First Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report Time Oil Northwest Terminal Portland, Oregon

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Prepared for

Time Oil Co.
2737 W. Commodore Way
Seattle, WA 98199

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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1.0 INTRODUCTION

This report provides the results of the first quarter 2003 groundwater sampling event and the performance and status of the groundwater interim action system at the Time Oil Northwest Terminal (terminal) in Portland, Oregon. The first quarter 2003 sampling event was conducted from February 10 through February 13, 2003, as part of the Phase II remedial investigation (RI) at the terminal. This report summarizes groundwater elevation and groundwater quality data, transmits analytical laboratory data packages and the associated data validation report, and presents an evaluation of the first quarter 2003 (January 1 – March 31, 2003) data relative to compliance with performance criteria for ongoing implementation of the groundwater interim action systems in the upper and lower water-bearing zones. The first quarter 2003 groundwater monitoring event is also considered the annual monitoring event for the site since certain well locations that are sampled on an annual basis are sampled at this time.

The terminal is an inactive bulk petroleum storage and transfer facility owned by Time Oil Co. (Time Oil). Time Oil ceased operations at the terminal on October 31, 2001. The terminal is located in the industrialized Rivergate area of North Portland, Oregon (Figure 1). Quarterly groundwater monitoring has been conducted at the terminal since April 1997, in accordance with the *Phase I/II Remedial Investigation/Feasibility Study (RI/FS)* work plan (Landau Associates 1996). The groundwater monitoring locations at the terminal are shown on Figure 2.

The chemical analyses conducted during this sampling event for each groundwater sampling location are summarized in Appendix A, Table A-1. Groundwater level measurements collected at the terminal for the first quarter 2003 event and for the previous quarterly events since March 1997 are provided in Appendix A, Table A-2. Groundwater quality data for the first quarter 2003 event are provided in Tables A-3 and A-4 for the shallow and deep wells, respectively. A summary of the first quarter 2003 groundwater interim action recovery data is provided in Appendix B. Procedures for collection of water levels and groundwater samples and methods for evaluation are provided in Appendix C. Modifications to the groundwater quality sampling and analysis requirements, as approved by the Oregon Department of Environmental Quality (DEQ), are documented and referenced in Appendix D. The data validation report for the first quarter 2003 data is provided in Appendix E. Laboratory data packages for these data are provided in Appendix F.

As requested by DEQ, a summary of the quarterly water quality data (detected constituents) since March 1997 for the shallow and deep wells is being provided to DEQ either electronically or on computer diskette. These tables will continue to be updated following each quarterly event.

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2.0 FIRST QUARTER 2003 GROUNDWATER SAMPLING EVENT

The first quarter 2003 groundwater sampling event was conducted from February 10 through February 13, 2003. The quarterly event included measurement of groundwater levels at existing monitoring wells and well points, recovery wells, and a river gauge established on the south side of the dock extending into the Willamette River (Figure 2); measurement of product thickness in wells, if observed; and collection of groundwater quality samples. The first quarter event included sampling of all monitoring wells routinely included in the quarterly sampling program, as well as the monitoring wells that are sampled on an annual basis, including the east property wells (LW-101S through -104S); wells H, L, and LW-5S; wells monitored as part of the groundwater interim action (LW-13S, -14D, -17D, and -18D); and monitoring wells associated with the *in situ* Chemical Oxidization (ISCO) pilot study (OX-1S, -2S, -3S, and -4S, PZ-1, -2, -3, and -4, LW-11S, and RW-1). A summary of the wells sampled for the first quarter 2003 event and the types of analyses conducted at each sample location are provided in Table A-1. This section presents a summary of the results for the groundwater level measurements and groundwater quality sampling, and provides an evaluation of groundwater flow and contaminant occurrence and trends. The performance and status of the groundwater interim action is discussed in Section 3.0.

2.1 GROUNDWATER LEVEL AND PRODUCT MEASUREMENTS

Groundwater levels were measured for the first quarter 2003 event on February 11, 2003. Each well was also checked for the presence of product. The measurement and evaluation results are provided in the following sections. The measurement and evaluation procedures are provided in Appendix C. The groundwater measurement locations are shown on Figure 2. Groundwater level measurements conducted for the quarterly groundwater sampling events since March 1997 are provided in Table A-2. Historical (pre-Phase II RI) groundwater level measurements conducted from 1993 through 1996 were provided in the Phase II RI report (Landau Associates 2000c).

2.1.1 PRODUCT MEASUREMENTS AND PRODUCT RECOVERY

During the first quarter 2003 event, measurable product was noted at site monitoring well P with a product thickness measurement of 0.01 ft. Since there was inadequate volume of product in this well for product recovery, recovery efforts were not performed. Continued monitoring of this well and all site monitoring wells for the presence of product will continue for all future quarterly monitoring events.

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2.1.2 UPPER WATER-BEARING ZONE

Groundwater elevations measured in the shallow wells were used to estimate groundwater flow conditions in the upper zone. Groundwater elevation contours for the upper zone are presented on Figure 3. The groundwater elevation contours indicate that groundwater flow in the upper zone across the terminal is generally to the west-southwest toward the Willamette River. A localized shift in groundwater flow to the south in an area southwest of the former pentachlorophenol (PCP) mixing area may be due to the influence of the east-west trending storm drain located about 170 ft north of the southern property boundary (Figure 2). The groundwater flow pattern observed in the upper zone does not vary significantly from the patterns seen over the previous years of monitoring. As discussed in Section 3.0, HRW-1 did not operate during this quarter. Groundwater elevation decreases in the upper zone throughout the site since the first quarter of 2002 can be attributed to seasonal fluctuation of the groundwater table.

2.1.3 LOWER WATER-BEARING ZONE

Groundwater elevations measured in the deep wells were used to estimate groundwater flow conditions in the lower zone. Groundwater elevation contours for the lower zone are presented on Figure 4. RW-2 pumped continuously during the first quarter 2003, except for periodic shutdowns for system maintenance. The contours indicate that pumping of recovery well RW-2 for the groundwater interim action has modified groundwater flow in the lower zone in proximity to the pumping well, such that hydraulic capture is achieved to the west approximately between LW-17D and LW-18D and to the south near LW-15D. Groundwater flow outside the RW-2 capture zone is generally toward the west to the Willamette River. The groundwater flow observed during this quarterly event is characteristic of the trend seen since the startup of RW-2 in October 2000.

2.2 GROUNDWATER QUALITY

Groundwater quality samples were collected for the first quarter 2003 event from February 10 through February 13, 2003. The wells sampled consisted of 26 upper zone wells and 16 lower zone wells. Monitoring wells LW-9S and PZ-4 were dry and not sampled as part of this event. Except as shown in Table A-1, all groundwater samples were analyzed for the following quarterly constituents: semivolatile organic compounds [SVOCs; U.S. Environmental Protection Agency (EPA) Method 8270]; PCP (EPA Method 8270 SIM); volatile organic compounds (VOCs; EPA Method 8260); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); chloride (EPA Method 325.2); total dissolved solids (TDS; EPA Method 160.1); major ions (EPA Methods 6010,

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SM2320, 160.1, 325.2, 354.1, and 375.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). Additionally, groundwater from 20 monitoring wells was analyzed for diesel-range total petroleum hydrocarbons (TPH; NWTPH-D). Samples from wells B-1, LW-8S, LW-11S, RW-1, and RW-2 were also analyzed for TPH gasoline and motor oil ranges (NWTPH-G and NWTPH-Dx). Laboratory analyses were conducted by Analytical Resources, Inc. (ARI, Seattle, Washington).

Analytical results for the first quarter 2003 event are provided in Tables A-3a through A-3f for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the results is provided in the following sections. Data qualifier definitions are included in Table A-5.

2.2.1 UPPER WATER-BEARING ZONE

The analytical results from the upper zone wells (presented in Table A-3) indicate that samples from nine wells contained detectable concentrations of PCP during the first quarter 2003 event. The highest concentration was observed in the samples from wells LW-11S and RW-1 (2,000 J and 2,800 µg/L, respectively), which are located downgradient of the former PCP mixing area. The detected concentrations of PCP at both these wells are less than last quarter (3,700 and 5,400 µg/L, respectively). In addition, groundwater from the ISCO monitoring wells OX-1S, -2S, -3S, and -4S, and piezometers PZ-1 and PZ-2 located downgradient of the former PCP warehouse and between LW-11S and RW-1, contained PCP concentrations ranging from 590 to 5,700 µg/L. (The results of the ISCO pilot study will be provided in the forthcoming Field Pilot Test Report prepared by In-Situ Oxidation Technologies, Inc.) PCP concentrations at well J1 continued to decrease (3.1 µg/L) during the third quarter 2002 to (0.35 µg/L) this quarter. During this quarter, PCP was nondetect in the sample collected from well LW-4S.

Other SVOCs were detected at low concentrations, but most detections were less than 10 µg/L and none were greater than 47 µg/L (2-methylnaphthalene at well LW-8S). The highest concentrations of VOCs (ethylbenzene; isopropylbenzene; m-, p-xylene; n-propylbenzene; and toluene) were detected in samples collected at wells B1, LW-8S, LW-11S, and RW-1. No TPH detection was greater than 11 mg/L (TPH-D at well LW-8S). The highest concentrations of metals were detected in samples collected at wells B1, LW-7S and LW-8S.

2.2.2 LOWER WATER-BEARING ZONE

During this quarter, PCP was detected at the following lower zone wells: RW-2 (33 µg/L), G1A (0.39 µg/L), LW-3D (0.28 µg/L) and LW-17D (0.33 µg/L). Low-level concentrations are detected very infrequently in wells G1A and LW-17D and may reflect intermittent migration outside the capture zone of recovery well RW-2. None of the other SVOCs detected were at concentrations greater than 14 µg/L

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(2-methylnapthalene at RW-2). The highest concentrations of VOCs detected were in the samples collected from wells G1A and RW-2; however, none of the detected concentrations were greater than 180 µg/L (isopropylbenzene at G1A). None of the detected concentrations of TPH were greater than 4.4 mg/L (diesel-range TPH at G1A). The highest concentrations of metals were detected in the sample collected from well LW-11D.

2.2.3 WATER LEVEL AND CONTAMINANT TRENDS

Potential trends between water levels and detected concentrations of selected constituents were evaluated by generating time versus groundwater elevation and time versus concentration plots for the period covered by the Phase II RI quarterly sampling events (April 1997 through the current quarterly event). Plots of PCP concentrations (maximum concentrations of EPA Methods 8270 and 8040 for events prior to the second quarter 2001 event) versus time for selected upper zone wells (LW-4S, -11S, -13S, and RW-1); selected lower zone wells (LW-4D, -11D, and RW-2); and nested wells (LW-4S and -4D) are provided on Figures 5 through 7. Plots of groundwater elevations and PCP concentrations for upper zone wells LW-4S and LW-11S are shown on Figures 8 and 9. Figure 10 shows groundwater elevations and PCP concentrations at lower zone well LW-4D plotted with the Willamette River stage.

As shown on Figure 5, PCP concentrations in the selected upper zone wells show variable concentration trends over time (note the logarithmic scale). The PCP concentrations at RW-1 increased between November 2001 and last quarter (5,400 µg/L), but decreased to 2,800 µg/L this quarter; these concentrations are still less than the maximum detected at this well (11,000 µg/L) in May 2000 and February 2001. The PCP concentration at LW-11S has continued to decrease during the last year from 4,700 µg/L to 2,000 J µg/L this quarter. These concentrations are greater than the historic low concentration detected at this well in the fourth quarter of 2001 (560 µg/L); however, since May 2000, PCP concentrations in LW-11S are considerably lower than the maximum detection observed to date (24,000 µg/L in May 1999). The recent decreases in PCP concentrations at wells RW-1 and LW-11S could reflect response to the ISCO pilot test event conducted in September 2002. The PCP concentration at LW-13S increased to about 10 µg/L between May 2000 and July 2001, but has been reported at or near the detection limit since the fourth quarter 2001 event. PCP concentrations at well LW-4S have continued to decrease since the second quarter 2002 event (2,200 µg/L) and returned to below the detection limit this quarter. Results from this well, located slightly south of the east-west trending storm drain, have exhibited spikes in PCP concentrations in November 1998 (4,200 µg/L), August 2000 (9,400 µg/L), and June 2002 (2,200 µg/L). Initially, as reported in previous quarterly reports, these spikes in PCP concentrations appeared anomalous, but, after further review, they appear to be related to seasonal

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trends in PCP concentrations at locations upgradient and within the source areas, and subsequent migration downgradient (Figure 8).

As shown on Figure 6 (note the logarithmic scale), PCP concentrations in the lower zone have generally decreased over time, except at RW-2 where concentrations decreased from 630 to 0.68 µg/L between September 2000 and June 2001, but increased to 76 µg/L between June 2001 and June 2002. Since the third quarter 2002 sampling event, PCP concentrations at RW-2 have remained relatively stable.

As in previous quarters, PCP concentrations detected this quarter at selected lower zone well locations where PCP has historically been detected are generally lower than the concentrations in the upper zone wells at the same location or similar locations. The PCP concentration trends for nested wells LW-4S and -4D (Figure 7) indicate that contamination observed in the lower zone at this location does not appear to be related to the upper zone at the same location, except possibly between December 1999 to November 2001. Before this time, lower zone concentrations were typically greater than upper zone concentrations and trended differently. Since November 2001, PCP has generally not been detected in well LW-40. Overall, PCP concentrations at lower zone well LW-4D have decreased over time, with concentrations below the detection limit mainly observed since groundwater recovery began at nearby well RW-2 in October 2000. However, at adjacent upper zone well LW-4S, intermittent spikes in PCP concentration have been observed, as discussed earlier.

Fluctuations in groundwater elevations in the upper zone reflect typical seasonal variability with seasonal lows during the fall months (October-November) and seasonal highs during the winter and early spring months (January-March) since monitoring began in March 1997. The groundwater levels during the past year are similar to those observed during 1998 and 2000. Groundwater levels this quarter appear to have recovered to more seasonally representative levels from the lowest upper zone groundwater elevations measured to date at the terminal last quarter. Trends in PCP concentrations can be correlated with groundwater elevations at some locations. Figure 9 shows that PCP concentrations in the upper zone at well LW-11S generally follow the water level trends in that zone over time. The continued lack of measurable product at well LW-11S during the last year may reflect successful removal of residual PCP from the soil resulting from the ISCO injection. However, figure 8 shows that there does not appear to be a direct correlation between the water levels and PCP concentrations in the upper zone at well LW-4S. As discussed earlier, the spikes in PCP concentrations at LW-4S appear to be related to seasonal migration of PCP from upgradient locations. In the lower zone, groundwater levels show similar trends with seasonal fluctuations in the Willamette River, as shown by the plot of groundwater elevations at LW-4D with river stage on Figure 10. However, there appears to be no correlation between PCP concentrations and groundwater/river stage elevations at LW-4D.

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Contaminant and groundwater level trends will continue to be evaluated and discussed for future quarterly events.

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3.0 GROUNDWATER INTERIM ACTION

This section presents a summary of the performance and status of the groundwater interim action system at the terminal for the first quarter of 2003 (January 1 through March 31, 2003). System operation data for the groundwater interim action were evaluated in accordance with the startup monitoring plan (Landau Associates 2000d) to determine first quarter 2003 compliance with performance criteria for the upper zone and the lower zone at the terminal. Specific performance criteria include: 1) groundwater recovery from an upper zone recovery well (HRW-1) when the pump is operating or when sufficient groundwater is present in the upper zone; 2) continuous pumping from a lower zone recovery well (RW-2), except for brief periods of system maintenance (or as described below); 3) groundwater flow toward HRW-1 and RW-2 from the downgradient and upgradient directions; 4) reversal of the lower zone groundwater flow direction at the leading edge of the PCP plume; 5) chemical confirmation that continued migration of PCP in groundwater downgradient of RW-2 and HRW-1 is not occurring; and 6) compliance with the requirements of the existing discharge permit. In addition to the six criteria listed above, information is also presented in this section related to the operation of a groundwater intercept system implemented in a storm drain at the site.

Specific operational information for the first quarter 2003 as it relates to the criteria identified above as follows:

1) During the first quarter 2003, no groundwater was extracted from HRW-1. As stated in the previous quarterly reports, the pump in HRW-1 was pulled on August 2, 2002 and observations indicated that there was likely biofouling on the pump and in the well. It appears that the well was "plugged" and not allowing water in the upper zone to enter the horizontal well at a rate sufficient to maintain pumping. Currently, we are continuing to assess the value of controlling the biological growth in HRW-1 in comparison with the potential full-scale implementation of the ISCO treatment program. A summary of historical groundwater recovery for HRW-1 is included in Appendix B, Table B-1.

2) As discussed in section 2.1, groundwater elevation data was collected from the upper zone monitoring wells on February 11, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 3. Because the pump was pulled from HRW-1 in early August 2002, an assessment of the impact of upper zone water elevations from pumping of HRW-1 was not possible during this quarterly monitoring event.

3) With the exception of periodic shutdowns for system maintenance, groundwater was extracted continuously from the lower zone during the period from January 1 to March 31, 2003 by operating the groundwater recovery pump in RW-2. A total of approximately 1,274,105 gallons of groundwater were recovered from RW-2 during the first quarter of 2003 at an estimated rate of 9.8 gpm. The recovery pump in RW-2 operated for approximately 2,158 hours and discharged water to Tank 16804 for temporary storage until treated by the terminal's wastewater treatment system. A summary of the groundwater recovery for RW-2 is included in Appendix B, Table B-1.

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4) As discussed in Section 2.1, groundwater elevation data was collected from the lower zone from February 11, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 4. Based on the groundwater elevation data collected, the groundwater flow direction has been reversed locally downgradient of the leading edge of the PCP plume in the lower zone near RW-2.

5) As previously discussed in Section 2.2, groundwater samples were collected at the site on February 10 through February 13, 2003. Historically, the extent of groundwater impact has been estimated based on the extent of dissolved-phase PCP. The extent of PCP in the upper and lower zones is depicted on Figures 11 and 12, respectively, based on data collected during the February 2003 groundwater sampling event. The extent of PCP in the upper zone is consistent with previous quarterly events. The lower zone analytical data indicate that monitoring wells downgradient of RW-2 do not exhibit detectable concentrations of PCP, confirming the hydraulic capture of lower zone groundwater, with two exceptions. Low-level detections in wells G1A and LW-17D, located between the PCP plume and the river, indicate intermittent and infrequent migration of PCP beyond the RW-2 capture zone. PCP has not been detected at G1A since February 1999 or at LW-17D since February 2002.

6) Between January 1 and March 31, 2003, approximately 569,458 gallons of groundwater was recorded to be pumped by the groundwater intercept system at SDM-1 to Tank 16804 for treatment with an average flow rate of approximately 4.4 gpm.

   The industrial wastewater discharge permit (City of Portland Permit No. 400.121) for discharge of the extracted groundwater following treatment at the terminal's wastewater treatment plant includes the following discharge limitations:

Parameter	Permitted Limit
PCP	40 micrograms/liter (µg/L)
Benzene	50 µg/L
BETX (benzene, ethylbenzene, toluene, and xylenes)	750 µg/L
pH	5 to 11.5

Samples of the treated groundwater discharged were collected on January 15, 2003 for laboratory analyses of the listed parameters. None of the permitted limits were exceeded. The analytical results for PCP are provided in Appendix B, Table B-1.

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4.0 FUTURE GROUNDWATER TASKS

The second quarter 2003 groundwater sampling event is planned for mid-May 2003. The groundwater monitoring and analytical program for the second quarter 2003 event will include the following: 1) monitoring at routine quarterly well locations, 2) monitoring of wells LW-13S, LW-14D, LW-17D, and LW-18D for evaluation of the groundwater interim action at RW-2, and 3) sampling of monitoring wells OX-1S, -2S, -3S, -4S as part of the ongoing ISCO pilot study. The results for the second quarter 2003 groundwater monitoring event and the second quarter groundwater interim action status will be provided in the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

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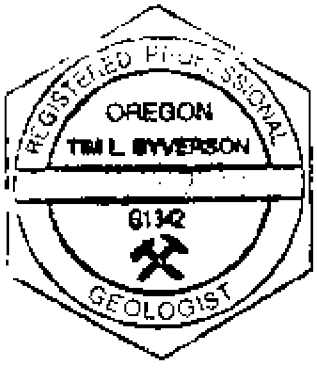
5.0 USE OF THIS REPORT

This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil Co. for specific application to the Northwest Terminal. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil Co. or others on connection with any site other than the Northwest Terminal without Landau Associates written permission shall be at the sole risk of Time Oil Co. and without liability to Landau Associates.

This document was prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

By:



Timothy L. Syverson, R.G.L.
Senior Geologist

Christy L. Johnson
Senior Staff Engineer

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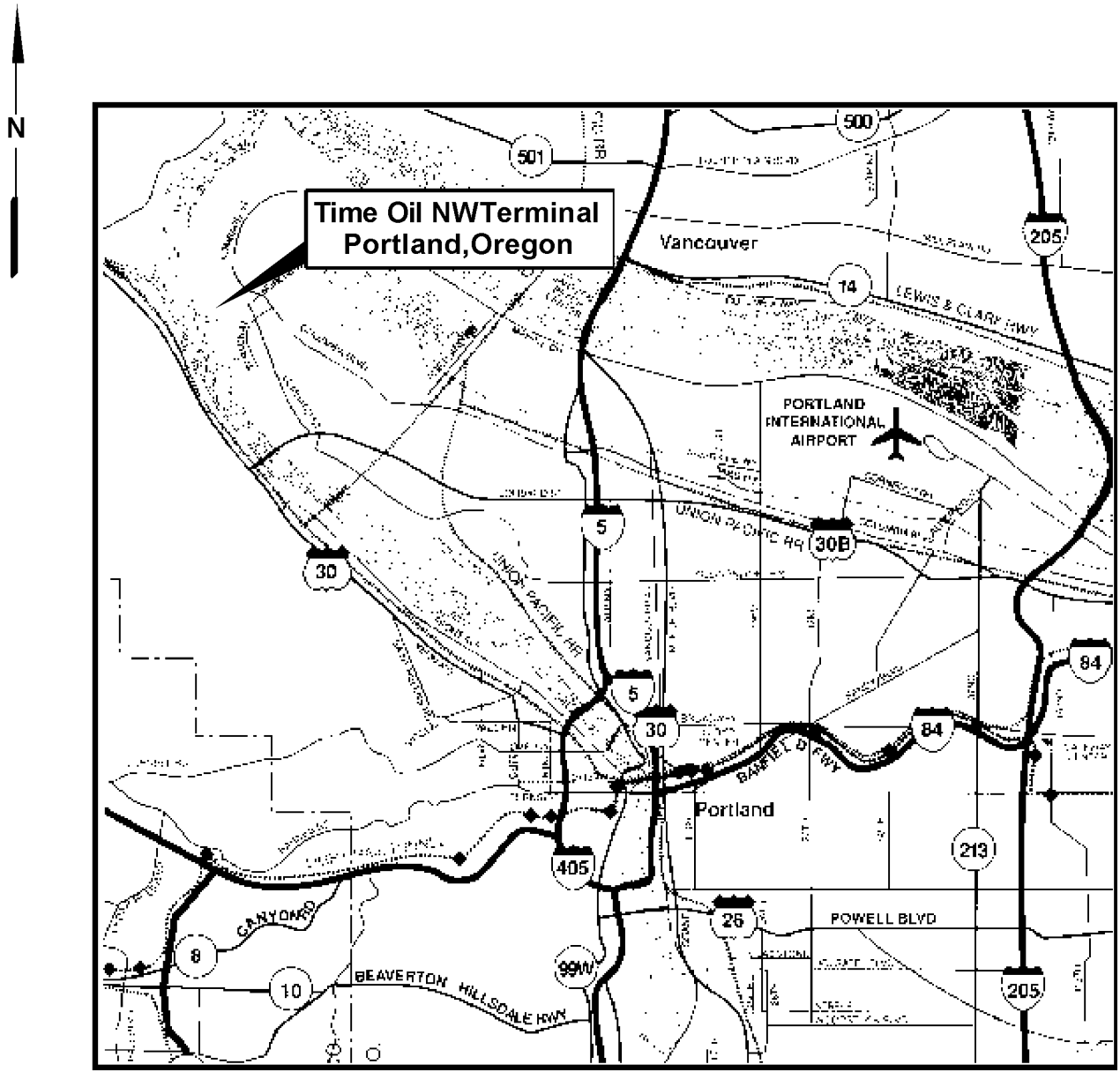

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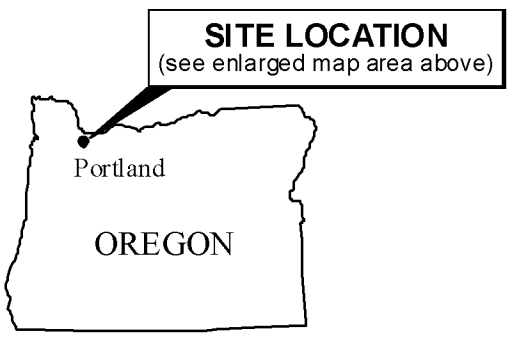

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TimeOilNWTerminal Portland,Oregon	**Vicinity Map**	Figure 1

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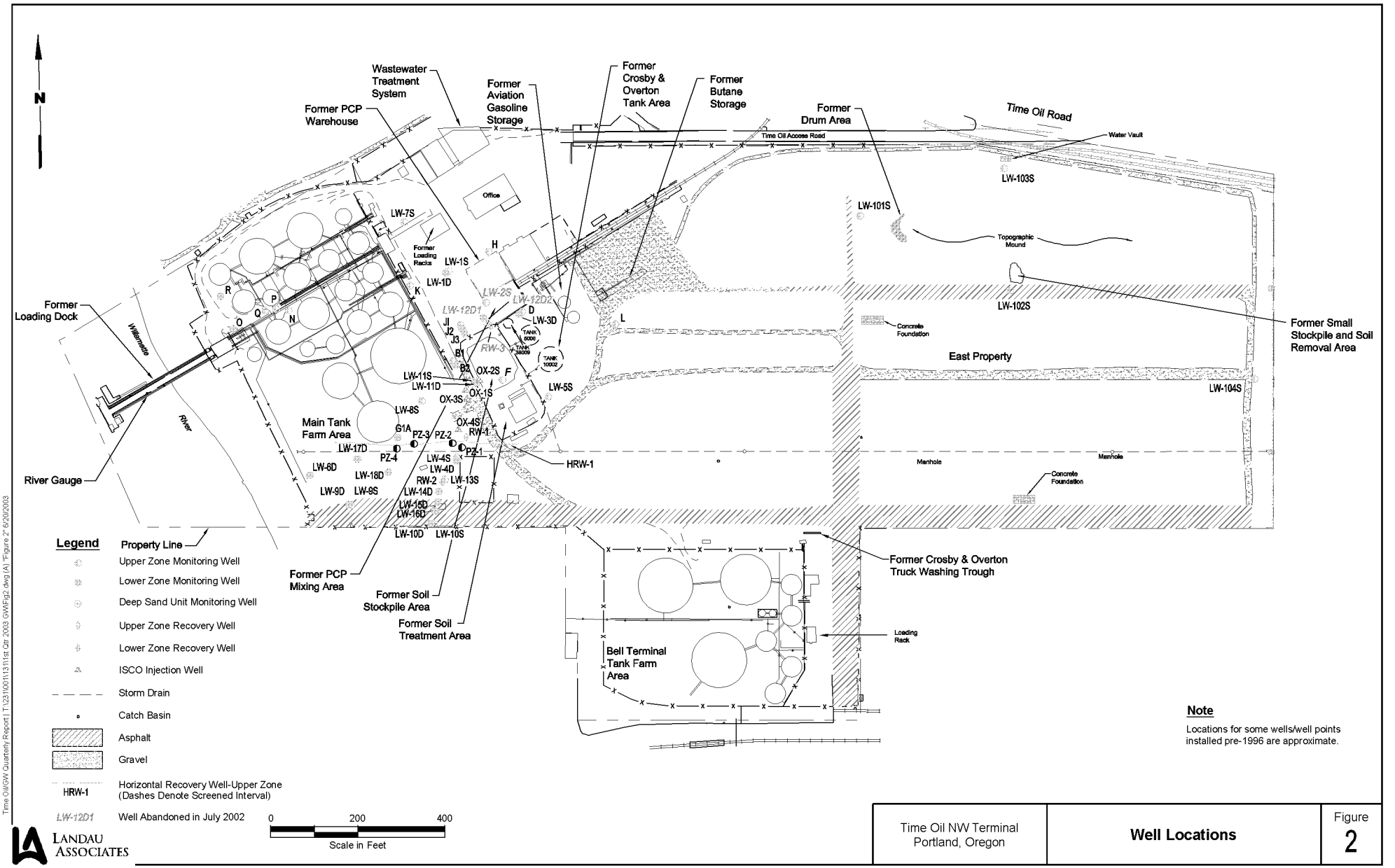

Note

Locations for some wells/well points installed pre-1996 are approximate.

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Time Oil NW Terminal Portland, Oregon	**Well Locations**	Figure 2

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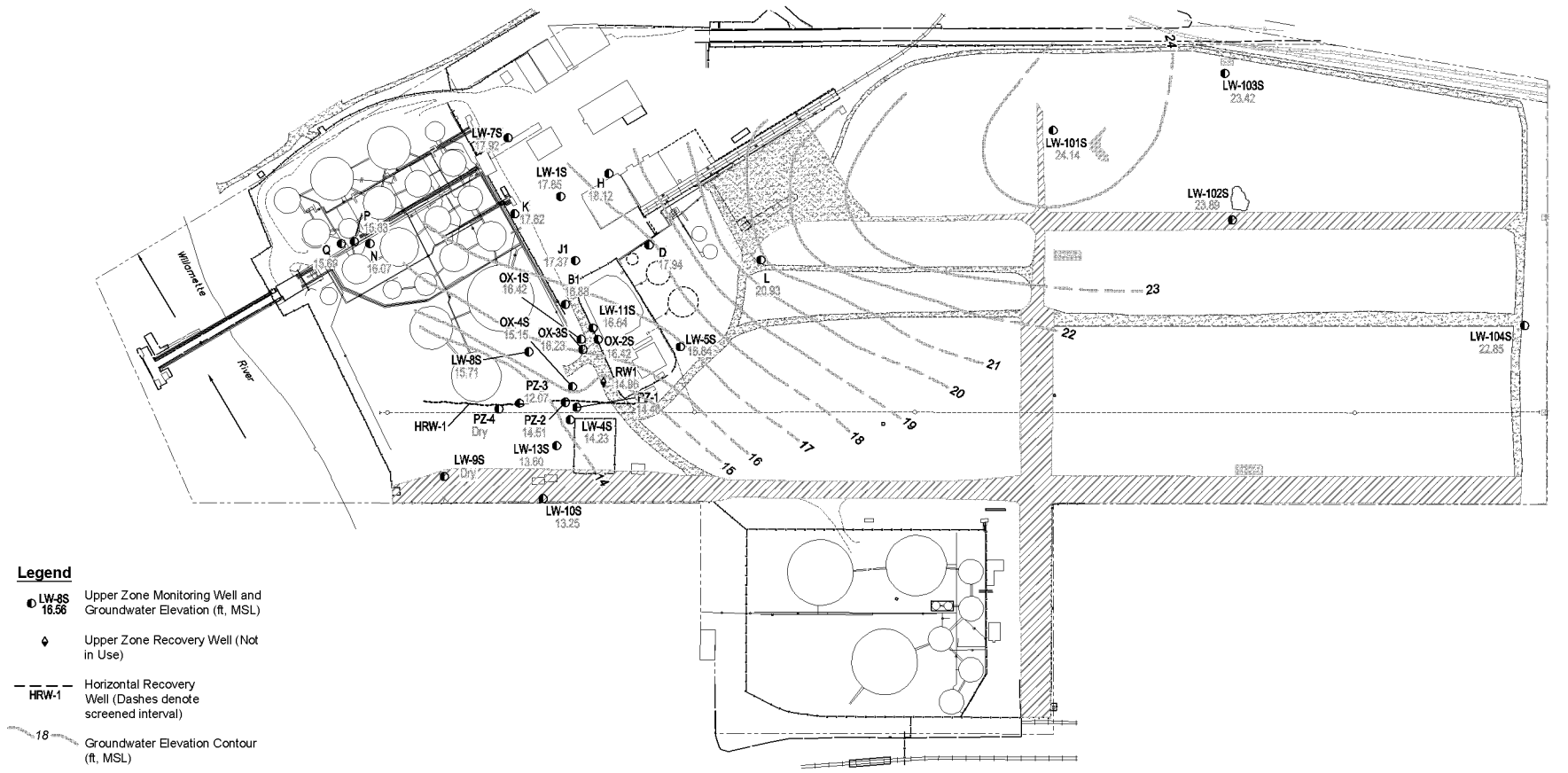

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Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Upper Zone, February 11, 2003**	Figure 3

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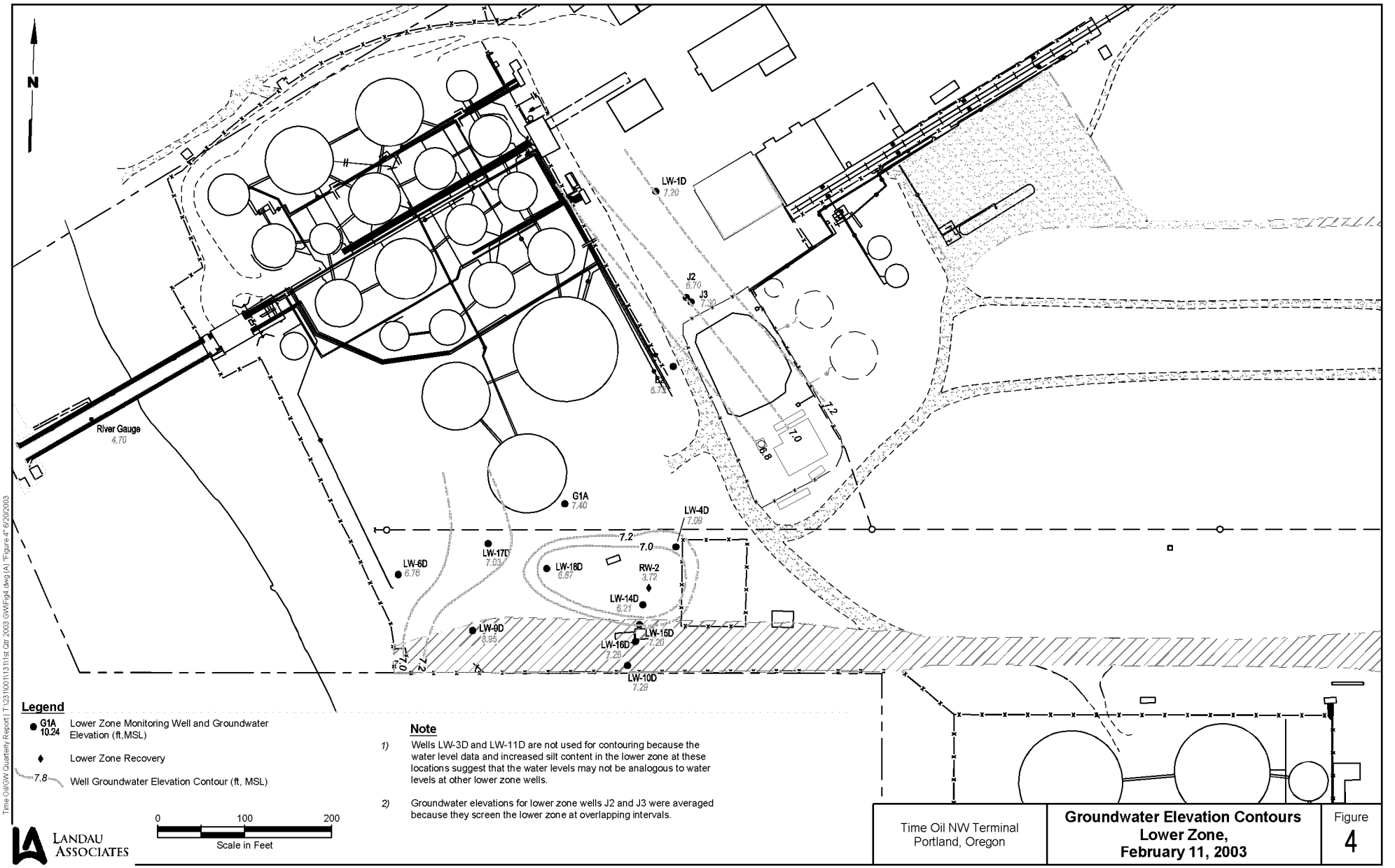

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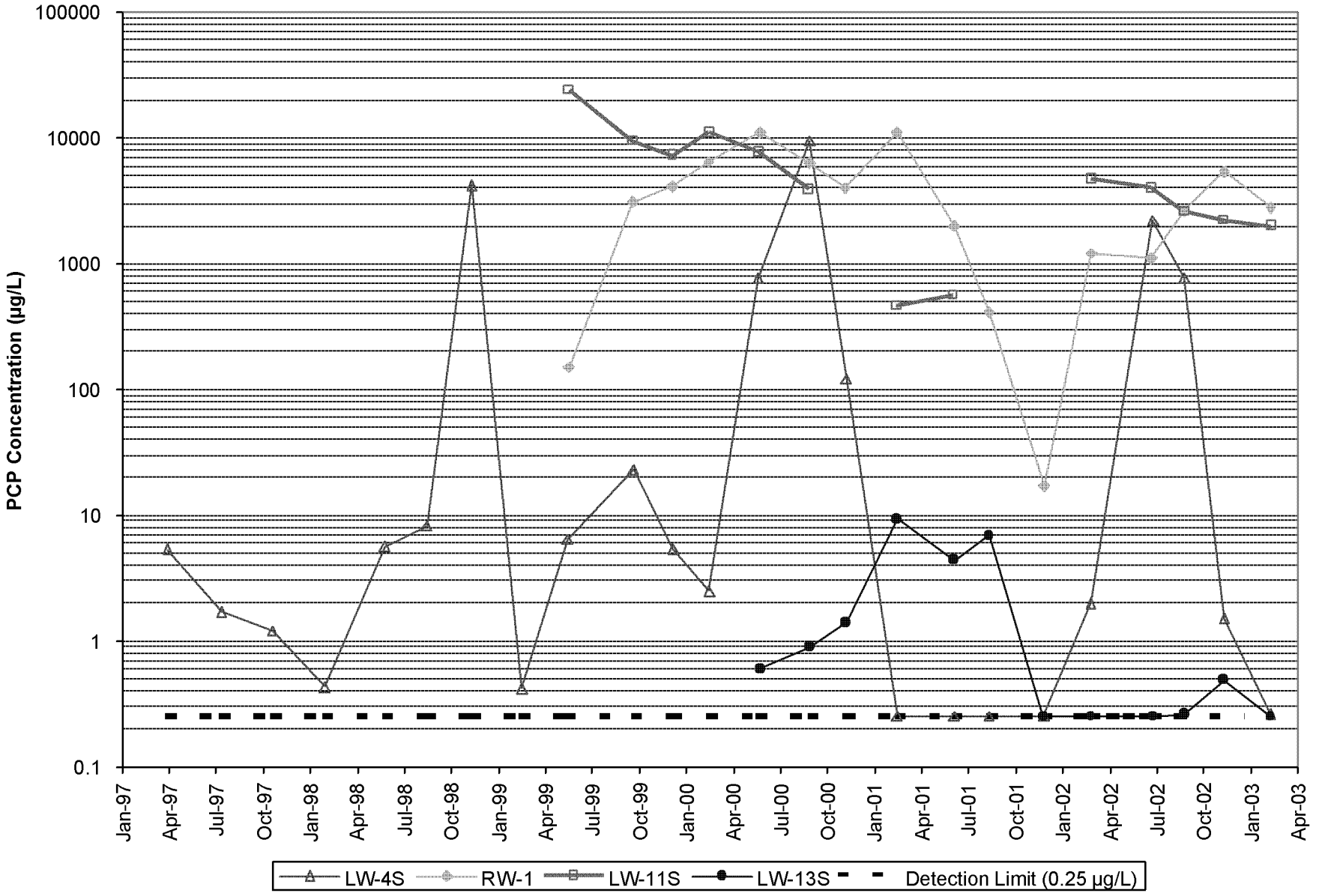
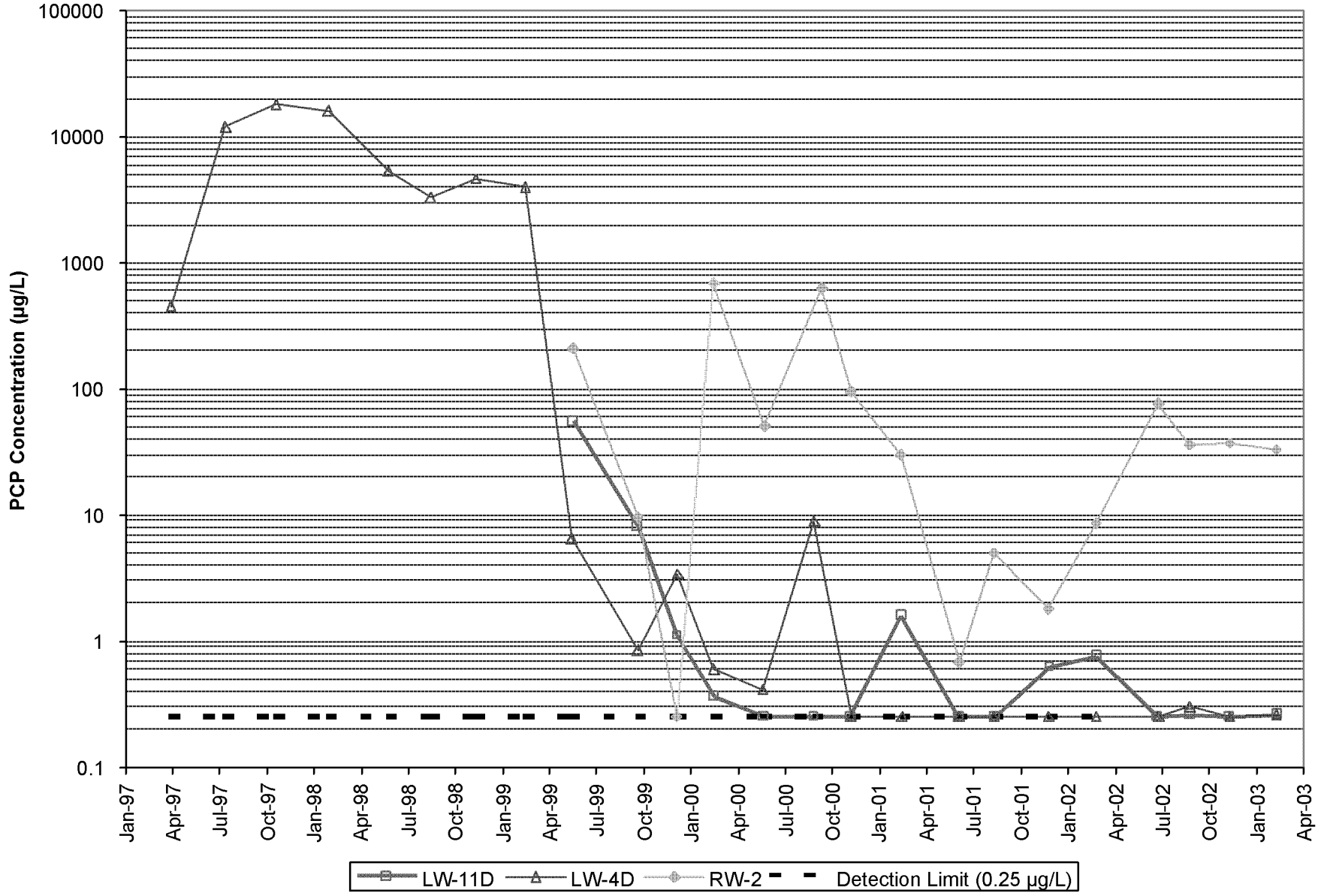


Time Oil NW Terminal Portland, OR	**PCP Concentrations, Selected Upper Zone Wells April 1997 - February 2003**	Figure 5

BZTO104(e)017659

Source: S:\SHEETS\timeoil\ph2ri\PLOTS2002-2203.xls Log PCP vs. Time-Deep

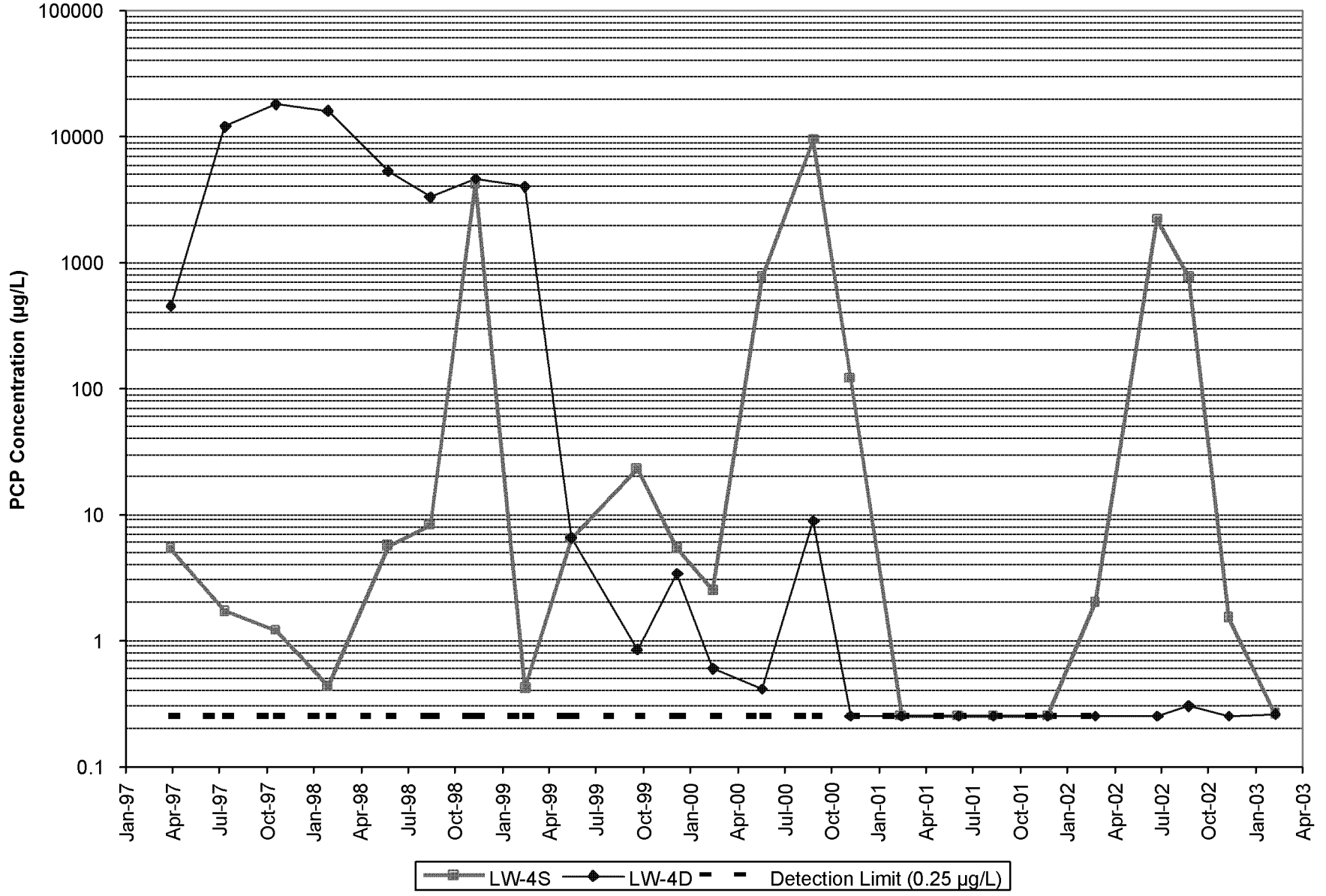


Time Oil NW Terminal
Portland, OR

**PCP Concentrations,
Selected Lower Zone Wells
April 1997 - February 2003**

Figure
6

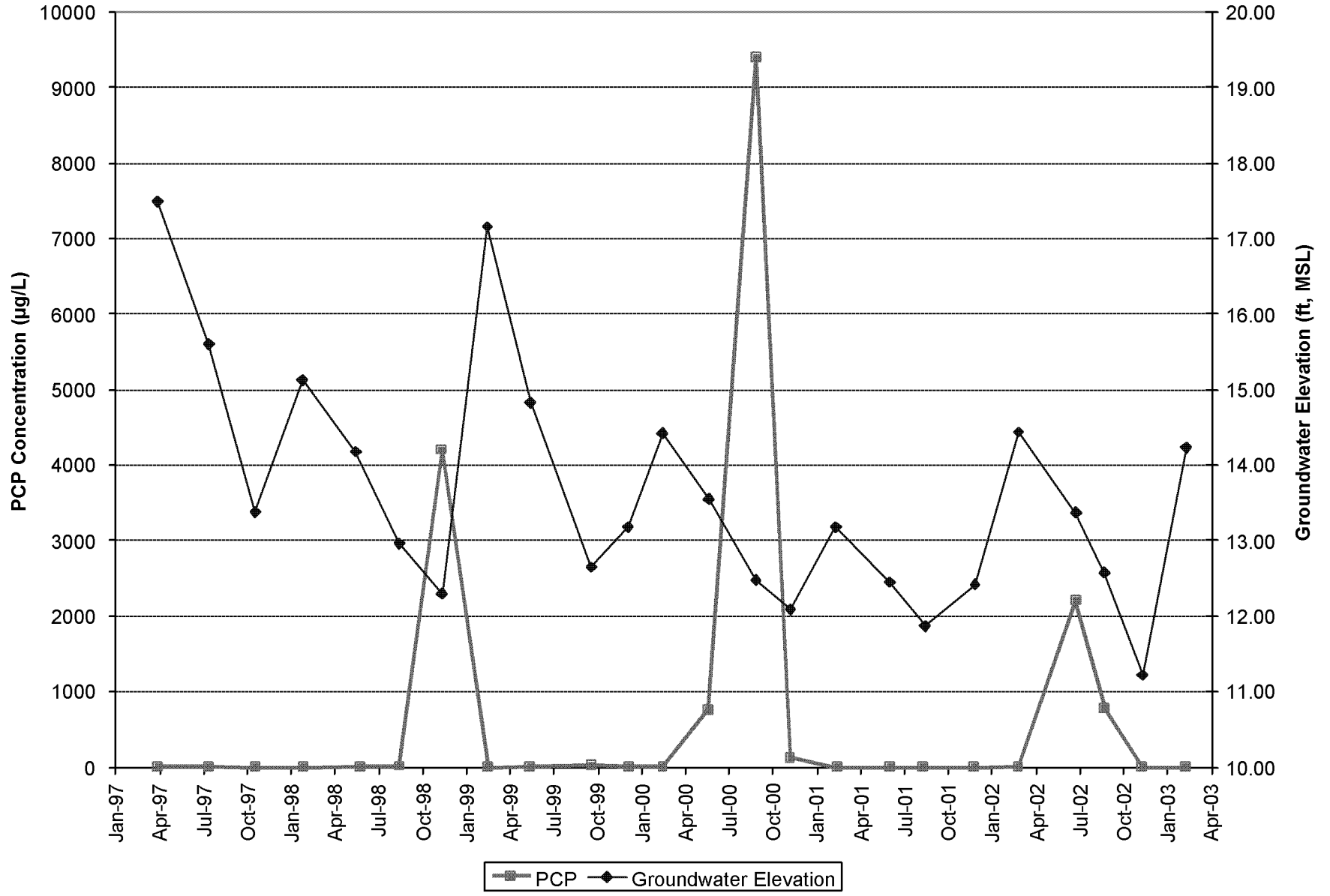
BZTO104(e)017660



Time Oil NW Terminal Portland, OR	**PCP Concentrations, Wells LW-4S and LW-4D April 1997 - February 2003**	Figure 7

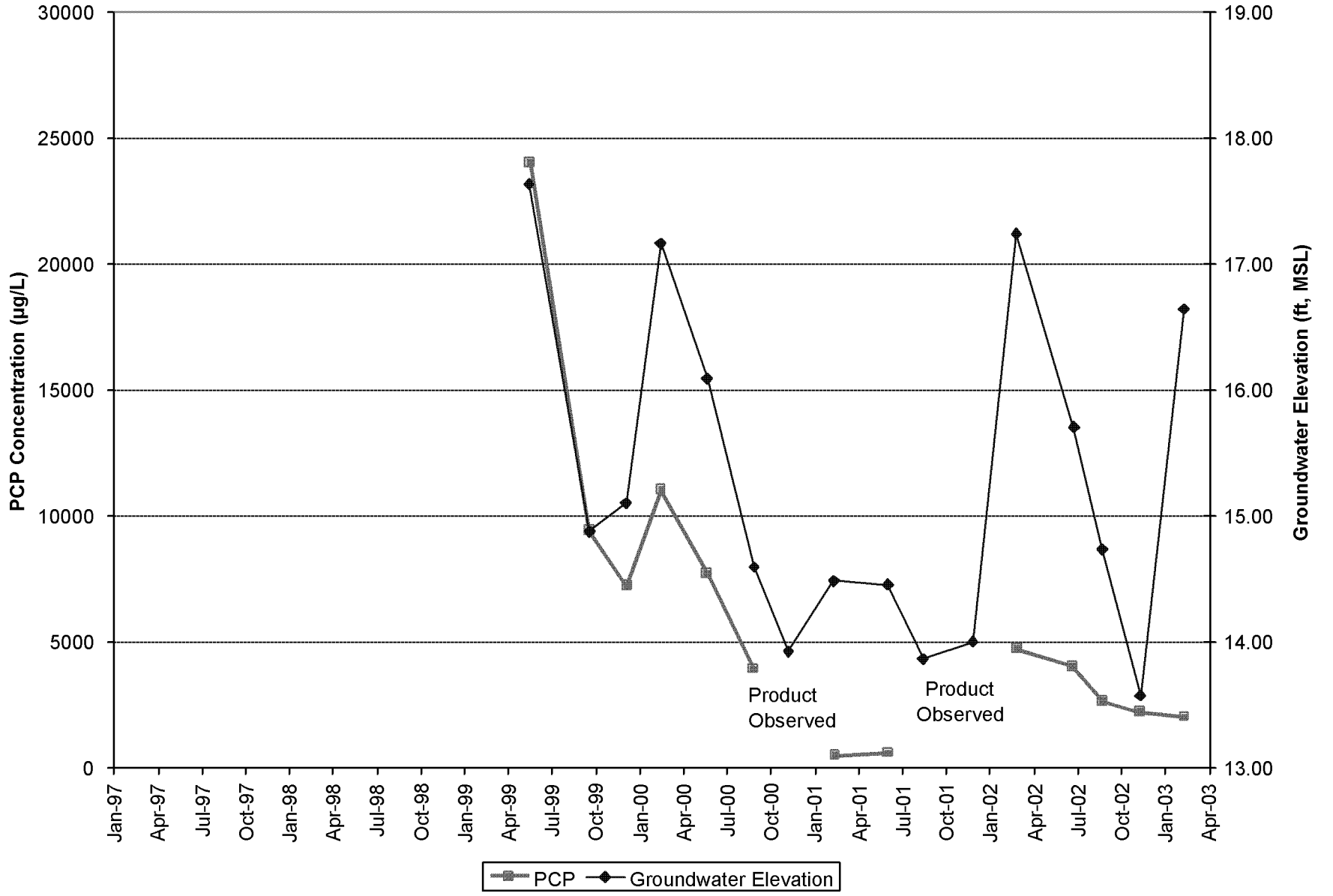
BZTO104(e)017661

Source: S:\SHEETS\timeoil\ph2ri\PLOTS2002-2203.xls LW4S PCP-WL



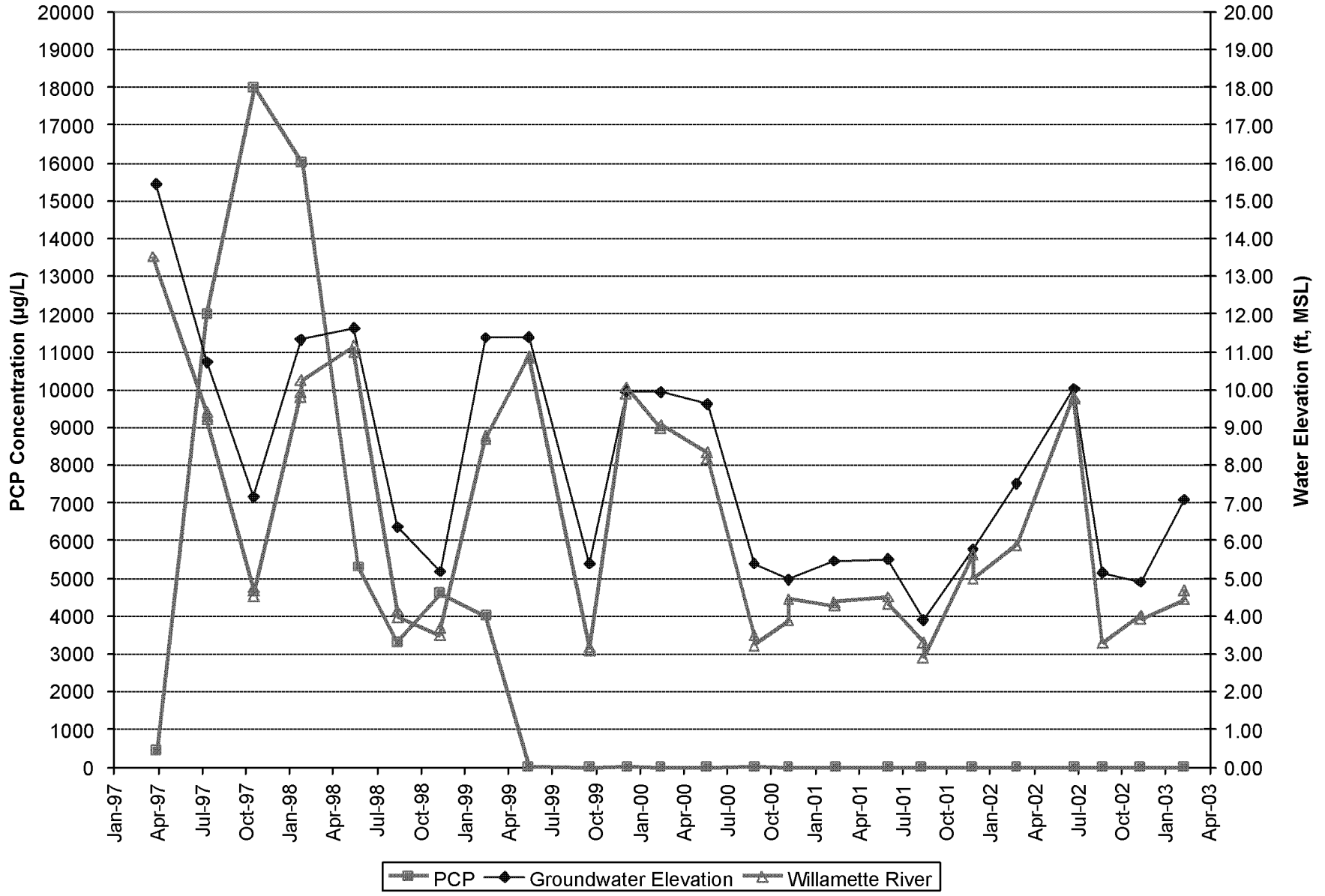
Time Oil NW Terminal Portland, OR	**PCP Concentrations and Groundwater Elevations, LW-4S April 1997 - February 2003**	Figure 8

BZTO104(e)017662



Time Oil NW Terminal Portland, OR	**PCP Concentrations and Groundwater Elevations, LW-11S April 1997 - February 2003**	Figure 9

BZTO104(e)017663

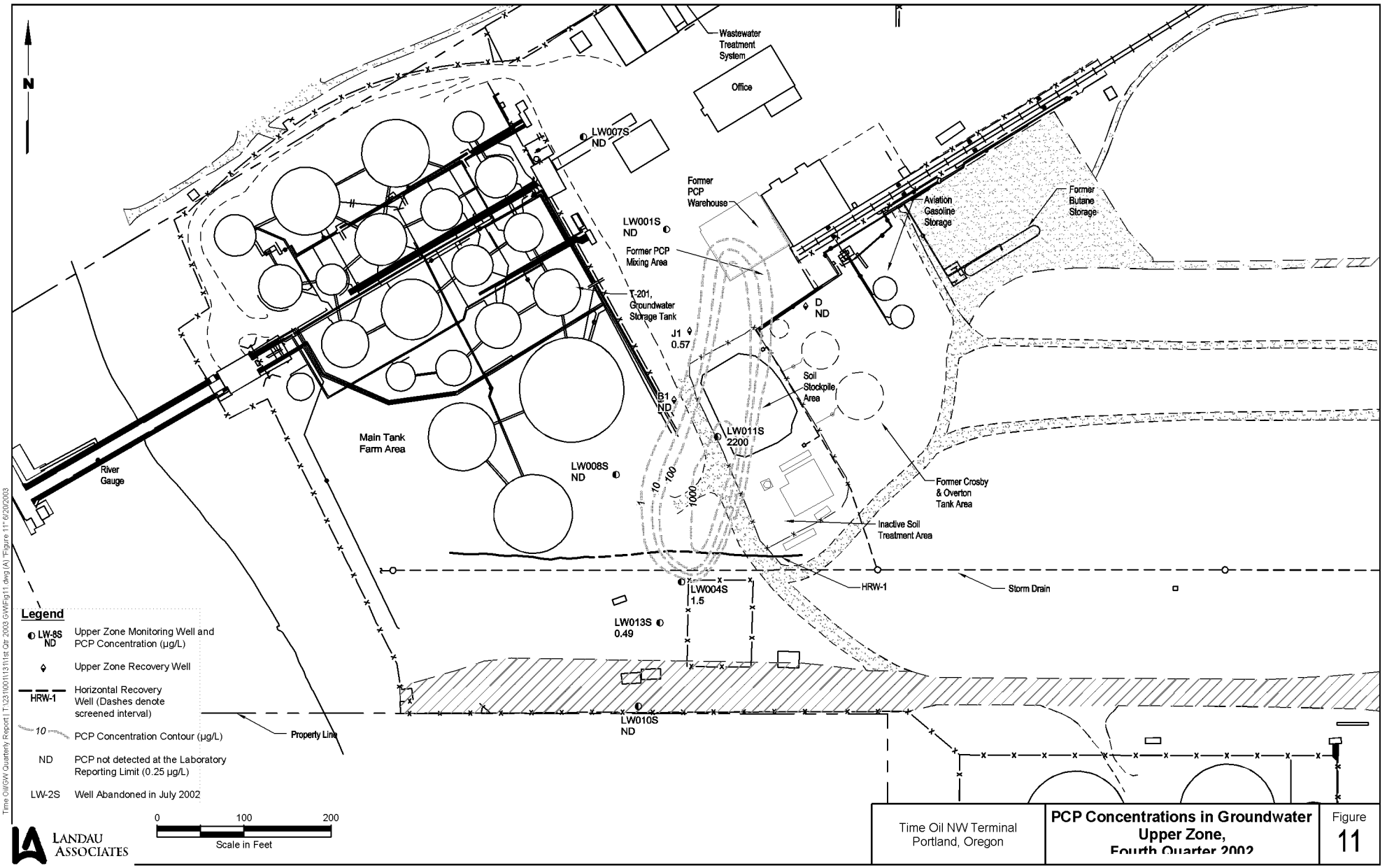


Time Oil NW Terminal
Portland, OR

PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D April 1997 - February 2003

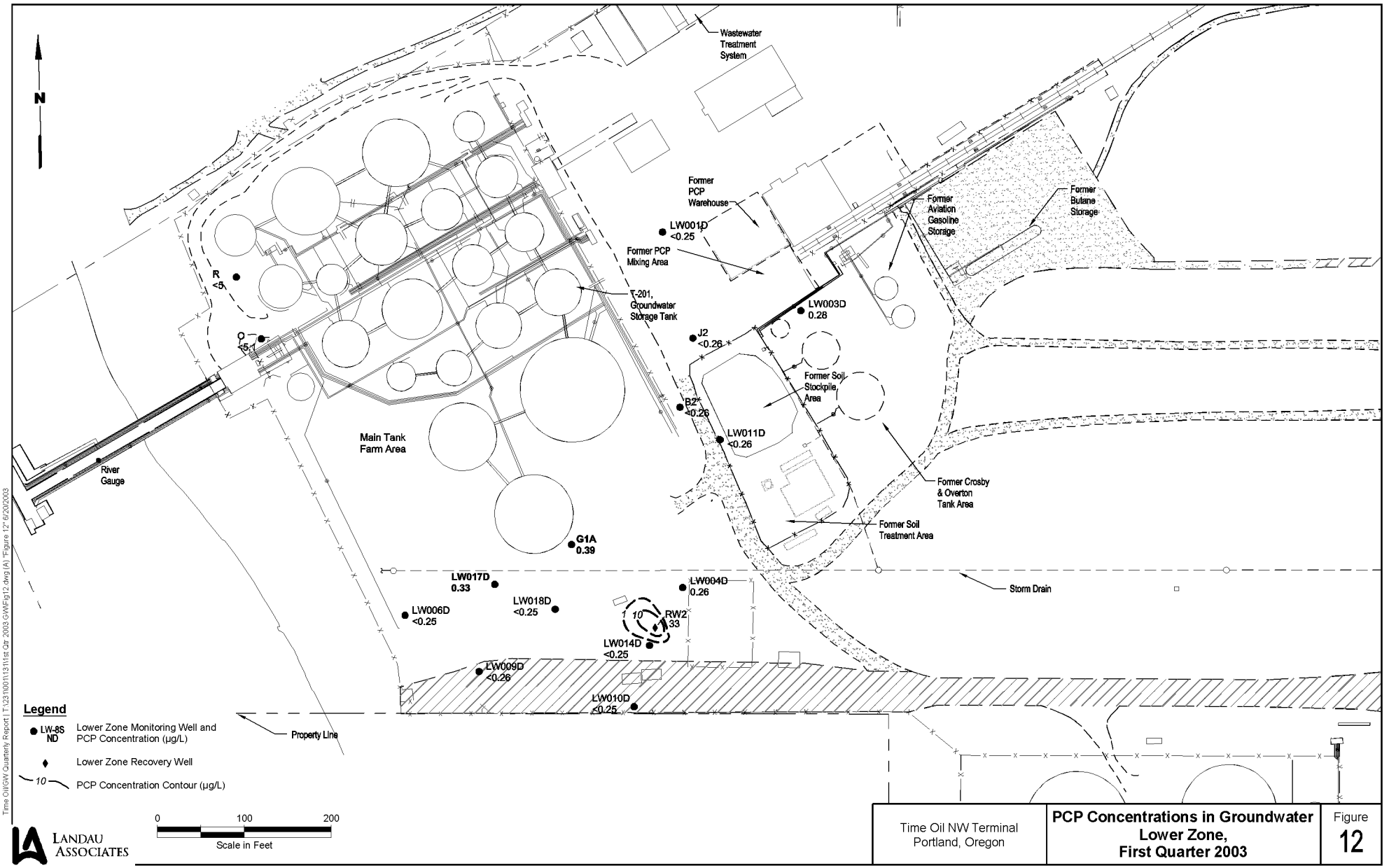
Figure
10

BZTO104(e)017664



Time Oil/GW Quarterly Report | T:\23\1000\113\1st Qtr 2003 GW\Fig11.dwg (A) "Figure 11" 6/20/2003

BZTO104(e)017665



Time Oil\GW Quarterly Report I:\123100\113\1st Qtr 2003 GW\Fig12.dwg (A) "Figure 12" 6/20/2003

BZTO104(e)017666

APPENDIX A

Groundwater Level Measurements And Quality Data

TABLE A-1
GROUNDWATER MONITORING POINTS AND ANALYTICAL METHODS
FIRST QUARTER EVENT, FEBRUARY 2003
TIME OIL NW TERMINAL

Well	SVOC (8270)	VOC (8260)	PCP (8270 SIM)	TPH-D	TPH-DX	TPH-G	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Major Ions
B1	X	X	X		X	X	X	X	X	X
B2	X	X	X	X			X	X	X	X
D	X	X	X				X	X	X	X
G1A	X	X	X	X			X	X	X	X
J1	X	X	X	X			X	X	X	X
J2	X	X	X	X			X	X	X	X
H			X				X			
K							X			
L	X	X	X	X			X	X	X	X
O	X	X								
R	X	X								
LW001S	X	X	X	X			X	X	X	X
LW001D	X	X	X	X			X	X	X	X
LW003D	X	X	X				X	X	X	X
LW004S	X	X	X	X			X	X	X	X
LW004D	X	X	X	X			X	X	X	X
LW005S	X	X	X	X			X	X	X	X
LW006D	X	X	X	X			X	X	X	X
LW007S	X	X	X	X			X	X	X	X
LW008S	X	X	X		X	X	X	X	X	X
LW009S (b)										
LW009D	X	X	X	X			X	X	X	X
LW010S	X	X	X	X			X	X	X	X
LW010D	X	X	X	X			X	X	X	X
LW011S	X	X	X		X	X	X	X	X	X
LW011D	X	X	X	X			X	X	X	X
LW013S			X							
LW014D			X							
LW017D			X							
LW018D			X							
LW101S	X	X	X	X			X	X	X	X
LW102S	X	X	X	X			X	X	X	X
LW103S	X	X	X	X			X	X	X	X
LW104S	X	X	X	X			X	X	X	X
RW1	X	X	X		X	X	X	X	X	X
RW2	X	X	X		X	X	X	X	X	X
OX001S			X							
OX002S			X							
OX003S			X							
OX004S			X							
PZ1			X							
PZ2			X							
PZ3			X							
PZ4 (b)										

(a) Metals analyzed include: arsenic, chromium, copper, nickel, lead, and zinc.
(b) Well dry and not sampled.

BZTO104(e)017668

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Shallow Wells:							
B *	03/25/97	----	29.04	NM	----	NM	Couldn't remove cap
B *	03/31/97	----	29.04	NM	----	NM	Couldn't remove cap
B *	07/16/97	08:30	29.04	11.02	18.02	----	
B *	10/21/97	16:35	29.04	13.39	15.65	----	
B *	01/27/98	12:15	29.04	11.53	17.51	----	
B *	05/18/98	17:56	29.04	12.51	16.53	----	
B *	08/17/98	11:02	29.04	14.40	14.64	----	
B *	11/13/98	10:24	29.04	14.38	14.66	----	
B *	02/16/99	13:36	29.04	9.69	19.35	----	
B *	05/18/99	15:52	29.04	11.72	17.32	----	
B *	09/21/99	12:21	29.04	15.18	13.86	----	
B *	12/06/99	14:37	29.04	13.00	16.04	----	
B *	02/16/00	10:57	29.04	11.84	17.20	----	
B *	05/23/00	17:31	29.04	13.22	15.82	----	
B *	08/29/00	14:23	29.04	15.32	13.72	----	
B *	11/09/00	13:31	29.04	15.29	13.75	----	
B *	02/12/01	15:25	29.04	13.68	15.36	----	
B *	06/04/01	12:49	29.04	14.18	14.86	----	
B *	08/16/01	11:54	29.04	15.80	13.24	----	
B *	11/28/01	12:44	29.04	13.80	15.24	----	
B *	02/27/02	14:33	29.04	12.27	16.77	----	
B *	06/27/02	15:05	29.04	13.38	15.66	----	
B *	08/26/02	16:59	29.04	14.02	15.02	----	
B *	11/13/02	09:01	29.04	13.90	15.14	----	
B *	02/11/03	10:13	29.04	12.85	16.19	----	
B1	03/25/97	10:48	29.74	----	----	----	Couldn't remove cap
B1	03/31/97	----	29.74	----	----	----	Couldn't remove cap
B1	07/16/97	07:49	29.74	11.01	18.73	----	
B1	10/21/97	16:33	29.74	13.56	16.18	----	
B1	01/27/98	12:10	29.74	11.68	18.06	----	
B1	05/18/98	17:55	29.74	12.76	16.98	----	
B1	08/17/98	11:04	29.74	14.15	15.59	----	
B1	11/13/98	10:21	29.74	15.05	14.69	----	
B1	02/16/99	13:33	29.74	9.59	20.15	----	
B1	05/18/99	15:51	29.74	11.79	17.95	----	
B1	09/21/99	12:19	29.74	14.63	15.11	----	
B1	12/06/99	14:38	29.74	14.25	15.49	----	
B1	02/16/00	10:55	29.74	12.20	17.54	----	
B1	05/23/00	17:32	29.74	13.25	16.49	----	
B1	08/29/00	14:22	29.74	14.93	14.81	----	
B1	11/09/00	13:30	29.74	15.56	14.18	----	
B1	02/12/01	15:26	29.74	15.19	14.55	----	
B1	06/04/01	12:50	29.74	15.06	14.68	----	
B1	08/16/01	11:55	29.74	15.72	14.02	----	
B1	11/28/01	12:45	29.74	15.47	14.27	----	
B1	02/27/02	14:34	29.74	12.15	17.59	----	
B1	03/05/02	11:06	29.74	12.28	17.46	----	
B1	04/05/02	08:42	29.74	12.40	17.34	----	
B1	05/29/02	00:00	29.74	13.20	16.54	----	
B1	06/27/02	15:06	29.74	13.77	15.97	----	
B1	08/26/02	17:00	29.74	14.79	14.95	----	
B1	11/13/02	09:02	29.74	16.00	13.74	----	
B1	02/11/03	10:15	29.74	12.86	16.88	----	
C *	03/25/97	12:32	28.89	5.56	23.33	----	
C *	03/31/97	11:38	28.89	6.16	22.73	----	
C *	07/16/97	08:47	28.89	8.28	20.61	----	
C *	10/21/97	15:15	28.89	10.00	18.89	----	
C *	01/27/98	13:41	28.89	7.98	20.91	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
C *	05/18/98	18:08	28.89	9.54	19.35	----	
C *	08/17/98	11:11	28.89	dry	----	----	
C *	11/13/98	10:36	28.89	10.36	18.53	----	
C *	02/16/99	13:58	28.89	5.91	22.98	----	
C *	05/18/99	16:04	28.89	7.90	20.99	----	
C *	09/21/99	12:44	28.89	dry	----	----	
C *	12/06/99	14:50	28.89	9.82	----	----	Water in endcap
C *	02/16/00	09:51	28.89	8.78	20.11	----	
C *	05/23/00	17:55	28.89	dry	----	----	
C *	08/29/00	14:33	28.89	dry	----	----	
C *	11/09/00	13:47	28.89	9.94	18.95	----	Dry?
C *	02/12/01	15:08	28.89	dry	----	----	
C *	06/04/01	13:25	28.89	dry	----	----	
C *	08/16/01	12:11	28.89	dry	----	----	
C *	11/28/01	13:03	28.89	dry	----	----	
C *	02/27/02	14:44	28.89	8.94	19.95	----	
C *	06/27/02	15:36	28.89	dry	----	----	
C *	08/26/02	17:31	28.89	dry	----	----	
C *	11/13/02	09:25	28.89	dry	----	----	
C *	02/11/03	10:46	28.89	dry	----	----	1" water
D	03/25/97	12:25	30.04	8.32	21.72	----	
D	03/31/97	11:31	30.04	8.66	21.38	----	
D	07/16/97	08:35	30.04	10.45	19.59	----	
D	10/21/97	17:10	30.04	13.27	16.77	----	
D	01/27/98	13:31	30.04	10.72	19.32	----	
D	05/18/98	17:36	30.04	12.23	17.81	----	
D	08/17/98	10:57	30.04	13.83	16.21	----	
D	11/13/98	09:05	30.04	15.01	15.03	----	
D	02/16/99	13:45	30.04	8.50	21.54	----	
D	05/18/99	15:59	30.04	11.00	19.04	----	
D	09/21/99	12:37	30.04	14.41	15.63	----	
D	12/06/99	14:46	30.04	14.04	16.00	----	
D	02/16/00	09:55	30.04	11.50	18.54	----	
D	05/23/00	12:56	30.04	12.74	17.30	----	
D	08/29/00	14:35	30.04	14.70	15.34	----	
D	11/09/00	13:43	30.04	15.49	14.55	----	
D	02/12/01	15:12	30.04	14.99	15.05	----	
D	06/04/01	12:35	30.04	14.95	15.09	----	
D	08/16/01	11:46	30.04	15.64	14.40	----	
D	11/28/01	12:43	30.04	15.45	14.59	----	
D	02/27/02	14:21	30.04	11.37	18.67	----	
D	03/05/02	11:00	30.04	11.51	18.53	----	
D	04/05/02	08:45	30.04	11.65	18.39	----	
D	05/29/02	00:00	30.04	12.73	17.31	----	
D	06/27/02	15:00	30.04	13.43	16.61	----	
D	08/26/02	17:04	30.04	14.68	15.36	----	
D	11/13/02	09:19	30.04	15.96	14.08	----	
D	02/11/03	10:41	30.04	12.10	17.94	----	
F*	08/18/98	08:10	NA	14.77	NA		
F*							Abandoned August 2003
G *	03/25/97	11:57	30.24	14.49	15.75	----	
G *	03/31/97	09:13	30.24	14.01	16.23	----	
G *	07/16/97	07:37	30.24	14.30	15.94	----	
G *	10/21/97	16:20	30.24	dry	----	----	
G *	01/27/98	11:49	30.24	dry	----	----	
G *	05/18/98	17:30	30.24	dry	----	----	
G *	08/17/98	11:06	30.24	dry	----	----	
G *	11/13/98	09:53	30.24	dry	----	----	
G *	02/16/99	13:14	30.24	dry	----	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G *	05/18/99	14:50	30.24	dry	----	----	
G *	09/21/99	11:30	30.24	dry	----	----	
G *	12/06/99	14:07	30.24	dry	----	----	
G *	02/16/00	10:19	30.24	dry	----	----	
G *	05/23/00	16:33	30.24	dry	----	----	
G *	08/29/00	13:18	30.24	dry	----	----	
G *	11/09/00	12:30	30.24	dry	----	----	
G *	02/12/01	16:02	30.24	dry	----	----	
G *	06/04/01	11:41	30.24	dry	----	----	
G *	08/16/01	10:50	30.24	dry	----	----	
G *	11/28/01	11:33	30.24	dry	----	----	
G *	02/27/02	13:38	30.24	dry	----	----	
G *	06/27/02	14:13	30.24	dry	----	----	
G *	08/26/02	16:05	30.24	dry	----	----	
G *	11/13/02	07:37	30.24	dry	----	----	
G *	02/11/03	08:58	30.24	dry	----	----	
H	03/31/97	11:51	27.08	5.42	21.66	----	
H	07/16/97	08:44	27.08	7.29	19.79	----	
H	10/21/97	17:45	27.08	10.08	17.00	----	
H	01/27/98	13:45	27.08	7.56	19.52	----	
H	05/18/98	17:50	27.08	9.06	18.02	----	
H	08/17/98	09:15	27.08	10.68	16.40	----	
H	11/13/98	10:54	27.08	11.84	15.24	----	
H	02/16/99	13:50	27.08	5.35	21.73	----	
H	05/18/99	15:41	27.08	7.78	19.30	----	
H	09/21/99	12:15	27.08	11.23	15.85	----	
H	12/06/99	15:13	27.08	10.91	16.17	----	
H	02/16/00	10:52	27.08	8.28	18.80	----	
H	05/23/00	17:20	27.08	9.48	17.60	----	
H	08/29/00	14:06	27.08	11.55	15.53	----	
H	11/09/00	13:23	27.08	12.34	14.74	----	
H	02/12/01	15:36	27.08	11.88	15.20	----	
H	06/04/01	12:27	27.08	11.81	15.27	----	
H	08/16/01	11:41	27.08	12.57	14.51	----	
H	11/28/01	12:34	27.08	12.39	14.69	----	
H	02/27/02	14:18	27.08	8.14	18.94	----	
H	03/05/02	10:58	27.08	8.28	18.80	----	
H	04/05/02	09:10	27.08	8.45	18.63	----	
H	05/29/02	00:00	27.08	9.38	17.70	----	
H	06/27/02	14:51	27.08	10.25	16.83	----	
H	08/26/02	17:00	27.08	11.54	15.54	----	
H	11/13/02	09:12	27.08	12.83	14.25	----	
H	02/11/03	10:33	27.08	8.96	18.12	----	
J1	03/25/97	12:15	29.70	8.78	20.92	----	Orange/brown algae
J1	03/31/97	11:19	29.70	9.02	20.68	----	
J1	07/16/97	08:22	29.70	10.49	19.21	----	
J1	10/21/97	16:58	29.70	13.10	16.60	----	
J1	01/27/98	13:15	29.70	11.03	18.67	----	
J1	05/18/98	18:01	29.70	12.27	17.43	----	
J1	08/17/98	11:00	29.70	13.78	15.92	----	
J1	11/13/98	10:30	29.70	14.77	14.93	----	
J1	02/16/99	13:37	29.70	8.91	20.79	----	
J1	05/18/99	15:46	29.70	11.19	18.51	----	
J1	09/21/99	12:28	29.70	14.36	15.34	----	
J1	12/06/99	15:07	29.70	13.95	15.75	----	
J1	02/16/00	11:05	29.70	11.67	18.03	----	
J1	05/23/00	17:27	29.70	12.78	16.92	----	
J1	08/29/00	14:14	29.70	14.58	15.12	----	
J1	11/09/00	13:25	29.70	15.30	14.40	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J1	02/12/01	15:22	29.70	14.87	14.83	----	
J1	06/04/01	12:39	29.70	14.83	14.87	----	
J1	08/16/01	11:52	29.70	15.48	14.22	----	
J1	11/28/01	12:35	29.70	15.23	14.47	----	
J1	02/27/02	14:30	29.70	11.62	18.08	----	
J1	03/05/02	11:04	29.70	11.76	17.94	----	
J1	04/05/02	08:40	29.70	11.87	17.83	----	
J1	05/29/02	00:00	29.70	12.77	16.93	----	
J1	06/27/02	15:02	29.70	13.40	16.30	----	
J1	08/26/02	16:54	29.70	14.51	15.19	----	
J1	11/13/02	09:00	29.70	15.71	13.99	----	
J1	02/11/03	10:18	29.70	12.33	17.37	----	
K	03/25/97	12:08	29.42	8.20	21.22	----	
K	03/31/97	09:32	29.42	8.46	20.96	----	
K	07/16/97	08:00	29.42	10.03	19.39	----	
K	10/21/97	16:45	29.42	12.71	16.71	----	
K	01/27/98	12:37	29.42	10.46	18.96	----	
K	05/18/98	17:52	29.42	11.77	17.65	----	
K	08/17/98	10:50	29.42	13.34	16.08	----	
K	11/13/98	10:14	29.42	14.30	15.12	----	
K	02/16/99	13:55	29.42	8.41	21.01	----	
K	05/18/99	15:30	29.42	10.68	18.74	----	
K	09/21/99	12:08	29.42	13.91	15.51	----	
K	12/06/99	14:32	29.42	13.44	15.98	----	
K	02/16/00	10:48	29.42	11.15	18.27	----	
K	05/23/00	17:12	29.42	12.25	17.17	----	
K	08/29/00	13:56	29.42	14.16	15.26	----	
K	11/09/00	13:16	29.42	14.84	14.58	----	
K	02/12/01	15:41	29.42	14.35	15.07	----	
K	06/04/01	12:20	29.42	14.22	15.20	----	
K	08/16/01	11:35	29.42	15.12	14.30	----	
K	11/28/01	12:26	29.42	14.68	14.74	----	
K	02/27/02	14:17	29.42	11.05	18.37	----	
K	03/05/02	10:55	29.42	11.25	18.17	----	
K	04/05/02	08:55	29.42	11.30	18.12	----	
K	05/29/02	00:00	29.42	12.22	17.20	----	
K	06/27/02	14:47	29.42	12.92	16.50	----	
K	08/26/02	17:17	29.42	14.12	15.30	----	
K	11/13/02	09:11	29.42	15.18	14.24	----	
K	02/11/03	10:29	29.42	11.80	17.62	----	
L	03/25/97	12:35	28.10	4.98	23.12	----	
L	03/31/97	11:40	28.10	5.24	22.86	----	
L	07/16/97	08:49	28.10	7.50	20.60	----	
L	10/21/97	15:18	28.10	9.55	18.55	----	
L	01/27/98	13:39	28.10	6.45	21.65	----	
L	05/18/98	18:07	28.10	9.21	18.89	----	
L	08/17/98	11:10	28.10	11.59	16.51	----	
L	11/13/98	10:35	28.10	13.02	15.08	----	
L	02/16/99	13:57	28.10	4.78	23.32	----	
L	05/18/99	16:03	28.10	7.62	20.48	----	
L	09/21/99	12:43	28.10	12.30	15.80	----	
L	12/06/99	14:49	28.10	9.51	18.59	----	
L	02/16/00	09:49	28.10	7.13	20.97	----	
L	05/23/00	17:54	28.10	9.11	18.99	----	
L	08/29/00	14:32	28.10	12.66	15.44	----	
L	11/09/00	13:46	28.10	13.56	14.54	----	
L	02/12/01	15:07	28.10	13.04	15.06	----	
L	06/04/01	13:24	28.10	12.78	15.32	----	
L	08/16/01	12:10	28.10	13.66	14.44	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
L	11/28/01	13:02	28.10	12.34	15.76	----	
L	02/27/02	14:42	28.10	7.16	20.94	----	
L	03/05/02	11:12	28.10	7.39	20.71	----	
L	04/05/02	08:39	28.10	7.63	20.47	----	
L	05/29/02	00:00	28.10	9.09	19.01	----	
L	06/27/02	10:38	28.10	10.11	17.99	----	
L	08/26/02	17:30	28.10	12.56	15.54	----	
L	11/13/02	09:26	28.10	14.00	14.10	----	
L	02/11/03	10:47	28.10	7.17	20.93	----	
N	03/25/97	11:48	31.40	14.05	17.35	----	
N	03/31/97	08:59	31.40	14.26	17.14	----	Hydrocarbon odor, product
N	07/16/97	07:20	31.40	16.03	16.33	1.20	Light brown color; thick coating on probe
N	10/21/97	16:09	31.40	16.46	14.94	----	No product - strong petroleum odor
N	10/23/97	17:20	31.40	16.48	14.92	----	No product - strong petroleum odor
N	01/27/98	11:13	31.40	15.01	16.41	0.02	
N	05/18/98	17:20	31.40	16.39	15.06	0.06	
N	08/17/98	10:40	31.40	17.16	14.26	0.02	Thin coat of thick product
N	11/13/98	09:48	31.40	17.83	13.58	0.01	
N	02/16/99	12:55	31.40	14.09	17.53	0.27	Strong petroleum odor
N	05/18/99	14:47	31.40	15.79	15.64	0.04	
N	09/21/99	11:23	31.40	17.39	14.02	0.01	
N	12/06/99	14:00	31.40	16.57	14.83	----	
N	02/16/00	10:10	31.40	15.69	15.71	----	
N	05/23/00	16:24	31.40	16.42	14.98	----	Strong petroleum odor, no product
N	08/29/00	13:07	31.40	17.61	13.79	----	
N	11/09/00	12:26	31.40	18.23	13.19	0.03	
N	02/12/01	15:49	31.40	17.64	13.76	----	
N	06/04/01	11:31	31.40	17.58	13.82	----	
N	08/16/01	10:29	31.40	18.08	13.32	----	Trace product
N	11/28/01	11:27	31.40	18.06	13.34	----	Trace product
N	02/27/02	13:25	31.40	15.76	15.64	----	
N	04/05/02	08:09	31.40	15.88	15.52	----	
N	05/29/02	00:00	31.40	16.42	14.98	----	
N	06/27/02	14:12	31.40	16.80	14.60	----	
N	08/26/02	15:56	31.40	17.51	13.89	----	
N	11/13/02	07:27	31.40	18.44	12.98	0.03	Product present
N	02/11/03	08:49	31.40	15.33	16.07	----	
P	03/25/97	11:45	29.96	12.88	17.08	----	
P	03/31/97	08:55	29.96	12.94	17.02	----	Hydrocarbon odor, product
P	07/16/97	07:15	29.96	14.02	16.08	0.17	Light coating on probe; light brown color
P	10/21/97	16:05	29.96	15.23	14.73	----	No product - strong petroleum odor
P	10/23/97	17:25	29.96	15.21	14.75	----	No product - strong petroleum odor
P	01/27/98	11:09	29.96	13.87	16.09	----	
P	05/18/98	17:18	29.96	13.08	16.88	----	Trace of product on probe
P	08/17/98	10:37	29.96	15.82	14.15	0.01	Sheen on probe, strong petroleum odor
P	11/13/98	09:46	29.96	16.63	13.37	0.05	Strong gasoline odor
P	02/16/99	12:52	29.96	12.91	17.10	0.06	Strong petroleum odor
P	05/18/99	14:43	29.96	14.68	15.38	0.13	
P	09/21/99	11:20	29.96	16.08	13.89	0.01	
P	12/06/99	13:55	29.96	15.41	14.55	----	
P	02/16/00	10:08	29.96	14.51	15.45	----	
P	05/23/00	16:21	29.96	15.15	14.81	----	Trace of product on surface
P	08/29/00	13:04	29.96	16.26	13.71	0.01	
P	11/09/00	12:24	29.96	16.98	13.00	0.03	
P	02/12/01	15:46	29.96	16.31	13.65	----	
P	06/04/01	11:27	29.96	16.26	13.70	----	Trace product
P	08/16/01	10:28	29.96	16.75	13.21	----	
P	11/28/01	11:24	29.96	17.01	12.95	----	
P	02/27/02	13:22	29.96	14.60	15.44	0.10	Strong ethanol-like odor

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
P	04/05/02	08:07	29.96	14.70	15.34	0.10	
P	05/29/02	00:00	29.96	15.00	14.96	----	Trace product
P	06/27/02	14:11	29.96	15.49	14.47	----	
P	08/26/02	15:54	29.96	16.15	13.81	----	
P	11/13/02	07:25	29.96	16.99	13.00	0.04	Product present
P	02/11/03	08:44	29.96	14.13	15.84	0.01	Product present
Q	03/25/97	11:42	30.36	13.55	16.81	----	
Q	03/31/97	08:52	30.36	13.54	16.82	----	Hydrocarbon odor
Q	07/16/97	07:10	30.36	14.55	15.83	0.02	Light coating on probe; light brown color
Q	10/21/97	16:04	30.36	15.70	14.66	----	No product - strong petroleum odor
Q	10/23/97	17:29	30.36	15.69	14.67	----	No product - strong petroleum odor
Q	01/27/98	11:05	30.36	14.48	15.88	----	
Q	05/18/98	17:16	30.36	15.58	14.78	----	
Q	08/17/98	10:35	30.36	16.27	14.09	----	Slight sheen on probe; no product, strong petroleum odor
Q	11/13/98	09:44	30.36	17.01	13.36	0.01	Strong gasoline odor
Q	02/16/99	12:49	30.36	13.61	16.76	0.01	Strong petroleum odor
Q	05/18/99	14:40	30.36	15.13	15.23	----	Strong odor when cap removed
Q	09/21/99	11:17	30.36	16.51	13.85	----	
Q	12/06/99	13:53	30.36	15.88	14.48	----	
Q	02/16/00	10:06	30.36	15.02	15.34	----	Film of product
Q	05/23/00	16:19	30.36	15.64	14.72	----	Strong petroleum odor, no product
Q	08/29/00	13:01	30.36	16.69	13.67	----	
Q	11/09/00	12:23	30.36	17.50	12.86	----	Trace of product
Q	02/12/01	15:45	30.36	16.71	13.65	----	
Q	06/04/01	11:25	30.36	16.66	13.70	----	
Q	08/16/01	10:26	30.36	17.15	13.21	----	Trace product
Q	11/28/01	11:21	30.36	17.76	12.94	0.42	
Q	02/27/02	13:20	30.36	15.07	15.29	----	Strong petroleum odor, no product
Q	04/05/02	08:05	30.36	15.23	15.13	----	Trace product
Q	05/29/02	00:00	30.36	15.53	14.83	----	Trace product
Q	06/27/02	14:10	30.36	15.95	14.41	----	Trace product
Q	08/26/02	15:52	30.36	16.60	13.76	----	
Q	11/13/02	07:30	30.36	17.50	12.87	0.01	Product present
Q	02/11/03	08:47	30.36	14.67	15.69	----	
LW001S	03/31/97	11:12	27.96	6.65	21.31		
LW001S	07/16/97	08:15	27.96	8.34	19.62	----	
LW001S	10/21/97	16:53	27.96	11.02	16.94	----	
LW001S	01/27/98	13:00	27.96	8.75	19.21	----	
LW001S	05/18/98	17:40	27.96	9.15	18.81	----	
LW001S	08/17/98	10:54	27.96	11.67	16.29	----	
LW001S	11/13/98	10:02	27.96	12.76	15.20	----	
LW001S	02/16/99	13:24	27.96	6.60	21.36	----	
LW001S	05/18/99	15:38	27.96	8.92	19.04	----	
LW001S	09/21/99	12:10	27.96	12.20	15.76	----	
LW001S	12/06/99	14:33	27.96	11.86	16.10	----	
LW001S	02/16/00	10:50	27.96	9.42	18.54	----	
LW001S	05/23/00	17:18	27.96	10.52	17.44	----	
LW001S	08/29/00	13:58	27.96	12.51	15.45	----	
LW001S	11/09/00	13:17	27.96	13.26	14.70	----	
LW001S	02/12/01	15:33	27.96	12.82	15.14	----	
LW001S	06/04/01	12:24	27.96	12.77	15.19	----	
LW001S	08/16/01	11:37	27.96	13.45	14.51	----	
LW001S	11/28/01	12:28	27.96	13.25	14.71	----	
LW001S	02/27/02	14:19	27.96	9.31	18.65	----	
LW001S	03/05/02	10:56	27.96	9.45	18.51	----	
LW001S	04/05/02	09:08	27.96	9.60	18.36	----	
LW001S	05/29/02	00:00	27.96	10.49	17.47	----	
LW001S	06/27/02	14:50	27.96	11.26	16.70	----	
LW001S	08/26/02	17:11	27.96	12.47	15.49	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW001S	11/13/02	09:07	27.96	13.72	14.24	----	
LW001S	02/11/03	10:25	27.96	10.11	17.85	----	
LW002S	03/25/97	12:22	29.56	8.06	21.50	----	
LW002S	03/31/97	11:27	29.56	8.34	21.22	----	
LW002S	07/16/97	08:33	29.56	10.05	19.51	----	
LW002S	10/21/97	17:04	29.56	12.77	16.79	----	
LW002S	01/27/98	13:25	29.56	10.39	19.17	----	
LW002S	05/18/98	18:02	29.56	11.78	17.78	----	
LW002S	08/17/98	10:56	29.56	13.38	16.18	----	
LW002S	11/13/98	10:32	29.56	14.47	15.09	----	
LW002S	02/16/99	13:42	29.56	8.27	21.29	----	
LW002S	05/18/99	15:45	29.56	10.63	18.93	----	
LW002S	09/21/99	12:34	29.56	13.95	15.61	----	
LW002S	12/06/99	15:11	29.56	13.54	16.02	----	
LW002S	02/16/00	10:38	29.56	11.08	18.48	----	
LW002S	05/23/00	17:24	29.56	12.29	17.27	----	
LW002S	08/29/00	14:12	29.56	14.23	15.33	----	
LW002S	11/09/00	13:04	29.56	15.00	14.56	----	
LW002S	02/12/01	15:30	29.56	14.52	15.04	----	
LW002S	06/04/01	12:34	29.56	14.46	15.10	----	
LW002S	08/16/01	11:45	29.56	15.16	14.40	----	
LW002S	11/28/01	12:41	29.56	14.90	14.66	----	
LW002S	02/27/02	14:19	29.56	11.02	18.54	----	
LW002S	03/05/02	10:59	29.56	11.17	18.39	----	
LW002S	04/05/02	08:47	29.56	11.33	18.23	----	
LW002S	05/29/02	00:00	29.56	12.22	17.34	----	
LW002S	06/27/02	14:56	29.56	13.00	16.56	----	
LW002S							Abandoned August 2003
LW004S	03/31/97	09:20	30.26	12.77	17.49	----	
LW004S	07/16/97	07:40	30.26	14.66	15.60	----	
LW004S	10/21/97	16:25	30.26	16.88	13.38	----	
LW004S	01/27/98	12:00	30.26	15.13	15.13	----	
LW004S	05/18/98	17:32	30.26	16.08	14.18	----	
LW004S	08/17/98	11:07	30.26	17.30	12.96	----	
LW004S	11/13/98	09:56	30.26	17.96	12.30	----	
LW004S	02/16/99	13:16	30.26	13.10	17.16	----	
LW004S	05/18/99	15:03	30.26	15.43	14.83	----	
LW004S	09/21/99	11:44	30.26	17.61	12.65	----	
LW004S	12/06/99	14:19	30.26	17.08	13.18	----	
LW004S	02/16/00	10:31	30.26	15.84	14.42	----	
LW004S	05/23/00	16:55	30.26	16.71	13.55	----	
LW004S	08/29/00	13:39	30.26	17.78	12.48	----	
LW004S	11/09/00	12:53	30.26	18.17	12.09	----	
LW004S	02/12/01	16:38	30.26	17.08	13.18	----	
LW004S	06/04/01	12:08	30.26	17.81	12.45	----	
LW004S	08/16/01	11:14	30.26	18.39	11.87	----	
LW004S	11/28/01	12:05	30.26	17.84	12.42	----	
LW004S	02/27/02	14:01	30.26	15.82	14.44	----	
LW004S	03/05/02	11:35	30.26	15.95	14.31	----	
LW004S	04/05/02	08:20	30.26	16.02	14.24	----	
LW004S	05/29/02	00:00	30.26	16.74	13.52	----	
LW004S	06/27/02	14:39	30.26	16.89	13.37	----	
LW004S	08/26/02	16:31	30.26	17.68	12.58	----	
LW004S	11/13/02	08:22	30.26	19.04	11.22	----	
LW004S	02/11/03	09:31	30.26	16.03	14.23	----	
LW005S	03/25/97	12:29	30.79	10.57	20.22	----	
LW005S	03/31/97	11:35	30.79	10.84	19.95	----	
LW005S	07/16/97	08:53	30.79	12.29	18.50	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW005S	10/21/97	15:16	30.79	15.00	15.79	----	
LW005S	01/27/98	13:36	30.79	12.90	17.89	----	
LW005S	05/18/98	18:05	30.79	14.19	16.60	----	
LW005S	08/17/98	11:09	30.79	15.54	15.25	----	
LW005S	11/13/98	10:38	30.79	16.55	14.24	----	
LW005S	02/16/99	13:16	30.79	10.59	20.20	----	
LW005S	05/18/99	16:01	30.79	13.12	17.67	----	
LW005S	09/21/99	12:40	30.79	16.00	14.79	----	
LW005S	12/06/99	14:47	30.79	15.64	15.15	----	
LW005S	02/16/00	09:56	30.79	13.54	17.25	----	
LW005S	05/23/00	17:51	30.79	14.80	15.99	----	
LW005S	08/29/00	14:37	30.79	16.35	14.44	----	
LW005S	11/09/00	13:45	30.79	16.98	13.81	----	
LW005S	02/12/01	15:13	30.79	16.51	14.28	----	
LW005S	06/04/01	13:23	30.79	16.43	14.36	----	
LW005S	08/16/01	12:07	30.79	17.03	13.76	----	
LW005S	11/28/01	13:01	30.79	16.94	13.85	----	
LW005S	02/27/02	14:39	30.79	13.48	17.31	----	
LW005S	03/05/02	11:13	30.79	13.62	17.17	----	
LW005S	04/05/02	08:38	30.79	13.60	17.19	----	
LW005S	05/29/02	00:00	30.79	14.81	15.98	----	
LW005S	06/27/02	10:43	30.79	15.15	15.64	----	
LW005S	08/26/02	17:08	30.79	16.12	14.67	----	
LW005S	11/13/02	09:22	30.79	17.39	13.40	----	
LW005S	02/11/03	10:43	30.79	13.95	16.84	----	
LW007S	03/31/97	11:05	28.10	6.75	21.35	----	
LW007S	07/16/97	08:05	28.10	8.62	19.48	----	
LW007S	10/21/97	16:45	28.10	11.26	16.84	----	
LW007S	01/27/98	12:47	28.10	8.85	19.25	----	
LW007S	05/18/98	17:48	28.10	10.34	17.76	----	
LW007S	08/17/98	10:48	28.10	11.85	16.25	----	
LW007S	11/13/98	10:12	28.10	12.90	15.20	----	Strong gasoline odor
LW007S	02/16/99	13:53	28.10	6.81	21.29	----	
LW007S	05/18/99	15:23	28.10	9.14	18.96	----	
LW007S	09/21/99	12:03	28.10	12.37	15.73	----	
LW007S	12/06/99	14:27	28.10	12.00	16.10	----	
LW007S	02/16/00	10:46	28.10	9.60	18.50	----	
LW007S	05/23/00	17:09	28.10	10.70	17.40	----	
LW007S	08/29/00	13:53	28.10	12.64	15.46	----	
LW007S	11/09/00	13:14	28.10	13.36	14.74	----	
LW007S	02/12/01	15:39	28.10	12.94	15.16	----	
LW007S	06/04/01	12:17	28.10	12.87	15.23	----	
LW007S	08/16/01	11:33	28.10	13.58	14.52	----	
LW007S	11/28/01	12:22	28.10	13.34	14.76	----	
LW007S	02/27/02	14:15	28.10	9.47	18.63	----	
LW007S	03/05/02	10:52	28.10	9.62	18.48	----	
LW007S	04/05/02	08:57	28.10	9.73	18.37	----	
LW007S	05/29/02	00:00	28.10	10.63	17.47	----	
LW007S	06/27/02	14:45	28.10	11.36	16.74	----	
LW007S	08/26/02	17:18	28.10	12.69	15.41	----	
LW007S	11/13/02	09:16	28.10	13.82	14.28	----	
LW007S	02/11/03	10:37	28.10	10.18	17.92	----	
LW008S	05/18/99	14:55	31.28	14.84	16.44	----	
LW008S	09/21/99	12:24	31.28	16.94	14.34	----	
LW008S	12/06/99	14:40	31.28	16.63	14.65	----	
LW008S	02/16/00	10:16	31.28	15.18	16.10	----	
LW008S	05/23/00	17:42	31.28	15.88	15.40	----	
LW008S	08/29/00	14:26	31.28	17.06	14.22	----	
LW008S	11/09/00	13:32	31.28	17.55	13.73	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW008S	02/12/01	15:58	31.28	17.24	14.04	----	
LW008S	06/04/01	13:05	31.28	17.14	14.14	----	
LW008S	08/16/01	12:00	31.28	17.70	13.58	----	
LW008S	11/28/01	12:57	31.28	17.63	13.65	0.04	
LW008S	02/27/02	14:37	31.28	15.12	16.16	----	
LW008S	03/05/02	11:09	31.28	15.26	16.02	----	
LW008S	04/05/02	08:17	31.28	15.34	15.94	----	
LW008S	05/29/02	00:00	31.28	15.91	15.37	----	
LW008S	06/27/02	15:21	31.28	16.21	15.07	----	
LW008S	08/26/02	16:38	31.28	16.95	14.33	----	
LW008S	11/13/02	08:50	31.28	17.88	13.40	----	
LW008S	02/11/03	09:48	31.28	15.57	15.71	----	
LW009S	05/18/99	14:57	31.04	19.58	11.46	----	Water level appears to be more representative of lower zc
LW009S	09/21/99	11:36	31.04	dry	----	----	
LW009S	12/06/99	14:13	31.04	19.64	----	----	Water in endcap
LW009S	02/16/00	10:24	31.04	19.59	----	----	Water in endcap
LW009S	05/23/00	16:39	31.04	dry	----	----	
LW009S	08/29/00	13:28	31.04	dry	----	----	
LW009S	11/09/00	12:42	31.04	dry	----	----	
LW009S	02/12/01	16:12	31.04	dry	----	----	
LW009S	06/04/01	11:50	31.04	dry	----	----	
LW009S	08/16/01	11:01	31.04	dry	----	----	
LW009S	11/28/01	11:52	31.04	dry	----	----	
LW009S	02/27/02	13:48	31.04	dry	----	----	
LW009S	03/05/02	11:15	31.04	dry	----	----	
LW009S	04/05/02	08:26	31.04	dry	----	----	
LW009S	05/29/02	00:00	31.04	dry	----	----	
LW009S	06/27/02	14:24	31.04	dry	----	----	
LW009S	08/26/02	16:09	31.04	dry	----	----	
LW009S	11/13/02	07:49	31.04	dry	----	----	
LW009S	02/11/03	09:06	31.04	dry	----	----	Recorded DTW of 19.58; well most likely dry
LW010S	05/18/99	14:59	30.75	17.24	13.51	----	
LW010S	09/21/99	11:38	30.75	19.13	11.62	----	
LW010S	12/06/99	14:14	30.75	18.54	12.21	----	
LW010S	02/16/00	10:26	30.75	17.62	13.13	----	
LW010S	05/23/00	16:41	30.75	18.25	12.50	----	
LW010S	08/29/00	13:30	30.75	dry	----	----	
LW010S	11/09/00	12:45	30.75	dry	----	----	
LW010S	02/12/01	16:14	30.75	dry	----	----	
LW010S	06/04/01	11:53	30.75	dry	----	----	
LW010S	08/16/01	11:03	30.75	dry	----	----	
LW010S	11/28/01	11:54	30.75	dry	----	----	
LW010S	02/27/02	13:50	30.75	17.77	12.98	----	
LW010S	03/05/02	11:32	30.75	17.84	12.91	----	
LW010S	04/05/02	08:24	30.75	17.82	12.93	----	
LW010S	05/29/02	00:00	30.75	18.22	12.53	----	
LW010S	06/27/02	14:28	30.75	18.27	12.48	----	
LW010S	08/26/02	16:15	30.75	dry	----	----	
LW010S	11/13/02	08:00	30.75	dry	----	----	
LW010S	02/11/03	09:20	30.75	17.50	13.25	----	
LW011S	05/18/99	15:10	29.10	11.47	17.63	----	
LW011S	09/21/99	11:51	29.10	14.23	14.87	----	
LW011S	12/06/99	15:05	29.10	14.00	15.10	----	
LW011S	02/16/00	11:01	29.10	11.94	17.16	----	
LW011S	05/23/00	11:01	29.10	13.01	16.09	----	
LW011S	08/29/00	14:55	29.10	14.51	14.59	----	
LW011S	11/09/00	13:36	29.10	15.48	13.92	0.37	First occurrence of product in well.
LW011S	02/12/01	15:18	29.10	14.62	14.48	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW011S	06/04/01	13:12	29.10	14.65	14.45	----	
LW011S	08/16/01	11:24	29.10	15.46	13.86	0.28	
LW011S	11/28/01	12:51	29.10	15.10	14.00	----	Trace product
LW011S	02/27/02	14:59	29.10	11.86	17.24	----	
LW011S	03/05/02	11:40	29.10	11.96	17.14	----	
LW011S	04/05/02	08:34	29.10	12.07	17.03	----	
LW011S	05/29/02	00:00	29.10	13.00	16.10	----	
LW011S	06/27/02	15:09	29.10	13.40	15.70	----	
LW011S	08/26/02	16:48	29.10	14.37	14.73	----	
LW011S	11/13/02	08:54	29.10	15.53	13.57	----	
LW011S	02/11/03	10:03	29.10	12.46	16.64	----	
LW013S	05/23/00	16:51	30.17	17.23	12.94	----	
LW013S	08/29/00	13:37	30.17	18.27	11.90	----	
LW013S	11/09/00	12:51	30.17	18.75	11.42	----	
LW013S	02/12/01	16:30	30.17	18.26	11.91	----	
LW013S	06/04/01	12:06	30.17	18.30	11.87	----	
LW013S	08/16/01	11:13	30.17	18.81	11.36	----	
LW013S	11/28/01	12:03	30.17	18.37	11.80	----	
LW013S	02/27/02	13:58	30.17	16.60	13.57	----	
LW013S	03/05/02	11:33	30.17	16.68	13.49	----	
LW013S	04/05/02	08:22	30.17	16.73	13.44	----	
LW013S	05/29/02	00:00	30.17	17.30	12.87	----	
LW013S	06/27/02	14:37	30.17	17.38	12.79	----	
LW013S	08/26/02	16:30	30.17	18.11	12.06	----	
LW013S	11/13/02	08:14	30.17	19.04	11.13	----	
LW013S	02/11/03	09:30	30.17	16.57	13.60	----	
LW101S	03/31/97	09:54	29.41	4.51	24.90	----	
LW101S	07/16/97	09:01	29.41	6.81	22.60	----	
LW101S	10/21/97	18:01	29.41	7.28	22.13	----	
LW101S	01/27/98	14:15	29.41	4.10	25.31	----	
LW101S	05/18/98	18:18	29.41	6.68	22.73	----	
LW101S	08/17/98	11:21	29.41	8.14	21.27	----	
LW101S	11/13/98	10:48	29.41	8.61	20.80	----	
LW101S	02/16/99	14:11	29.41	3.21	26.20	----	
LW101S	05/18/99	16:17	29.41	6.00	23.41	----	
LW101S	09/21/99	12:54	29.41	8.60	20.81	----	
LW101S	12/06/99	14:58	29.41	6.98	22.43	----	
LW101S	02/16/00	09:44	29.41	4.96	24.45	----	
LW101S	05/23/00	18:06	29.41	6.83	22.58	----	
LW101S	08/29/00	14:47	29.41	8.67	20.74	----	
LW101S	11/09/00	13:56	29.41	9.39	20.02	----	
LW101S	02/12/01	15:02	29.41	8.02	21.39	----	
LW101S	06/04/01	13:35	29.41	8.40	21.01	----	
LW101S	08/16/01	12:20	29.41	9.44	19.97	----	
LW101S	11/28/01	13:12	29.41	8.58	20.83	----	
LW101S	02/27/02	14:52	29.41	5.70	23.71	----	
LW101S	06/27/02	15:32	29.41	7.80	21.61	----	
LW101S	08/26/02	17:34	29.41	8.85	20.56	----	
LW101S	11/13/02	09:35	29.41	9.92	19.49	----	
LW101S	02/11/03	10:59	29.41	5.27	24.14	----	
LW102S	03/31/97	10:01	25.77	1.86	23.91	----	
LW102S	07/16/97	09:09	25.77	3.91	21.86	----	
LW102S	10/21/97	17:59	25.77	4.03	21.74	----	
LW102S	01/27/98	14:07	25.77	1.26	24.51	----	
LW102S	05/18/98	18:15	25.77	3.57	22.20	----	
LW102S	08/17/98	11:18	25.77	4.88	20.89	----	
LW102S	11/13/98	10:45	25.77	5.14	20.63	----	
LW102S	02/16/99	14:08	25.77	0.45	25.32	----	
LW102S	05/18/99	16:12	25.77	3.24	22.53	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW102S	09/21/99	12:52	25.77	5.33	20.44	----	
LW102S	12/06/99	14:56	25.77	3.67	22.10	----	
LW102S	02/16/00	09:41	25.77	1.91	23.86	----	
LW102S	05/23/00	18:03	25.77	3.72	22.05	----	
LW102S	08/29/00	14:45	25.77	5.40	20.37	----	
LW102S	11/09/00	13:53	25.77	5.94	19.83	----	
LW102S	02/12/01	15:00	25.77	4.52	21.25	----	
LW102S	06/04/01	13:32	25.77	4.93	20.84	----	
LW102S	08/16/01	12:17	25.77	5.96	19.81	----	
LW102S	11/28/01	13:10	25.77	5.15	20.62	----	
LW102S	02/27/02	14:48	25.77	2.14	23.63	----	
LW102S	06/27/02	15:30	25.77	4.50	21.27	----	
LW102S	08/26/02	17:39	25.77	5.48	20.29	----	
LW102S	11/13/02	09:32	25.77	6.50	19.27	----	
LW102S	02/11/03	10:55	25.77	1.88	23.89	----	
LW103S	03/31/97	09:50	29.07	5.50	23.57	----	
LW103S	07/16/97	08:59	29.07	6.93	22.14	----	
LW103S	10/21/97	18:03	29.07	7.08	21.99	----	
LW103S	01/27/98	14:20	29.07	5.11	23.96	----	
LW103S	05/18/98	18:21	29.07	6.57	22.50	----	
LW103S	08/17/98	11:24	29.07	7.80	21.27	----	
LW103S	11/13/98	10:51	29.07	7.91	21.16	----	
LW103S	02/16/99	14:14	29.07	4.54	24.53	----	
LW103S	05/18/99	16:20	29.07	6.20	22.87	----	
LW103S	09/21/99	12:57	29.07	8.30	20.77	----	
LW103S	12/06/99	15:00	29.07	6.60	22.47	----	
LW103S	02/16/00	09:46	29.07	5.50	23.57	----	
LW103S	05/23/00	18:10	29.07	6.64	22.43	----	
LW103S	08/29/00	14:50	29.07	8.41	20.66	----	
LW103S	11/09/00	13:58	29.07	8.78	20.29	----	
LW103S	02/12/01	15:04	29.07	7.39	21.68	----	
LW103S	06/04/01	13:37	29.07	7.83	21.24	----	
LW103S	08/16/01	12:23	29.07	9.07	20.00	----	
LW103S	11/28/01	13:16	29.07	8.02	21.05	----	
LW103S	02/27/02	14:50	29.07	5.26	23.81	----	
LW103S	06/27/02	15:34	29.07	7.42	21.65	----	
LW103S	08/26/02	17:36	29.07	8.57	20.50	----	
LW103S	11/13/02	09:37	29.07	9.48	19.59	----	
LW103S	02/11/03	11:03	29.07	5.65	23.42	----	
LW104S	03/31/97	10:06	26.57	3.55	23.02	----	
LW104S	07/16/97	08:54	26.57	5.71	20.86	----	
LW104S	10/21/97	16:22	26.57	5.71	20.86	----	
LW104S	01/27/98	14:00	26.57	2.84	23.73	----	
LW104S	05/18/98	18:11	26.57	5.17	21.40	----	
LW104S	08/17/98	11:15	26.57	6.64	19.93	----	
LW104S	11/13/98	10:41	26.57	6.72	19.85	----	
LW104S	02/16/99	14:03	26.57	2.11	24.46	----	
LW104S	05/18/99	16:08	26.57	4.97	21.60	----	
LW104S	09/21/99	12:48	26.57	7.18	19.39	----	
LW104S	12/06/99	14:54	26.57	5.00	21.57	----	
LW104S	02/16/00	09:39	26.57	3.61	22.96	----	
LW104S	05/23/00	17:59	26.57	5.61	20.96	----	
LW104S	08/29/00	14:43	26.57	7.08	19.49	----	
LW104S	11/09/00	13:51	26.57	7.49	19.08	----	
LW104S	02/12/01	14:57	26.57	6.28	20.29	----	
LW104S	06/04/01	13:30	26.57	6.64	19.93	----	
LW104S	08/16/01	12:15	26.57	7.56	19.01	----	
LW104S	11/28/01	13:06	26.57	6.30	20.27	----	
LW104S	02/27/02	14:46	26.57	4.07	22.50	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW104S	06/27/02	15:27	26.57	6.28	20.29	----	
LW104S	08/26/02	17:41	26.57	7.13	19.44	----	
LW104S	11/13/02	09:30	26.57	7.85	18.72	----	
LW104S	02/11/03	10:51	26.57	3.72	22.85	----	
RW1	05/18/99	15:06	31.46	15.70	15.76	----	
RW1	09/21/99	11:46	31.46	18.02	13.44	----	
RW1	12/06/99	14:43	31.46	17.73	13.73	----	
RW1	02/16/00	10:33	31.46	16.14	15.32	----	
RW1	05/23/00	17:46	31.46	17.09	14.37	----	
RW1	08/29/00	14:28	31.46	18.29	13.17	----	
RW1	11/09/00	12:57	31.46	18.67	12.79	----	
RW1	02/12/01	16:44	31.46	18.30	13.16	----	
RW1	06/04/01	13:17	31.46	18.22	13.24	----	
RW1	08/16/01	10:55	31.46		----	----	Vapor/water recovery system test running - not measured
RW1	11/28/01	12:02	31.46	18.55	12.91	----	
RW1	02/27/02	14:03	31.46	16.12	15.34	----	
RW1	03/05/02	11:38	31.46	16.33	15.13	----	
RW1	04/05/02	08:27	31.46	16.28	15.18	----	
RW1	05/29/02	00:00	31.46	17.00	14.46	----	
RW1	06/27/02	15:16	31.46	17.33	14.13	----	
RW1	08/26/02	16:40	31.46	18.00	13.46	----	
RW1	11/13/02	08:26	31.46	18.85	12.61	----	
RW1	02/11/03	09:34	31.46	16.50	14.96	----	
RW3	12/06/99	15:24	29.96	14.20	15.76	----	
RW3	02/16/00	10:37	29.96	11.88	18.08	----	
RW3	05/23/00	17:26	29.96	13.02	16.94	----	
RW3	08/29/00	13:42	29.96	14.88	15.08	----	
RW3	11/09/00	13:03	29.96	15.58	14.38	----	
RW3	02/12/01	15:28	29.96	15.13	14.83	----	
RW3	06/04/01	12:30	29.96	15.09	14.87	----	
RW3	08/16/01	11:44	29.96	15.74	14.22	----	
RW3	11/28/01	12:40	29.96	15.52	14.44	----	
RW3	02/27/02	14:26	29.96	11.80	18.16	----	
RW3	03/05/02	11:02	29.96	11.94	18.02	----	
RW3	04/05/02	08:44	29.96	12.06	17.90	----	
RW3	05/29/02	00:00	29.96	13.00	16.96	----	
RW3	06/27/02	14:59	29.96	13.64	16.32	----	
RW3							Abandoned August 2003
PZ1	05/23/00	17:47	28.04	14.21	13.83	----	
PZ1	08/29/00	14:30	28.04	15.33	12.71	----	
PZ1	11/09/00	12:55	28.04	15.68	12.36	----	
PZ1	02/12/01	16:42	28.04	15.30	12.74	----	
PZ1	06/04/01	13:20	28.04	15.29	12.75	----	
PZ1	08/16/01	11:17	28.04	15.94	12.10	----	
PZ1	11/28/01	12:09	28.04	15.48	12.56	----	
PZ1	02/27/02	14:02	28.04	13.28	14.76	----	
PZ1	03/05/02	11:34	28.04	13.40	14.64	----	
PZ1	04/05/02	08:32	28.04	13.44	14.60	----	
PZ1	05/29/02	00:00	28.04	14.16	13.88	----	
PZ1	06/27/02	15:17	28.04	14.50	13.54	----	
PZ1	08/26/02	16:33	28.04	15.17	12.87	----	
PZ1	11/13/02	08:42	28.04	15.83	12.21	----	
PZ1	02/11/03	09:36	28.04	13.58	14.46	----	
PZ2	06/27/02	15:18	31.97	18.31	13.66	----	
PZ2	08/26/02	16:34	31.97	18.88	13.09	----	
PZ2	11/13/02	08:25	31.97	19.40	12.57	----	
PZ2	02/11/03	09:44	31.97	17.46	14.51	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
PZ3	06/27/02	15:19	31.12	19.35	11.77	----	
PZ3	08/26/02	16:35	31.12	19.74	11.38	----	
PZ3	11/13/02	08:45	31.12	16.87	----	----	
PZ3	02/11/03	09:40	31.12	19.05	12.07	----	
PZ4	06/27/02	15:20	28.47	dry	----	----	
PZ4	08/26/02	16:36	28.47	dry	----	----	
PZ4	11/13/02	08:48	28.47	16.87	11.60	----	
PZ4	02/11/03	09:41	28.47	dry	----	----	
OX001S	06/27/02	15:13	33.38	17.85	15.53	----	
OX001S	08/26/02	16:45	33.38	18.75	14.63	----	
OX001S	11/13/02	08:30	33.38	19.92	13.46	----	
OX001S	02/11/03	09:59	33.38	16.96	16.42	----	
OX002S	06/27/02	15:12	28.69	13.22	15.47	----	
OX002S	08/26/02	16:44	28.69	14.26	14.43	----	
OX002S	11/13/02	08:33	28.69	15.39	13.30	----	
OX002S	02/11/03	10:06	28.69	12.39	16.30	----	
OX003S	06/27/02	15:14	30.01	14.65	15.36	----	
OX003S	08/26/02	16:42	30.01	15.50	14.51	----	
OX003S	11/13/02	08:31	30.01	16.65	13.36	----	
OX003S	02/11/03	09:58	30.01	13.78	16.23	----	
OX004S	06/27/02	15:15	33.42	19.07	14.35	----	
OX004S	08/26/02	16:39	33.42	19.74	13.68	----	
OX004S	11/13/02	08:24	33.42	20.73	12.69	----	
OX004S	02/11/03	09:38	33.42	18.39	15.03	----	
Deep Wells:							
B2	08/11/93	10:02	30.31	25.44	4.87	----	Slight sheen, slight to mod solvent-like odor
B2	10/26/93	13:32	30.31	25.25	5.06	----	
B2	11/17/93	13:32	30.31	25.23	5.08	----	
B2	12/17/93	12:59	30.31	23.88	6.43	----	
B2	01/17/94	13:12	30.31	23.99	6.32	----	
B2	02/18/94	14:20	30.31	23.73	6.58	----	
B2	03/18/94	12:59	30.31	23.15	7.16	----	
B2	04/18/94	14:42	30.31	24.35	5.96	----	
B2	05/18/94	15:22	30.31	23.12	7.19	----	
B2	06/17/94	14:54	30.31	22.90	7.41	----	
B2	07/19/94	09:20	30.31	24.38	5.93	----	
B2	08/17/94	07:35	30.31	25.22	5.09	----	
B2	09/16/94	07:27	30.31	25.89	4.42	----	
B2	10/17/94	09:03	30.31	25.43	4.88	----	
B2	11/21/94	11:51	30.31	24.56	5.75	----	
B2	12/19/94	11:10	30.31	21.82	8.49	----	
B2	01/18/95	11:18	30.31	18.93	11.38	----	
B2	02/21/95	13:23	30.31	17.12	13.19	----	
B2	03/21/95	13:05	30.31	20.37	9.94	----	
B2	04/19/95	12:48	30.31	21.21	9.10	----	
B2	05/19/95	13:38	30.31	19.30	11.01	----	
B2	07/17/95	13:55	30.31	22.72	7.59	----	
B2	08/22/95	07:53	30.31	24.42	5.89	----	
B2	09/22/95	08:28	30.31	25.28	5.03	----	
B2	11/20/95	07:57	30.31	22.02	8.29	----	
B2	12/01/95	08:29	30.31	13.63	16.68	----	
B2	12/19/95	07:26	30.31	15.57	14.74	----	
B2	01/19/96	08:38	30.31	16.48	13.83	----	
B2	02/20/96	10:42	30.31	10.63	19.68	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
B2	03/19/96	09:23	30.31	16.61	13.70	----	
B2	04/19/96	11:53	30.31	16.20	14.11	----	
B2	07/22/96	14:24	30.31	22.29	8.02	----	
B2	08/20/96	14:20	30.31	23.43	6.88	----	
B2	09/24/96	08:11	30.31	24.30	6.01	----	
B2	10/28/96	11:09	30.31	23.76	6.55	----	
B2	12/13/96	10:47	30.31	16.70	13.61	----	
B2	03/25/97	12:02	30.31	15.85	14.46	----	
B2	03/31/97	09:27	30.31	14.91	15.40	----	
B2	07/16/97	07:45	30.31	19.91	10.40	----	
B2	10/21/97	16:30	30.31	23.56	6.75	----	
B2	01/27/98	12:06	30.31	19.32	10.99	----	
B2	05/18/98	17:54	30.31	18.80	11.51	----	
B2	08/17/98	10:23	30.31	24.38	5.93	----	
B2	11/13/98	10:17	30.31	25.33	4.98	----	
B2	02/16/99	13:34	30.31	19.64	10.67	----	
B2	05/18/99	15:50	30.31	19.04	11.27	----	
B2	09/21/99	12:18	30.31	25.34	4.97	----	
B2	12/06/99	14:39	30.31	20.25	10.06	----	
B2	02/16/00	10:56	30.31	20.57	9.74	----	
B2	05/23/00	17:33	30.31	20.99	9.32	----	
B2	08/29/00	14:20	30.31	25.38	4.93	----	
B2	11/09/00	13:29	30.31	25.31	5.00	----	
B2	02/12/01	15:27	30.31	24.62	5.69	----	
B2	06/04/01	13:04	30.31	24.84	5.47	----	
B2	08/16/01	11:58	30.31	26.75	3.56	----	
B2	11/28/01	12:46	30.31	24.14	6.17	----	
B2	02/27/02	14:35	30.31	22.90	7.41	----	
B2	06/27/02	15:07	30.31	20.16	10.15	----	
B2	08/26/02	17:01	30.31	25.32	4.99	----	
B2	11/13/02	09:03	30.31	25.28	5.03	----	
B2	02/11/03	10:14	30.31	23.58	6.73	----	
G1A	03/25/97	11:55	29.72	14.84	14.88	----	
G1A	03/31/97	09:11	29.72	14.28	15.44	----	
G1A	07/16/97	07:33	29.72	18.94	10.78	----	
G1A	10/21/97	16:18	29.72	22.44	7.28	----	
G1A	01/27/98	11:46	29.72	18.42	11.30	----	
G1A	05/18/98	17:31	29.72	18.05	11.67	----	
G1A	08/17/98	10:07	29.72	23.35	6.37	----	
G1A	11/13/98	09:54	29.72	24.59	5.13	----	
G1A	02/16/99	13:14	29.72	18.28	11.44	----	
G1A	05/18/99	14:51	29.72	18.42	11.30	----	
G1A	09/21/99	11:29	29.72	24.32	5.40	----	
G1A	12/06/99	14:05	29.72	19.82	9.90	----	
G1A	02/16/00	10:18	29.72	19.81	9.91	----	
G1A	05/23/00	16:31	29.72	20.08	9.64	----	Replaced lock and tubing
G1A	08/29/00	13:13	29.72	24.36	5.36	----	
G1A	11/09/00	12:32	29.72	24.85	4.87	----	
G1A	02/12/01	16:01	29.72	24.08	5.64	----	
G1A	06/04/01	11:40	29.72	24.10	5.62	----	
G1A	08/16/01	10:52	29.72	25.51	4.21	----	
G1A	11/28/01	11:32	29.72	23.84	5.88	----	
G1A	02/27/02	13:39	29.72	21.96	7.76	----	
G1A	06/27/02	14:17	29.72	19.48	10.24	----	
G1A	08/26/02	16:06	29.72	24.36	5.36	----	
G1A	11/13/02	07:35	29.72	24.60	5.12	----	
G1A	02/11/03	08:59	29.72	22.32	7.40	----	
J2	03/25/97	12:18	29.65	15.22	14.43	----	
J2	03/31/97	11:21	29.65	14.38	15.27	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J2	07/16/97	08:24	29.65	19.28	10.37	----	
J2	10/21/97	17:00	29.65	23.02	6.63	----	
J2	01/27/98	13:19	29.65	18.69	10.96	----	
J2	05/18/98	18:00	29.65	18.14	11.51	----	
J2	08/17/98	10:21	29.65	23.70	5.95	----	
J2	11/13/98	10:28	29.65	24.64	5.01	----	
J2	02/16/99	13:40	29.65	19.00	10.65	----	
J2	05/18/99	15:46	29.65	18.40	11.25	----	
J2	09/21/99	12:30	29.65	24.73	4.92	----	
J2	12/06/99	15:08	29.65	19.53	10.12	----	
J2	02/16/00	11:07	29.65	19.89	9.76	----	
J2	05/23/00	17:28	29.65	20.33	9.32	----	
J2	08/29/00	14:15	29.65	24.67	4.98	----	
J2	11/09/00	13:26	29.65	24.66	4.99	----	
J2	02/12/01	15:23	29.65	23.92	5.73	----	
J2	06/04/01	13:02	29.65	24.17	5.48	----	
J2	08/16/01	11:51	29.65	25.57	4.08	----	
J2	11/28/01	12:36	29.65	23.45	6.20	----	
J2	02/27/02	14:31	29.65	22.21	7.44	----	
J2	06/27/02	15:03	29.65	19.48	10.17	----	
J2	08/26/02	16:56	29.65	24.67	4.98	----	
J2	11/13/02	08:59	29.65	24.60	5.05	----	
J2	02/11/03	10:19	29.65	22.95	6.70	----	
J3	03/25/97	12:20	29.58	14.70	14.88	----	
J3	03/31/97	11:25	29.58	14.03	15.55	----	
J3	07/16/97	08:25	29.58	18.91	10.67	----	
J3	10/21/97	17:02	29.58	22.37	7.21	----	
J3	01/27/98	13:21	29.58	18.28	11.30	----	
J3	05/18/98	17:58	29.58	17.84	11.74	----	
J3	08/17/98	10:22	29.58	23.12	6.46	----	
J3	11/13/98	10:26	29.58	24.14	5.44	----	
J3	02/16/99	13:41	29.58	18.32	11.26	----	
J3	05/18/99	15:48	29.58	18.01	11.57	----	
J3	09/21/99	12:31	29.58	24.12	5.46	----	
J3	12/06/99	15:09	29.58	19.31	10.27	----	
J3	02/16/00	10:07	29.58	19.50	10.08	----	
J3	05/23/00	17:29	29.58	19.86	9.72	----	
J3	08/29/00	14:17	29.58	24.05	5.53	----	
J3	11/09/00	13:27	29.58	24.24	5.34	----	
J3	02/12/01	15:24	29.58	23.45	6.13	----	
J3	06/04/01	12:44	29.58	23.62	5.96	----	
J3	08/16/01	11:50	29.58	24.98	4.60	----	
J3	11/28/01	12:37	29.58	22.98	6.60	----	
J3	02/27/02	14:32	29.58	21.52	8.06	----	
J3	06/27/02	15:04	29.58	19.14	10.44	----	
J3	08/26/02	16:57	29.58	23.99	5.59	----	
J3	11/13/02	08:58	29.58	24.10	5.48	----	
J3	02/11/03	10:20	29.58	22.28	7.30	----	
O	03/25/97	11:40	32.03	17.01	15.02	----	
O	03/31/97	08:48	32.03	16.39	15.64	----	
O	07/16/97	07:05	32.03	21.93	10.10	----	
O	10/21/97	16:01	32.03	22.23	9.80	----	
O	01/27/98	11:03	32.03	20.51	11.52	----	
O	05/18/98	17:14	32.03	20.25	11.78	----	
O	08/17/98	10:13	32.03	25.42	6.61	----	
O	11/13/98	09:31	32.03	26.49	5.54	----	
O	02/16/99	12:45	32.03	20.25	11.78	----	
O	05/18/99	14:36	32.03	21.23	10.80	----	
O	09/21/99	11:09	32.03	26.22	5.81	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
O	12/06/99	13:48	32.03	21.90	10.13	----	
O	02/16/00	10:04	32.03	22.21	9.82	----	
O	05/23/00	16:15	32.03	22.18	9.85	----	
O	08/29/00	12:56	32.03	26.49	5.54	----	
O	11/09/00	12:18	32.03	27.01	5.02	----	
O	02/12/01	15:52	32.03	26.12	5.91	----	
O	06/04/01	11:22	32.03	26.08	5.95	----	
O	08/16/01	10:22	32.03	27.58	4.45	----	
O	11/28/01	11:18	32.03	26.15	5.88	----	
O	02/27/02	13:15	32.03	24.08	7.95	----	
O	06/27/02	14:09	32.03	21.29	10.74	----	
O	08/26/02	15:47	32.03	25.91	6.12	----	
O	11/13/02	07:21	32.03	26.56	5.47	----	
O	02/11/03	08:38	32.03	22.81	9.22	----	
R	03/25/97	11:36	30.47	15.56	14.91	----	
R	03/31/97	08:43	30.47	14.85	15.62	----	
R	07/16/97	07:00	30.47	20.37	10.10	----	
R	10/21/97	15:56	30.47	22.54	7.93	----	
R	01/27/98	10:57	30.47	18.98	11.49	----	
R	05/18/98	17:15	30.47	18.73	11.74	----	
R	08/17/98	10:12	30.47	23.93	6.54	----	
R	11/13/98	09:35	30.47	25.17	5.30	----	
R	02/16/99	13:05	30.47	18.79	11.68	----	
R	05/18/99	14:37	30.47	19.64	10.83	----	
R	09/21/99	11:15	30.47	24.53	5.94	----	
R	12/06/99	13:46	30.47	20.33	10.14	----	
R	02/16/00	10:12	30.47	20.65	9.82	----	
R	05/23/00	16:17	30.47	20.64	9.83	----	
R	08/29/00	12:58	30.47	24.97	5.50	----	
R	11/09/00	12:20	30.47	25.47	5.00	----	
R	02/12/01	15:54	30.47	24.46	6.01	----	
R	06/04/01	11:36	30.47	24.53	5.94	----	
R	08/16/01	10:35	30.47	26.02	4.45	----	
R	11/28/01	11:19	30.47	24.57	5.90	----	
R	02/27/02	13:17	30.47	22.50	7.97	----	
R	06/27/02	14:08	30.47	19.75	10.72	----	
R	08/26/02	15:58	30.47	24.38	6.09	----	
R	11/13/02	07:22	30.47	25.04	5.43	----	
R	02/11/03	08:41	30.47	21.22	9.25	----	
LW001D	03/31/97	11:11	28.31	12.71	15.60	----	
LW001D	07/16/97	08:12	28.31	17.65	10.66	----	
LW001D	10/21/97	16:55	28.31	21.29	7.02	----	
LW001D	01/27/98	13:07	28.31	17.06	11.25	----	
LW001D	05/18/98	17:39	28.31	16.53	11.78	----	
LW001D	08/17/98	10:30	28.31	21.82	6.49	----	
LW001D	11/13/98	10:01	28.31	22.77	5.54	----	
LW001D	02/16/99	13:21	28.31	17.30	11.01	----	
LW001D	05/18/99	15:36	28.31	16.76	11.55	----	
LW001D	09/21/99	12:12	28.31	22.91	5.40	----	
LW001D	12/06/99	14:34	28.31	18.00	10.31	----	
LW001D	02/16/00	10:49	28.31	18.16	10.15	----	
LW001D	05/23/00	17:19	28.31	18.62	9.69	----	
LW001D	08/29/00	13:59	28.31	22.81	5.50	----	
LW001D	11/09/00	13:20	28.31	22.98	5.33	----	
LW001D	02/12/01	15:35	28.31	22.23	6.08	----	
LW001D	06/04/01	12:23	28.31	22.36	5.95	----	
LW001D	08/16/01	11:38	28.31	23.73	4.58	----	
LW001D	11/28/01	12:29	28.31	21.73	6.58	----	
LW001D	02/27/02	14:17	28.31	20.31	8.00	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW001D	06/27/02	14:49	28.31	17.81	10.50	----	
LW001D	08/26/02	17:12	28.31	22.85	5.46	----	
LW001D	11/13/02	09:08	28.31	22.91	5.40	----	
LW001D	02/11/03	10:27	28.31	21.11	7.20	----	
LW003D	03/31/97	11:45	30.80	19.38	11.42	----	Time estimated
LW003D	07/16/97	08:38	30.80	28.09	2.71	----	
LW003D	10/21/97	17:07	30.80	23.36	7.44	----	
LW003D	01/27/98	13:30	30.80	21.66	9.14	----	
LW003D	05/18/98	17:35	30.80	19.21	11.59	----	
LW003D	08/17/98	10:24	30.80	24.62	6.18	----	
LW003D	11/13/98	09:03	30.80	25.56	5.24	----	
LW003D	02/16/99	13:44	30.80	20.00	10.80	----	
LW003D	05/18/99	15:58	30.80	19.42	11.38	----	Purged dry at 11:00
LW003D	09/21/99	10:40	30.80	25.76	5.04	----	
LW003D	12/06/99	14:45	30.80	20.69	10.11	----	
LW003D	02/16/00	09:54	30.80	20.98	9.82	----	
LW003D	05/23/00	14:40	30.80	21.16	9.64	----	Purged dry at 13:10
LW003D	08/29/00	14:36	30.80	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW003D	11/09/00		30.80	----	----	----	Well sampled 11/8/00 - water level not representative
LW003D	02/12/01	15:11	30.80	24.85	5.95	----	
LW003D	06/04/01	12:35	30.80	25.09	5.71	----	
LW003D	08/16/01	11:47	30.80	26.43	4.37	----	
LW003D	11/28/01	12:42	30.80	24.48	6.32	----	
LW003D	02/27/02	14:20	30.80	23.13	7.67	----	
LW003D	06/27/02	14:59	30.80	20.55	10.25	----	
LW003D	08/26/02	17:03	30.80	25.63	5.17	----	
LW003D	11/13/02	09:20	30.80	25.57	5.23	----	
LW003D	02/11/03	10:40	30.80	24.03	6.77	----	
LW004D	03/31/97	09:18	30.17	14.73	15.44	----	
LW004D	07/16/97	07:42	30.17	19.43	10.74	----	
LW004D	10/21/97	16:27	30.17	23.02	7.15	----	
LW004D	01/27/98	11:56	30.17	18.84	11.33	----	
LW004D	05/18/98	17:33	30.17	18.54	11.63	----	
LW004D	08/17/98	10:18	30.17	23.81	6.36	----	
LW004D	11/13/98	09:57	30.17	24.99	5.18	----	
LW004D	02/16/99	13:17	30.17	18.79	11.38	----	
LW004D	05/18/99	15:04	30.17	18.77	11.40	----	Completed sampling at 13:40
LW004D	09/21/99	11:41	30.17	24.78	5.39	----	
LW004D	12/06/99	14:18	30.17	20.21	9.96	----	
LW004D	02/16/00	10:30	30.17	20.23	9.94	----	
LW004D	05/23/00	16:54	30.17	20.55	9.62	----	
LW004D	08/29/00	13:38	30.17	24.78	5.39	----	
LW004D	11/09/00	12:52	30.17	25.19	4.98	----	
LW004D	02/12/01	16:39	30.17	24.71	5.46	----	
LW004D	06/04/01	12:07	30.17	24.66	5.51	----	
LW004D	08/16/01	11:15	30.17	26.27	3.90	----	
LW004D	11/28/01	12:04	30.17	24.41	5.76	----	
LW004D	02/27/02	14:00	30.17	22.65	7.52	----	
LW004D	03/05/02	11:36	30.17	22.94	7.23	----	
LW004D	04/05/02	08:19	30.17	23.75	6.42	----	
LW004D	05/29/02	00:00	30.17	20.48	9.69	----	
LW004D	06/27/02	14:41	30.17	20.15	10.02	----	
LW004D	08/26/02	16:32	30.17	25.02	5.15	----	
LW004D	11/13/02	08:23	30.17	25.26	4.91	----	
LW004D	02/11/03	09:32	30.17	23.08	7.09	----	
LW006D	03/25/97	11:52	30.84	16.51	14.33	----	
LW006D	03/31/97	09:05	30.84	15.53	15.31	----	Faint odor
LW006D	07/16/97	07:30	30.84	20.74	10.10	----	
LW006D	10/21/97	16:16	30.84	24.05	6.79	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW006D	01/27/98	11:38	30.84	19.94	10.90	----	
LW006D	05/18/98	17:28	30.84	19.36	11.48	----	
LW006D	08/17/98	10:05	30.84	24.92	5.92	----	
LW006D	11/13/98	09:50	30.84	25.94	4.90	----	
LW006D	02/16/99	13:11	30.84	20.40	10.44	----	
LW006D	05/18/99	14:53	30.84	19.81	11.03	----	
LW006D	09/21/99	11:32	30.84	25.92	4.92	----	
LW006D	12/06/99	14:09	30.84	20.86	9.98	----	
LW006D	02/16/00	10:20	30.84	21.27	9.57	----	
LW006D	05/23/00	16:35	30.84	21.64	9.20	----	
LW006D	08/29/00	13:20	30.84	25.93	4.91	----	
LW006D	11/09/00	12:35	30.84	26.21	4.63	----	
LW006D	02/12/01	16:03	30.84	25.37	5.47	----	
LW006D	06/04/01	11:42	30.84	25.30	5.54	----	
LW006D	08/16/01	10:54	30.84	26.72	4.12	----	
LW006D	11/28/01	11:46	30.84	24.92	5.92	----	
LW006D	02/27/02	13:35	30.84	23.62	7.22	----	
LW006D	06/27/02	14:19	30.84	20.68	10.16	----	
LW006D	08/26/02	16:04	30.84	25.79	5.05	----	
LW006D	11/13/02	07:42	30.84	25.82	5.02	----	
LW006D	02/11/03	09:01	30.84	24.08	6.76	----	
LW009D	05/18/99	14:56	30.98	20.02	10.96	----	
LW009D	09/21/99	11:34	30.98	25.23	5.75	----	
LW009D	12/06/99	14:11	30.98	21.04	9.94	----	
LW009D	02/16/00	10:23	30.98	21.17	9.81	----	
LW009D	05/23/00	16:39	30.98	21.15	9.83	----	
LW009D	08/29/00	13:27	30.98	25.36	5.62	----	
LW009D	11/09/00	12:43	30.98	25.96	5.02	----	
LW009D	02/12/01	16:11	30.98	25.13	5.85	----	
LW009D	06/04/01	11:49	30.98	25.15	5.83	----	
LW009D	08/16/01	11:02	30.98	26.57	4.41	----	
LW009D	11/28/01	11:53	30.98	25.40	5.58	----	
LW009D	02/27/02	13:47	30.98	22.97	8.01	----	
LW009D	06/27/02	14:25	30.98	20.38	10.60	----	
LW009D	08/26/02	16:11	30.98	24.90	6.08	----	
LW009D	11/13/02	07:48	30.98	25.73	5.25	----	
LW009D	02/11/03	09:07	30.98	22.03	8.95	----	
LW010D	05/18/99	15:00	31.12	19.82	11.30	----	
LW010D	09/21/99	11:37	31.12	25.81	5.31	----	
LW010D	12/06/99	14:15	31.12	21.18	9.94	----	
LW010D	02/16/00	10:27	31.12	21.20	9.92	----	
LW010D	05/23/00	16:42	31.12	21.51	9.61	----	
LW010D	08/29/00	13:29	31.12	25.86	5.26	----	
LW010D	11/09/00	12:46	31.12	26.26	4.86	----	
LW010D	02/12/01	16:15	31.12	25.63	5.49	----	
LW010D	06/04/01	11:52	31.12	25.62	5.50	----	
LW010D	08/16/01	11:04	31.12	27.16	3.96	----	
LW010D	11/28/01	11:55	31.12	25.46	5.66	----	
LW010D	02/27/02	13:49	31.12	23.58	7.54	----	
LW010D	06/27/02	14:29	31.12	21.03	10.09	----	
LW010D	08/26/02	16:17	31.12	25.91	5.21	----	
LW010D	11/13/02	08:01	31.12	26.17	4.95	----	
LW010D	02/11/03	09:21	31.12	23.83	7.29	----	
LW011D	05/18/99	15:09	29.04	18.59	10.45	----	
LW011D	09/21/99	11:50	29.04	20.76	8.28	----	
LW011D	12/06/99	15:06	29.04	21.81	7.23	----	
LW011D	02/16/00	11:02	29.04	20.35	8.69	----	
LW011D	05/23/00	17:37	29.04	19.50	9.54	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW011D	08/29/00	14:54	29.04	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW011D	11/09/00		29.04	----	----	----	Well sampled 11/8/00 - water level not representative
LW011D	02/12/01	15:16	29.04	23.14	5.90	----	
LW011D	06/04/01	13:11	29.04	23.35	5.69	----	
LW011D	08/16/01	11:25	29.04	26.94	2.10	----	
LW011D	11/28/01	12:53	29.04	24.54	4.50	----	
LW011D	02/27/02	14:57	29.04	21.80	7.24	----	
LW011D	06/27/02	15:11	29.04	18.84	10.20	----	
LW011D	08/26/02	16:47	29.04	22.71	6.33	----	
LW011D	11/13/02	08:55	29.04	23.87	5.17	----	
LW011D	02/11/03	10:04	29.04	21.79	7.25	----	
LW012D1	05/18/99	15:13	30.02	18.45	11.57	----	
LW012D1	09/21/99	11:54	30.02	24.44	5.58	----	
LW012D1	12/06/99	14:21	30.02	19.72	10.30	----	
LW012D1	02/16/00	10:35	30.02	19.89	10.13	----	
LW012D1	05/23/00	17:00	30.02	20.23	9.79	----	
LW012D1	08/29/00	13:45	30.02	24.38	5.64	----	
LW012D1	11/09/00	13:00	30.02	24.66	5.36	----	
LW012D1	02/12/01	15:57	30.02	23.92	6.10	----	
LW012D1	06/04/01	12:32	30.02	23.99	6.03	----	
LW012D1	08/16/01	11:42	30.02	25.39	4.63	----	
LW012D1	11/28/01	12:38	30.02	23.33	6.69	----	
LW012D1	02/27/02	14:28	30.02	21.88	8.14	----	
LW012D1	06/27/02	14:57	30.02	19.58	10.44	----	
LW012D1							Abandoned August 2003
LW012D2	05/18/99	15:14	29.24	18.23	11.01	----	
LW012D2	09/21/99	11:53	29.24	24.69	4.55	----	
LW012D2	12/06/99	14:22	29.24	19.40	9.84	----	
LW012D2	02/16/00	10:36	29.24	19.90	9.34	----	
LW012D2	05/23/00	16:59	29.24	20.38	8.86	----	
LW012D2	08/29/00	13:44	29.24	24.68	4.56	----	
LW012D2	11/09/00	13:01	29.24	24.56	4.68	----	
LW012D2	02/12/01	15:56	29.24	23.88	5.36	----	
LW012D2	06/04/01	12:31	29.24	24.10	5.14	----	
LW012D2	08/16/01	11:43	29.24	25.43	3.81	----	
LW012D2	11/28/01	12:39	29.24	23.17	6.07	----	
LW012D2	02/27/02	14:29	29.24	22.38	6.86	----	
LW012D2	06/27/02	14:58	29.24	19.44	9.80	----	
LW012D2							Abandoned August 2003
LW014D	05/23/00	16:50	30.54	21.26	9.28	----	
LW014D	08/29/00	13:35	30.54	25.68	4.86	----	
LW014D	11/09/00	12:49	30.54	25.90	4.64	----	
LW014D	02/12/01	16:20	30.54	25.33	5.21	----	
LW014D	06/04/01	12:00	30.54	25.37	5.17	----	
LW014D	08/16/01	11:08	30.54	27.00	3.54	----	
LW014D	11/28/01	11:56	30.54	25.03	5.51	----	
LW014D	02/27/02	13:55	30.54	23.57	6.97	----	
LW014D	06/27/02	14:33	30.54	20.70	9.84	----	
LW014D	08/26/02	16:26	30.54	25.90	4.64	----	
LW014D	11/13/02	08:07	30.54	25.76	4.78	----	
LW014D	02/11/03	09:27	30.54	24.33	6.21	----	
LW015D	05/23/00	16:49	30.85	21.26	9.59	----	
LW015D	08/29/00	13:34	30.85	25.54	5.31	----	
LW015D	11/09/00	12:48	30.85	25.98	4.87	----	
LW015D	02/12/01	16:18	30.85	25.43	5.42	----	
LW015D	06/04/01	11:59	30.85	25.41	5.44	----	
LW015D	08/16/01	11:07	30.85	27.05	3.80	----	
LW015D	11/28/01	11:55	30.85	25.29	5.56	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW015D	02/27/02	13:52	30.85	23.42	7.43	----	
LW015D	06/27/02	14:32	30.85	20.91	9.94	----	
LW015D	08/26/02	16:25	30.85	25.77	5.08	----	
LW015D	11/13/02	08:05	30.85	26.04	4.81	----	
LW015D	02/11/03	09:23	30.85	23.65	7.20	----	
LW016D	05/23/00	16:48	28.4	18.79	9.61	----	
LW016D	08/29/00	13:32	28.4	23.07	5.33	----	
LW016D	11/09/00	12:47	28.4	23.59	4.81	----	
LW016D	02/12/01	16:17	28.4	22.94	5.46	----	
LW016D	06/04/01	11:57	28.4	23.00	5.40	----	
LW016D	08/16/01	11:05	28.4	24.43	3.97	----	
LW016D	11/28/01	11:57	28.4	22.87	5.53	----	
LW016D	02/27/02	13:54	28.4	20.94	7.46	----	
LW016D	06/27/02	14:31	28.4	18.46	9.94	----	
LW016D	08/26/02	16:23	28.4	23.24	5.16	----	
LW016D	11/13/02	08:08	28.4	23.45	4.95	----	
LW016D	02/11/03	09:25	28.4	21.14	7.26	----	
LW017D	08/29/00	13:21	27.82	22.96	4.86	----	
LW017D	11/09/00	12:36	27.82	23.17	4.65	----	
LW017D	02/12/01	16:04	27.82	22.44	5.38	----	
LW017D	06/04/01	11:44	27.82	22.42	5.40	----	
LW017D	08/16/01	10:55	27.82	23.80	4.02	----	
LW017D	11/28/01	11:50	27.82	22.00	5.82	----	
LW017D	02/27/02	13:37	27.82	19.82	8.00	----	
LW017D	03/05/02	11:30	27.82	20.46	7.36	----	
LW017D	04/05/02	08:15	27.82	21.34	6.48	----	
LW017D	05/29/02	00:00	27.82	17.90	9.92	----	
LW017D	06/27/02	14:20	27.82	17.64	10.18	----	
LW017D	08/26/02	16:07	27.82	22.67	5.15	----	
LW017D	11/13/02	07:45	27.82	22.80	5.02	----	
LW017D	02/11/03	09:03	27.82	20.79	7.03	----	
LW018D	08/29/00	13:25	27.82	22.79	5.03	----	
LW018D	11/09/00	12:40	27.82	22.91	4.91	----	
LW018D	02/12/01	16:10	27.82	22.56	5.26	----	
LW018D	06/04/01	11:47	27.82	22.28	5.54	----	
LW018D	08/16/01	11:00	27.82	23.81	4.01	----	
LW018D	11/28/01	11:51	27.82	22.00	5.82	----	
LW018D	02/27/02	13:43	27.82	20.44	7.38	----	
LW018D	06/27/02	14:23	27.82	17.72	10.10	----	
LW018D	08/26/02	16:13	27.82	21.90	5.92	----	
LW018D	11/13/02	07:51	27.82	22.71	5.11	----	
LW018D	02/11/03	09:05	27.82	20.95	6.87	----	
RW2	05/18/99	15:02	30.68	19.50	11.18	----	
RW2	09/21/99	11:40	30.68	25.75	4.93	----	
RW2	12/06/99	14:17	30.68	20.77	9.91	----	
RW2	02/16/00	10:29	30.68	20.99	9.69	----	
RW2	05/23/00	16:52	30.68	21.37	9.31	----	
RW2	08/29/00	13:36	30.68	25.36	5.32	----	
RW2	11/09/00	12:50	30.68	25.83	4.85	----	Groundwater interim action pumping began 10/5/00 in the lower zone at this well. Pump not running at time of measurement.
RW2	02/12/01	16:37	30.68	26.40	4.28	----	
RW2	06/04/01	12:05	30.68	26.26	4.42	----	
RW2	08/16/01	11:11	30.68	28.98	1.70	----	
RW2	11/28/01	12:02	30.68	26.86	3.82	----	
RW2	02/27/02	13:57	30.68	26.02	4.66	----	
RW2	06/27/02	14:35	30.68	23.68	7.00	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RW2	08/26/02	16:29	30.68	28.26	2.42	----	
RW2	11/13/02	08:20	30.68	28.50	2.18	----	
RW2	02/11/03	09:29	30.68	26.96	3.72	----	
RIVER_GAUGE	08/11/93	12:57	28.13	24.90	3.23	----	
RIVER_GAUGE	10/26/93	13:17	28.13	25.27	2.86	----	
RIVER_GAUGE	11/17/93	13:21	28.13	24.18	3.95	----	
RIVER_GAUGE	12/17/93	12:46	28.13	22.48	5.65	----	
RIVER_GAUGE	01/17/94	12:58	28.13	22.90	5.23	----	
RIVER_GAUGE	02/18/94	14:10	28.13	22.30	5.83	----	
RIVER_GAUGE	03/18/94	12:48	28.13	21.70	6.43	----	
RIVER_GAUGE	04/18/94	14:34	28.13	23.50	4.63	----	
RIVER_GAUGE	05/18/94	15:14	28.13	21.80	6.33	----	
RIVER_GAUGE	06/17/94	14:45	28.13	21.32	6.81	----	
RIVER_GAUGE	07/19/94	09:10	28.13	23.25	4.88	----	
RIVER_GAUGE	08/17/94	07:26	28.13	24.00	4.13	----	
RIVER_GAUGE	09/16/94	07:30	28.13	24.66	3.47	----	
RIVER_GAUGE	10/17/94	08:58	28.13	24.10	4.03	----	
RIVER_GAUGE	11/21/94	11:43	28.13	23.20	4.93	----	
RIVER_GAUGE	12/19/94	10:58	28.13	19.95	8.18	----	
RIVER_GAUGE	01/18/95	11:04	28.13	16.70	11.43	----	
RIVER_GAUGE	02/21/95	13:14	28.13	14.65	13.48	----	
RIVER_GAUGE	03/21/95	12:58	28.13	18.90	9.23	----	
RIVER_GAUGE	04/19/95	12:37	28.13	19.80	8.33	----	
RIVER_GAUGE	05/19/95	13:22	28.13	17.40	10.73	----	
RIVER_GAUGE	07/17/95	13:48	28.13	22.00	6.13	----	
RIVER_GAUGE	08/22/95	07:45	28.13	23.24	4.89	----	
RIVER_GAUGE	09/22/95	08:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/20/95	07:50	28.13	20.20	7.93	----	
RIVER_GAUGE	12/01/95	08:23	28.13	8.45	19.68	----	
RIVER_GAUGE	12/19/95	07:11	28.13	14.10	14.03	----	
RIVER_GAUGE	01/19/96	08:29	28.13	14.06	14.07	----	
RIVER_GAUGE	02/20/96	10:36	28.13	8.00	20.13	----	
RIVER_GAUGE	03/19/96	09:15	28.13	15.95	12.18	----	
RIVER_GAUGE	04/19/96	11:45	28.13	13.95	14.18	----	
RIVER_GAUGE	07/22/96	14:18	28.13	22.00	6.13	----	
RIVER_GAUGE	07/22/96	15:05	28.13	22.20	5.93	----	
RIVER_GAUGE	08/20/96	14:09	28.13	22.80	5.33	----	
RIVER_GAUGE	08/20/96	15:10	28.13	23.00	5.13	----	
RIVER_GAUGE	09/24/96	07:55	28.13	23.41	4.72	----	
RIVER_GAUGE	09/24/96	10:15	28.13	24.25	3.88	----	
RIVER_GAUGE	10/28/96	10:53	28.13	22.95	5.18	----	
RIVER_GAUGE	10/28/96	12:12	28.13	23.21	4.92	----	
RIVER_GAUGE	12/13/96	12:09	28.13	14.50	13.63	----	
RIVER_GAUGE	03/25/97	11:33	28.13	14.60	13.53	----	
RIVER_GAUGE	03/31/97		28.13	----	----	----	Locked
RIVER_GAUGE	07/16/97	06:55	28.13	18.73	9.40	----	
RIVER_GAUGE	07/16/97	07:55	28.13	18.84	9.29	----	
RIVER_GAUGE	07/16/97	09:14	28.13	18.92	9.21	----	
RIVER_GAUGE	10/21/97	15:52	28.13	23.38	4.75	----	
RIVER_GAUGE	10/21/97	16:11	28.13	23.44	4.69	----	
RIVER_GAUGE	10/21/97	17:55	28.13	23.59	4.54	----	
RIVER_GAUGE	01/27/98	10:46	28.13	18.20	9.93	----	
RIVER_GAUGE	01/27/98	12:25	28.13	18.31	9.82	----	
RIVER_GAUGE	01/27/98	13:56	28.13	17.89	10.24	----	
RIVER_GAUGE	05/18/98	17:12	28.13	16.97	11.16	----	
RIVER_GAUGE	05/18/98	17:45	28.13	17.15	10.98	----	
RIVER_GAUGE	08/17/98	09:58	28.13	23.98	4.15	----	
RIVER_GAUGE	08/17/98	10:34	28.13	24.15	3.98	----	
RIVER_GAUGE	11/13/98	09:30	28.13	24.64	3.49	----	
RIVER_GAUGE	11/13/98	10:05	28.13	24.45	3.68	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - NOVEMBER 2002
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	02/16/99	12:40	28.13	19.36	8.77	----	
RIVER_GAUGE	02/16/99	13:27	28.13	19.43	8.70	----	
RIVER_GAUGE	05/18/99	14:33	28.13	17.24	10.89	----	
RIVER_GAUGE	05/18/99	15:19	28.13	17.30	10.83	----	
RIVER_GAUGE	09/21/99	11:10	28.13	24.94	3.19	----	
RIVER_GAUGE	09/21/99	11:59	28.13	25.03	3.10	----	
RIVER_GAUGE	12/06/99	13:43	28.13	18.24	9.89	----	
RIVER_GAUGE	12/06/99	14:25	28.13	18.06	10.07	----	
RIVER_GAUGE	02/16/00	10:03	28.13	19.18	8.95	----	
RIVER_GAUGE	02/16/00	10:41	28.13	19.07	9.06	----	
RIVER_GAUGE	05/23/00	16:12	28.13	19.80	8.33	----	
RIVER_GAUGE	05/23/00	17:04	28.13	19.94	8.19	----	
RIVER_GAUGE	08/29/00	12:54	28.13	24.63	3.50	----	
RIVER_GAUGE	08/29/00	13:49	28.13	24.91	3.22	----	
RIVER_GAUGE	11/09/00	12:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/09/00	13:10	28.13	23.67	4.46	----	
RIVER_GAUGE	02/12/01	15:45	28.13	23.75	4.38	----	
RIVER_GAUGE	02/12/01	16:43	28.13	24.00	4.13	----	
RIVER_GAUGE	06/04/01	11:20	28.13	23.62	4.51	----	
RIVER_GAUGE	06/04/01	12:15	28.13	23.79	4.34	----	
RIVER_GAUGE	08/16/01	10:20	28.13	24.83	3.30	----	
RIVER_GAUGE	08/16/01	11:29	28.13	25.23	2.90	----	
RIVER_GAUGE	11/28/01	11:16	28.13	22.50	5.63	----	
RIVER_GAUGE	11/28/01	12:18	28.13	23.13	5.00	----	
RIVER_GAUGE	02/27/02	13:11	28.13	22.24	5.89	----	
RIVER_GAUGE	02/27/02	14:12	28.13	22.27	5.86	----	
RIVER_GAUGE	03/05/02	11:25	28.13	21.42	6.71	----	
RIVER_GAUGE	04/05/02	08:00	28.13	23.10	5.03	----	
RIVER_GAUGE	05/29/02	14:07	28.13	17.31	10.82	----	
RIVER_GAUGE	06/27/02	14:07	28.13	18.31	9.82	----	
RIVER_GAUGE	06/27/02	14:43	28.13	18.36	9.77	----	
RIVER_GAUGE	08/26/02	15:45	28.13	24.83	3.30	----	
RIVER_GAUGE	08/26/02	16:13	28.13	24.85	3.28	----	
RIVER_GAUGE	11/13/02	07:19	28.13	24.10	4.03	----	
RIVER_GAUGE	11/13/02	07:54	28.13	24.21	3.92	----	
RIVER_GAUGE	02/11/03	08:34	28.13	23.70	4.43	----	
RIVER_GAUGE	02/11/03	09:14	28.13	23.43	4.70	----	

NM Not measured.
NA Not available.
-- No measurable product or odor observed.
* Well Point

(a) Reference Elevation (Ref. Elev) is the north side of the top of the 1.25-, 2- or 4-inch well casing; reference elevation surveys were conducted by Zarosinski-Tatone Engineers, Inc., Portland, Oregon. For the river gauge, the reference elevation was measured at a marked location on the south side of the dock on the Willamette River.
(b) Depth to water (DTW) measured from surveyed reference elevation [see note (1)].
(c) Where LNAPL thickness measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "*Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells*" [Lenhard and Parker 1990; Groundwater 28(1):57-67].

APPENDIX B

Groundwater Interim Action Recovery Summary

TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

Monitoring Period	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			Comments
	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	
Fourth Quarter 2000																
October 2000	439,003			0.35									0			Mass removal calculated using 11/00 PCP concentration.
November 2000	305,601	11/9/2000	95	0.24									467,478	11/7/2000	ND (a)	
December 2000	348,720	12/20/2000	39	0.11									497,656	12/6/2000	5.89	
														12/20/2000	9.73	
Quarterly Totals	*1,093,324*			*0.70*									*965,134*			
First Quarter 2001																
January 2001	416,140	1/18/2001	38.8	0.13									239,207	1/18/2001	14.3	
February 2001	335,008	2/13/2001	30	0.08									184,192			
March 2001	332,963	3/7/2001	ND (b)	0.03									517,332	3/7/2001	ND (b)	
Quarterly Totals	*1,084,111*			*0.25*									*940,731*			
Second Quarter 2001																
April 2001	377,931			0.04									275,519			
May 2001	344,252	5/22/2001	12.3	0.04									195,522	5/22/2001	5.29	
June 2001	361,846	6/4/2001	0.68	0.04									563,853			
Quarterly Totals	*1,084,029*			*0.11*									*1,034,894*			
Third Quarter 2001																
July 2001	351,509			0.01									559,015			
August 2001	486,123	8/13/2001	5	0.02									66,876			
Quarterly Totals	*837,632*			*0.03*									*625,891*			
Fourth Quarter 2001																
October 2001	393,168	10/11/2001	ND (a)	0.01									484,158	10/11/2001	ND (a)	
November 2001	319,798			0.01									118,786	11/1 & 11/15/01	ND (a)	
December 2001	361,058	12/6/2001	ND (c)	0.01									717,769	12/6/2001	ND (c)	
Quarterly Totals	*680,856*			*0.02*									*836,555*			
First Quarter 2002																
January 2002	331,224			0.02	1,812			0.01					340,688			Recovered groundwater from HRW-1 from January 22-29. Re-initiated groundwater recovery from HRW-1 on February 28.
February 2002	282,480	2/27/2002	8.6	0.02	58			0.00					437,943			HRW-1 mass removal estimates for January and February are based on the March 12 sampling event.
March 2002	280,814			0.02	40,294	3/12/2002	786	0.26					234,816			RW-2 mass removal estimates for January and March are based on February 27 sampling event.
Quarterly Totals	*894,518*			*0.06*	*42,164*			*0.28*					*1,013,447*			
Second Quarter 2002																
April 2002	292,099			0.19	74,996	4/5/2002	94	0.06					391,263	4/5/02	34.4	RW-2 mass removal estimates for April and May are based on June 27 sampling event.
														4/22/02	9.33	
May 2002	310,584			0.20	23,427	5/29/2002	452	0.09					247,440			
June 2002	272,393	6/27/2002	76	0.17	25,484	6/25/2002	410	0.09					307,810			
Quarterly Totals	*875,076*			*0.56*	*123,907*			*0.23*					*946,513*			
Third Quarter 2002																
July 2002	272,771			0.08	51,111			0.18					188,300	7/24/2002	2.09	
August 2002	270,746	8/27/2002	36	0.08	7								301,613	8/20/2002	9.15	HRW-1 shut down on July 24 due to dry pumping conditions and potential biofouling of the well. HRW-1 mass removal rate estimate based on June 2002 data.
September 2002	143,662			0.04	0				110,000	9/23/2002	47.0		369,469	9/23/2002	11.8	RW-2 temporarily shut down on September 25. Water being intercepted from SDM-1 and pumped to treatment system beginning on September 16.
Quarterly Totals	*687,179*				*51,118*								*859,382*			RW-2 mass removal rates based on August 27 sampling event. Total Volume pumped from SDM-1 estimated based on throughout of WWTP and volume recovered from RW-2; Flowmeter to be installed for SDM-1 in October 2002.

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TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

Monitoring Period	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			Comments
	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	
Fourth Quarter 2002																
October 2002	177,937			0.05	0				Not metered				112,129	10/3/2002	8.84	
November 2002	275,033	11/13/2002	37	0.09	0				95,157				399,747			The storage tank gauge was moved to groundwater sump SDM-1 on November 1.
December 2002	418,846			0.13	0				124,894				507,766			
Quarterly Totals	*871,816*				*0*								*1,019,642*			RW-2 mass removal rates based on November 13 sampling event.
First Quarter 2003																
January 2003	417,646			0.13	0				166,663			0.05	574,451	1/15/2003	11.6	
February 2003	398,299	2/11/2003	33	0.12	0				192,395	2/13/2003	290.00	0.06	483,579			
March 2003	458,160			0.14	0				210,400			0.06	624,807			SDM-1 mass removal rates based on February 13 sampling event.
Quarterly Totals	*1,274,105*				*0*				*569,458*				*1,682,837*			RW-2 mass removal rates based on February 11 sampling event.

ND = Not Detected.

(a) PCP not detected above the detection limit of 5 µg/L; concentration-dependent calculations based on half the detection limit.
(b) PCP not detected above the detection limit of 25 µg/L; concentration-dependent calculations based on half the detection limit.
(c) PCP not detected above the detection limit of 5.25 µg/L; concentration-dependent calculations based on half the detection limit.

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Measurement and Evaluation Procedures

APPENDIX C

MEASUREMENT AND EVALUATION PROCEDURES

This appendix ponders the procedures for conducting groundwater level and product (where observed) measurements during the quarterly groundwater events and the method used to evaluate the groundwater elevations.

MEASUREMENT PROCEDURES

Groundwater level measurements and the check for the presence of product were conducted using an electronic oil-water interface probe. Measurements were taken from the top of the PVC well casing at a marked survey point or at the north side of the casing, and recorded to the nearest 0.01 ft. Measurements in the Willamette River were taken from a surveyed PK nail with washer located on the south side of the dock. Surveyed reference elevations for each water level measurement location, obtained by a licensed land surveyor (ZTec Engineers, Inc., Portland, Oregon), are shown in Table A-2 of the text of this report.

Water level measurements for the first quarter 2003 event were obtained over about a 2.5-hour period beginning at about 2.5 hours after a predicted mean river stage, based on predictions for the St. Johns station on the Willamette River. The timing for water level measurements was scheduled to estimate a mean water level elevation or elevation minimally influenced by river stage, and to reduce the time-dependent variation between wells screened in the same water-bearing zone. The timing of the water level measurements was based on average time lag calculations presented in the additional groundwater investigation technical memorandum (Landau Associates 1998b), aquifer test report (Landau Associates 1999c), and previous quarterly measurements.

GROUNDWATER LEVEL EVALUATION METHODS

For evaluation purposes, the groundwater level measurements were converted from depth-to-water readings to groundwater elevations using the survey information for each location. At locations where product was observed, the groundwater elevations were adjusted to account for the presence of product using the method defined by Lenhard and Parker (1990). Groundwater elevations for the upper and lower zones were contoured using GIS/Key or manually in conjunction with the evaluations conducted to evaluate the capture zone of the groundwater interim action for the upper and lower zones.

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GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the shallow wells using a peristaltic pump attached to dedicated polyethylene tubing immediately following purging. The deep wells were sampled with disposable bailers, except for the sample from RW-2 that was collected from the in-line sampling port on the groundwater interim action system. Wells were purged using a peristaltic pump or a centrifugal purge pump. Purging continued until at least 3 casing volumes of water had been removed and specific conductance and temperature had stabilized or until the well purged dry. Four replicate measurements of field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature) were collected at each well during sampling. To prevent degassing of volatile organic compounds during sampling, the pumping rate was maintained below about 100 ml/min. All sampling was conducted in accordance with the Phase I/II RI/FS work plan (Landau Associates 1996) and appropriate provisions of the revised quality assurance project plan and project health and safety plan (Landau Associates 2001). A more detailed description of groundwater sampling procedures is provided in the Phase II RI report (Landau Associates 2000).

REFERENCES

Landau Associates. 1996. *Work Plan, Phases I and II, Remedial Investigation/Feasibility Study, Time Oil Co. Northwest Terminal.* Prepared for Time Oil Co., Seattle, Washington. May 10.

Landau Associates. 2000. *Report Phase II Remedial Investigation, Time Oil Co. Northwest Terminal.* Prepared for Time Oil Co., Seattle, Washington. April 6.

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

BZTO104(e)017696

APPENDIX D

Summary of Modifications to Quarterly Groundwater Analysis Program

APPENDIX D

SUMMARY OF MODIFICATIONS TO QUARTERLY GROUNDWATER ANALYSIS PROGRAM

A summary of modifications to the quarterly groundwater monitoring program for the Time Oil Northwest Terminal in Portland, Oregon is presented below by the date of first implementation. A reference list for the modifications is attached.

- ***Second Quarter 1998*** (Landau Associates 1998a; DEQ 1998):
  - annual sampling of east property wells LW-101S, LW-102S, LW-103S, and LW-104S
  - elimination of 2-chloroethylvinylether from the volatile analyte list
  - reduction of the suite of metals analyses to include only arsenic, chromium, copper, lead, nickel, and zinc
  - quarterly analysis of only metals in well K and only chlorinated phenols and metals in well H
  - elimination of PCB analysis
  - annual analysis for major ions; quarterly analysis for chloride and dissolved oxygen.
- ***First Quarter 1999*** [Landau Associates 1999a; (verbal approval DEQ 1999)]:
  - analysis of polynuclear aromatic hydrocarbons (PAHs) using analytical techniques that provide lower detection limits at upper zone wells LW-2S, LW-7S and LW-101S and at lower zone wells G1A, O, and LW-4D for the first quarter 1999 event only
  - elimination of sampling at well J3
- ***Second Quarter 2000*** (Landau Associates 2000a; DEQ 2000a):
  - elimination of dioxin/furan analyses
- ***Third Quarter 2000*** (Landau Associates 2000b; Tom Roick, DEQ 2000b):
  - reduction of sampling frequency of wells H, L, and LW-5S from quarterly to annually
- ***Second Quarter 2001*** (Landau Associates 2001a; DEQ 2001b):
  - reduction of the list of chlorinated phenols being analyzed by EPA Method 8040 to pentachlorophenol (PCP) only using EPA Method 8270 SIM
- ***Second Quarter 2001*** (Landau Associates 2001b; Tom Roick, DEQ 2001b):
  - reduction of the frequency of total petroleum hydrocarbon (TPH) analysis from quarterly to annually at upper zone wells J1 and LW-1S; lower zone wells B2, J2, LW-1D; and deep sand unit well LW-12D2. In addition, TPH analysis was eliminated for the following wells: upper zone wells D, L, LW-5S, LW-101S through -104S, and lower zone well LW-3D.

BZTO104(e)017698

REFERENCES
(Modifications to Quarterly Groundwater Analysis Program)

DEQ. 2001a. Letter to Kevin Murphy, Time Oil Co., Seattle Washington, re*: Groundwater Monitoring, Interim Action, and Project Schedule, Time Oil Northwest Terminal*. Thomas E. Roick, Oregon Department of Environmental Quality, Portland, Oregon. February 21.

DEQ. 2001b. Email to Rebekah Brooks, Landau Associates, Edmonds, Washington, re*: Reduction of Total Petroleum Hydrocarbon Analysis, Time Oil Co. Northwest Terminal*. Thomas E. Roick, Oregon Department of Environmental Quality, Portland, Oregon. May 30.

DEQ. 2000a. Letter to Kevin Murphy, Time Oil Co., Seattle Washington, re*: Dioxin/Furans Groundwater Analysis, Time Oil Northwest Terminal*. Thomas E. Roick, Oregon Department of Environmental Quality, Portland, Oregon. May 18.

DEQ. 2000b. Email to Rebekah Brooks, Landau Associates, Edmonds, Washington, Tom Roick, Oregon Department of Environmental Quality, Portland, Oregon re: *Time Oil Groundwater Monitoring.* August 15.

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Landau Associates. 2001a. Letter to Tom Roick, Oregon Department of Environmental Quality, Portland, Oregon re: *Recommendation for Reduction of Analyses, Time Oil Northwest Terminal, Portland, Oregon.* January 30.

Landau Associates. 2001b. Letter to Tom Roick, Oregon Department of Environmental Quality, Portland, Oregon re*: Recommendation for Reduction of TPH Analyses, Time Oil Northwest Terminal, Portland Oregon.* May 17.

Landau Associates. 2000a. Letter to Tom Roick, Oregon Department of Environmental Quality, Portland, Oregon re: *Discontinuing Dioxin/Furan Analyses, Time Oil Northwest Terminal, Portland, Oregon.* May 16.

Landau Associates. 2000b. Letter to Tom Roick, Oregon Department of Environmental Quality, Portland, Oregon re: *Recommended Reduction of Wells for Quarterly Monitoring, Time Oil Northwest Terminal, Portland, Oregon.* August 9.

Landau Associates. 2000c. *Report Phase II Remedial Investigation, Time Oil Co. Northwest Terminal*. Prepared for Time Oil Co., Seattle, Washington. April 6.

Landau Associates. 1999a. Letter to Karla Urbanowicz, Oregon Department of Environmental Quality, Portland, Oregon re: *Time Oil Northwest Terminal, Portland, Oregon.* January 21.

Landau Associates. 1999b. Personal communication (telephone conversation with Karla Urbanowicz, Oregon Department of Environmental Quality, Portland, Oregon, re: *Approval of additional modification to groundwater sampling and analysis program. Time Oil Northwest Terminal, Portland, OR*). Rebekah Brooks, Landau Associates, Edmonds, Washington. February 12.

Landau Associates. 1998a. Letter to Karla Urbanowicz, Oregon Department of Environmental Quality, Portland, Oregon re: *Time Oil Northwest Terminal, Portland, Oregon.* May 4.

Landau Associates. 1998b. Technical Memorandum re: *Additional Groundwater Investigation, January-February, 1998, Time Oil Northwest Terminal, Portland, Oregon.* Prepared for the Oregon Department of Environmental Quality, Portland, Oregon. July 28.

BZTO104(e)017699

APPENDIX E

Data Validation Report

TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL · GEOTECHNICAL · NATURAL RESOURCES

TO: Rebekah Brooks, Project Manager

cc: Tom Roick, Oregon Department of Environmental Quality (DEQ)
Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe, Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

FROM: Shannon Dunn

DATE: March 11, 2003

RE: FIRST QUARTER 2003 GROUNDWATER MONITORING
LABORATORY DATA QUALITY EVALUATION
TIME OIL NORTHWEST TERMINAL

This technical memorandum provides the results of a data quality evaluation for 46 groundwater samples and 4 trip blanks collected at the Time Oil Northwest Terminal on February 10 through 13, 2003 for the Phase II remedial investigation (RI) first quarter 2003 groundwater monitoring event. A data quality evaluation was performed for analyses of total petroleum hydrocarbons [TPH; Oregon Department of Environmental Quality (DEQ) TPH-D, TPH-D extended, and TPH-G]; volatile organic compounds [VOCs; U.S. Environmental Protection Agency (EPA) Method 8260B]; pentachlorophenol [PCP; EPA Method 8270 with selected ion monitoring (SIM)]; semivolatile organic compounds (SVOCs; EPA Method 8270C); selected priority pollutant metals (EPA Method 6010/7000 series); chloride (EPA Method 325.2); total dissolved solids (TDS; EPA Method 160.1); alkalinity, carbonate, and bicarbonate (Standard Method 2320); nitrate, nitrite, and nitrate + nitrite (EPA Method 353.2); and sulfate (EPA Method 375.2). All of the analyses were performed by Analytical Resources, Inc. (ARI), located in Seattle, Washington. This data quality evaluation covers ARI data packages FF48, FF65, FF76, and FF88. The data quality evaluation was performed in accordance with the revised quality assurance project plan (QAPP) contained in Appendix C of the *Phase III Remedial Investigation* work plan (Landau Associates 2001), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994a,b).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
- Surrogate spike recoveries
- Matrix spike and matrix spike duplicate (MS/MSD) results

- Laboratory control sample (LCS) results
- Blank (method and field) results
- Duplicate (laboratory and field) results
- Reporting limits
- Overall data quality and completeness.

Data validation qualifiers are added to sample results based on the evaluation of data quality. The absence of a data qualifier indicates that the datum is acceptable without qualification. Applicable data validation qualifiers are summarized in Table 1. The data quality evaluation is summarized below.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. The laboratory received all samples in good condition and all analyses requested were performed.

HOLDING TIMES

For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding times except as discussed below:

- **Data Package FF48 – TPH-D analyses**. During the initial analysis of TPH-D, the LCS had recoveries above the control limits. Samples LW102S, LW101S, LW103S, and LW104S were re-extracted outside of holding times and reanalyzed. The reanalysis confirmed the original analysis results of nondetect for diesel-range petroleum hydrocarbons. It is recommended that the results from the initial analyses, which were performed within the recommended holding time, be reported. No qualification of the data was determined necessary.

SURROGATE SPIKE RECOVERIES

All of the surrogate spike recoveries were within the laboratory control limits except as discussed below:

- **Data Package FF48 – PCP analyses.** Recoveries of surrogate 2,4,5-tribromophenol were diluted out in the diluted PCP analyses of samples OX003S and OX002S. No qualifiers were assigned because surrogate recoveries in the original sample analyses were within laboratory control limits.
- **Data Package FF65 – SVOC analyses.** All surrogates were diluted out in the diluted SVOC analysis of sample RW1. Because surrogate recoveries during the initial (nondiluted) analysis of this sample were within the laboratory control limits, no qualifiers were assigned.
- **Data Package FF76 – SVOC analyses.** All surrogates were diluted out in the diluted SVOC analysis of sample X. Recovery of surrogate 2-fluorobiphenyl was below laboratory control limits in the dilution analysis of sample LW011S. No qualifiers were assigned because surrogate recoveries in the original (undiluted) analyses for samples X and LW011S were within laboratory control limits.

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- **Data Package FF88 – SVOC analyses.** Recovery of surrogate 2-fluorophenol exceeded the laboratory control limits in sample B1. No qualifiers were assigned as the remaining SVOC surrogates were within laboratory control limits.
- **Data Package FF88 – PCP analyses.** Surrogate recovery of 2,4,6-tribromophenol was diluted out in the diluted PCP analysis of sample TANK 16804. No qualifiers were assigned because surrogate recovery in the original sample analysis was within laboratory control limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

A minimum of one MS/MSD pair per 20 samples (or per laboratory batch if fewer than 20 samples were obtained) was performed for each organic analysis and a minimum of one MS per 20 samples (or per laboratory batch if fewer than 20 samples were obtained) was performed for total metals, chloride, nitrate, nitrate + nitrite, and sulfate analyses. For all analyses, each MS/MSD was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits, except as indicated in Table 1 and as discussed below:

- **Data Package FF48 – PCP analyses.** Recovery of PCP in the MS associated with the initial nondiluted analysis was not reported. No qualifiers were assigned because the spiked concentration was less than four times the parent sample concentration. The RPD between the MS/MSD PCP results associated with the diluted analysis was above the laboratory control limit. PCP was not detected in the parent sample (LW104S); therefore no qualifiers were added to the data.
- **Data Package FF88 – TPH-G analyses.** Gasoline-range petroleum hydrocarbon recovery in the MS was below laboratory control limits. No qualifiers were assigned because the spike concentration was less than four times the parent sample concentration.

LABORATORY CONTROL SAMPLE (LCS) RESULTS

Except for the analysis of TDS, at least one LCS/blank spike was analyzed with each batch of samples. LCS duplicates were also performed with some of the analyses. Recoveries and RPDs for the LCSs and associated duplicates were within laboratory control limits with the following exceptions:

- **Data Package FF48 – TPH-D analyses.** Recovery of diesel-range petroleum hydrocarbons in the LCS associated with the TPH-D analysis exceeded the laboratory control limits during the initial analysis. The samples were reanalyzed and recovery in the LCS associated with the reanalysis was within control limits. Because all project sample PCP results for the initial analysis and reanalysis were nondetect, no qualification of the data was deemed necessary.

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METHOD BLANK RESULTS

Method blanks were analyzed with each batch of samples for each analysis, except for alkalinity, carbonate, and bicarbonate. No contamination was detected in the method blanks. No qualification of the data was necessary.

FIELD BLANK RESULTS

In accordance with the QAPP, field equipment rinsate blanks were not collected (all sampling equipment was dedicated and/or disposable, which eliminated the potential for cross contamination). Trip blanks were submitted for analysis of VOCs. No VOCs were detected in the trip blanks.

LABORATORY DUPLICATE RESULTS

At least one laboratory duplicate sample was analyzed for metals and conventionals. All RPDs were within the laboratory control limits, except as indicated in Table 1 and as discussed below:

- **Data Package FF76 – Metal analyses.** The RPD between the laboratory duplicate (LW010D) results for copper and zinc were above laboratory control limits. The concentration of zinc in the sample and the duplicate were within five times the reporting limit. No qualifiers were assigned to zinc data because the concentration of zinc in the sample and the duplicate were within plus or minus the reporting limit, which meets EPA control limits. The copper result for sample LW010D was qualified as estimated (J).

FIELD DUPLICATE RESULTS

Three blind field duplicate pairs (RW2/W, LW011S/X, and LW013S/Y) were collected during this sampling event. The project-specified criterion of at least one blind field duplicate sample per 20 samples was met. A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for both duplicate sample pairs submitted for analysis were within the project-specified control limits, except as indicated in Table 1, and as discussed below:

- The RPD between field duplicate results for zinc and nitrate + nitrite in sample RW-2 and duplicate sample W exceeded project control limits. Zinc and nitrate + nitrite results were qualified as estimated (J) for samples RW-2 and W.
- The RPD between field duplicate results for benzene, toluene, pentachlorophenol, copper, nitrate, and nitrate + nitrite in sample LW011S and duplicate sample X exceeded project control limits. Benzene, toluene, pentachlorophenol, copper, nitrate, and nitrate + nitrite results were qualified as estimated (J/UJ) in samples LW011S and X.

REPORTING LIMITS

BZTO104(e)017704

Method and/or project-specified quantitation limits were met except as discussed below:

- Pentachlorophenol reporting limits in samples PZ3 and LW008S were 2.4 times project-specified limits. During the initial PCP analysis of samples PZ3 and LW008S, the laboratory reported a high background interference. The samples were diluted and re-analyzed, which resulted in raised reporting limits.
- In sample G1A, the 4-nitrophenol reporting limit was 1.8 times the project-specified limit as a result of co-elution and poor spectral match.
- The reporting limit for 3-nitroaniline in sample X was 2.1 times the project-specified limit as a result of co-elution and poor spectral match.
- Bromobenzene (21 times) and n-butylbenzene (2.8 times) reporting limits were elevated in sample B1. The reporting limit for bromobenzene was elevated as a result of laboratory error. Bromobenzene was erroneously spike in sample B1 prior to analysis. The concentration of bromobenzene detected in the sample was the same as the concentration spiked into the sample. Bromobenzene was reported as nondetect with an elevated detection limit. As a result of activity on the instrument, n-butylbenzene had an elevated reporting limit.

No qualifiers were signed as a result of elevated reporting limits.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, field duplicates, matrix spike duplicates, and laboratory control samples duplicates. Data accuracy was evaluated through surrogate spikes, matrix spikes, and laboratory control samples. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected.

Other factors that affect the use of the data include the following:

- During the initial PCP analysis of samples PZ3 and LW008S, the laboratory reported a high background interference. The samples were diluted and re-analyzed. The laboratory recommends that the results from the re-analysis be reported.

The completeness for this set of data is 100 percent, which exceeds the project-specified goal of 90 percent.

REFERENCES

EPA. 1994a. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. U.S. Environmental Protection Agency.

EPA. 1994b. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. U.S. Environmental Protection Agency.

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

BZTO104(e)017705

TABLE E-1
SUMMARY OF DATA QUALIFIERS

FIRST QUARTER 2003 EVENT GROUNDWATER SAMPLE RESULTS
ARI DATA PACKAGES FF48, FF65, FF76, FF88

Data Package No.	Analyte	Qualifier	Sample Number	Reason
FF65	Zinc	J	RW2	High field duplicate RPD
FF65	Zinc	J	W	High field duplicate RPD
FF65	Nitrate + nitrite	J	RW2	High field duplicate RPD
FF65	Nitrate + nitrite	J	W	High field duplicate RPD
FF65	Pentachlorophenol	DNR	PZ3 initial analysis	High background interference
FF65	Pentachlorophenol	DNR	LW008S initial analysis	High background interference
FF76	Benzene	J	LW011S	High field duplicate RPD
FF76	Toluene	J	LW011S	High field duplicate RPD
FF76	Benzene	J	X	High field duplicate RPD
FF76	Toluene	J	X	High field duplicate RPD
FF76	Pentachlorophenol	J	LW011S	High field duplicate RPD
FF76	Pentachlorophenol	J	X	High field duplicate RPD
FF76	Copper	J	LW010D	High laboratory duplicate RPD
FF76	Copper	UJ	LW011S	High field duplicate RPD
FF76	Copper	J	X	High field duplicate RPD
FF76	Nitrate	J	LW011S	High field duplicate RPD
FF76	Nitrate + nitrite	J	LW011S	High field duplicate RPD
FF76	Nitrate	J	X	High field duplicate RPD
FF76	Nitrate + nitrite	J	X	High field duplicate RPD

J = Indicates the analyte was positively identified; the associated numerical is the approximate concentration of the analyte in the sample.

UJ = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

DNR = Do not report

APPENDIX F

Laboratory Data

LANDAU ASSOCIATES

June 9, 2003

RECEIVED JUN 1 2 2003

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the May 2003 monthly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

By:

Rebekah Brooks
Project Manager

RB/tam
6/9/03 \\Edmnas\wproc\231\TRANSMIT FAX\Monthly Rpt_Ltr doc
Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

MONTHLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
May 2003

SUMMARY OF WORK PERFORMED

- Prepared and submitted the April 2003 monthly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 10.2 gpm. HRW-1 did not operate during May. The groundwater intercept system at the east-west trending storm drain line also did not operate during May. We are currently evaluating the reason for the system shutdown. A total of approximately 11.8 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 469,100 gallons treated in May 2003.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment system.

- Contacted Barbara Priest at DEQ-UIC regarding redevelopment techniques for HRW-1. Received approval of the technique and use of a 10 ppm sodium hypochlorite solution to aid the redevelopment. Conducted redevelopment of HRW-1 using the sodium hypochlorite solution and mechanical jetting/flushing/pumping.

- Continued preparation of the ISCO pilot study report, including evaluation of additional post-injection water data and concentration trends.

- Conducted the second quarter groundwater monitoring event, May 7-9, 2003.

- Provided the *Fourth Quarter 2002 Groundwater Monitoring and Groundwater Interim Action Status Report* to DEQ.

- Prepared the *First Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Prepared the *Soil Stockpile and In Situ Excavation Removal Action Completion Report.*

- Prepared a work plan outlining design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area, and for drilling and installing monitoring wells to replace some of the wells abandoned during the soil removal action in this area.

- Prepared the quarterly discharge monitoring report (DMR) for discharge of treated groundwater to the sanitary sewer at the terminal and submitted to DEQ and the city of Portland. All discharge concentrations were in compliance.

- Installed a spill containment berm in the bioreactor room of the wastewater treatment system building at the terminal.

- Submitted the technical memorandum for interim subsurface investigations in the Phase III study area, including the CPT investigation, to DEQ.

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RESULTS COLLECTED

- Wastewater treatment system discharge samples.

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- The groundwater intercept system did not operate during this month. We are currently evaluating the reason for the shutdown and plan to restart operation immediately upon resolution.

WORK TO BE PERFORMED NEXT MONTH

- Prepare and submit monthly report to DEQ.
- Continue implementation of the groundwater interim action in the lower zone at RW-2. Continue treatment and discharge to POTW. Evaluate and remedy the shutdown for the groundwater intercept system at the storm drain. Assess need for pump replacement at HRW-1, replace pump (as necessary), and restart recovery system. Continue review of the system operations performance for the groundwater interim action system at RW-2 and the onsite wastewater treatment system.
- Complete review and comment of the *First Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* and submit to DEQ.
- Complete review and comment of the ISCO pilot study report and submit to DEQ.
- Install autodialer and control modifications in the bioreactor room of the wasterwater treatment system building at the terminal.
- Complete preparation of the removal action completion report for the soil stockpile and warehouse demolition/*in situ* soil excavation.
- Complete a work plan outlining a design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area, and for drilling and installing monitoring wells to replace some of the wells abandoned during the soil removal action in this area.
- Receive DEQ comments on the Phase III CPT investigation technical memorandum.
- Receive a no further action (NFA) determination from DEQ for the east property.

BZTO104(e)017710

LANDAU ASSOCIATES

July 10, 2003

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the June 2003 monthly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

By:

Rebekah Brooks
Project Manager

RB/tam
7/10/03 \\Edmnas\wproc\231\TRANSMIT FAX\Monthly Rpt_Ltr doc
Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

MONTHLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
June 2003

SUMMARY OF WORK PERFORMED

- Prepared and submitted the May 2003 monthly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 10.8 gpm. After replacing the pumps, resumed operation of groundwater recovery at the groundwater intercept system at the east-west trending storm drain line on June 16 at an average flow rate of 2 gpm and at HRW-1 on June 27. A total of approximately 12.2 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 446,100 gallons treated in May 2003.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment system.

- Submitted the ISCO pilot study report to DEQ with a cover letter including evaluation of additional post-injection water data and concentration trends.

- Submitted the *First Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* to DEQ.

- Continued preparation of the *Soil Stockpile and In Situ Excavation Removal Action Completion Report.*

- Continued preparation of a work plan outlining design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area, and for drilling and installing monitoring wells to replace some of the wells abandoned during the soil removal action in this area.

- Received, processed, and validated the second quarter 2003 groundwater data and began preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

RESULTS COLLECTED

- Second quarter 2003 groundwater data. Laboratory data and data validation reports will be provided to DEQ with the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report*

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- The groundwater intercept system pump that malfunctioned was replaced on June 16 and continuous groundwater recovery was resumed.

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WORK TO BE PERFORMED NEXT MONTH

- Prepare and submit monthly report to DEQ.

- Continue implementation of the groundwater interim action in the lower zone at RW-2, HRW-1, and the groundwater intercept system at the storm drain. Continue treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, and the onsite wastewater treatment system.

- Continue preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* and submit to client for review.

- Install autodialer and control modifications in the bioreactor room of the wasterwater treatment system building at the terminal.

- Complete preparation of the removal action completion report for the soil stockpile and warehouse demolition/*in situ* soil excavation and submit to DEQ.

- Complete a work plan outlining a design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area, and for drilling and installing monitoring wells to replace some of the wells abandoned during the soil removal action in this area and submit to DEQ.

- Receive DEQ comments on the Phase III CPT investigation technical memorandum. Begin planning of field activities for the Phase III RI.

- Receive a no further action (NFA) determination from DEQ for the east property.

BZTO104(e)017713

LANDAU ASSOCIATES

RECEIVED AUG 18 2003

August 11, 2003

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the July 2003 monthly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

By:
Glenda Morr
For Rebekah Brooks
Project Manager

RB/tam
8/8/03 \\Edmnas\wproc\231\TRANSMIT FAX\Monthly Rpt_Ltr doc
Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

MONTHLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
July 2003

SUMMARY OF WORK PERFORMED

- Prepared and submitted the June 2003 monthly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 8.2 gpm. Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line at an average flow rate of 3.2 gpm and at HRW-1 at an average flow rate of 0.75 gpm. A total of approximately 12.6 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 441,000 gallons treated in July 2003.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP).

- Collected influent and effluent samples from the WWTP on July 11, 2003. The pentachlorophenol (PCP) concentration in the effluent sample (87.4 µg/L) was in excess of the permitted maximum discharge limit (40 µg/L) identified in the industrial wastewater discharge permit. The City of Portland (COP) was notified and discharge from the WWTP was temporarily shut down on July 24, one day following receipt of the analytical results. Additional hydrogen peroxide was added to the system and, with COP approval, system discharge was resumed on August 1 after a sample collected from the effluent on July 30 yielded a PCP result of 8.6 µg/L. In compliance with the permit requirements, documentation of these events was provided to the COP.

- Continued preparation of the *Soil Stockpile and In Situ Excavation Removal Action Completion Report.*

- Continued preparation of a work plan outlining design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area.

- Continued preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Prepared a technical memorandum providing the plan for installation of monitoring wells within and adjacent to the former PCP mixing area to replace some of those abandoned for the soil removal action in this area, and for abandonment of existing historical well points.

- Prepared a letter to DEQ requesting a modification to the abandonment method for the east property wells.

- Received approval and comments from DEQ on the Phase III Interim Subsurface Investigation technical memorandum and began preparation of a response.

- Began preparation for Phase III RI field activities and for the third quarter 2003 groundwater monitoring event. The third quarter 2003 event will be conducted over a 3-day period during the week of August 25, 2003. The Phase III RI activities are expected to begin on September 2, 2003 and extend through mid-September (approximately a 2 ½ week period).

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RESULTS COLLECTED

- Influent and effluent samples from the WWTP. See discussion above. Samples were also collected from SDM-1, HRW-1, RW-2, Tank 16804 and both WWTP bioreactors on July 28, 2003. PCP was reported to be present in SDM-1 (409 µg/L), HRW-1 (370 µg/L), and Tank 16804 (111 µg/L). PCP was not detected in samples from RW-2 or the bioreactors.

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- The effluent sample collected from the WWTP in July 2002 had PCP concentrations in excess of the maximum permitted discharge limit for the industrial wastewater discharge permit. (See discussion above.) The rate of 35 percent hydrogen peroxide solution introduced to the water at the WWTP before being discharged to the sanitary sewer was increased from 0.1 liter per minute (lpm) to 0.15 lpm, which effectively reduced the PCP concentrations to meet the permitted maximum discharge limit. Through about the end of August 2003, additional effluent samples will be collected to monitor the WWTP and to verify that PCP concentrations in the effluent remain in compliance. Also, because the higher PCP concentrations observed in the effluent sample on July 11 are believed to be directly related to higher PCP concentrations present in SDM-1 and HRW-1, the sources of influent water to the WWTP (SDM-1, HRW-1, and RW-2) will be sampled on a quarterly basis for PCP.

WORK TO BE PERFORMED NEXT MONTH

- Prepare and submit monthly report to DEQ.

- Continue implementation of the groundwater interim action in the lower zone at RW-2, HRW-1, and the groundwater intercept system at the storm drain. Continue treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, and the onsite wastewater treatment system.

- Sample effluent from the WWTP on approximately a weekly basis through the end of August, 2003.

- Conduct the third quarter 2003 groundwater monitoring event during the week of August 25, 2003.

- Continue preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Install autodialer and control modifications in the bioreactor room of the wastewater treatment system building at the terminal.

- Complete preparation of the removal action completion report for the soil stockpile and warehouse demolition/*in situ* soil excavation and submit to DEQ.

- Complete a work plan outlining a design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area.

- Complete a plan for drilling and installing monitoring wells to replace some of the wells abandoned during the soil removal action in this area and submit to DEQ and to abandon other historical well points.

- Complete a letter to request modification of the abandonment method for the east property wells.

BZTO104(e)017716

- Complete response to DEQ comments on the *Phase III Interim Subsurface Investigation* technical memorandum and provide to DEQ.
- Continue planning for upcoming field activities.
- Receive a no further action (NFA) determination from DEQ for the east property.

BZTO104(e)017717

RECEIVED AUG 0 8 2003

LANDAU ASSOCIATES

August 5, 2003

City of Portland
Environmental Services
Industrial Source Control Division
6543 N. Burlington Avenue
Portland, Oregon 97203-5452

Attn: Ann O'Roke

RE: DOCUMENTATION OF NONCOMPLIANCE CONDITIONS
INDUSTRIAL WASTEWATER DISCHARGE
TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Ms. O'Roke:

This correspondence is being submitted to the City of Portland (City) to document upset conditions observed at the wastewater treatment plant (WWTP) in operation at the Time Oil Northwest Terminal (site) located at 10350 North Time Oil Road in Portland, Oregon. The operation of the WWTP is subject to the limitations outlined in Industrial Wastewater Discharge Permit No. 400.121 issued by the City on April 17, 2002.

On July 11, 2003, Time Oil personnel collected influent and effluent water samples from the WWTP. The influent and effluent samples were submitted to Specialty Analytical of Tualatin, Oregon for analysis. The samples were collected in preparation for the third quarter self-monitoring report (SMR) to be submitted to the City of Portland as a requirement of the industrial wastewater discharge permit. The influent sample was analyzed for pentachlorophenol (PCP) using U.S. Environmental Protection Agency (EPA) Method 8270 and the effluent sample was analyzed for PCP using EPA Method 8270; benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B; and ignitability using Solid Waste Method 1010. The analytical results for the influent and effluent samples were initially received by Time Oil and Landau Associates on July 23, 2003. The analytical results (Attachment 1) indicated that the concentration of PCP in the effluent sample [87.4 micrograms per liter (µg/L)] was in excess of the permitted maximum discharge limit (MDL; 40 µg/L) identified in the industrial wastewater discharge permit. The analytical results were reviewed on July 24, 2003 by Time Oil and Landau Associates and the discharge from the WWTP was shut down to prevent further discharge of treated water to the sanitary sewer. At the time the discharge was discontinued, the WWTP remained in operation as water that was in the "bioreactors" continued to be aerated by the operation of blowers. After reviewing the analytical data, Time Oil personnel (Kevin Murphy) contacted Ann O'Roke of the City to report the concentration of PCP in the effluent on July 24, 2003.

On July 28, 2003, Time Oil personnel collected additional water samples to assist in identifying the potential cause of the observed concentration of PCP in the effluent sample collected on July 11, 2003. The samples were submitted to Specialty Analytical for analysis of PCP using EPA Method 8270. The following water samples were collected on July 28, 2003:

Sample Identification	Sample Description
SDM-1	Shallow groundwater intercepted by a storm sewer sump; this water is one of the three influent streams for the WWTP
HRW-1	Shallow groundwater collected by a horizontal recovery well; this is one of the three influent streams for the WWTP
RW-2	Deeper groundwater collected by a vertical recovery well; this is one of the three influent streams for the WWTP
Tank 16804	Water collected in a surge tank prior to treatment; the water in Tank 16804 is a mixture of the water from SDM-1, HRW-1, and RW-2
Bioreactor A	Water stored in a bioreactor that was being aerated by a blower; operating in parallel with Bioreactor B
Bioreactor B	Water stored in a bioreactor that was being aerated by a blower; operating in parallel with Bioreactor A.

Analytical data (Attachment 1) from the July 28, 2003 sampling event was received by Time Oil and Landau Associates on July 30, 2003. PCP was reported to be present in SDM-1 (409 µg/L), HRW-1 (370 µg/L), and Tank 16804 (111 µg/L). PCP was not detected in the samples designated as RW-2, Bioreactor A, or Bioreactor B.

Based on the lack of PCP in the Bioreactor A and Bioreactor B samples collected on July 28, 2003, and verbal permission received by Kevin Murphy from Ann O'Roke, approximately 7,000 gallons of the 15,000 gallons of water stored in the bioreactors was discharged to the sanitary sewer on July 30, 2003. After the water was discharged, additional "influent" water was routed to the WWTP from Tank 16804. After the water was delivered from Tank 16804, the entire WWTP was brought back into operation; however, the treated water was not discharged. The entire treatment operation includes the delivery of influent water from Tank 16804 to a batch tank; mixture of nutrients (nitrogen and phosphorous) into the batch tank; pumping of the mixed water from the batch tank to the bioreactors; aeration of the water in the bioreactors; pumping of the aerated water to a clarifier tank for solids settling; discharge of the water from the clarifier to the system discharge piping; and mixture of hydrogen peroxide into the water flowing through the water discharge piping. The treated water was returned to the bioreactors after the hydrogen peroxide was mixed into the water. A sample of the treated water being

BZTO104(e)017719

discharged back into the bioreactors was collected on July 30, 2003 and designated as "Effluent". The sample was analyzed for PCP by Specialty Analytical using EPA Method 8270. The analytical result (Attachment 1) for the "Effluent" sample was received on August 1, 2003 and indicated a PCP concentration of 8.6 µg/L.

The operation of the WWTP on July 11, 2003 included the introduction of approximately 0.1 liter per minute (lpm) of 35 percent hydrogen peroxide solution to the water being discharged from the clarifier to the sanitary sewer. As a response to the higher concentration of PCP observed in the effluent on July 11, the feed rate of 35 percent hydrogen peroxide was increased to approximately 0.15 lpm on July 30, 2003, to provide for a higher rate of oxidation of the PCP prior to discharge back to the bioreactors. Given the low concentration (8.6 µg/L) of PCP reported in the sample collected on July 30, 2003, the increased feed rate of hydrogen peroxide appears to have effectively reduced the PCP concentrations to meet the MDL.

The modified hydrogen peroxide feed rate (0.15 lpm) was set on August 1, 2003 and discharge of treated water resumed based on prior discussions between Kevin Murphy and Ann O'Roke. During the next 3 weeks, additional effluent samples will be collected to monitor the WWTP and verify that PCP concentrations in the effluent remain in compliance with the permitted MDL. The higher PCP concentrations observed in the effluent sample collected on July 11, 2003 are believed to be directly related to higher PCP concentrations present in SDM-1 and HRW-1 as compared to historical results. As a means to monitor the influent concentration of PCP more frequently, the sources of influent water (SDM-1, HRW-1, and RW-2) will be sampled on a quarterly basis for PCP concentration. Time Oil and Landau Associates look forward to continuing to work with the City on this project. If you should have any further questions regarding the WWTP, please contact Kevin Murphy of Time Oil or Martin Powers of Landau Associates.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

Martin T. Powers, P.E.
Associate Engineer

RB/MTP/tam
Attachment

cc: Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe Williamson & Wyatt
Mike Tischuk, Beazer East Inc.

BZTO104(e)017720

ATTACHMENT 1

Laboratory Analytical Data

Specialty Analytical

Date: *21-Jul-03*

CLIENT: Time Oil Co.
Project: Water Treatment
Lab Order: 0307066

Lab ID: 0307066-01 **Collection Date:** 7/11/2003 9:40:00 AM
Client Sample ID: Influent **Matrix:** WASTE WATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		E8270B-AF				Analyst: bda
Pentachlorophenol	173	25.0		µg/L	5	7/16/2003 11:36:00 AM
Surr: 2,4,6-Tribromophenol	93.4	33.1-99.7		%REC	5	7/16/2003 11:36:00 AM

Lab ID: 0307066-02 **Collection Date:** 7/11/2003
Client Sample ID: Effluent **Matrix:** WASTE WATER

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
BTEX - RBC		SW8021B				Analyst: btf
Benzene	ND	0.400		µg/L	1	7/14/2003
Toluene	ND	0.500		µg/L	1	7/14/2003
Ethylbenzene	ND	0.500		µg/L	1	7/14/2003
Xylenes, Total	ND	1.50		µg/L	1	7/14/2003
Surr: 4-Bromofluorobenzene	95.7	74.8-126		%REC	1	7/14/2003
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		E8270B-AF				Analyst: bda
Pentachlorophenol	87.4	5.00		µg/L	1	7/16/2003 11:10:00 AM
Surr: 2,4,6-Tribromophenol	87.0	33.1-99.7		%REC	1	7/16/2003 11:10:00 AM
IGNITABILITY		SW1010				Analyst: bat
Ignitability	>140			°F	1	7/14/2003

BZTO104(e)017722

Specialty Analytical

Date:

CLIENT: Time Oil Co.
Lab Order: 0307151
Project: NW Terminal

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
RW-2	**0307151-01A**			**Date Collected**		**7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	ND	5.00		µg/L	1	7/29/2003 12:16:00 PM
Surr: 2,4,6-Tribromophenol	54.3	33.1-99.7		%REC	1	7/29/2003 12:16:00 PM
HRW-1	**0307151-02A**			**Date Collected**		**7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	370	50.0		µg/L	10	7/29/2003 2:36:00 PM
Surr: 2,4,6-Tribromophenol	47.8	33.1-99.7	D	%REC	10	7/29/2003 2:36:00 PM
Storm Water (SDm-1)	**0307151-03A**			**Date Collected**		**7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	409	50.0		µg/L	10	7/29/2003 3:04:00 PM
Surr: 2,4,6-Tribromophenol	0	33.1-99.7	S,CN	%REC	10	7/29/2003 3:04:00 PM
BioReactor 'A'	**0307151-04A**			**Date Collected**		**7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	ND	5.00		µg/L	1	7/29/2003 2:07:00 PM
Surr: 2,4,6-Tribromophenol	53.8	33.1-99.7		%REC	1	7/29/2003 2:07:00 PM
BioReactor 'B'	**0307151-05A**			**Date Collected**		**7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	ND	5.00		µg/L	1	7/29/2003 1:12:00 PM
Surr: 2,4,6-Tribromophenol	55.9	33.1-99.7		%REC	1	7/29/2003 1:12:00 PM
Tank 16804	**0307151-06A**			**Date Collected**		– **7/28/2003**
SEMI-VOLATILE COMPOUNDS- ACID FRACTION		**E8270B-AF**				Analyst: **bda**
Pentachlorophenol	111	10.0		µg/L	2	7/29/2003 3:32:00 PM
Surr: 2,4,6-Tribromophenol	56.3	33.1-99.7	D	%REC	2	7/29/2003 3:32:00 PM
Tank 16804	**0307151-06C**			**Date Collected**		**7/28/2003**
ORGANIC CARBON, TOTAL		**E415.2**				Analyst: **bda**
Organic Carbon, Total	7.44	1.00		mg/L	1	7/29/2003
TOTAL NITROGEN		**E351.3/353.3**				Analyst: **das**
Ammonia Nitrogen, as N	1.2			mg/L	1	7/31/2003
Nitrate/Nitrite Nitrogen, as N	ND			mg/L	1	7/31/2003
Total Nitrogen	1.2			mg/L	1	7/31/2003
TOTAL PHOSPHATE AS P IN WATER		**E365.2**				Analyst: **das**
Phosphorus, Total	0.424	0.0200		mg/L	1	7/31/2003

PRELIMINARY

BZTO104(e)017723

LANDAU ASSOCIATES

RECEIVED SEP 12 2003

September 9, 2003

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the August 2003 monthly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

By:

for Terry McDaniel
Rebekah Brooks
Project Manager

RB/tam
8/8/03 \\Edmnas\wproc\231\TRANSMIT FAX\Monthly Rpt_Ltr doc
Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

MONTHLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
August 2003

SUMMARY OF WORK PERFORMED

- Prepared and submitted the July 2003 monthly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 8 gpm. Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line and at HRW-1 at an average flow rate of less than 1 gpm at each location. A total of approximately 13 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 398,000 gallons treated in August 2003.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP).

- Collected effluent samples from the WWTP on a twice weekly basis throughout the month of August. The pentachlorophenol (PCP) concentration in the effluent samples ranged from nondetect to 36.5 µg/L, but all were below the permitted maximum discharge limit (40 µg/L) identified in the industrial wastewater discharge permit. Because the PCP concentrations in the effluent increased during this time period (see analytical results listed below), discharge from the WWTP was suspended on August 29.

- Installed autodialer and control modifications in the bioreactor room of the wastewater treatment system building at the terminal and tested the system.

- Conducted the third quarter 2003 groundwater monitoring event on August 27-29, 2003.

- Submitted a technical memorandum to DEQ providing the plan for installation of monitoring wells within and adjacent to the former PCP mixing area to replace some of those abandoned for the soil removal action in this area, and for abandonment of existing historical well points.

- Submitted a letter to DEQ requesting a modification to the abandonment method for the east property wells.

- Submitted a response to DEQ comments on the Phase III Interim Subsurface Investigation technical memorandum.

- Continued preparation of the *Soil Stockpile and In Situ Excavation Removal Action Completion Report.*

- Continued preparation of a work plan outlining design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area.

- Continued preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

BZTO104(e)017725

- Continued preparation for Phase III RI field activities, east property and Phase II well abandonments, and Phase II replacement well installations. The field activities are expected to begin on September 15, 2003 and extend through the end of September (approximately a 2 ½ week period).

RESULTS COLLECTED

- Effluent samples from the WWTP. See discussion above. Samples dates and preliminary PCP results (in parentheses) are as follows: August 4(ND), August 6(ND), August 11(ND), August 13(ND), August 18(ND), August 20(ND), August 25 (23.8 µg/L), and August 27 (36.5 µg/L).

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- PCP concentrations in the effluent samples collected from the WWTP in August 2003 increased over the month, and discharge was suspended on August 29. (See discussion above.) Additional samples will be collected from the bioreactors, RW-2, HRW-1, and the stormwater intercept system to determine the cause of the increase. Discharge from the WWTP will resume as soon as a reduction in effluent concentration is confirmed.

WORK TO BE PERFORMED NEXT MONTH

- Prepare and submit monthly report to DEQ.

- Continue implementation of the groundwater interim action in the lower zone at RW-2, HRW-1, and the groundwater intercept system at the storm drain. Continue treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, and the onsite wastewater treatment system.

- Continue to monitor the effluent from the WWTP on approximately a weekly basis through the end of September, 2003.

- Conduct field activities for the Phase III RI, east property, and Phase II well abandonments, and Phase II RI replacement well installations.

- Receive and begin evaluation of the third quarter 2003 groundwater monitoring results.

- Continue preparation of the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Complete preparation of the removal action completion report for the soil stockpile and warehouse demolition/*in situ* soil excavation and submit to DEQ.

- Complete a work plan outlining a design and procedures for conducting soil and groundwater remediation using the pipeline laterals in the former PCP mixing area.

- Receive a no further action (NFA) determination from DEQ for the east property.

BZTO104(e)017726

LANDAU ASSOCIATES

RECEIVED JAN 1 2 2004

January 9, 2004

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the October through December 2003 quarterly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

By:

Rebekah Brooks
Project Manager

RB/tam
1/9/04 \\Edmdata\wproc\231\TRANSMIT FAX\Quarterly Rpt_Ltr doc

Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Ms. Cheryl Rath, Schwabe Williamson & Wyatt
[redacted]

BZTO104(e)017727

QUARTERLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
October through December, 2003

SUMMARY OF WORK PERFORMED

- Prepared and submitted the September 2003 monthly report to DEQ. As agreed upon with DEQ, future status reports for the terminal will be provided on a quarterly basis, beginning with this report.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 7.2 gpm. Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line at an average flow rate of 1.7 gpm. HRW-1 did not operate during October through December 2003 because it was dry due to low water level conditions. A total of approximately 14.7 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 1.2 million gallons treated during this quarter.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP).

- Collected effluent samples from the WWTP approximately on a weekly basis throughout the quarter. The pentachlorophenol (PCP) concentrations in the effluent samples were less than the permitted maximum discharge limit (40 µg/L) identified in the industrial wastewater discharge permit.

- Submitted the *Soil Stockpile and In Situ Excavation Removal Action Completion Report* to DEQ. Received approval of the report from DEQ with some clarifications requested for inclusion in the Phase III RI Report.

- Submitted the *Second Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* to DEQ.

- Prepared the *Third Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Conducted the fourth quarter 2003 groundwater monitoring event during the weeks of October 20 and 27, 2003. This event was conducted approximately 1 month prior to the regularly scheduled event (typically in November) in order to more expeditiously obtain information from the newly installed wells.

- Received DEQ's comments on the *In Situ Chemical Oxidation (ISCO) Field Pilot Test Report.* Submitted a comment response letter to DEQ.

- Installed product socks in wells OX2S, PZ-2, and Q for passive recovery of product from these wells.

- Used dye tracer in the storm drain to assess whether the groundwater intercept system was adequately capturing the groundwater that entered the storm drain. The tracer indicated that the intercept system was operating correctly.

- Completed Phase III RI field activities in mid-October, 2003, including Phase III monitoring well drilling, installation, and development and soil sample collection in the former tank farm areas.

BZTO104(e)017728

- Disposed of soil cuttings from replacement wells in the former PCP mixing area and spent product socks from passive product recovery at Chemical Waste Management of the Northwest in Arlington, Oregon.

- Conducted a survey (x.y,z) of new monitoring wells using a licensed surveyor (ZTec Engineers, Inc.).

- Received soil data from the Phase III RI activities and groundwater data from the fourth quarter 2003 sampling event. Began data processing and data validation.

- Began preparation of the *Phase III RI Report.*

- Received a conditional no further action (NFA) determination from DEQ for the east property.

RESULTS COLLECTED

- Effluent samples from the WWTP for October through December, 2003. Twelve samples were collected on approximately a weekly basis. PCP results ranged from nondetect (at laboratory reporting limits from 4.73 to 5.19 µg/L) to 30.4 µg/L, but all were below the permitted maximum discharge limit (40 µg/L) identified in the industrial wastewater discharge permit. Data results will be presented in the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Soil data from the Phase III RI, including well boring and soil boring samples, and surface soil samples. Data results will be presented in the *Phase III RI Report.*

- Groundwater data from the fourth quarter 2003 groundwater sampling event. Data results will be presented in the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Survey data for the new monitoring wells. Data will be presented in the *Phase III RI Report.*

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- No problems were encountered.

WORK TO BE PERFORMED NEXT QUARTER

- Prepare and submit quarterly report to DEQ.

- Continue implementation of the groundwater interim action in the lower zone at RW-2, HRW-1, and the groundwater intercept system at the storm drain. Continue treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, and the onsite wastewater treatment system.

- Continue to monitor the effluent from the WWTP.

- Complete preparation of the *Third Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* and submit to DEQ.

- Prepare the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Report* and submit to DEQ.

BZTO104(e)017729

- Conduct the first quarter 2004 groundwater monitoring event in February 2004.
- Prepare a plan for conducting full scale *in situ* chemical oxidation (ISCO) groundwater interim action within the upper zone and submit to DEQ.
- Continue preparation of the Phase III RI report and submit to DEQ.

BZTO104(e)017730

QUARTERLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
July through September, 2004

SUMMARY OF WORK PERFORMED

- Prepared and submitted the April - June 2004 quarterly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 8.6 gpm.

- Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line (SDM-1) at an average flow rate of 1.7 gpm.

- Intermittent operation of groundwater recovery in the upper zone from a horizontal recovery well (HRW-1). HRW-1 did not operate during July because it was dry due to low water level conditions. HRW-1 operated intermittently in August and September at an average rate of 0.03 gpm.

- A total of approximately 18.37 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 1.47 million gallons treated during this quarter.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP).

- Collected effluent samples from the WWTP throughout the quarter to evaluate the treatment system efficiency. On July 7, 2004 a WWTP effluent sample was collected which indicated that the concentration of pentachlorophenol (PCP) was 37.5 micrograms per liter (µg/L). On August 10, 2004, a WWTP effluent sample was collected which indicated that the concentration of PCP was less than 5.53 µg/L. Neither the July nor August 2004 effluent sample exceeded the permitted limit of 40 µg/L for PCP. An additional WWTP effluent sample was collected on September 30, 2004, however the analytical results are not available at this time.

- Conducted the third quarter 2004 groundwater monitoring event August 3-10, 2004. Continued the sampling frequency recommended in our February 2, 2004 letter to DEQ, as approved by DEQ in an email from Tom Roick on February 3, 2004. Formal approval will occur after thorough review by DEQ.

- Completed preparation of the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report* and submitted to DEQ.

- Received and validated second quarter (June 2004) and third quarter (August 2004) groundwater monitoring data.

- Continued preparation of the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Began preparation of the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

BZTO104(e)017731

- Received approval from DEQ for a work plan to implement the *in situ* chemical oxidation (ISCO) technique as an interim remedial action for upper zone soil and groundwater.

- Implemented the ISCO work plan by completing an injection event in July 2004 and completing post-injection groundwater sampling in August 2004, including collection of samples at select wells for dioxin/furan analyses. The methods of injection and evaluation of analytical data will be incorporated into the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Installed new ISCO monitoring well (OX-9S) to define the eastern boundary of the upper zone PCP plume, as requested by DEQ.

- Received comments from DEQ on the Phase III RI report.

- Met with DEQ personnel on September 14, 2004, to discuss their comments on the Phase III RI report.

- Prepared a proposal for the installation of additional monitoring wells along the shoreline of the Willamette River, in the Bell Terminal, at the north property boundary, and to replace well LW-4D, which was damaged during the first ISCO injection event. Submitted the proposal to DEQ.

- Continued passive product recovery in wells LW-21S and LW-27S using a passive bailer. The bailers are emptied on a quarterly basis. The product is temporarily being stored in a 55-gallon drum in a designated location at the terminal pending disposal. The product sock was removed from well Q when no product was observed during the second and third quarter 2004 monitoring events. The spent product socks are being temporarily stored in a 55-gallon drum in a designated location at the terminal pending disposal.

- Continued preparation of a work plan for performance of the terminal-wide human health and ecological risk assessments.

- Began compilation of data set for risk calculations.

RESULTS COLLECTED

- Influent/effluent samples from the WWTP for July through September, 2004. PCP and other constituent concentrations (e.g., BTEX) were less than the permitted maximum discharge limits identified in the industrial wastewater discharge permit according to the analytical results received from the July and August sampling events. The results from the September 2004 sampling event have not been received yet. The data results will be presented in the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Final groundwater data for the second and third quarter 2004 groundwater sampling events. Data results will be presented in the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report* and *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report,* respectively.

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- The bentonite seal in LW-4D was damaged during the first full-scale ISCO injection event. The well is scheduled to be replaced in late October, 2004.

WORK TO BE PERFORMED NEXT QUARTER

- Prepare and submit quarterly report to DEQ.
- Continue implementation of the groundwater interim action in the lower zone at RW-2. Continue to operate the groundwater intercept system at the storm drain (SDM-1). Continue groundwater treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, SDM-1 and the onsite wastewater treatment system.
- Continue to monitor the effluent from the WWTP.
- Complete preparation of the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Report* and submit to DEQ.
- Prepare the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Report,* including post-injection groundwater results from the first full-scale ISCO injection event.
- Install additional monitoring wells on the shoreline of the Willamette River, at the north property boundary, and in the Bell Terminal and replace well LW-4D.
- Conduct the fourth quarter 2004 groundwater monitoring event in November 2004, including the initial sampling of the new monitoring wells.
- Evaluate groundwater analytical data and groundwater elevations and schedule the next ISCO injection event which will likely occur in January 2005.
- Complete preparation of the risk assessment work plan and submit to DEQ.
- Provide a response to comments on the Phase III RI report to DEQ. As discussed with DEQ, the final Phase III RI report will incorporate the results of the new monitoring wells and is scheduled for resubmittal to DEQ in the first quarter 2005.

NEW TIME OIL PROJECT MANAGER

- Mark Chandler is Time Oil's new project manager for this site. Please direct correspondence and other communications to Mark Chandler, Time Oil Co., 2737 W. Commodore Way, Seattle WA; (206) 285-2400 Ext 345; mchandler@timeoil.com.

LANDAU ASSOCIATES

RECEIVED OCT 12 2004

October 8, 2004

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the July through September 2004 quarterly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

RB/tam
10/8/04 \\Edmdata\wproc\231\TRANSMIT FAX\Quarterly Rpt_Ltr doc
Enclosure

cc: Mr. Mark Chandler, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

QUARTERLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
July through September, 2004

SUMMARY OF WORK PERFORMED

- Prepared and submitted the April - June 2004 quarterly report to DEQ.
- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 8.6 gpm.
- Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line (SDM-1) at an average flow rate of 1.7 gpm.
- Intermittent operation of groundwater recovery in the upper zone from a horizontal recovery well (HRW-1). HRW-1 did not operate during July because it was dry due to low water level conditions. HRW-1 operated intermittently in August and September at an average rate of 0.03 gpm.
- A total of approximately 18.37 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 1.47 million gallons treated during this quarter.
- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP).
- Collected effluent samples from the WWTP throughout the quarter to evaluate the treatment system efficiency. On July 7, 2004 a WWTP effluent sample was collected which indicated that the concentration of pentachlorophenol (PCP) was 37.5 micrograms per liter (µg/L). On August 10, 2004, a WWTP effluent sample was collected which indicated that the concentration of PCP was less than 5.53 µg/L. Neither the July nor August 2004 effluent sample exceeded the permitted limit of 40 µg/L for PCP. An additional WWTP effluent sample was collected on September 30, 2004, however the analytical results are not available at this time.
- Conducted the third quarter 2004 groundwater monitoring event August 3-10, 2004. Continued the sampling frequency recommended in our February 2, 2004 letter to DEQ, as approved by DEQ in an email from Tom Roick on February 3, 2004. Formal approval will occur after thorough review by DEQ.
- Completed preparation of the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report* and submitted to DEQ.
- Received and validated second quarter (June 2004) and third quarter (August 2004) groundwater monitoring data.
- Continued preparation of the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*
- Began preparation of the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

BZTO104(e)017735

- Received approval from DEQ for a work plan to implement the *in situ* chemical oxidation (ISCO) technique as an interim remedial action for upper zone soil and groundwater.

- Implemented the ISCO work plan by completing an injection event in July 2004 and completing post-injection groundwater sampling in August 2004, including collection of samples at select wells for dioxin/furan analyses. The methods of injection and evaluation of analytical data will be incorporated into the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Installed new ISCO monitoring well (OX-9S) to define the eastern boundary of the upper zone PCP plume, as requested by DEQ.

- Received comments from DEQ on the Phase III RI report.

- Met with DEQ personnel on September 14, 2004, to discuss their comments on the Phase III RI report.

- Prepared a proposal for the installation of additional monitoring wells along the shoreline of the Willamette River, in the Bell Terminal, at the north property boundary, and to replace well LW-4D, which was damaged during the first ISCO injection event. Submitted the proposal to DEQ.

- Continued passive product recovery in wells LW-21S and LW-27S using a passive bailer. The bailers are emptied on a quarterly basis. The product is temporarily being stored in a 55-gallon drum in a designated location at the terminal pending disposal. The product sock was removed from well Q when no product was observed during the second and third quarter 2004 monitoring events. The spent product socks are being temporarily stored in a 55-gallon drum in a designated location at the terminal pending disposal.

- Continued preparation of a work plan for performance of the terminal-wide human health and ecological risk assessments.

- Began compilation of data set for risk calculations.

RESULTS COLLECTED

- Influent/effluent samples from the WWTP for July through September, 2004. PCP and other constituent concentrations (e.g., BTEX) were less than the permitted maximum discharge limits identified in the industrial wastewater discharge permit according to the analytical results received from the July and August sampling events. The results from the September 2004 sampling event have not been received yet. The data results will be presented in the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Final groundwater data for the second and third quarter 2004 groundwater sampling events. Data results will be presented in the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report* and *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report,* respectively.

BZTO104(e)017736

Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report Time Oil Northwest Terminal Portland, Oregon

December 3, 2004

Prepared for

Time Oil Co.
2737 W. Commodore Way
Seattle, Washington 98199

LANDAU ASSOCIATES

130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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BZTO104(e)017738

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1.0 INTRODUCTION

This report provides the results of the second quarter 2004 groundwater monitoring event conducted as part of the ongoing Phase II and III remedial investigation (RI) activities at the Time Oil Northwest Terminal (terminal) in Portland, Oregon. This report also provides performance and status information for the Phase II groundwater interim action currently ongoing at the terminal. Prior to the fourth quarter 2003 event, groundwater monitoring was focused on wells drilled for the Phase II RI at locations within and downgradient of the former pentachlorophenol (PCP) mixing area. Starting with the fourth quarter 2003 event, groundwater monitoring data were also collected from wells installed as part of the Phase III RI within the Main Terminal and Bell Terminal tank farm areas and other areas of the terminal not covered under previous investigations. Groundwater monitoring at the Phase III RI wells continued for this quarter and a reduced number of Phase II wells were sampled during this quarter based on our February 2, 2004 recommendation letter to Oregon Department of Environmental Quality (DEQ; Landau Associates 2004a) and DEQ's email approval to proceed with this recommendation (DEQ 2004a). Data from the quarterly monitoring events are used to assess contaminant distribution and groundwater level trends across the terminal. Additional discussion of the Phase III activities is provided in the draft Phase III RI report (Landau Associates 2004b).

The terminal is a former bulk petroleum storage and transfer facility owned by Time Oil Co. (Time Oil) that is located in the industrialized Rivergate area of north Portland, Oregon (Figure 1). Time Oil ceased operations at the terminal on October 31, 2001. Quarterly groundwater monitoring of the Phase II wells has been ongoing at the terminal since April 1997 and since October 2003 for the Phase III wells. Groundwater monitoring is conducted in accordance with the *Phase I/II Remedial Investigation/Feasibility Study (RI/FS)* work plan (Landau Associates 1996), and the *Phase III Remedial Investigation* (RI) *Work Plan* (Landau Associates 2001). The groundwater monitoring locations at the terminal are shown on Figure 2.

The second quarter 2004 groundwater monitoring event was conducted from June 7 through June 10, 2004. This report summarizes the quarterly groundwater elevation and groundwater quality data, transmits analytical laboratory data packages and the associated data validation report, and presents an evaluation of data collected during the second quarter 2004 (April 1 through June 30, 2004) for the groundwater interim action in the upper and lower water-bearing zones relative to compliance with defined performance criteria.

The chemical analyses conducted during this monitoring event for each groundwater sampling location are summarized in Appendix A, Table A-1. Groundwater level measurements collected at the terminal for the second quarter 2004 event and for the previous RI quarterly events since March 1997 are

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provided in Appendix A, Table A-2. Groundwater quality data for the second quarter 2004 event are provided in Tables A-3 and A-4 for the upper and lower zone wells, respectively. Data validation qualifiers included in Tables A-3 and A-4 are defined in Table A-5. A summary of the second quarter 2004 groundwater interim action recovery data is provided in Appendix B. Procedures for collection of water level measurements and groundwater samples and methods for evaluation are provided in Appendix C. A summary of all modifications to the Phase II groundwater quality sampling and analysis requirements, as approved by DEQ, are documented and referenced in Appendix D. The data validation report for the second quarter 2004 data is provided in Appendix E. Laboratory data packages for these data are provided in Appendix F.

As requested by DEQ, a summary of the quarterly water quality data (detected constituents) since March 1997 for the upper and lower zone wells is being provided to DEQ either electronically or on computer diskette. These tables will continue to be updated following each quarterly event.

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2.0 SECOND QUARTER 2004 GROUNDWATER MONITORING EVENT

The second quarter 2004 groundwater monitoring event was conducted from June 7 through June 10, 2004. The quarterly event included measurement of groundwater levels at all monitoring wells, well points, and recovery wells at the terminal, and at a river gauge established on the south side of the dock extending into the Willamette River (Figure 2); measurement of product thickness in all terminal wells, if observed; and collection of groundwater quality samples. The second quarter 2004 event included the sampling of select Phase II monitoring wells; monitoring wells associated with the Phase II *in situ* chemical oxidation (ISCO) activities (OX-1S through OX-8S, OX-8D, LW-11S, and RW-1); and monitoring of wells from the Phase III RI. Because the Phase II and Phase III wells were installed to monitor groundwater quality from different areas of the terminal, the Phase II and Phase III groundwater quality data are discussed in separate sections (Sections 2.2 and 2.3, respectively). For discussion purposes, Phase II refers to monitoring locations within and downgradient of the former PCP mixing area and warehouse, and Phase III refers to monitoring locations within and downgradient of the Main Terminal and Bell Terminal tank farm areas and associated former petroleum storage operation areas.

For reference, the site monitoring wells, well points, and recovery wells are grouped as follows:

- Phase II: B1, B2, D, G1A, H, J1, J2, L, LW-3D, LW-4S/D, LW-5S, LW-6D, LW-7S, LW-8S, LW-9S/D, LW-10S/D, LW-11S/D, LW-13S, LW-14D, LW-15D, LW-16D, LW-17D, :W-18D, OX-1S through OX-7S, OX-8S/D, PZ-1 through PZ-4, RW-1, RW-2, and HRW-1.

- Phase III: K, LW-1S/1D, LW-19S, LW-20S/D, LW-21S, LW-22D, LW-23D, LW-24D, LW-25D, LW-26D, LW-27S/D, LW-28S, LW-29S/D, LW-30S/D, LW-31S, LW-32S/D, LW-33S, LW-34S, and LW-35D.

A summary of the analyses conducted for each well sample scheduled for the second quarter 2004 event is provided in Table A-1. As shown in Table A-1, only selected Phase II monitoring wells were sampled during the second quarter of 2004 per the recommendations to DEQ for reduction of sample frequency for Phase II monitoring wells (Landau Associates 2004a). This recommendation decreases the frequency of Phase II well sampling to semiannual and omits other Phase II wells from sampling where adequate information has been previously collected. A summary of all modifications to the Phase II groundwater quality sampling and analysis requirements, as approved by DEQ, are documented and referenced in Appendix D. Section 2.1 presents a summary of the results for the groundwater level measurements for all monitoring locations at the terminal. The groundwater quality data and evaluations of groundwater flow and contaminant occurrence and trends for the Phase II wells and the Phase III wells are presented in Sections 2.2 and 2.3, respectively. The performance and status of the groundwater interim action are discussed in Section 3.0.

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2.1 GROUNDWATER LEVEL AND PRODUCT MEASUREMENTS

Groundwater levels were measured at each well for the second quarter 2004 event on June 9, 2004. Each well was also checked for the presence of product. The measurement and evaluation results are provided in the following sections. The measurement and evaluation procedures are provided in Appendix C. The groundwater measurement locations are shown on Figure 2. Groundwater level measurements conducted for the quarterly groundwater sampling events since March 1997 are provided in Table A-2. Historical (pre-Phase II RI) groundwater level measurements conducted from 1993 through 1996 were provided in the Phase II RI report (Landau Associates 2000a).

2.1.1 Product Measurements and Product Recovery

During the second quarter 2004 event, a measurable amount of product was observed at well LW-21S, located within the Main Terminal tank farm area. Product thickness was measured at 0.11 ft during this sampling event. Measurable product was first noted at this well location during the first quarter 2004 sampling event approximately four months following installation of this monitoring well. A Keck passive product recovery bailer was installed in March 2004 at LW-21S and product recovery continued through the second quarter 2004. To date, approximately 3 gallons of product have been removed from this monitoring location. The recovered product is contained in a 55-gal drum onsite pending appropriate offsite disposal. Well LW-21S was the only well that contained measurable free product during the second quarter 2004 monitoring event. A product recovery bailer previously installed in monitoring well LW-27S was removed during the second quarter event since measurable product was not observed at the time of water level measurement. A groundwater quality sample was collected from well LW-27S and results are discussed in Section 2.3. All monitoring wells at the terminal will continue to be monitored for the presence of product during future quarterly monitoring events.

2.1.2 Upper Water-Bearing Zone

Groundwater elevations measured in the shallow wells were used to estimate groundwater flow conditions in the upper water-bearing zone (upper zone). Groundwater elevation contours for the upper zone are presented on Figure 3. Groundwater elevations measured in the Phase II and the Phase III wells support that groundwater flow is generally to the west-southwest toward the Willamette River in the upper zone across the Main Terminal and Bell Terminal tank farm areas. The localized southward shift in groundwater flow that is apparent within and downgradient of the former PCP mixing area appears to be due to the influence of the east-west trending storm drain located about 170 ft north of the southern property boundary (Figure 2). The overall groundwater flow pattern observed in the upper zone does not

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show significant seasonal variation. Groundwater elevations measured at Phase III wells located along the confining unit boundary in the western portion of the terminal reflect the change from two water-bearing zones (upper and lower) to a single unconfined water-bearing zone and reflect seasonal variability in an area where the upper zone is thin. For example, during the summer and fall months, upper zone well LW-10S and piezometers PZ-3 and PZ-4, located near the extent of the confining unit, are typically dry. During the wetter months of winter and spring, groundwater is observed within the upper zone along this boundary. In the Bell Terminal tank farm area, wells LW-28S and LW-33S, which are also located where the confining unit is thin and likely discontinuous, were dry during the fall months, but during the second quarter 2004 sampling event conducted in the late spring, water levels were consistent with upper zone water levels observed in neighboring monitoring locations. At Phase III RI well LW-27S, the water level appears to represent an intermediate groundwater elevation between the upper zone and lower zone, thereby indicating the edge of the confining unit and the transition from two groundwater zones to one in this area. The groundwater flow patterns in this area mirror the western extent of the confining unit boundary and groundwater gradients increase sharply where the upper and lower zones converge.

2.1.3 Lower Water-Bearing Zone

Groundwater elevations measured in the deep wells were used to estimate groundwater flow conditions in the lower water-bearing zone (lower zone) and in the area where the confining unit is absent. Groundwater elevation contours for the lower zone are presented on Figure 4. Well RW-2 pumped continuously during the second quarter 2004 for the groundwater interim action, except for periodic shutdowns for system maintenance. The contours indicate that pumping of recovery well RW-2 has modified groundwater flow in the lower zone in proximity to the pumping well, such that hydraulic capture is achieved to the west between wells LW-18D and LW-17D and to the south between wells LW-16D and LW-10D. Groundwater flow outside the well RW-2 capture zone is generally toward the west/southwest toward the Willamette River. The groundwater flow pattern in the lower zone likely represents the combined influence of two factors: 1) upper zone groundwater flow over the confining unit boundary, as demonstrated by the slight mounding of groundwater elevations between the riverbank wells and the confining unit boundary, and 2) the residual influence of recharge to the lower zone during high river stage at wells further inward of the nearshore wells due to lagtime effects after the predominant flow direction in the nearshore wells has shifted back toward the river in response to lower river stage.

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2.2 PHASE II GROUNDWATER QUALITY

The Phase II analytical results address groundwater quality within and downgradient of the former PCP mixing area and warehouse. The contaminants associated with historical operations in these areas predominantly include PCP and associated carrier compounds. Phase II wells are currently being sampled on a semiannual basis, as described earlier. For the second quarter 2004 event, groundwater from 13 upper zone Phase II wells and 5 lower zone Phase II wells were sampled and analyzed, as shown on Table A-1. Monitoring well LW-9S was dry and not sampled as part of this event. For this monitoring event, analytical results for groundwater collected from select Phase II wells were used to evaluate the performance of the groundwater interim action, to document baseline groundwater concentrations prior to full-scale implementation of the ISCO technique in the upper zone, and to assess long-term contaminant concentrations and trends in the Phase II wells, in conjunction with sampling conducted within the Phase III areas of the terminal. Except as needed to assess the groundwater interim action and ISCO activities, discussions of the results from the Phase III wells and groundwater interim action are discussed in Sections 2.3 and 3.0, respectively.

Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: semivolatile organic compounds [SVOCs; U.S. Environmental Protection Agency (EPA) Method 8270]; volatile organic compounds (VOCs; EPA Method 8260) including methyl tert-butyl ether (MTBE) at well LW-7S, six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). PCP (EPA Method 8270 SIM) was also analyzed for samples collected from G1A, LW-6D, LW-7S, LW-8S, LW-9D, and LW-10S/10D that contained nondetect concentrations of PCP using EPA Method 8270. Additionally, groundwater from eight monitoring wells was analyzed for diesel- and motor oil-range total petroleum hydrocarbons (NWTPH-Dx). Samples from wells LW-7S, LW-8S, and RW-2 were also analyzed for gasoline-range TPH (NWTPH-Gx). Selenium (EPA Method 6010) analysis was performed at all ISCO monitoring locations. The above listed laboratory analyses were conducted by Specialty Analytical, Inc., in Tualatin, Oregon. Ferrous iron (EPA Method SM3500) analysis performed at all ISCO monitoring locations, was analyzed by Analytical Resources Inc., in Seattle, Washington. Dioxin and furan analysis was performed on groundwater samples from wells OX-2S, OX-6S, and RW-1 (EPA Method SW8290) by Columbia Analytical, Inc. in Houston, Texas.

Analytical results for the second quarter 2004 event are provided in Tables A-3a through A-3g for the upper zone wells and in Tables A-4a through A-4f for the lower zone wells. A summary of the Phase II results are provided in the following sections. Data qualifier definitions are included in Table A-5.

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2.2.1 UPPER WATER-BEARING ZONE

The second quarter 2004 analytical results for the select Phase II upper zone wells indicate that samples from nine wells contained concentrations of PCP greater than the laboratory reporting limits (Figure 5). The highest concentrations were detected in the samples from wells OX-2S and OX-6S [5,030 and 3,280 micrograms per liter (µg/L), respectively], located within and downgradient of the former PCP mixing area. In addition, groundwater from downgradient monitoring wells OX-1S, OX-3S, OX-4S, OX-7S, OX-8S, LW-11S, and RW-1 contained PCP concentrations ranging from 58.2 (well OX-1S) to 2,130 (well LW-11S) µg/L. During the previous quarterly event, the highest detections were in samples from wells LW-11S (6,350 µg/L) and OX-2S (5,320 µg/L).

Other SVOCs were detected at low concentrations; however, none were greater than 43.7 µg/L (naphthalene at well OX-4S). Benzene was detected in 7 wells and ethylbenzene was detected in 10 wells. The benzene and ethylbenzene concentrations in these wells appear to be related to historical operations within the former PCP mixing area and subsequent downgradient migration with groundwater, with the exception of concentrations at well LW-8S. Petroleum-related compounds (e.g., diesel- and gasoline-range TPH, benzene and ethylbenzene) at this location appear to be related to former petroleum operations in the Main Terminal tank farm area, as described in Section 2.3.3. These wells are mainly located downgradient of the former PCP mixing area. Benzene and ethylbenzene concentrations for the upper zone monitoring wells are shown on Figures 15 and 16, respectively. The highest concentrations of VOCs (ethylbenzene, isopropylbenzene, 1,2,4-trimethylbenzene, n-propylbenzene, sec-butylbenzene, naphthalene, and xylenes) were detected in samples collected from eleven Phase II well locations (LW-8S, LW-11S, OX-1S through OX-8S, and RW-1). The highest concentrations of TPH (diesel-range) and TPH (gasoline-range) were observed at well LW-8S [8.52 milligrams per liter (mg/L) and 8.62 mg/L, respectively]. Arsenic and chromium were detected at all Phase II well locations where analyzed. The highest individual concentrations of metals (arsenic and lead) were detected in samples collected at wells LW-8S, OX-1S, OX-4S and RW-1. Arsenic concentrations from the upper zone Phase II wells ranged from 3.61 µg/L at well OX-2S to 22.8 µg/L at well LW-8S. Lead concentrations in the same wells ranged from nondetect at well LW-8S to 8.39 µg/L at well OX-4S.

Dioxin and furan analysis was performed on samples from wells OX-2S, OX-6S and RW-1, which are located within and downgradient of the former PCP mixing area. Results from this sampling indicate that concentrations, as total equivalency quotient (TEQ), ranged from 0.00016 ng/L at RW-1 to 0.11 ng/L at OX-2S.

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2.2.2 LOWER WATER-BEARING ZONE

During this quarter, five lower water-bearing zone wells were sampled. PCP was detected in only extraction well RW-2 at a concentration of 47.3 µg/L, as shown on Figure 6. Other SVOCs were only detected at RW-2 and were limited to 2-methylnapthalene (6.08 µg/L) and naphthalene (1.69 µg/L). The highest concentrations of VOCs were detected in the samples collected from wells G1A and RW-2; however, none of the detected concentrations were greater than 112 µg/L (n-propylbenzene at G1A). The highest detected concentration of TPH was estimated at 3.98 mg/L (diesel-range TPH at G1A). The highest concentrations of metals (arsenic and lead) were detected in samples collected from wells G1A, LW-6D, and LW-9D. Arsenic concentrations for the lower zone Phase II wells sampled for this event ranged from 13.1 µg/L at well LW-6D to 32.6 µg/L at well G1A. Lead concentrations in the same wells ranged from nondetect at well RW-2 and LW-10D to 0.437 µg/L at well G1A.

2.2.3 WATER LEVEL AND CONTAMINANT TRENDS

In addition to sampling associated with the groundwater interim action and ISCO activities, the second quarter 2004 data from the Phase II wells were used to evaluate long-term groundwater level and contaminant trends for groundwater impacted by former PCP-related operations at the terminal. PCP concentrations were evaluated using time versus groundwater elevation and time versus concentration plots for the period covered by the Phase II RI quarterly sampling events (April 1997 or first available through the latest quarterly event). Plots of PCP concentrations (maximum concentrations of EPA Methods 8270 and 8040 for events prior to the second quarter 2001 event) versus time for selected upper zone wells (LW-4S, LW-11S, LW-13S, and RW-1); selected lower zone wells (LW-4D, LW-11D, and RW-2); and paired wells (LW-4S and LW-4D) are provided on Figures 7 through 9. Plots of groundwater elevations and PCP concentrations for upper zone wells LW-4S and LW-11S are shown on Figures 10 and 11. Figure 12 shows groundwater elevations and PCP concentrations at lower zone well LW-4D plotted with the Willamette River stage. In addition, PCP concentrations from the second quarter 2004 event for the upper and lower water-bearing zones are plotted on Figures 5 and 6. Note that the groundwater concentration contours presented in previous quarterly groundwater reports include data for monitoring wells that are now sampled on a semiannual basis. Where monitoring well data were not collected for this quarterly event, concentration contours were inferred from the previous quarterly data.

As shown on Figure 7, the PCP concentrations in the selected upper zone wells show variable concentration trends over time (note the logarithmic scale). The PCP concentration at RW-1 (903 µg/L) decreased slightly compared to the previous quarterly event, but is similar to the PCP concentration detected during the last half of 2003. The PCP concentration at well LW-11S (2,130 µg/L) also decreased compared to

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the previous quarterly event but is within the same range of concentrations observed at this well since early 2002. The PCP concentrations detected at well LW-11S during recent quarters appear to reflect a response to seasonal groundwater fluctuations, as shown on Figure 11. Monitoring wells LW-13S and -4S were not sampled during this event.

As shown on Figure 8 (note the logarithmic scale), overall PCP concentrations in the lower zone at RW-2 have increased over the past three quarters from mostly nondetected concentrations during the period from November 2000 to May 2003, to 47.3 µg/L for this quarter. This concentration is greater than the previous quarter at RW-2 and is similar to the concentrations observed during 2002.

Fluctuations in groundwater elevations in the upper zone reflect typical seasonal variability with seasonal lows during the fall months (October-November) and seasonal highs during the winter and early spring months (January-March) since monitoring began in March 1997. The groundwater levels during the past year are similar to those observed during 2000 and 2002. Trends in PCP concentrations can be correlated with groundwater elevations at some locations. Figure 10 shows that there appears to be a correlation between the water levels and PCP concentrations in the upper zone at well LW-4S since the first quarter of 2002, as discussed earlier. Figure 7 shows that the PCP concentration in the upper zone at well LW-11S generally follows the water level trends in that zone over time. In the lower zone, groundwater levels show similar trends with seasonal fluctuations in the Willamette River, as shown by the plot of groundwater elevations at LW-4D with river stage on Figure 12. However, there appears to be no correlation between PCP concentrations and groundwater/river stage elevations at LW-4D.

Concentration contours for the upper and lower water-bearing zones (Figure 5 and 6, respectively) indicate that the overall extent of the PCP plume remains unchanged from the previous quarterly event. However, as discussed earlier, the concentration contours for this quarter are based in part on the previous quarter data for locations where sampling is conducted semiannually. The sample from monitoring well OX-2S, downgradient of the former PCP mixing area, contained the highest concentration of PCP (5,030 µg/L) for the upper zone wells. For the lower zone wells, RW-2 was the only location where PCP was detected (47.3 µg/L).

Contaminant and groundwater level trends will continue to be evaluated and discussed for future quarterly events.

2.3 PHASE III GROUNDWATER QUALITY

Analytical results for groundwater collected from the Phase III wells are used to evaluate groundwater quality in the former petroleum operations areas of the terminal, mainly focusing on the Main Terminal and Bell Terminal tank farm areas. The contaminants associated with historical operations in these areas predominantly include petroleum hydrocarbons (gasoline- and diesel-range);

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volatile compounds (e.g., BETX), PAHs, and other petroleum-related compounds. For the second quarter 2004 event, groundwater from 12 upper zone Phase III wells and 11 lower zone Phase III wells was sampled and analyzed. These wells are indicated in Table A-1. Monitoring well LW-21S was not sampled due to the presence of product. The second quarter 2004 sampling event is the third consecutive quarterly monitoring event for the Phase III wells that were installed in fall, 2003.

Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: SVOCs (EPA Method 8270); VOCs (EPA Method 8260) including MTBE; polycyclic aromatic hydrocarbons (PAH, EPA Method 8270 SIM); TPH diesel, motor oil, and gasoline ranges (NWTPH-Dx and NWTPH-Gx); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). As mentioned earlier, monitoring wells K and LW-1S were analyzed for BETX and TPH (gasoline-range) only. The Phase III laboratory analyses were conducted by Specialty Analytical, Inc.

Analytical results for the second quarter 2004 event are provided in Tables A-3a through A-3g for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the Phase III results are provided in the following sections. Data qualifier definitions are included in Table A-5.

2.3.1 Upper Water-Bearing Zone

The second quarter 2004 results for the Phase III monitoring wells installed in the upper zone indicate the following:

- TPH (diesel- and gasoline-range) was detected at the three upper zone Phase III well locations (LW-19S, 20S, and -27S) within the Main Terminal tank farm area. Within the Bell Terminal tank farm area, concentrations of TPH (diesel-range) were detected at four wells (LW-28S, -30S, -31S, and -33S). Of these same wells, TPH (gasoline-range) was detected at two well locations (LW-30S and LW-32S). The highest TPH (diesel-range) concentration was detected at well LW-20S (10.7 mg/L) and the highest TPH (gasoline-range) concentration was detected at well LW-27S (1.6 mg/L). TPH (diesel-range) and TPH (gasoline-range) concentrations for the upper zone monitoring wells are shown on Figures 13 and 14, respectively.

- VOCs (isopropylbenzene; n-butylbenzene; n-propylbenzene; sec-butylbenzene) were detected in 5 of the 10 wells sampled for these constituents. The detected VOC concentrations ranged from about 2.24 µg/L (n-butylbenzene and sec-butylbenzene) at well LW-27S to 36.4 µg/L (n-propylbenzene) at well LW-30S. MTBE was nondetect in all upper zone wells where analyzed.

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- PAHs were detected at low level concentrations in a majority of the monitoring wells. The highest concentrations were observed in wells LW-19S and LW-20S. PAH concentrations ranged from 0.05 µg/L (anthracene at well LW-32S) to 3.92 µg/L (fluorene at well LW-20S). At least one PAH concentration at only two wells (LW-24D and -25D) exceeded the national recommended ambient water quality criteria (organism only; EPA 2002).

- Other SVOC detections were limited to dibenzofuran ranging from 1.08 µg/L at well LW-19S to 1.24 µg/L at well LW-20S and butyl benzyl phthalate at a concentration of 4.13 µg/L at well LW-27S.

- The highest metals concentrations were detected at wells LW-19S (arsenic 39.3 µg/L) and LW-20S (arsenic 29.3 µg/L, chromium 0.0133 mg/L, and lead 0.105 µg/L).

2.3.2 LOWER WATER-BEARING ZONE

The second quarter 2004 results for the Phase III monitoring wells installed in the lower zone indicate the following:

- TPH (diesel-range) was detected in 10 of the 11 lower zone Phase III wells sampled during this event. TPH (gasoline-range) was detected in seven of the same monitoring wells. The highest TPH (diesel-range) concentration was detected in lower zone Phase III monitoring well LW-24D (6.84 mg/L). Monitoring well LW-24D contained the highest TPH (gasoline-range) concentration (1.23 mg/L). TPH (diesel-range) and TPH (gasoline-range) concentrations for the lower zone monitoring wells are shown on Figures 17 and 18, respectively.

- Benzene was detected in two wells (LW-23D at 132 µg/L and RW-2 at 3.57 µg/L). Benzene and ethylbenzene concentrations for the lower zone monitoring wells are shown on Figures 19 and 20, respectively. The benzene concentration at well LW-23D is the maximum concentration observed to date at this well and is about six times greater than the previous quarter. Ethylbenzene was only detected at one location (RW-2) at a concentration of 3.97 µg/L. The highest concentrations of other VOCs (isopropylbenzene, n-propylbenzene, and sec-butylbenzene) ranged from 1.26 µg/L (sec-butylbenzene; LW-22D) to 132 µg/L (benzene; LW-23D). MTBE was only detected in Phase III lower zone well LW-23D (51.2 µg/L), which is located within the Main Terminal tank farm area.

- PAHs were detected in seven Phase III lower zone wells with individual concentrations ranging from 0.0513 µg/L [benzo(a)pyrene and benzo(b)fluoranthene at well LW-35D) to 2.81 µg/L (fluorene at well LW-24D).

- Other SVOC detections were limited to bis(2-ethylhexyl)phthalate at wells LW-24D (1.07 µg/L), LW-25D (3.53 µg/L), and LW-32D (2.21 µg/L).

- Arsenic was detected in all Phase III lower zone wells at concentrations ranging from 3.8 µg/L at well LW-35D to 57.6 µg/L at well LW-24D. All six priority pollutant metals analyzed (arsenic, chromium, copper, lead, nickel and zinc) were detected at lower zone wells LW-24D, LW-25D, LW-30D and LW-35D.

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2.3.3 WATER LEVEL AND CONTAMINANT TRENDS

The three quarters of data from the Phase III wells were used to evaluate contaminant trends within areas of the terminal used historically for petroleum operations. The analytes detected in the Phase III wells during the second quarter 2004 and previous quarters are predominantly constituents commonly associated with petroleum products. This contaminant trend discussion focuses on petroleum hydrocarbons (gasoline- and diesel-range) and VOCs (benzene and ethylbenzene) because these constituents are related to former petroleum operations at the terminal; however, other constituents were detected, as described in the previous section. The diesel-range and gasoline-range petroleum hydrocarbons, benzene, and ethylbenzene concentrations for the upper and lower water-bearing zones for the second quarter 2004 are plotted on Figures 13 through 20. The groundwater concentration contours contained in the draft Phase III RI report (Landau Associates 2004b) include data from monitoring wells sampled during the fourth quarter 2003 event, as well as data collected from single event direct-push locations. The contours shown in the First Quarter Groundwater Monitoring and Groundwater Interim Action Status Report (Landau Associates 2004d) and in this report for the second quarter 2004 monitoring event and contours that will be presented in the reports for subsequent quarterly events only contain data from permanent monitoring wells.

Since the primary pathway of concern at the terminal is the groundwater to surface water pathway, the groundwater analytical results were contoured using preliminary screening levels (Figures 13 through 20), as presented in the draft Phase III RI report (Landau Associates 2004b). The preliminary screening levels were based on the most conservative published value from the EPA National Recommended Water Quality Criteria (organism only; EPA 2003), DEQ ecological risk screening level values (SLVs), Oregon Ambient Water Quality Criteria for Freshwater (fish consumption only; DEQ 2004b), and DEQ generic risk-based concentrations for petroleum constituents and total petroleum hydrocarbons (DEQ 2003b).

Trends of TPH and associated petroleum related VOC concentrations were also evaluated using time versus groundwater elevation and time versus concentration plots for the period covered by the Phase III RI quarterly sampling events (October 2003 through the latest quarterly event) and quarterly events since February 1999 for well LW-8S. Plots of diesel- and gasoline-range TPH concentrations for selected upper zone and lower zone wells in the Main Teriminal tank farm area are shown on Figures 21 through 24. These same constituents for upper zone wells in the Bell Terminal are shown on Figures 25 and 26. Plots of TPH (diesel- and gasoline-range), benzene, and ethylbenzene including groundwater elevation and Willamette River stage (lower zone wells only) for one upper zone well (LW-8S) and selected lower zone wells (LW-23D and LW-25D) in the Main Terminal tank farm area and upper zone well (LW-32S) in the Bell Terminal are provided on Figures 27 through 30 (Note the logarithmic scale on

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these figures). Plots of diesel- and gasoline-range TPH concentrations versus groundwater elevation for paired wells in the Main Terminal tank farm area (LW-20S/D) and in the Bell Terminal (LW-30S/D) are shown on Figures 31 and 32.

Concentrations of diesel- and gasoline-range TPH for the upper and lower zone Phase III wells were generally similar to those detected during the previous quarters, with the exception of upper zone well LW-27S located within the Main Terminal tank farm area. This well contained measurable product during the previous sampling event, but product was not observed during the second quarter 2004 event or during the fourth quarter 2003 event. In addition to the second quarter 2004 event, product has also been observed at upper zone monitoring well LW-21S during each of the two prior quarterly events. Based on information collected for the Phase III RI, the potential sources of this product within the Main Terminal tank farm area include a diesel spill resulting from the rupture of Tank 29508 in 1975; an unleaded gasoline spill in the vicinity of wells N, P, and Q in 1994; and, to a lesser extent, incidental leakage along conveyance pipelines.

Benzene and ethylbenzene concentrations presented on Figures 15 and 16 for the upper zone and Figures 19 and 20 for the lower zone indicate that the overall distribution of these constituents remains unchanged during the last three quarters in the areas where data were available. However, benzene concentrations at monitoring location LW-23D within the Main Terminal tank farm area nearest the river exhibited the highest detection to date for this monitoring location (132 µg/L; Figure 28). Of the lower zone well locations sampled, RW-2 continued to exhibit the only detection of ethylbenzene (3.57 µg/L) above the laboratory reporting limit.

The two separate diesel-range TPH plumes visible in the upper and lower zones and the separate ethylbenzene plumes in the upper zone (Figure 16) within and near the southeast corner of the Main Terminal tank farm area represent groundwater concentrations associated with separate historic activities conducted at the terminal (Figures 13 and 17). The plumes to the west, including monitoring location LW-8S and the other Main Terminal wells, are likely associated with spills from former petroleum operations within the Main Terminal tank farm area. The plume, including monitoring locations B2, RW2 and LW-11S, is likely associated with carrier oils used with the PCP formula for wood treatment formulation activities within the former PCP mixing area. This interpretation is supported by the product sample results collected from well LW-11S in November 2000, which contained 3.2 percent PCP in addition to other petroleum constituents, versus the product sample results collected from wells LW-21S and LW-27S in April 2004 (Landau Associates 2004d), which contained only petroleum constituents (e.g., gasoline-, diesel-, and motor oil-range hydrocarbons). LW-8S is included in the plume associated with the former petroleum operations in the Main Terminal tank farm area for the TPH compounds and

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for the benzene and ethylbenzene because groundwater flow and contaminant migration of constituents originating in the former PCP mixing area (e.g., PCP) have not been observed at this location.

Contaminant trend data indicate that diesel-range hydrocarbon concentrations in the upper zone within the Main Terminal tank farm area have ranged between about 3 to 12 mg/L, with the highest concentrations occurring at well LW-20S during 2 of the 3 quarters where data are available (Figure 21). Gasoline-range hydrocarbon concentrations in the upper zone within the Main Terminal tank farm area are consistently greatest at well LW-8S over time (Figures 22 and 27) with concentrations at this well ranging from about 4 to 15 mg/L since this well was first sampled in May 1999. Concentrations of diesel-range hydrocarbons in the lower zone within the Main Terminal tank farm area tend to be significantly greater than gasoline-range hydrocarbons at the same locations over time (Figures 23 and 24), but less than the upper zone concentrations for these constituents. Also, TPH concentrations in groundwater from lower zone wells located beyond the extent of the confining unit tend to be greater than those further to the east where the confining unit is present. The highest concentration of diesel-range hydrocarbons since quarterly monitoring began at these wells occurred at well LW-25D in February 2004 (about 6.7 mg/L); however, this concentration decreased to about 2.3 mg/L during this quarter. Diesel-range concentrations at the other lower zone wells in the Main Terminal tank farm area have increased slightly since last quarter (Figure 23). Gasoline-range concentrations for lower zone wells in the Main Terminal tank farm area showed similar trends to the diesel-range concentrations (Figure 24).

Comparison of the diesel- and gasoline-range hydrocarbons, benzene, and ethylbenzene concentrations with groundwater level elevations at selected well locations in the Main Terminal tank farm area indicate that groundwater concentrations in upper zone wells are likely influenced by seasonal fluctuations in groundwater levels, as demonstrated by the long-term data in well LW-8S (Figure 27). At well LW-8S, long-term diesel-range concentrations appear to be progressively increasing over time, benzene concentrations are progressively decreasing, and gasoline-range hydrocarbon and ethylbenzene concentrations have stayed relatively constant since about February 2002. At lower zone wells LW-23D and LW-25D (Figures 28 and 29), groundwater level elevations correlate with river stage fluctuations, as expected; however, any trends in groundwater concentrations in response to groundwater level fluctuations or river stage fluctuations is not apparent based on the available data. Diesel-range hydrocarbon and benzene concentrations increased at well LW-23D with an increase in groundwater levels between the first and second quarter 2004, but is not known based on the available data whether this increase is due to the influence of seasonal groundwater level fluctuations. Diesel-range concentrations at upper/lower zone well pair, LW-20S/-20D in the Main Terminal tank farm area indicate that upper and lower zone concentrations for this constituent are relatively similar, and are all less than

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1.0 mg/L (Figure 31). Also, there does not seem to be a correlation between diesel-range hydrocarbons concentrations and groundwater levels at these wells based on the available data.

In the Bell Terminal, diesel-range hydrocarbon concentrations in the upper zone are slightly greater than gasoline-range concentrations, with the highest concentrations for both constituents typically occurring at LW-32S (3.5 mg/L for gasoline-range TPH in June 2004 and 1.8 mg/L for diesel-range TPH in October 2003; Figures 25 and 26). Slight increases for both of these constituents were generally observed in the upper zone wells between the first and second quarters of 2004, except at LW-29S and LW-33S and LW-29S for gasoline-range only. (Note that well LW-33S was dry during the October 2003 event.) Lower zone groundwater concentrations for these constituents are much less than the upper zone concentrations, as shown on Figures 17 through 20. Figure 30 indicates that concentrations of diesel- and gasoline-range hydrocarbons, benzene, and ethylbenzene in upper zone well LW-32S have remained relatively constant over time and no correlation between groundwater concentrations and groundwater levels is apparent based on the available data. Conversely, at well pair LW-30S/-30D, trends in diesel-range concentrations and groundwater levels are similar (Figure 32). Diesel-range concentrations appear to be slightly greater in the upper zone than the lower zone at this well pair.

Long-term trends in the upper and lower zones will continue to be evaluated as part of the quarterly monitoring events.

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3.0 GROUNDWATER INTERIM ACTION

This section presents a summary of the performance and status of the groundwater interim action system for groundwater impacted by PCP at the terminal for the second quarter of 2004 (May 1 through June 30, 2004). System operation data for the groundwater interim action were evaluated in accordance with the startup monitoring plan (Landau Associates 2000b) to determine compliance with performance criteria for the upper zone and the lower zone at the terminal. Specific performance criteria include: 1) groundwater recovery from an upper zone recovery well (HRW-1) when the pump is operating or when sufficient groundwater is present in the upper zone; 2) continuous pumping from a lower zone recovery well (RW-2), except for brief periods of system maintenance (or as described below); 3) groundwater flow toward HRW-1 and RW-2 from the downgradient and upgradient directions; 4) reversal of the lower zone groundwater flow direction at the leading edge of the PCP plume; 5) chemical confirmation that continued migration of PCP in groundwater downgradient of RW-2 and HRW-1 is not occurring; and 6) compliance with the requirements of the existing discharge permit. In addition to the six criteria listed above, information is also presented in this section regarding the operation of the upper zone groundwater intercept system operating in the east-west trending storm drain (SDM-1) at the site (Figure 2).

Specific operational information for the first quarter 2004, as it relates to the criteria identified above, is as follows:

- As discussed in Section 2.1, groundwater elevation data were collected from the upper zone monitoring wells on June 9, 2004. The groundwater elevation data are summarized in Table A-2 and presented on Figure 3.

- During the second quarter 2004, HRW-1 resumed extraction of groundwater from the upper zone in late April due to seasonal increases in upper zone water levels. A total of approximately 10,305 gallons of groundwater was recorded as being recovered from HRW-1 during the second quarter of 2004 at an estimated rate of 0.1 gallons per minute (gpm). Extracted water is discharged into Tank 16804 for temporary storage until treated by the wastewater treatment system located at the terminal and subsequent discharge to the sanitary sewer under a permit with the City of Portland. Groundwater collected from the HRW-1 contained a PCP concentration of 278 µg/L on June 9, 2004. A summary of groundwater recovery for HRW-1 is included in Appendix B, Table B-1.

- With the exception of periodic shutdowns for system maintenance, groundwater was extracted continuously from the lower zone during the period from April 1 through June 30, 2004 by operating the groundwater recovery pump in RW-2. A total of approximately 446,608-gal of groundwater was recorded as being recovered from RW-2 during the second quarter of 2004 at an estimated average rate of 9.5 gpm. The recovery pump in RW-2 operated for approximately 781 hours and discharged water to Tank 16804 for temporary storage until treated by the wastewater treatment system located at the terminal and subsequent discharge to the sanitary sewer under a permit with the City of Portland. A summary of the groundwater recovery for RW-2 is included in Appendix B, Table B-1.

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- As discussed in Section 2.1, groundwater elevation data were collected from the lower zone wells on June 9, 2004. The groundwater elevation data are summarized in Table A-2 and presented on Figure 4. Based on the groundwater elevation data collected, the groundwater flow direction was reversed locally in the lower zone at the leading edge of the PCP plume when RW-2 was in operation during this quarter.

- As previously discussed in Section 2.2, groundwater samples were collected at the terminal on June 7 through June 10, 2004. Historically, the extent of groundwater impact has been estimated based on the extent of dissolved-phase PCP. The extent of PCP in the upper and lower zones is depicted on Figures 5 and 6, respectively, based on data collected during the June 2004 groundwater sampling event. The extent of PCP in the upper zone is consistent with previous quarterly events. The second quarter lower zone analytical data indicate that RW-2 was the only well where detected concentrations of PCP were observed in the lower zone, indicating that RW-2 was effective in capturing PCP-impacted groundwater. PCP concentrations were not detected at monitoring well LW-10D, located approximately 100 ft downgradient from RW-2 or at well LW-6D, located between RW-2 and the river.

- During the second quarter 2004, the water meter for the groundwater intercept system at storm drain manhole SDM-1 became impaired due to sediment within the meter. Therefore, an accurate reading of the amount of groundwater intercepted by the system was not recorded for this quarter. The system continued to pump during the second quarter; however, a new meter was not installed until June 2004. Following the new meter installation, 44,155-gal were recorded as being transferred to Tank 16804 for treatment. Groundwater collected from the storm drain contained a PCP concentration of 595 µg/L on June 9, 2004 (Appendix B, Table B-1).

The industrial wastewater discharge permit (City of Portland Permit No. 400.121) for discharge of the extracted groundwater following treatment at the terminal's wastewater treatment plant includes the following discharge limitations:

Parameter	Permitted Limit
PCP	40 µg/L
Benzene	50 µg/L
BTEX (1)	750 µg/L
PH	5 to 11.5

(1) Summation of detected concentrations of Benzene, Ethylbenzene, Toluene, Xylenes (BTEX).

Samples of the treated groundwater discharge were collected periodically during the second quarter 2004 for analyses of PCP following discharge exceedances that occurred during this quarter. Sampling results indicated that PCP concentrations ranged from nondetect to 194 µg/L during the second quarter 2004. Currently, Landau Associates and Time Oil Co. are monitoring the discharge more

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frequently, in addition to increasing the hydrogen peroxide dosage rate to decrease the PCP in the treatment system discharge. The analytical results for PCP are provided in Appendix B, Table B-1.

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4.0 FUTURE GROUNDWATER TASKS

The third quarter 2004 groundwater sampling event was conducted during the week of August 2, 2004. The groundwater monitoring and analytical program for the third quarter 2004 event included the following: 1) semiannual monitoring at Phase II wells per the modified monitoring frequency discussed in Section 1.0, 2) post-injection monitoring of the ISCO wells following the first full-scale injection event, in accordance with the ISCO work plan (Landau Associates 2004c); 3) continued quarterly monitoring of the Phase II monitoring and recovery wells used for evaluation of the performance of the groundwater interim action system and 3) continued quarterly monitoring of the Phase III RI monitoring wells installed in September 2003. The results for the Phase II and Phase III third quarter 2004 groundwater monitoring event and the third quarter groundwater interim action status will be provided in the *Third Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

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5.0 USE OF THIS REPORT

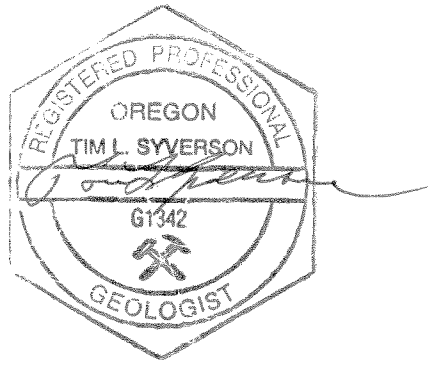
This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil Co. for specific application to the Northwest Terminal. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil Co. or others in connection with any site other than the Northwest Terminal without Landau Associates' written permission shall be at the sole risk of Time Oil Co. and without liability to Landau Associates.

This document was prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

Timothy L. Syverson, R.G.
Associate Geologist



Christy L. Johnson
Project Engineer

TLS/CLJ/tam

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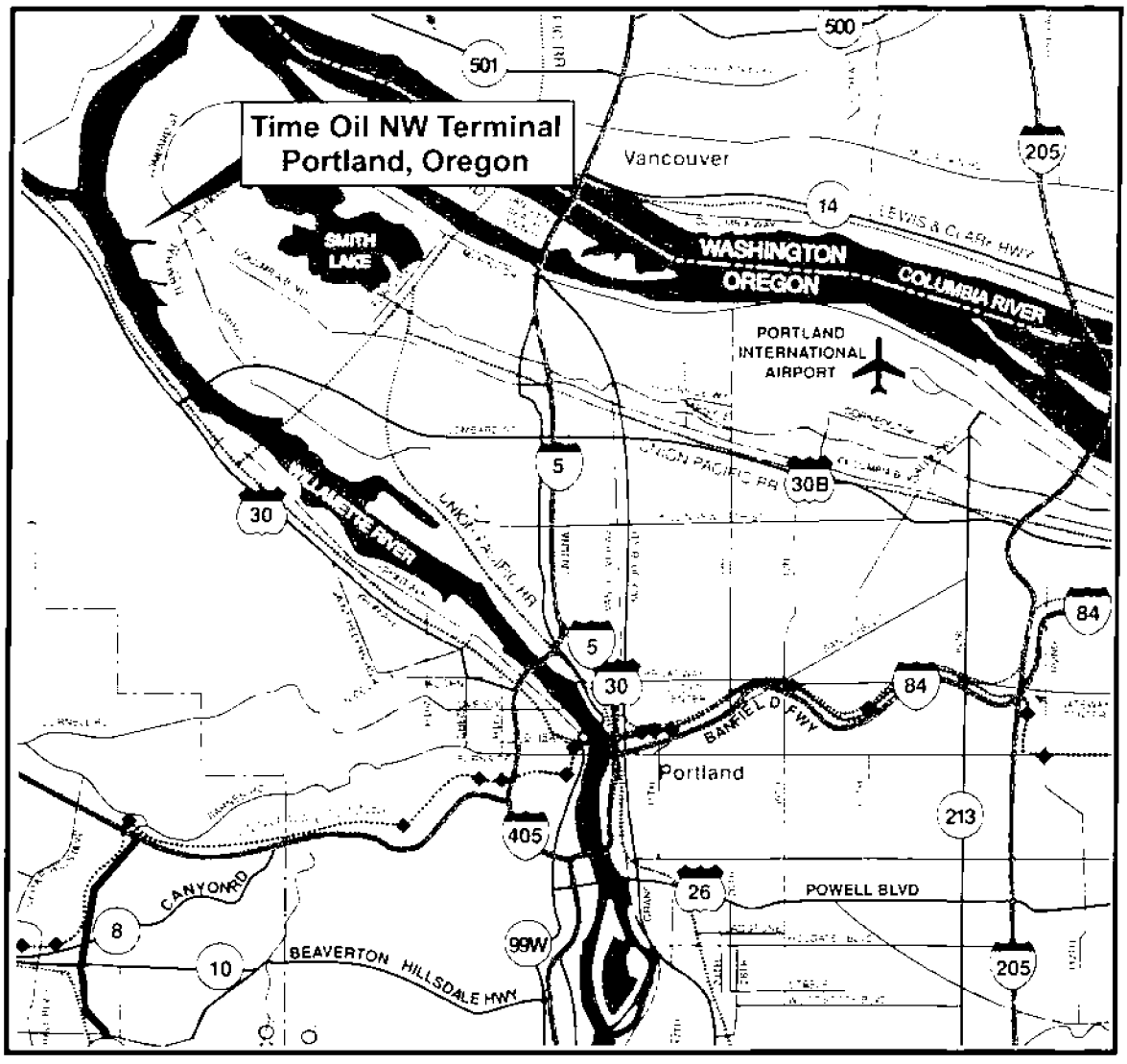
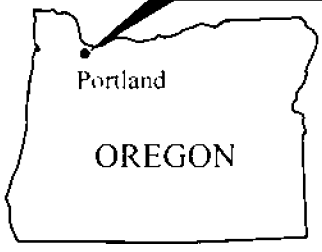
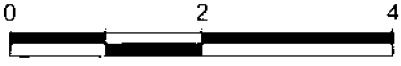


Map from MetroAmerica 1995

SITE LOCATION
(see enlarged map area above)





Approximate Scale in Miles

Time Oil | P123\001\Vicinity Map.cdr (G) 05/10/2002

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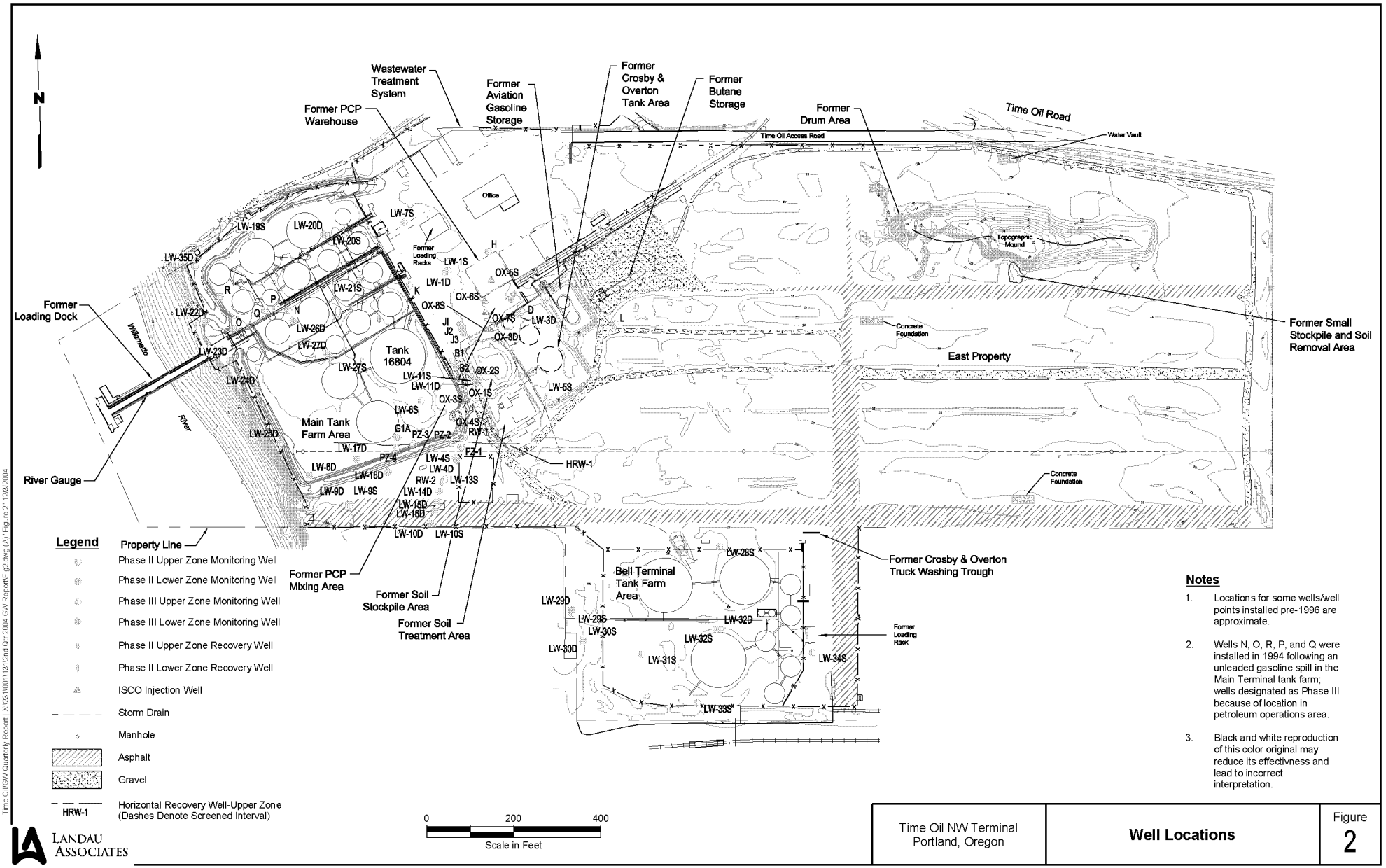
Time Oil NW Terminal Portland, Oregon	**Vicinity Map**	Figure 1



Notes

1. Locations for some wells/well points installed pre-1996 are approximate.
2. Wells N, O, R, P, and Q were installed in 1994 following an unleaded gasoline spill in the Main Terminal tank farm; wells designated as Phase III because of location in petroleum operations area.
3. Black and white reproduction of this color original may reduce its effectivness and lead to incorrect interpretation.

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Time Oil NW Terminal Portland, Oregon	**Well Locations**	Figure 2

Time Oil\GW Quarterly Report I X:\231\00\13\12nd Qtr 2004 GW Report\Fig2.dwg (A) "Figure 2" 12/9/2004

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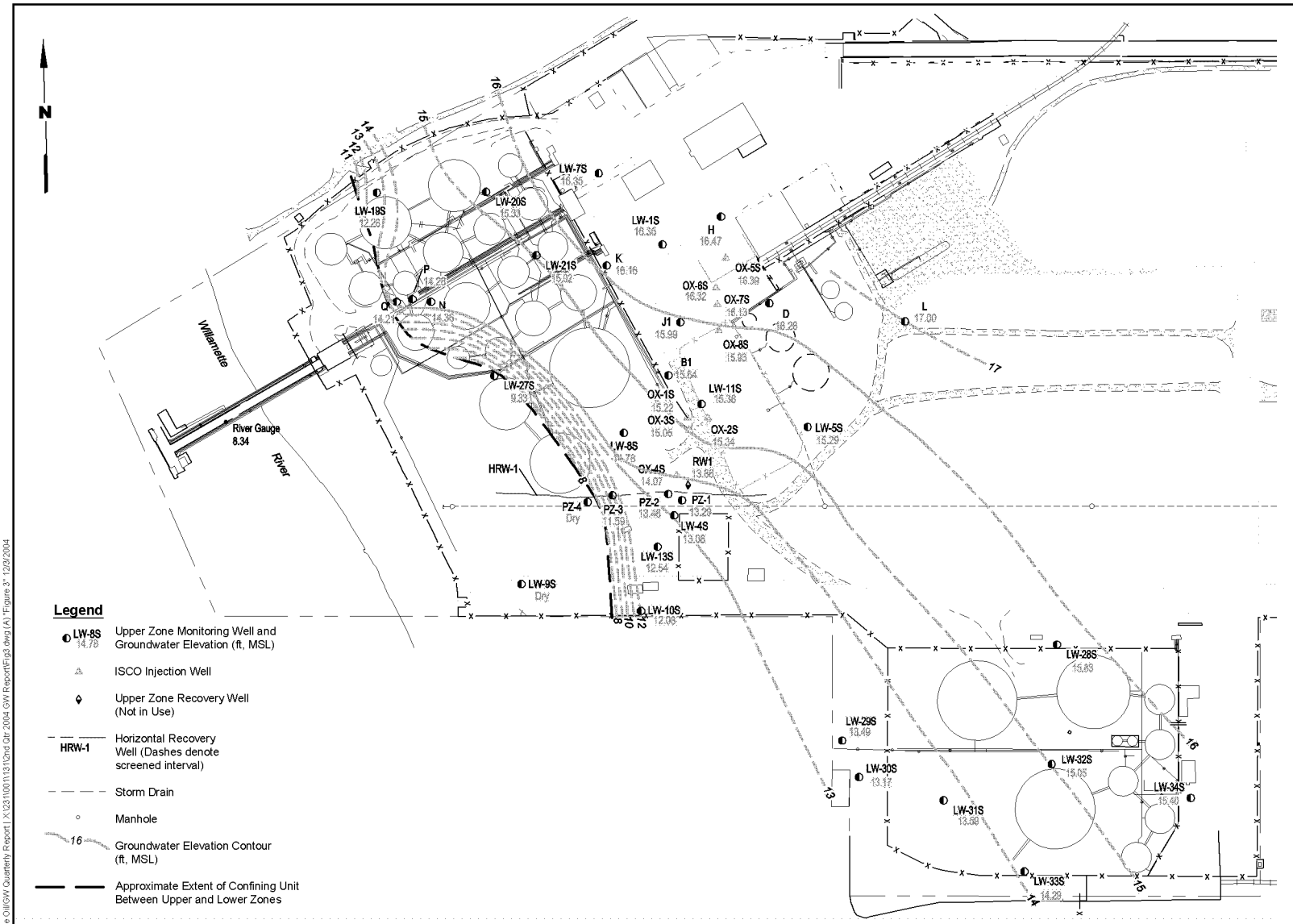

Notes

1. Groundwater levels measured on June 9, 2004.
2. Data presented to west of confining unit boundary represent groundwater elevations where the upper and lower zones converge.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Upper Zone June 2004**	Figure **3**

Time Oil\GW Quarterly Report I X:\231\001\13\12nd Qtr 2004 GW Report\Fig3.dwg (A) "Figure 3" 12/9/2004

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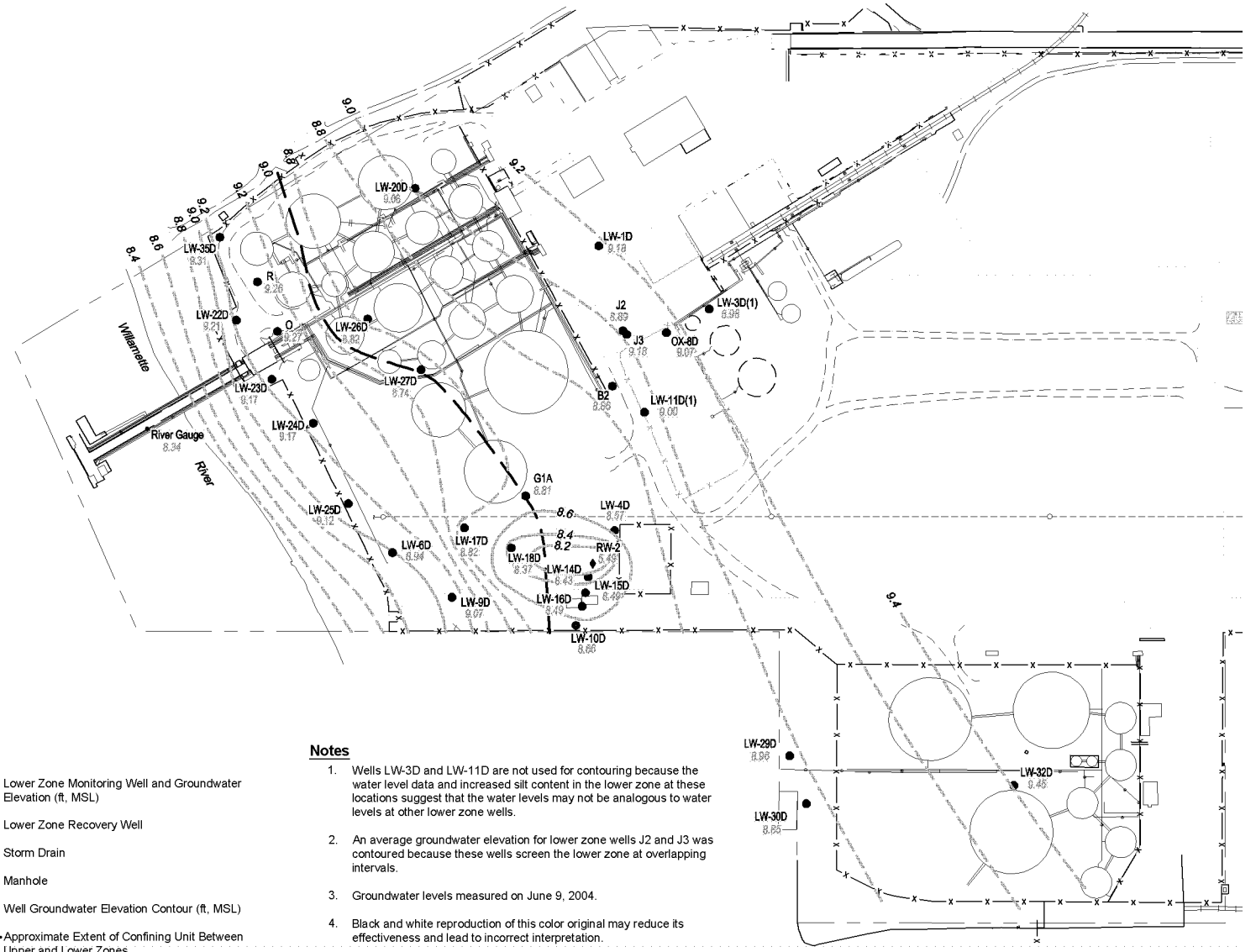

Legend

- G1A 8.21 — Lower Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- Lower Zone Recovery Well
- Storm Drain
- Manhole
- 7.8 — Well Groundwater Elevation Contour (ft, MSL)
- Approximate Extent of Confining Unit Between Upper and Lower Zones

Notes

1. Wells LW-3D and LW-11D are not used for contouring because the water level data and increased silt content in the lower zone at these locations suggest that the water levels may not be analogous to water levels at other lower zone wells.
2. An average groundwater elevation for lower zone wells J2 and J3 was contoured because these wells screen the lower zone at overlapping intervals.
3. Groundwater levels measured on June 9, 2004.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 150 300
Scale in Feet

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Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Lower Zone June 2004**	Figure 4

Time Oil\GW Quarterly Report I X:\231\00\13\12nd Qtr 2004 GW Report\Fig4.dwg (A) "Figure 4" 12/9/2004

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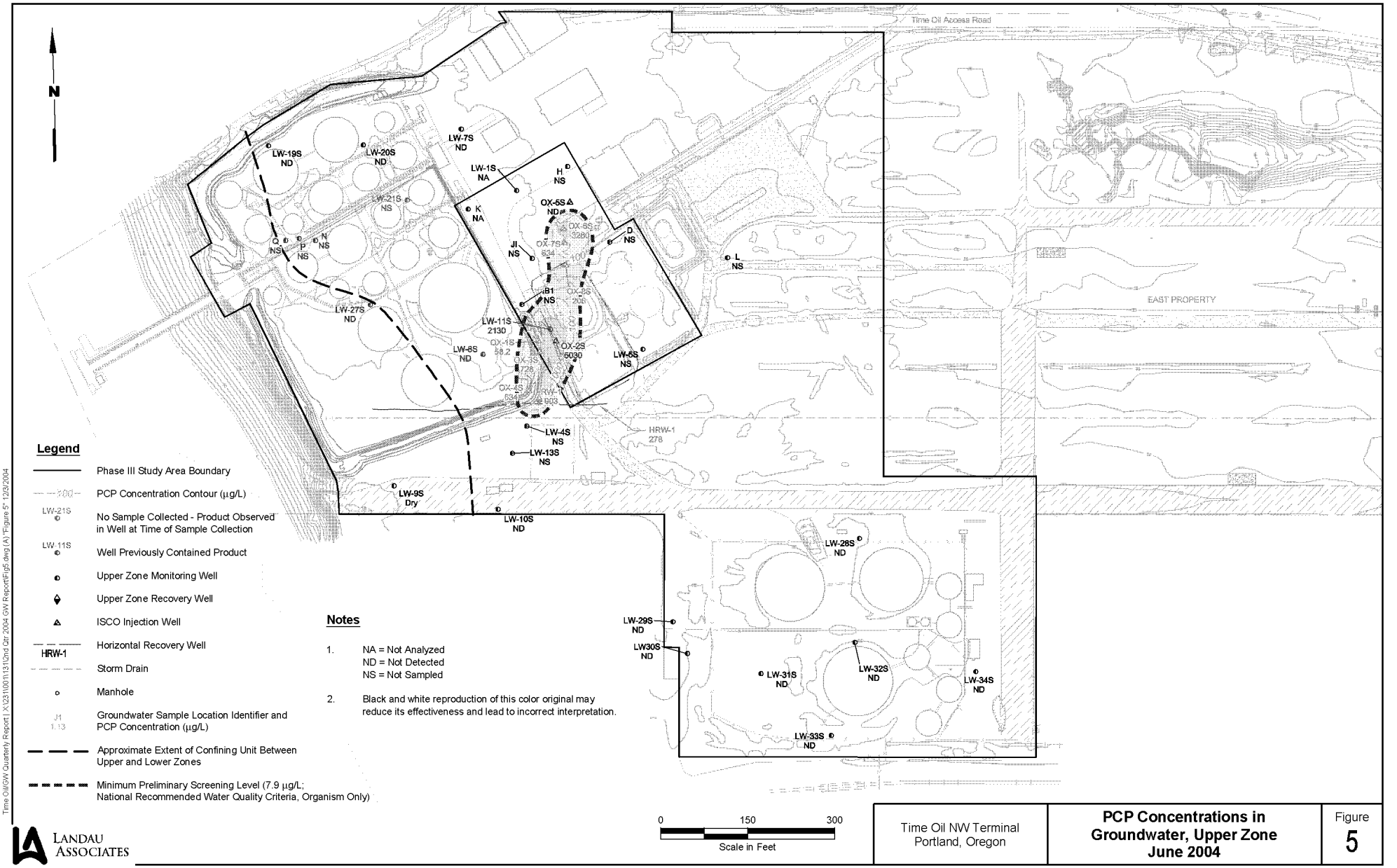

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations in Groundwater, Upper Zone June 2004**	Figure **5**

Time Oil\GW Quarterly Report [X:\231\00113\12nd Qtr 2004 GW Report\Fig5.dwg (A) "Figure 5" 12/9/2004

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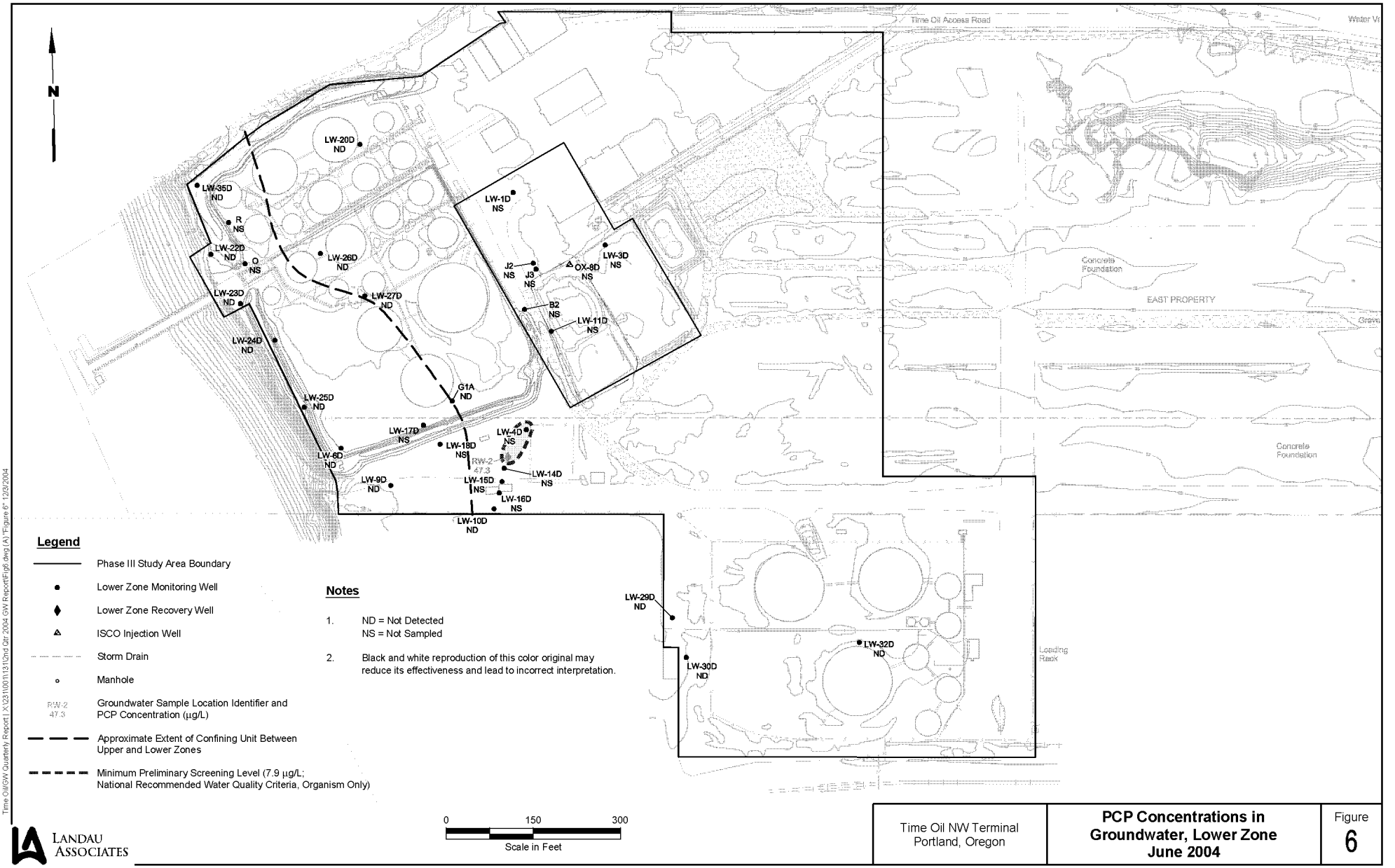

Time Oil\GW Quarterly Report \ X:\231\00\13\12nd Qtr 2004 GW Report\Fig6.dwg [A] "Figure 6" 12/9/2004

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations in Groundwater, Lower Zone June 2004**	Figure **6**

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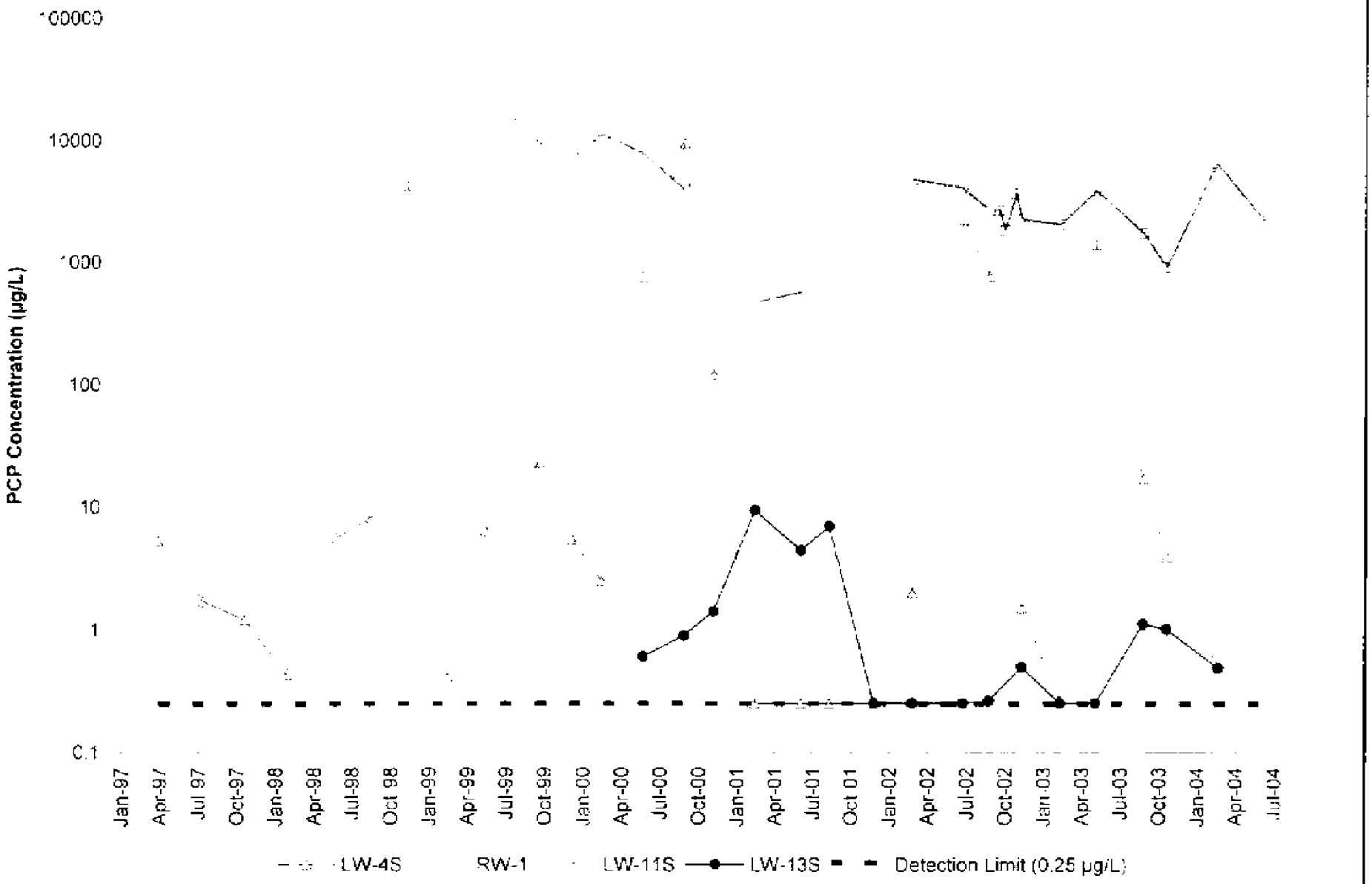

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations, Selected Upper Zone Wells April 1997 – April 2004**	Figure 7

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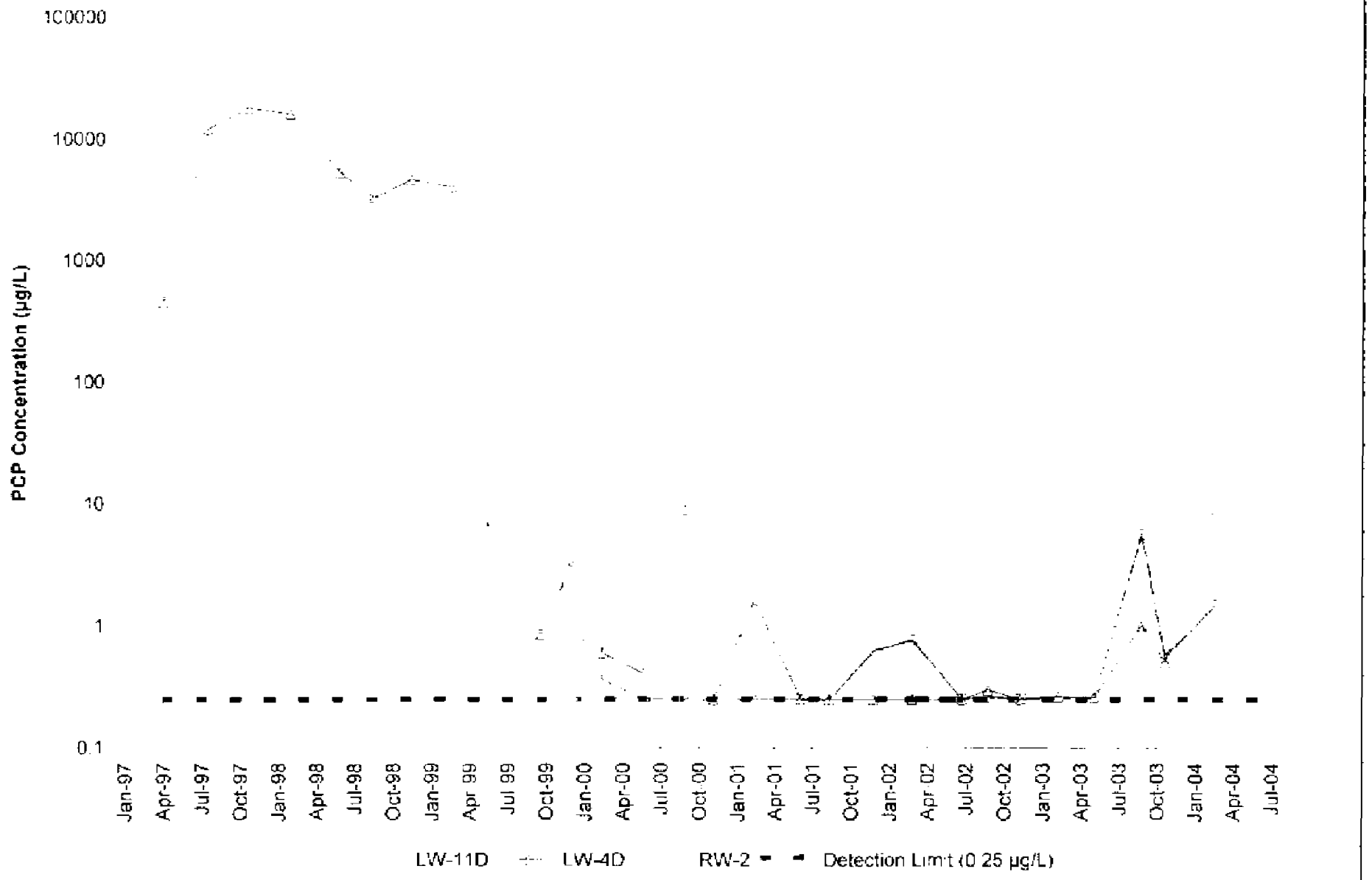

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Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Lower Zone Wells
April 1997 – April 2004**

Figure
8

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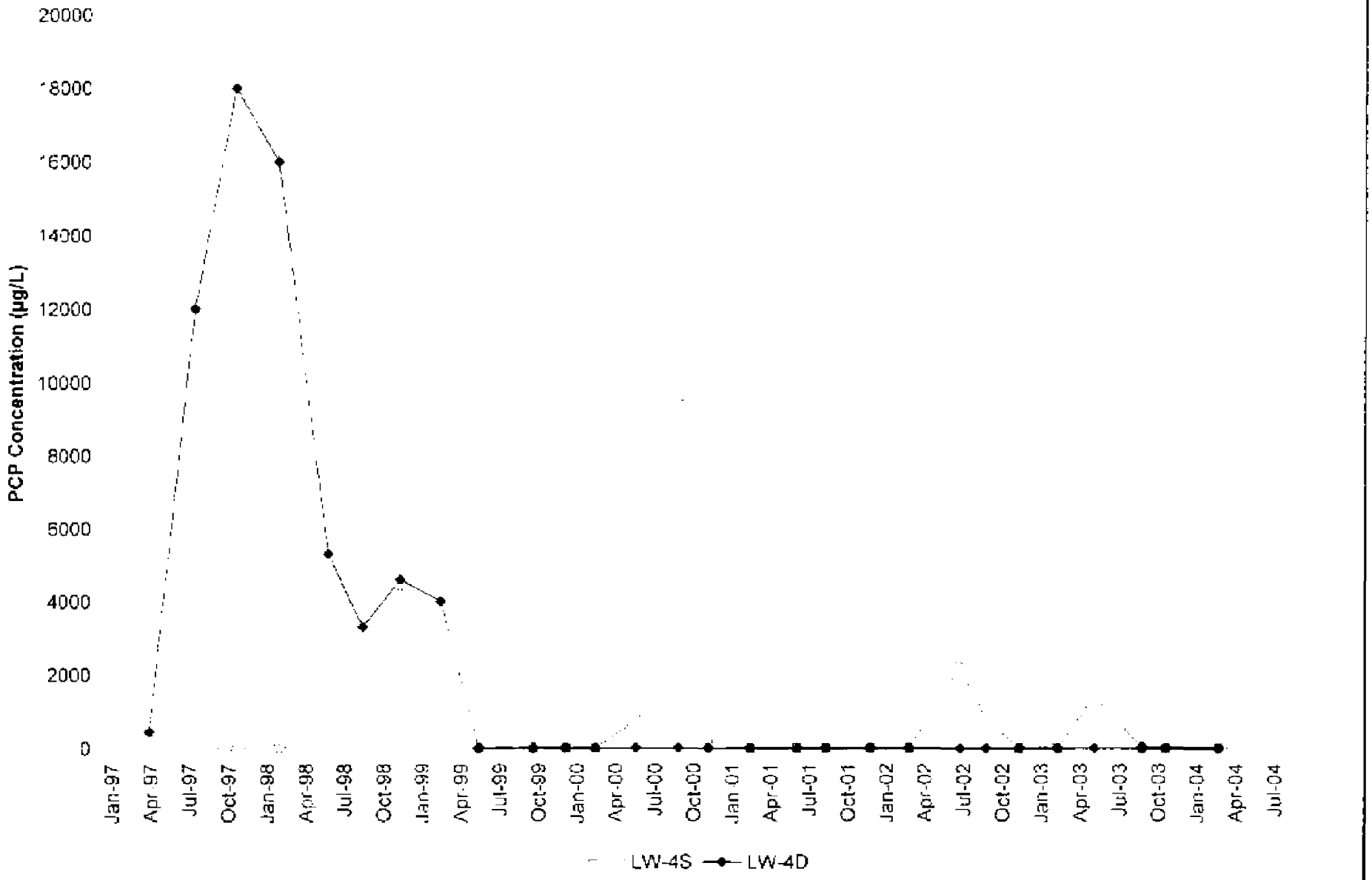

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations, Wells LW-4S and LW-4D, April 1997 – February 2004**	Figure 9

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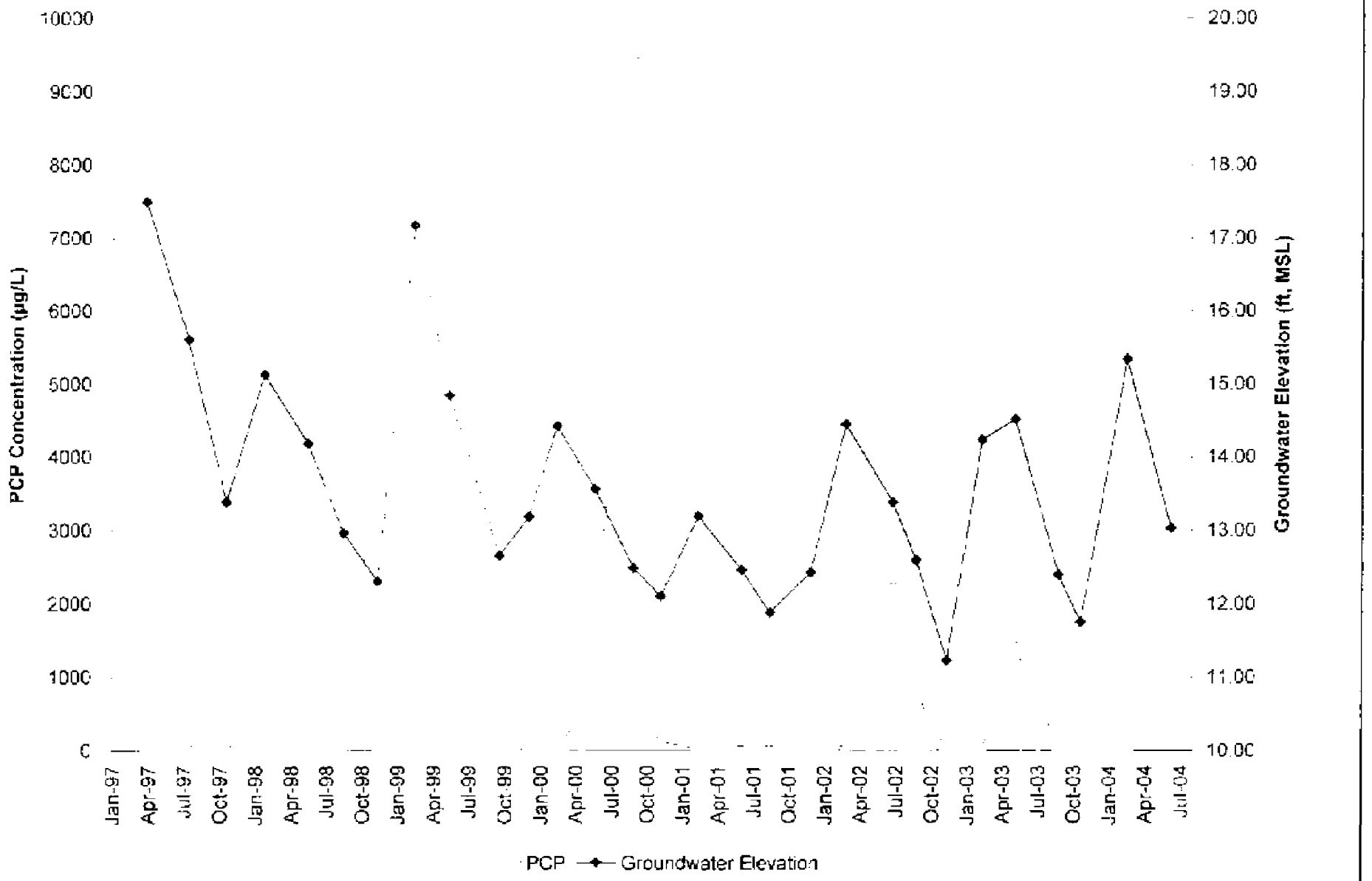

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations and Groundwater Elevations, LW-4S April 1997 – April 2004**	Figure 10

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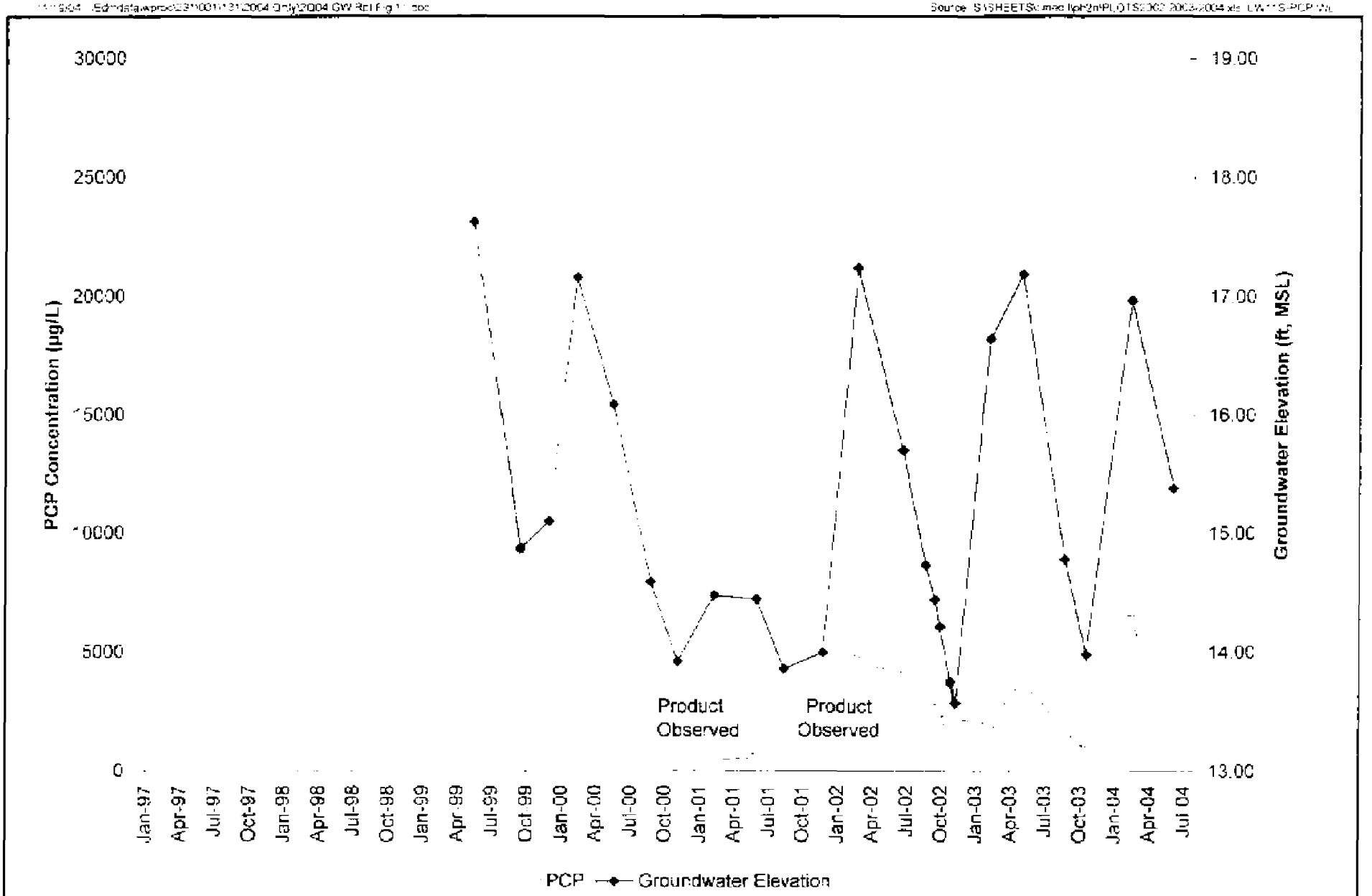

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Time Oil NW Terminal
Portland, Oregon

PCP Concentrations and Groundwater Elevations, LW-11S
April 1997 – April 2004

Figure
11

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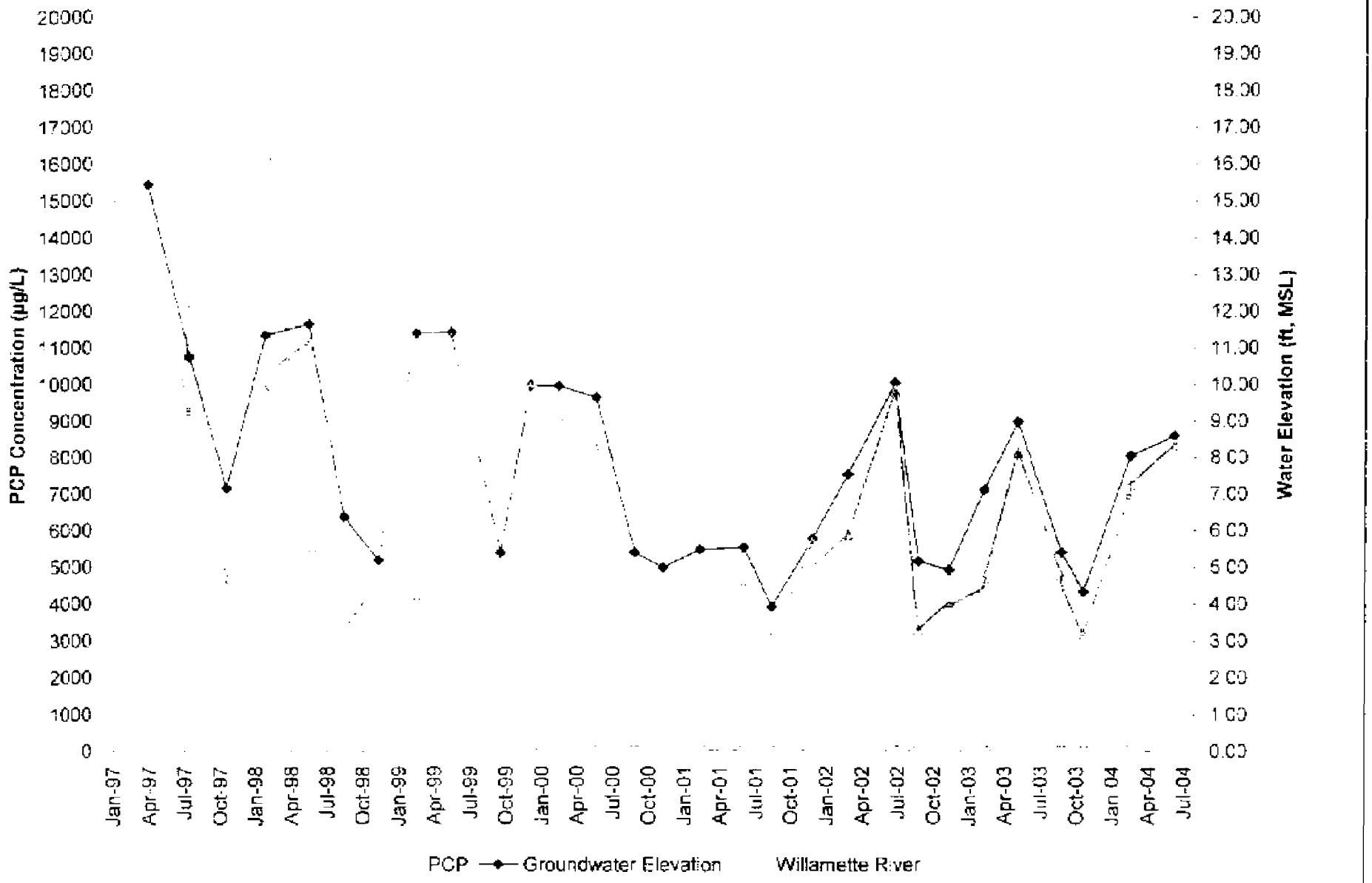

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Time Oil NW Terminal Portland Oregon	**PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D April 1997 – April 2004**	Figure 12

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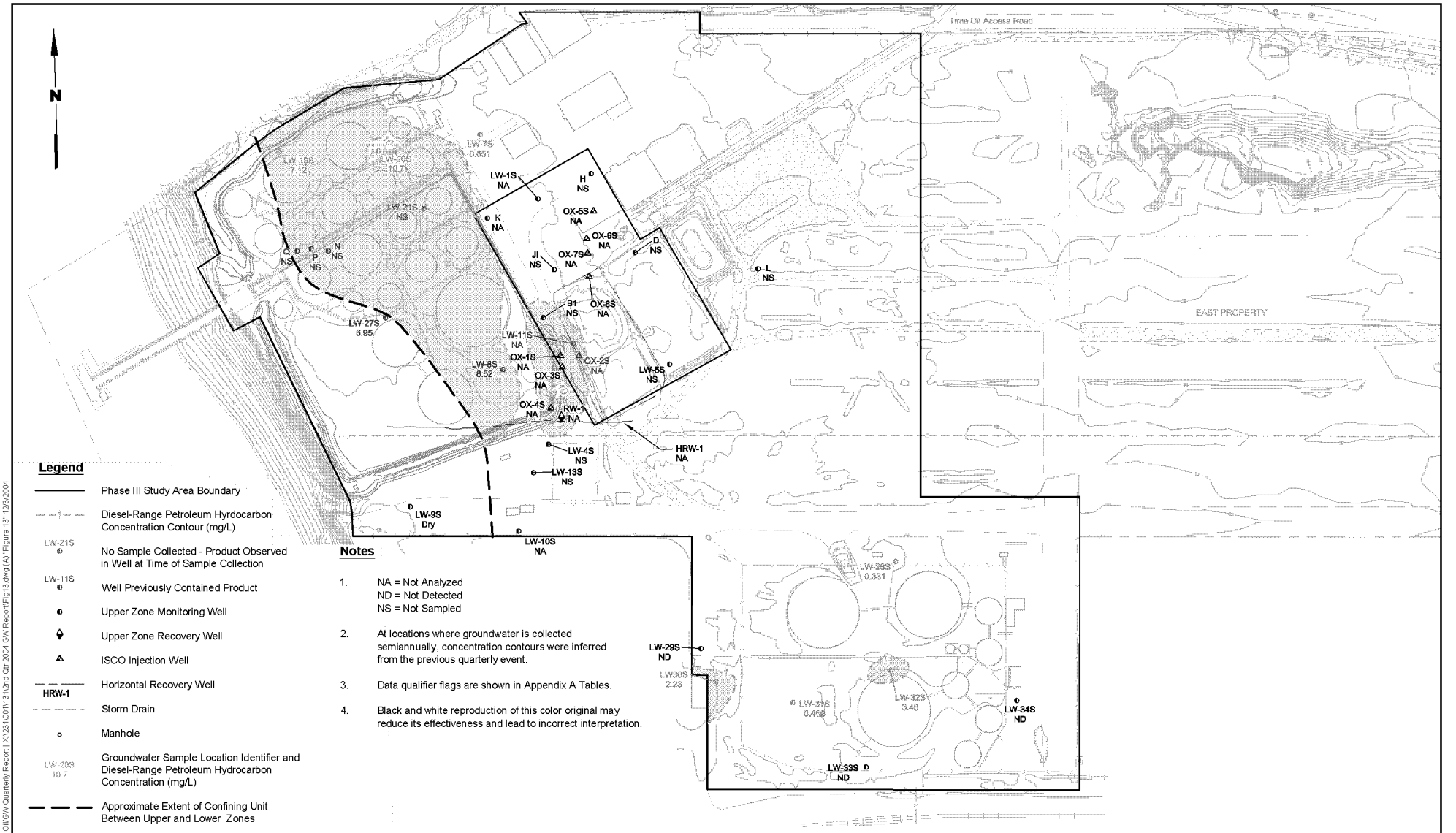

Time Oil/GW Quarterly Report I:\X23\100\13\2nd Qtr 2004 GW Report\Fig13.dwg (A) Figure 13" 1/23/2004

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Time Oil NW Terminal Portland, Oregon	**Diesel-Range Petroleum Hydrocarbons in Groundwater Upper Zone, June 2004**	Figure 13

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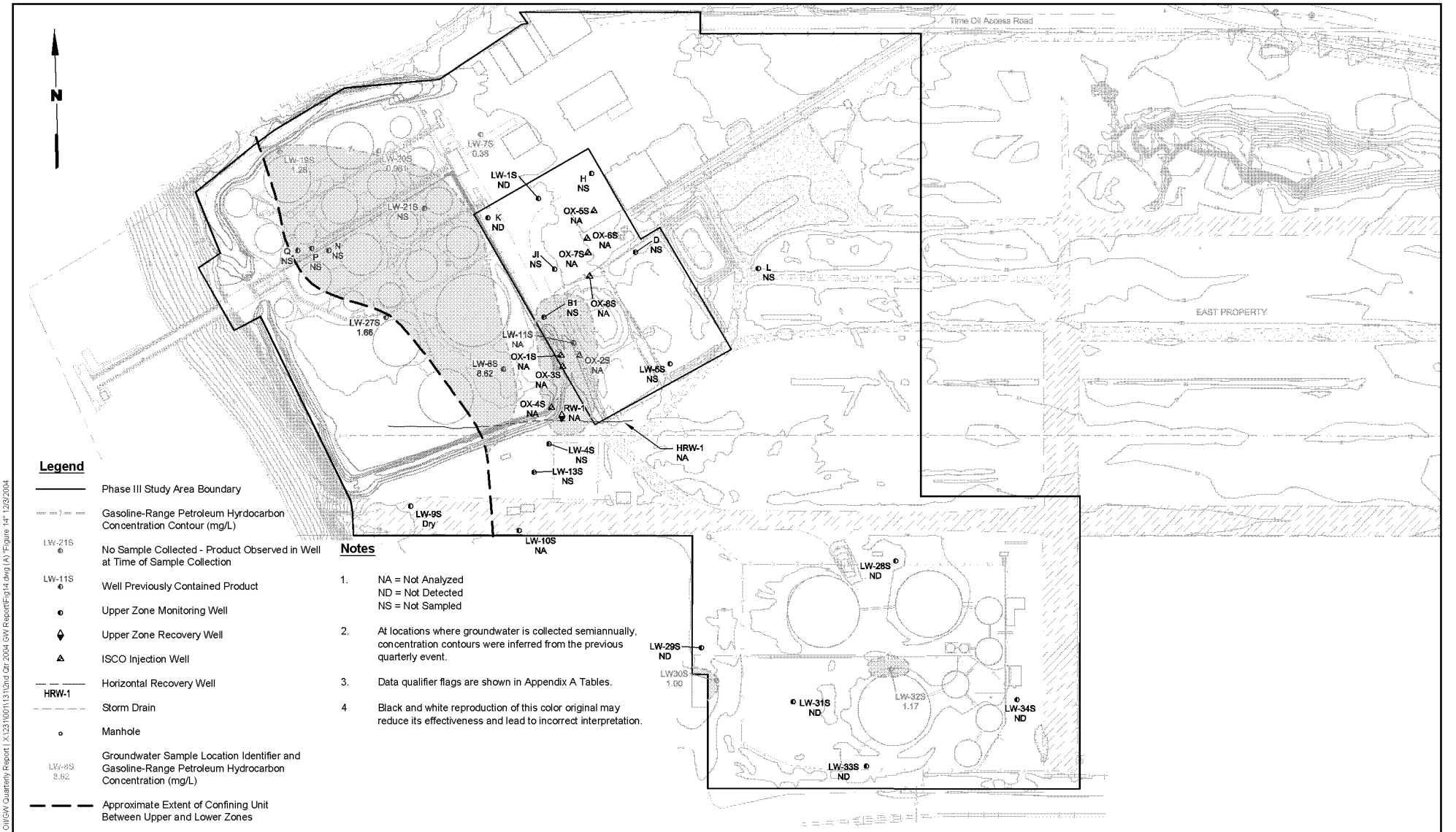

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Time Oil NW Terminal Portland, Oregon	**Gasoline-Range Petroleum Hydrocarbons in Groundwater Upper Zone, June 2004**	Figure 14

Time Oil\GW Quarterly Report I:\X\23110011312nd Qtr 2004 GW Report\Fig14.dwg (A) 'Figure 14' 12/3/2004

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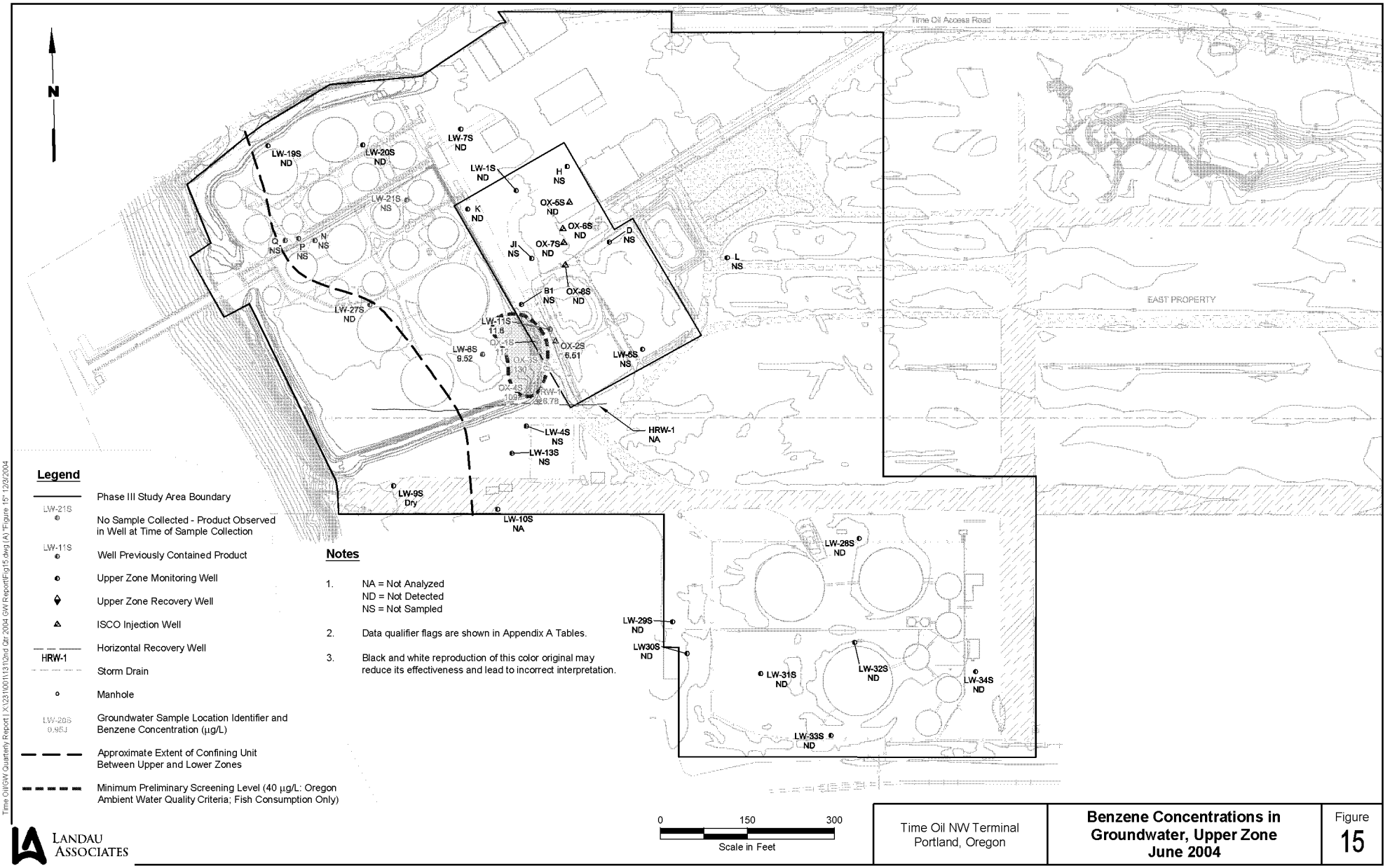

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Time Oil NW Terminal Portland, Oregon	**Benzene Concentrations in Groundwater, Upper Zone June 2004**	Figure **15**

Time Oil\GW Quarterly Report I:\X\23110011313\2nd Qtr 2004 GW Report\Fig15.dwg (A) Figure 15 12/3/2004

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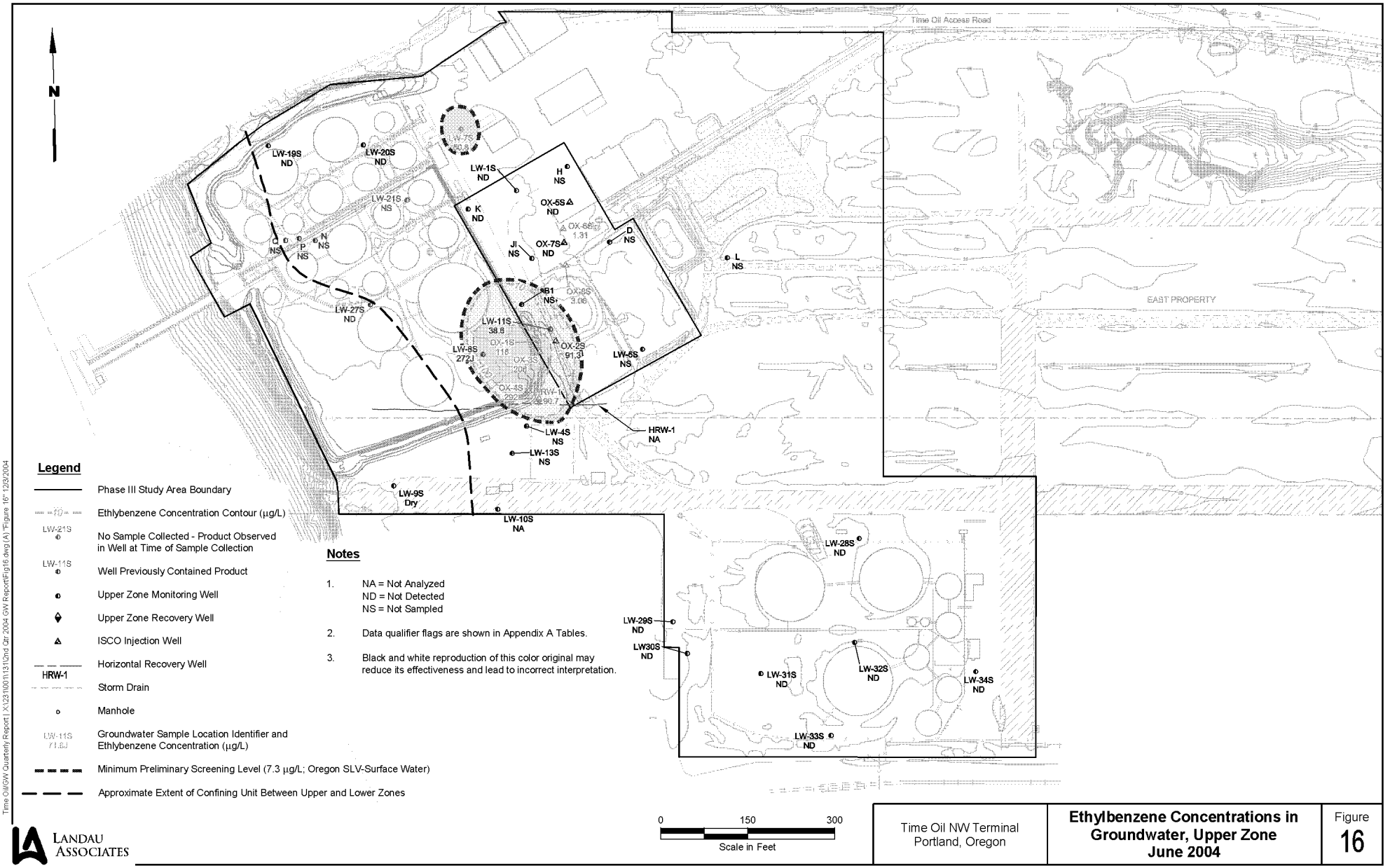

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Ethylbenzene Concentrations in Groundwater, Upper Zone June 2004**	Figure 16

Time Oil\GW Quarterly Report [X:\231\00\13\12nd Qtr 2004 GW Report\Fig16.dwg (A) "Figure 16" 12/3/2004

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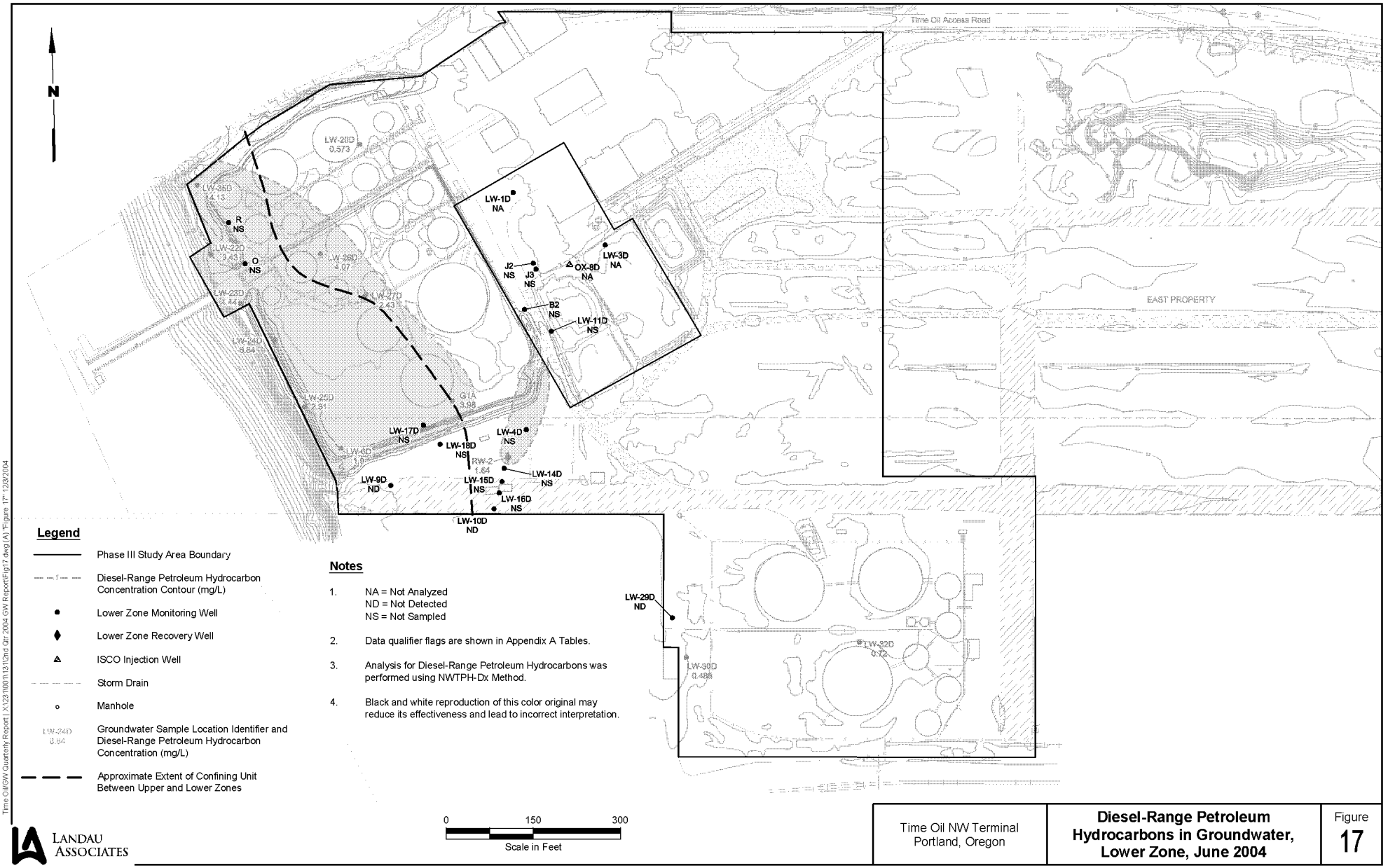
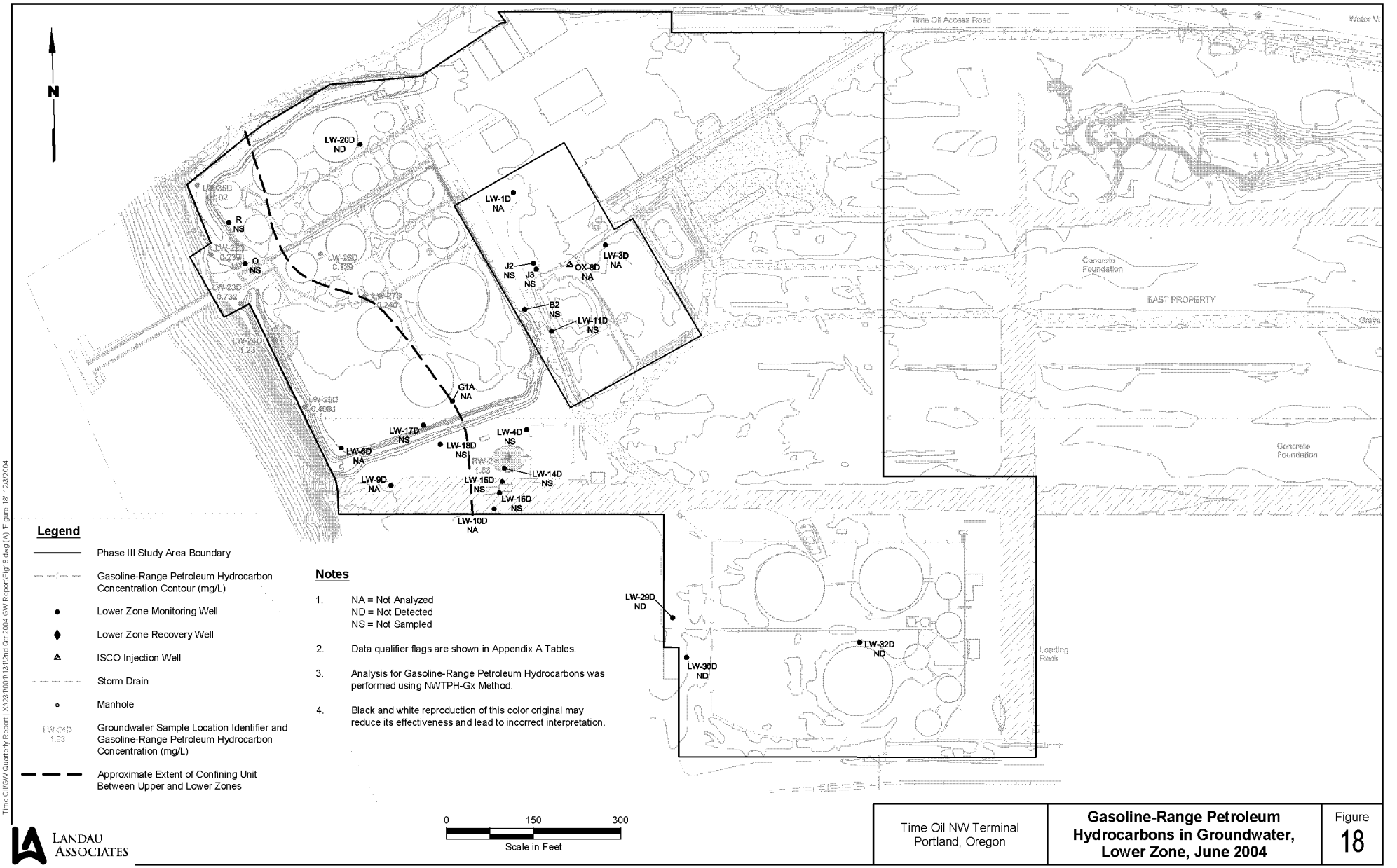


Time Oil/GW Quarterly Report \ X:\23\00\13\12nd Qtr 2004 GW Report\Fig17.dwg (A) "Figure 17" 12/3/2004

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range Petroleum Hydrocarbons in Groundwater, Lower Zone, June 2004**	Figure 17

BZTO104(e)017777

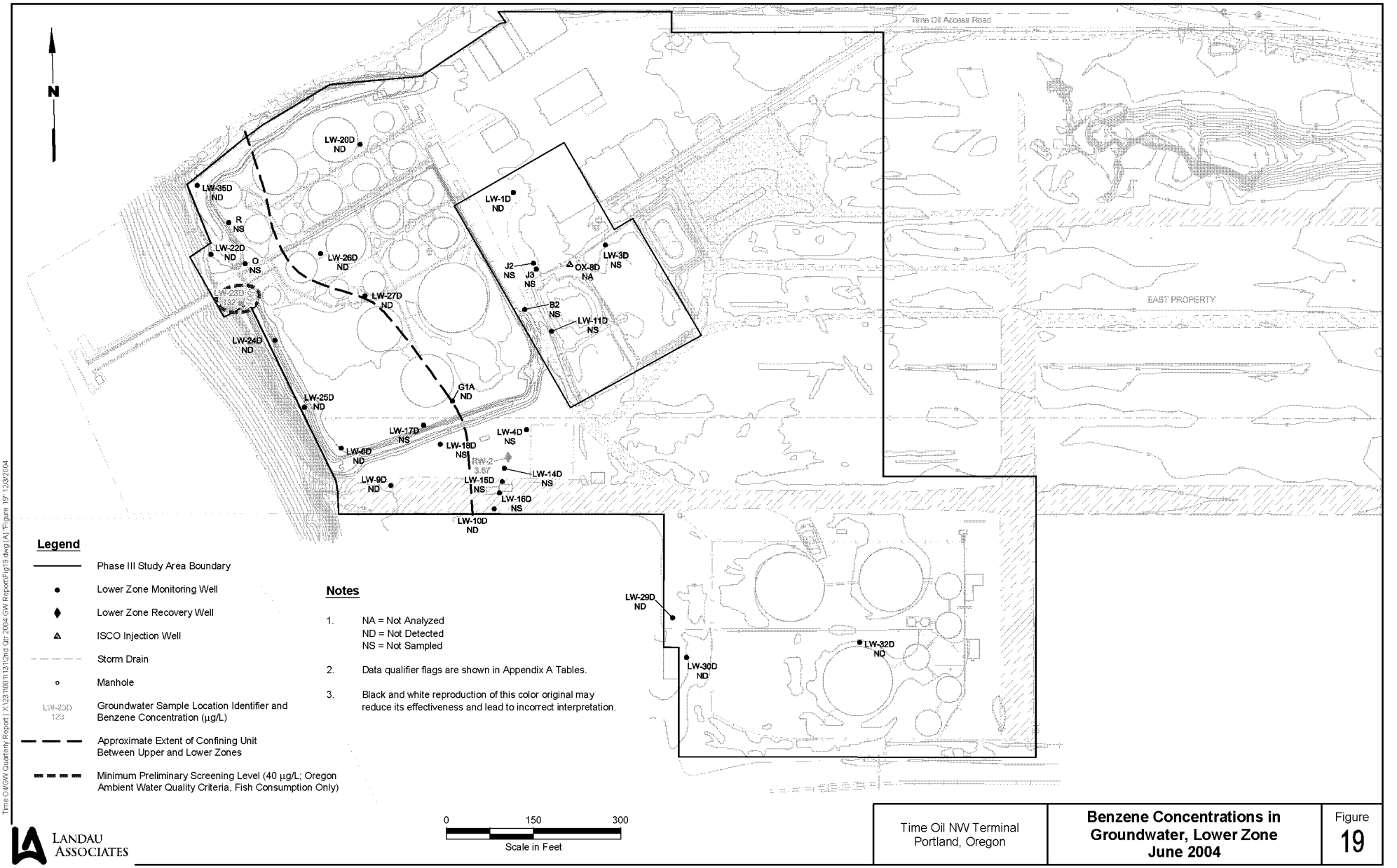


Time Oil\GW Quarterly Report \ X:\23\00\13\12nd Qtr 2004 GW Report\Fig18.dwg (A) "Figure 18" 12/3/2004

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Gasoline-Range Petroleum Hydrocarbons in Groundwater, Lower Zone, June 2004**	Figure 18

BZTO104(e)017778



Legend

- Phase III Study Area Boundary
- Lower Zone Monitoring Well
- Lower Zone Recovery Well
- ISCO Injection Well
- Storm Drain
- Manhole
- LW-23D 123 — Groundwater Sample Location Identifier and Benzene Concentration (µg/L)
- Approximate Extent of Confining Unit Between Upper and Lower Zones
- Minimum Preliminary Screening Level (40 µg/L; Oregon Ambient Water Quality Criteria, Fish Consumption Only)

Notes

1. NA = Not Analyzed
   ND = Not Detected
   NS = Not Sampled
2. Data qualifier flags are shown in Appendix A Tables.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

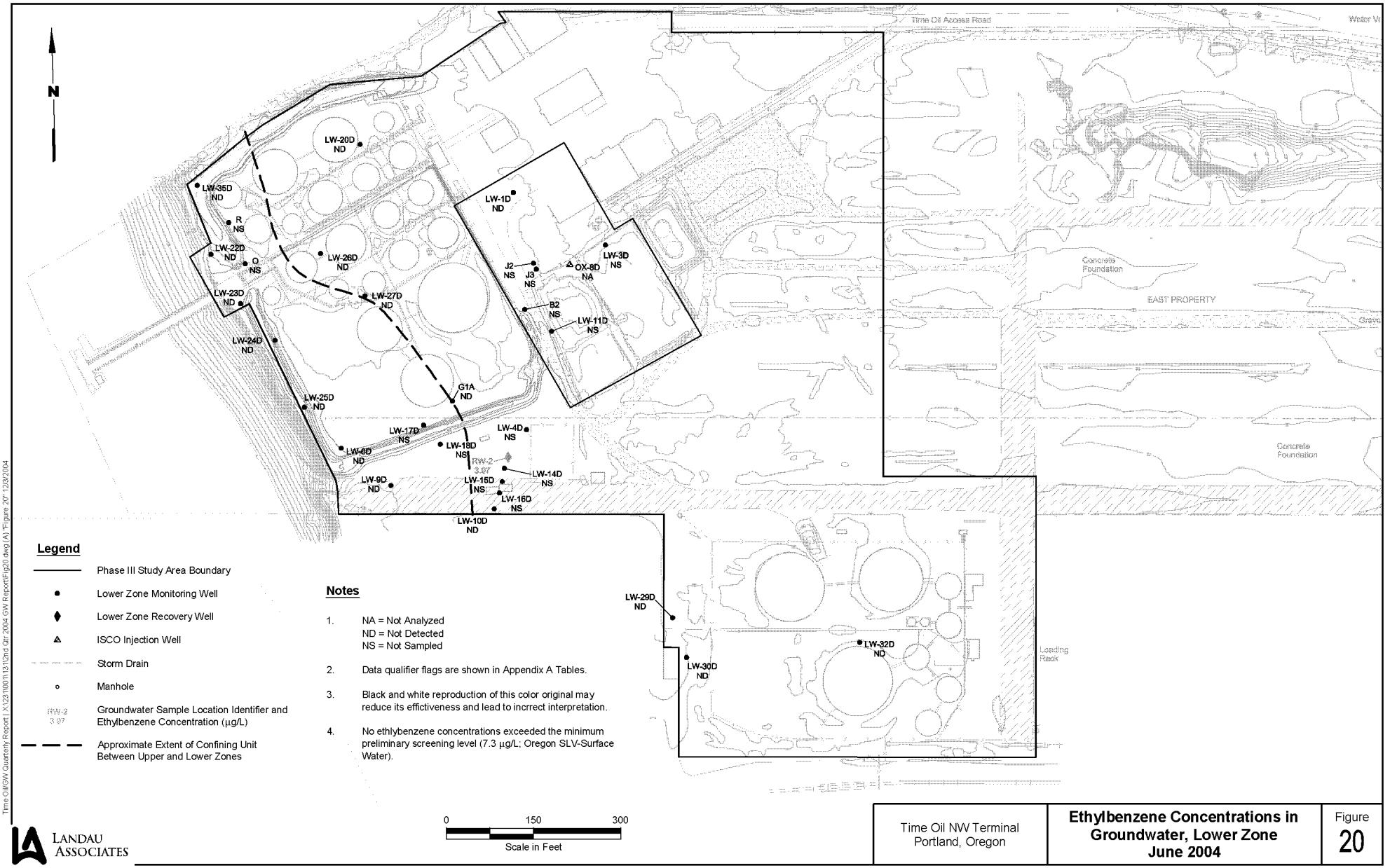
0 150 300
Scale in Feet

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Benzene Concentrations in Groundwater, Lower Zone June 2004**	Figure 19

Time Oil/GW Quarterly Report | X:\231\001\131\2nd Qtr 2004 GW Report\Fig19.dwg (A) "Figure 19" 12/3/2004

BZTO104(e)017779

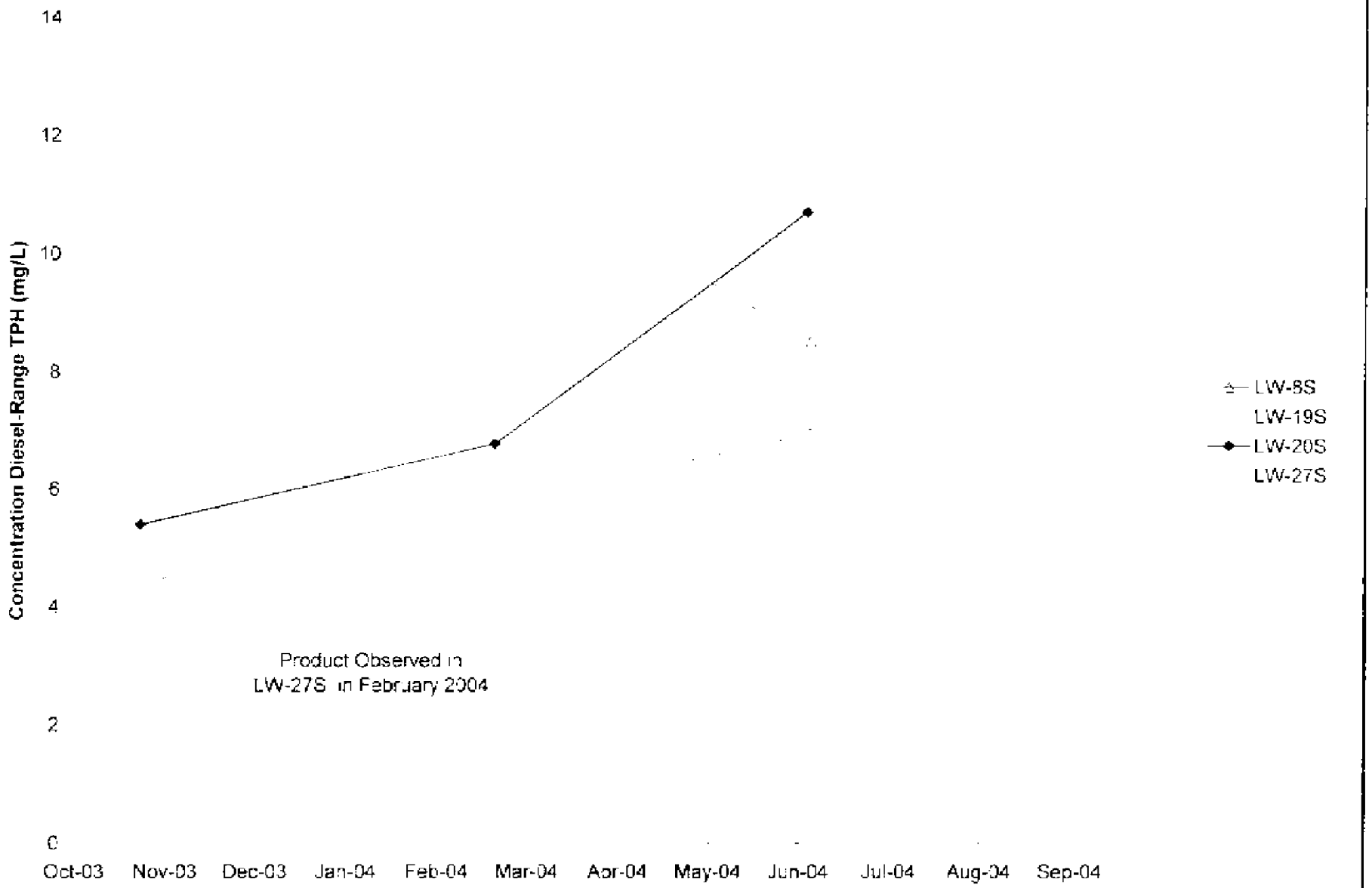


Time Oil\GW Quarterly Report \ X:\231\00\13\12nd Qtr 2004 GW Report\Fig20.dwg (A) "Figure 20" 12/3/2004

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Ethylbenzene Concentrations in Groundwater, Lower Zone June 2004**	Figure 20

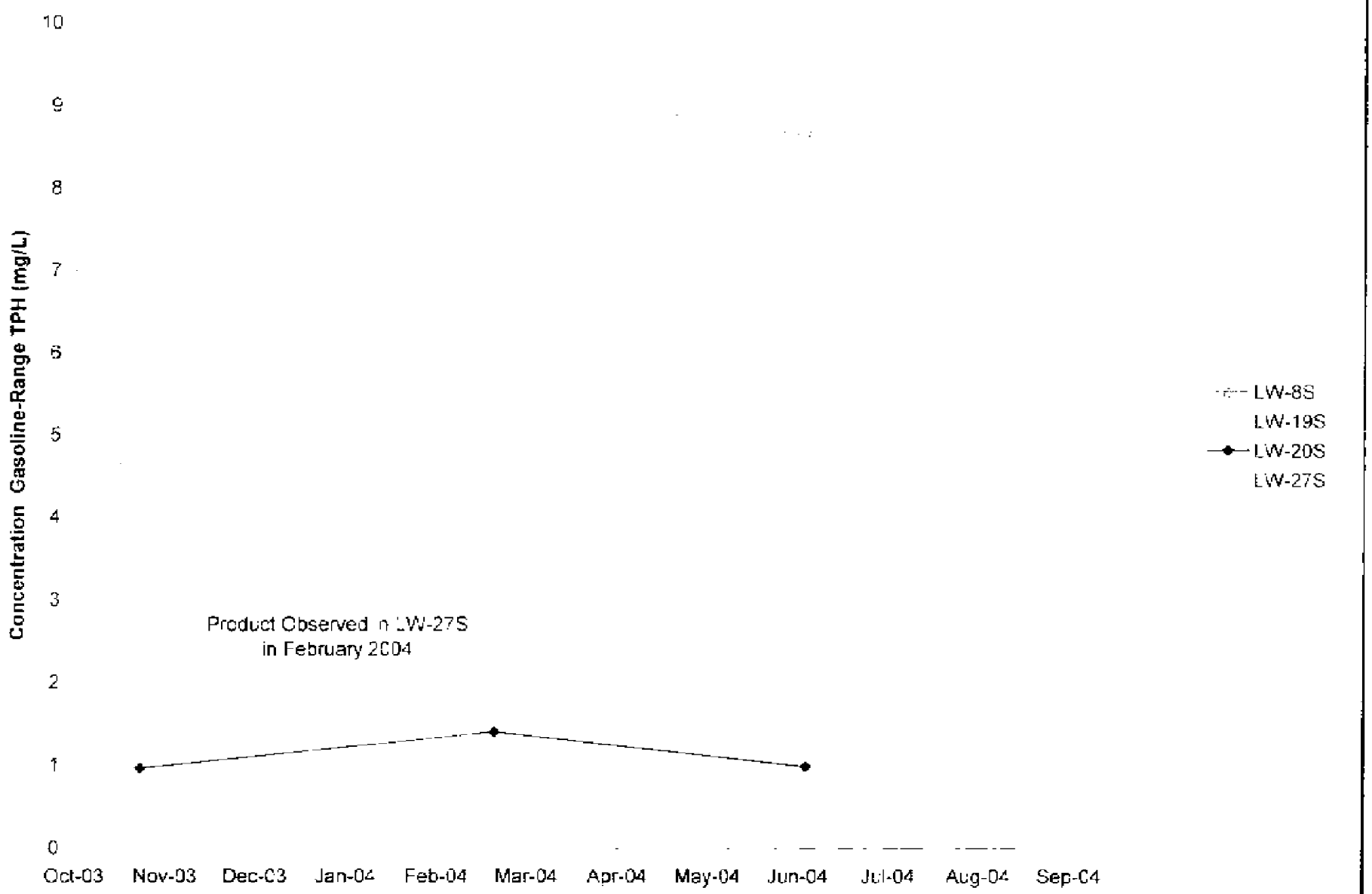
BZTO104(e)017780



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range Hydrocarbons Selected Upper Zone Wells Main Tank Farm Area**	Figure 21

BZTO104(e)017781



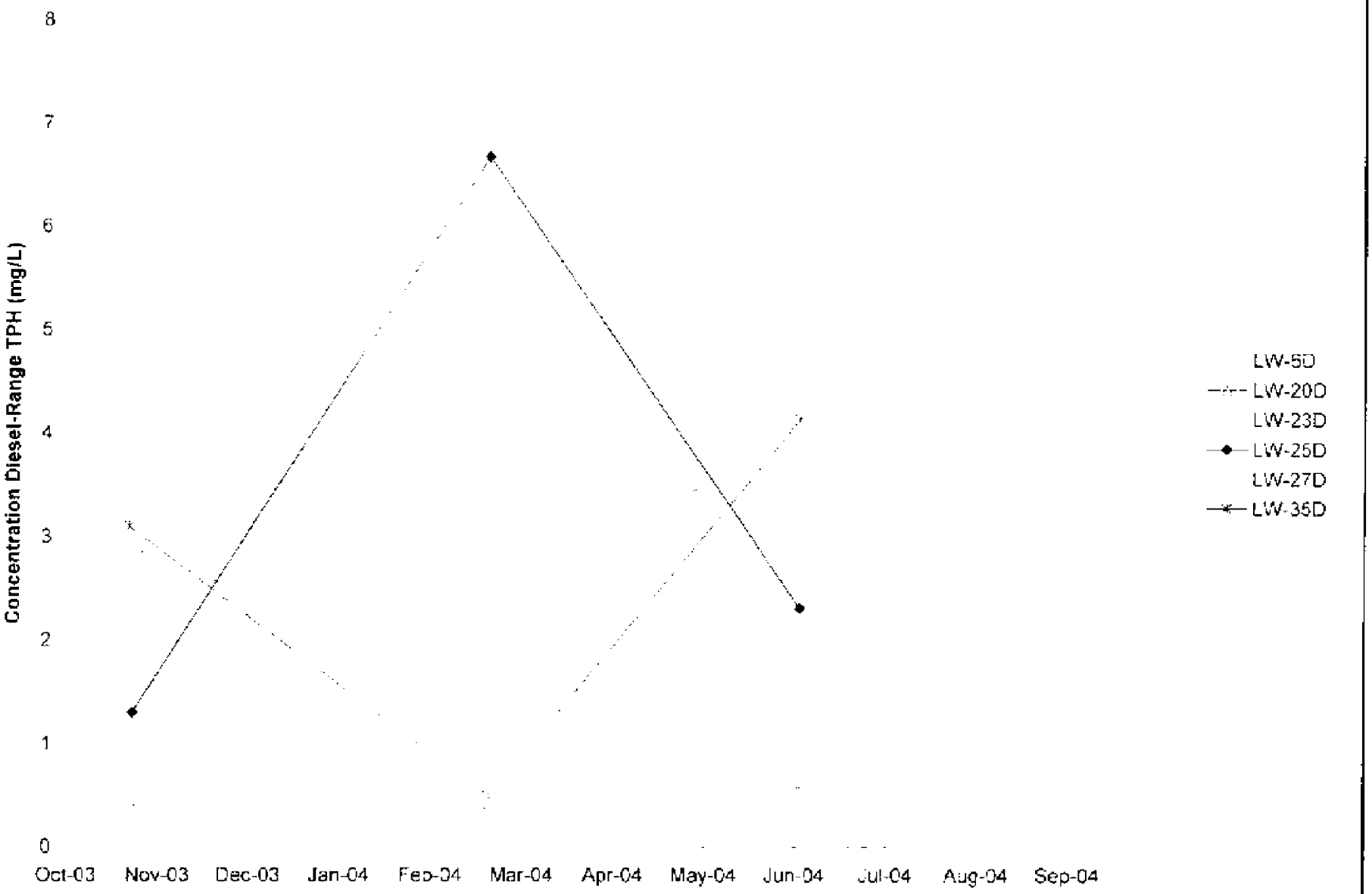
LANDAU ASSOCIATES

Time Oil NW Terminal
Portland, Oregon

Gasoline-Range Hydrocarbons
Selected Upper Zone Wells
Main Tank Farm Area

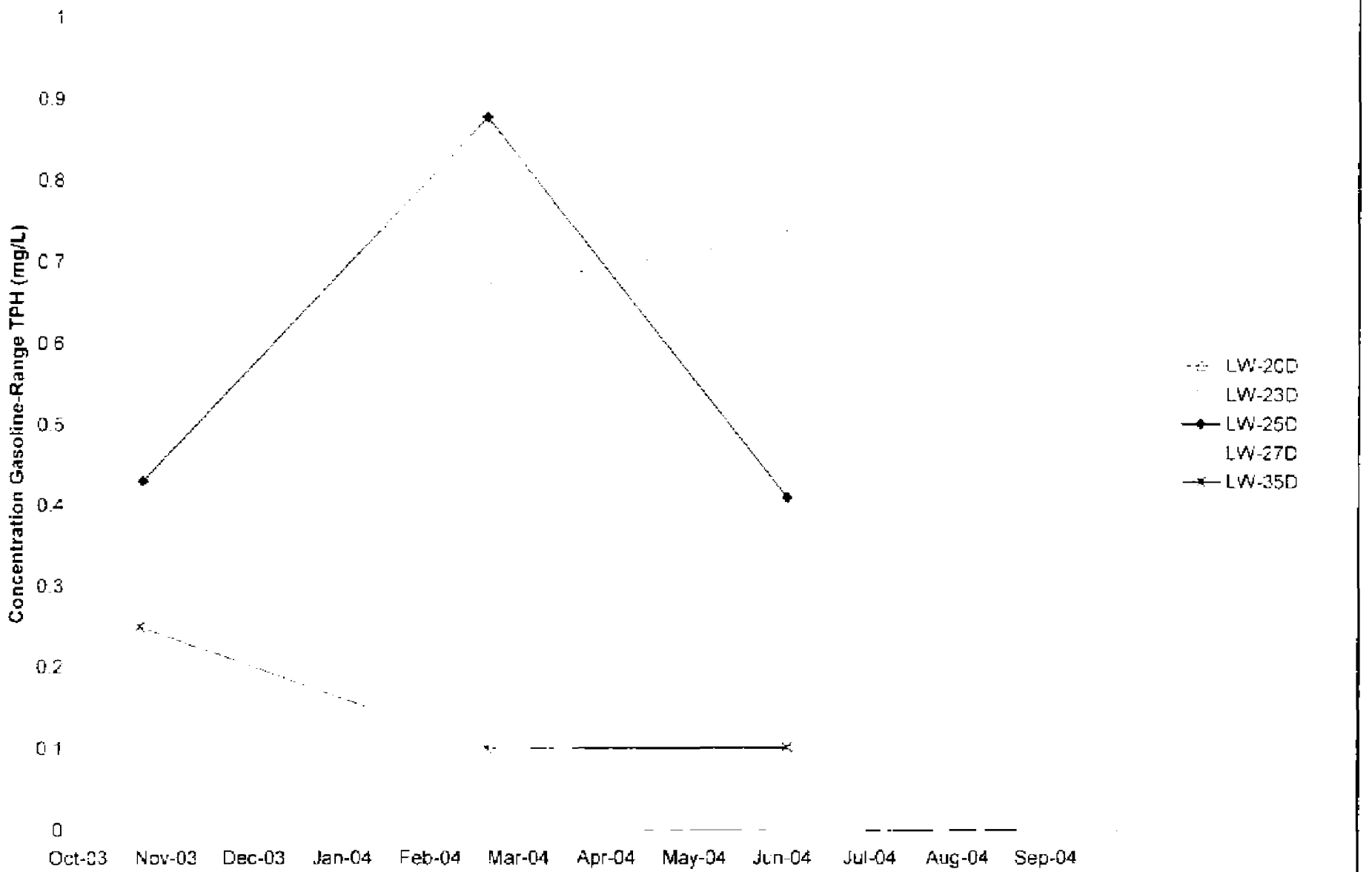
Figure
22

BZTO104(e)017782



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range Hydrocarbons Selected Lower Zone Wells Main Tank Farm Area**	Figure 23



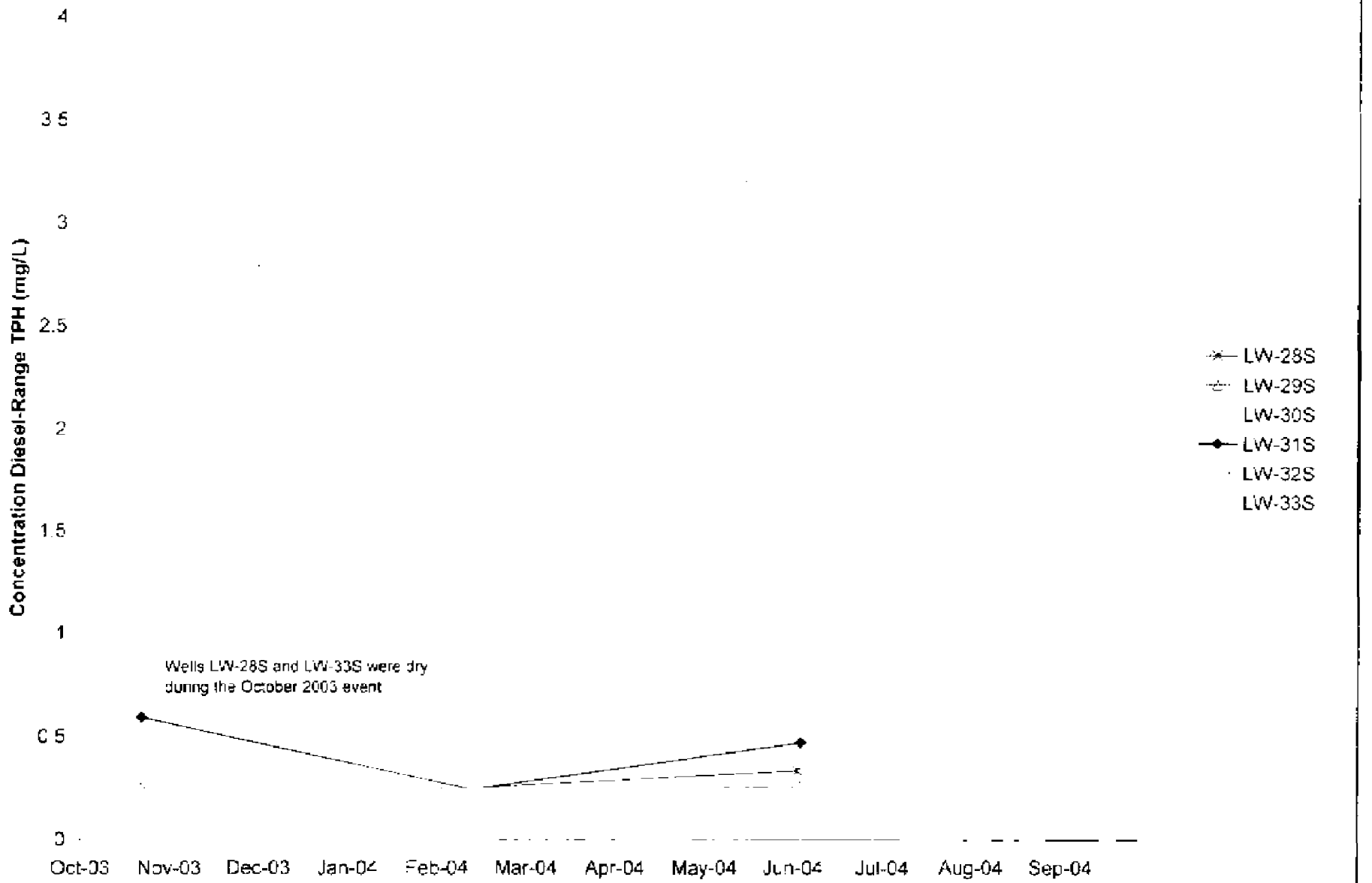
LANDAU ASSOCIATES

Time Oil NW Terminal
Portland, Oregon

Gasoline-Range Hydrocarbons
Selected Lower Zone Wells
Main Tank Farm Area

Figure
24

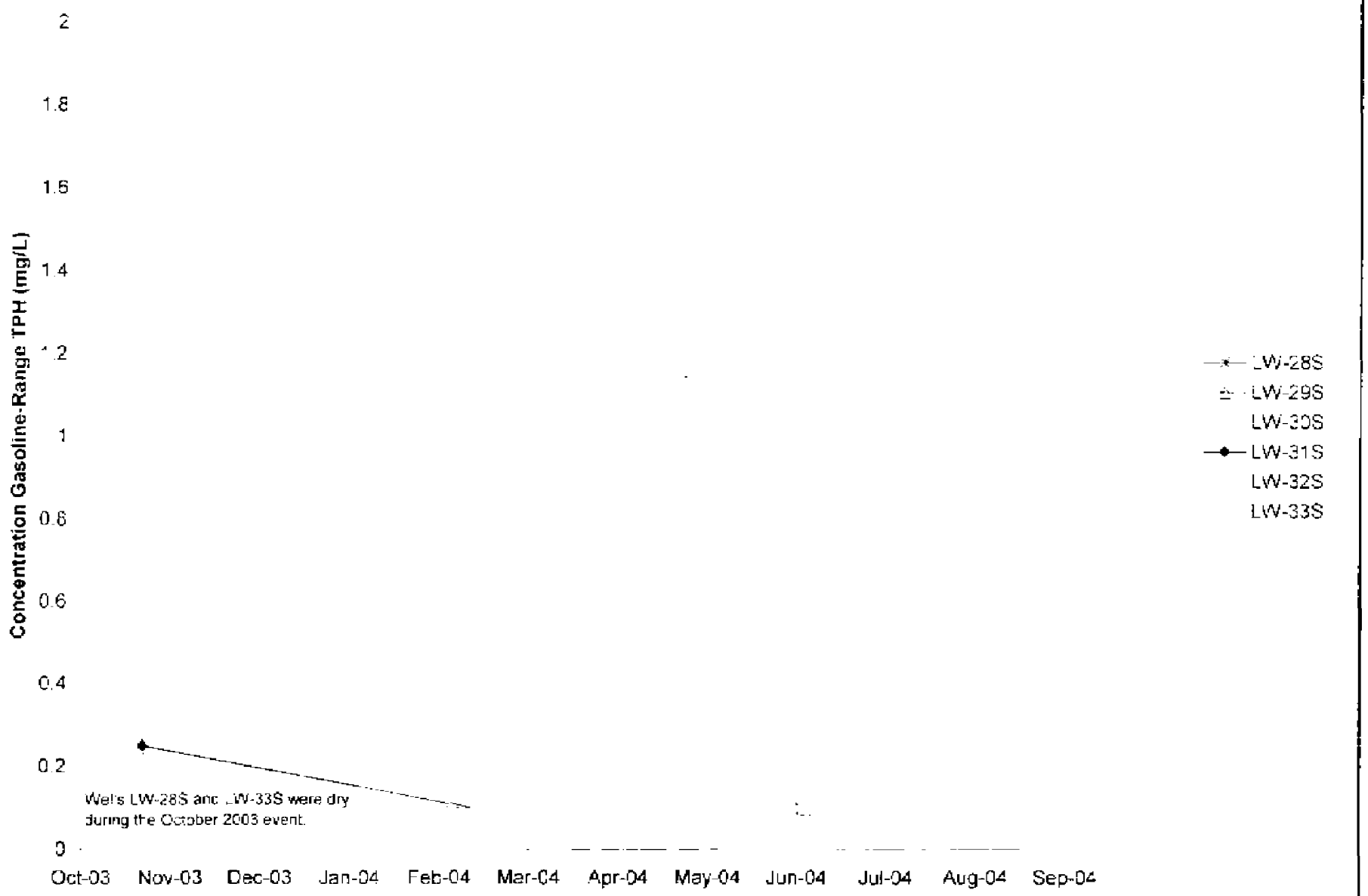
BZT0104(e)017784



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range Hydrocarbons Upper Zone Wells Bell Terminal**	Figure 25

BZTO104(e)017785



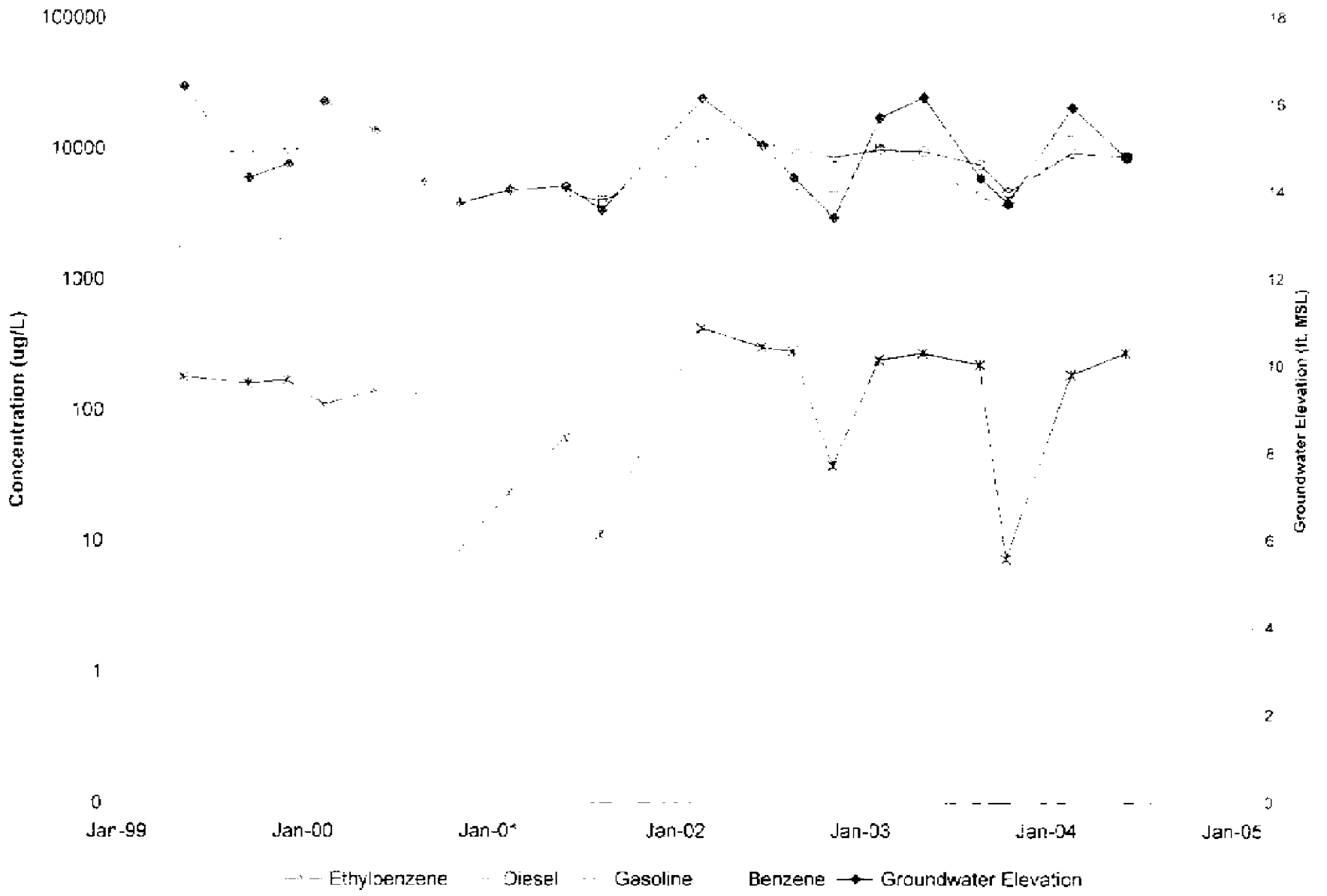
LANDAU ASSOCIATES

Time Oil NW Terminal
Portland, Oregon

Gasoline-Range Hydrocarbons
Upper Zone Wells
Bell Terminal

Figure
26

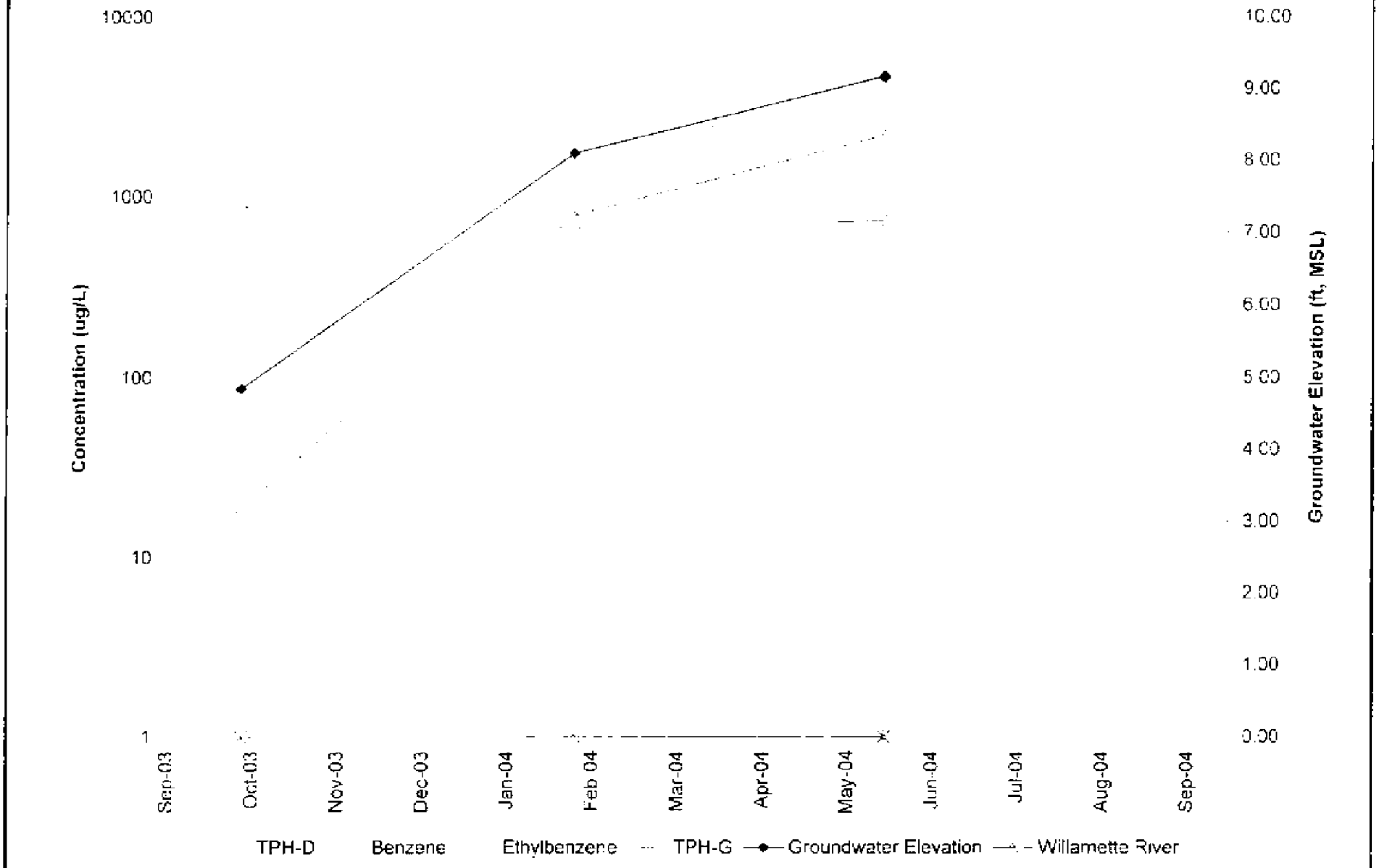
BZTO104(e)017786



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Selected Constituents Well LW-8S, Upper Zone Main Tank Farm Area**	Figure 27

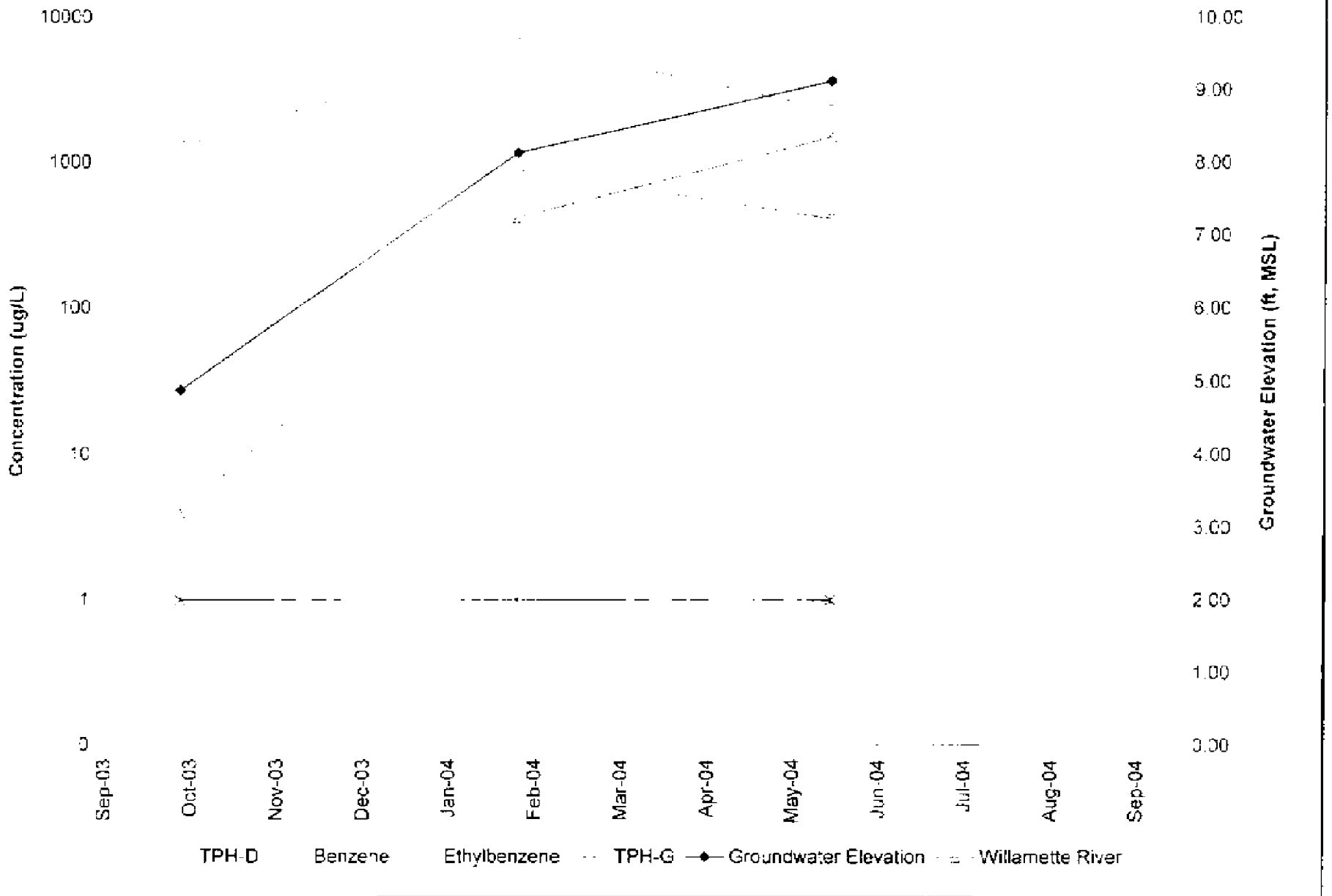
BZT0104(e)017787



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Selected Constituents, Well LW-23D Lower Zone Main Tank Farm Area**	Figure 28

BZTO104(e)017788



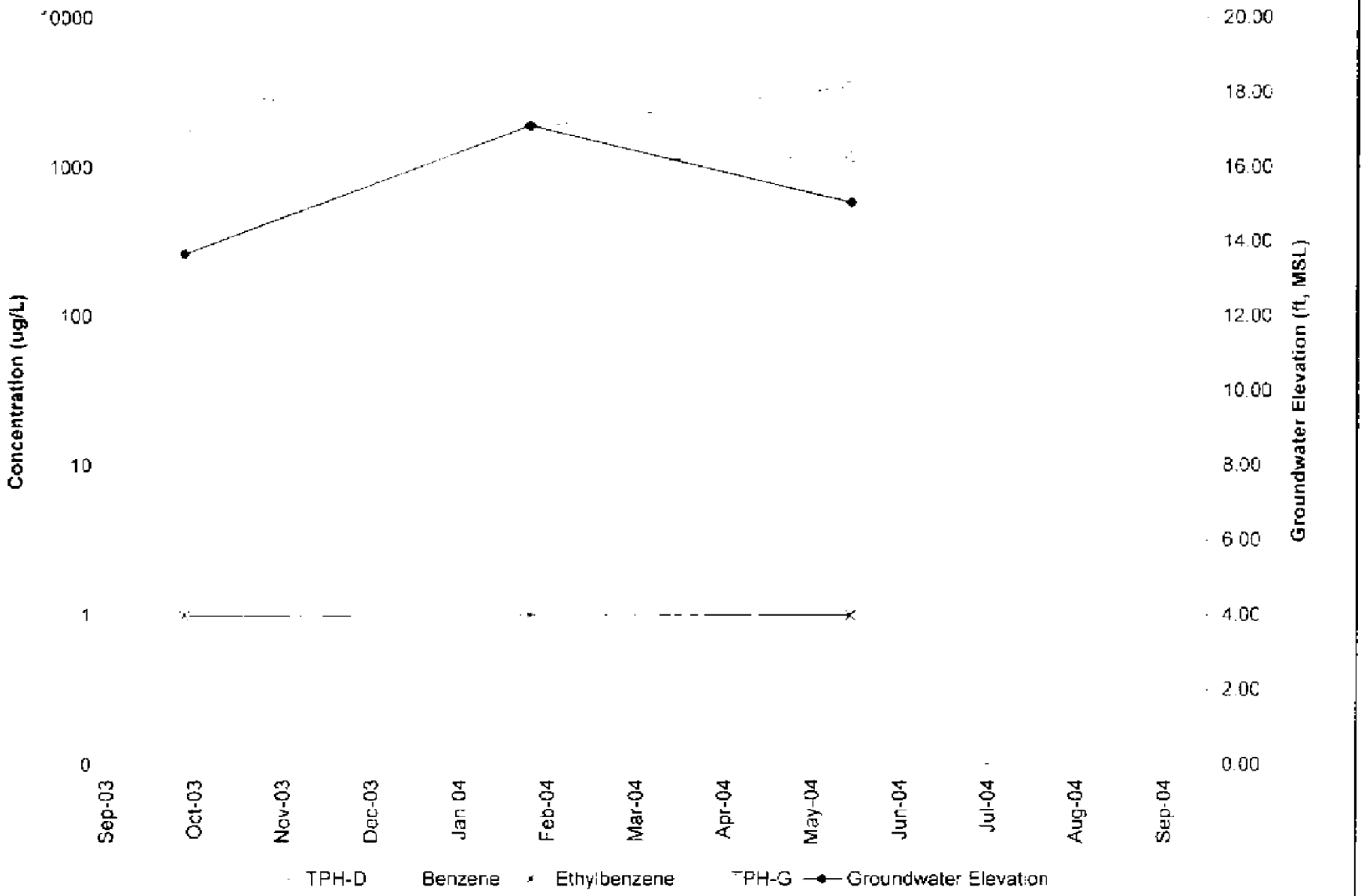
LANDAU ASSOCIATES

Time Oil NW Terminal
Portland, Oregon

Selected Constituents
Well LW-25D, Lower Zone
Main Tank Farm Area

Figure
29

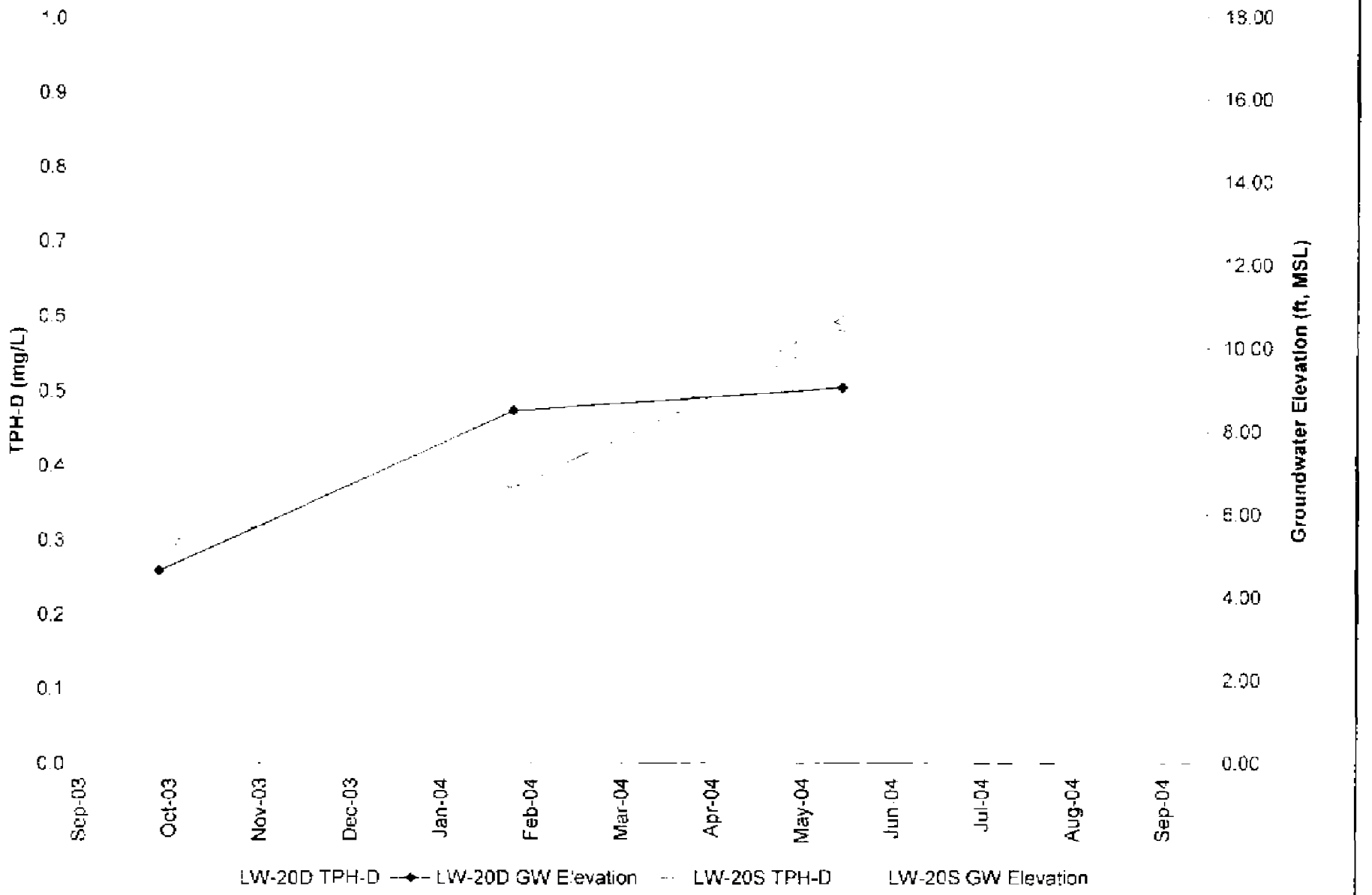
BZT0104(e)017789



LANDAU ASSOCIATES

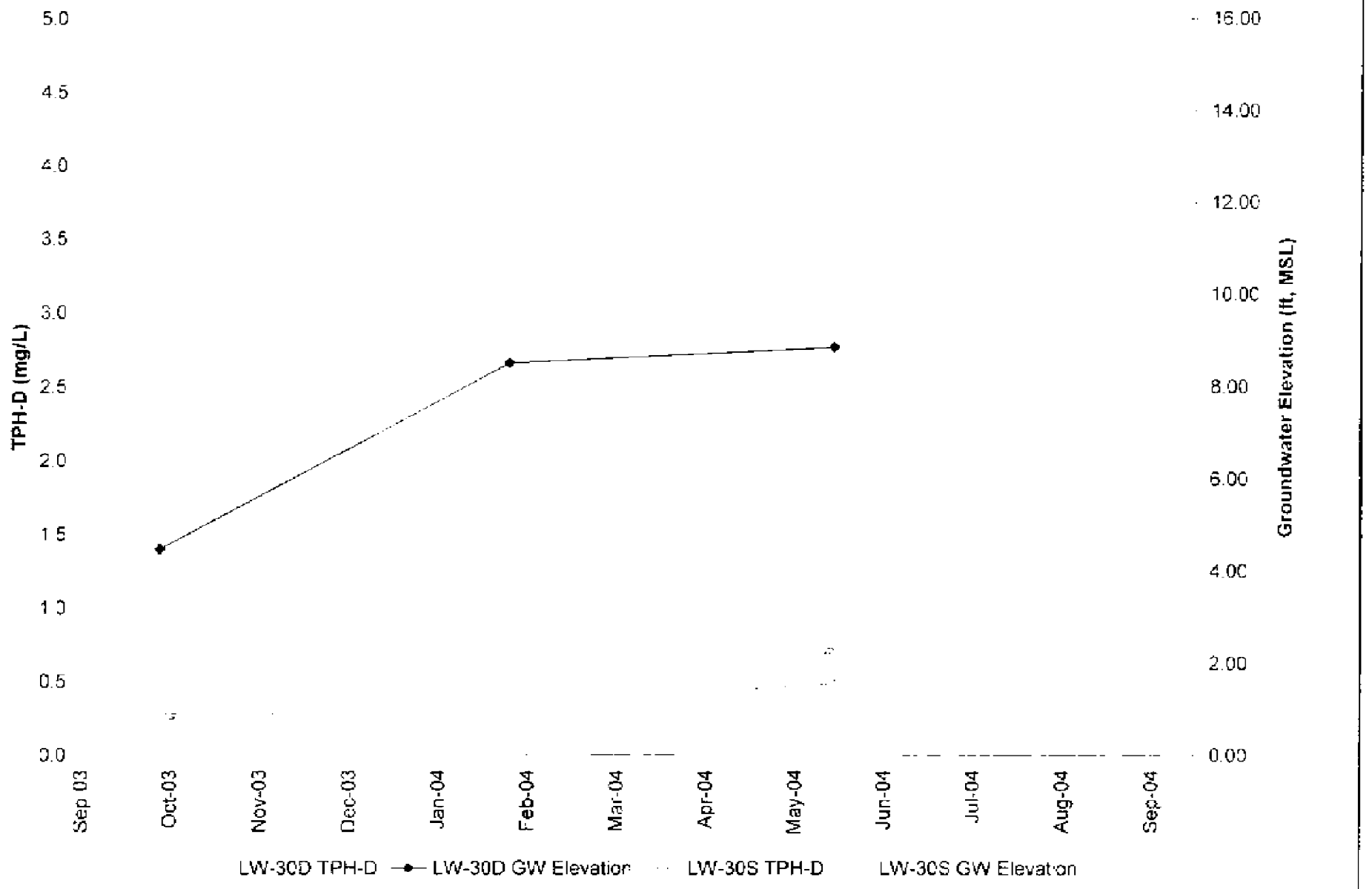
Time Oil NW Terminal Portland, Oregon	**Selected Constituents** **Well LW-32S** **Upper Zone Bell Terminal**	Figure 30

BZTO104(e)017790



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range TPH vs. Groundwater Elevation LW-20S and LW-20D Main Tank Farm Area**	Figure 31



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Diesel-Range TPH vs. Groundwater Elevation LW-30S and 30D Bell Terminal**	Figure 32

BZTO104(e)017792

APPENDIX A

Groundwater Level Measurements And Quality Data

TABLE A-1
GROUNDWATER MONITORING LOCATIONS AND ANALYTICAL METHODS
SECOND QUARTER EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

Well	Semivolatiles (8270)	Volatiles (8260)	MTBE (8260)	BETX (8260)	PCP (8270 SIM)	PAH (8270 SIM)	TPH-Dx (NWTPH-Dx)	TPH-Gx (NWTPH-G)	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Ferrous Iron (SM3500)	Selenuim (6010)	Dioxin/Furans (8290)
G1A	X	X			X		X		X	X	X			
K				X				X						
LW-1S				X				X						
LW-6D	X	X			X		X		X	X	X			
LW-7S	X	X	X		X	X	X	X	X					
LW-8S	X	X			X		X	X	X					
LW-9S (b)														
LW9D	X	X			X		X		X	X	X			
LW-10S					X									
LW-10D	X	X			X		X		X	X	X			
LW-11S	X	X							X			X	X	
LW-19S	X	X	X			X	X	X	X					
LW-20S	X	X	X			X	X	X	X					
LW-20D	X	X	X			X	X	X	X	X	X			
LW-21S (c)														
LW-22D	X	X	X			X	X	X	X	X	X			
LW-23D	X	X	X			X	X	X	X	X	X			
LW-24D	X	X	X			X	X	X	X	X	X			
LW-25D	X	X	X			X	X	X	X	X	X			
LW-26D	X	X	X			X	X	X	X	X	X			
LW-27S	X	X	X			X	X	X	X					
LW-27D	X	X	X			X	X	X	X	X	X			
LW-28S	X	X	X			X	X	X	X					
LW-29S	X	X	X			X	X	X	X					
LW-29D	X	X	X			X	X	X	X	X	X			
LW-30S	X	X	X			X	X	X	X					
LW-30D	X	X	X			X	X	X	X	X	X			
LW-31S	X	X	X			X	X	X	X					
LW-32S	X	X	X			X	X	X	X					
LW-32D	X	X	X			X	X	X	X	X	X			
LW-33S	X	X	X			X	X	X	X					
LW-34S	X	X	X			X	X	X	X					
LW-35D	X	X	X			X	X	X	X	X	X			
RW1	X	X							X			X	X	X
RW2	X	X			X		X	X	X	X	X			
OX-1S	X	X							X			X	X	
OX-2S	X	X							X			X	X	X
OX-3S	X	X							X			X	X	
OX-4S	X	X							X			X	X	
OX-5S	X	X							X			X	X	
OX-6S	X	X							X			X	X	X
OX-7S	X	X							X			X	X	
OX-8S	X	X							X			X	X	
HRW-1					X									

Note: Well locations in regular text are part of the Phase II RI sampling program, wells in bold text are part of the Phase III RI sampling program.

(a) Metals analyzed include: arsenic, chromium, copper, nickel, lead, and zinc
(b) Well dry and not sampled
(c) Well contained product and not sampled

BZTO104(e)017794

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Shallow Wells:							
B	03/25/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	03/31/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	07/16/1997	08:30	29.04	11.02	18.02	----	
B	10/21/1997	16:35	29.04	13.39	15.65	----	
B	01/27/1998	12:15	29.04	11.53	17.51	----	
B	05/18/1998	17:56	29.04	12.51	16.53	----	
B	08/17/1998	11:02	29.04	14.40	14.64	----	
B	11/13/1998	10:24	29.04	14.38	14.66	----	
B	02/16/1999	13:36	29.04	9.69	19.35	----	
B	05/18/1999	15:52	29.04	11.72	17.32	----	
B	09/21/1999	12:21	29.04	15.18	13.86	----	
B	12/06/1999	14:37	29.04	13.00	16.04	----	
B	02/16/2000	10:57	29.04	11.84	17.20	----	
B	05/23/2000	17:31	29.04	13.22	15.82	----	
B	08/29/2000	14:23	29.04	15.32	13.72	----	
B	11/09/2000	13:31	29.04	15.29	13.75	----	
B	02/12/2001	15:25	29.04	13.68	15.36	----	
B	06/04/2001	12:49	29.04	14.18	14.86	----	
B	08/16/2001	11:54	29.04	15.80	13.24	----	
B	11/28/2001	12:44	29.04	13.80	15.24	----	
B	02/27/2002	14:33	29.04	12.27	16.77	----	
B	06/27/2002	15:05	29.04	13.38	15.66	----	
B	08/26/2002	16:59	29.04	14.02	15.02	----	
B	11/13/2002	09:01	29.04	13.90	15.14	----	
B	02/11/2003	10:13	29.04	12.85	16.19	----	
B	05/08/2003	08:11	29.04	12.27	16.77	----	
B	08/27/2003	15:30	29.04	14.70	14.34	----	
B1	03/25/1997	10:48	29.74	----	----	----	Couldn't remove cap
B1	03/31/1997	----	29.74	----	----	----	Couldn't remove cap
B1	07/16/1997	07:49	29.74	11.01	18.73	----	
B1	10/21/1997	16:33	29.74	13.56	16.18	----	
B1	01/27/1998	12:10	29.74	11.68	18.06	----	
B1	05/18/1998	17:55	29.74	12.76	16.98	----	
B1	08/17/1998	11:04	29.74	14.15	15.59	----	
B1	11/13/1998	10:21	29.74	15.05	14.69	----	
B1	02/16/1999	13:33	29.74	9.59	20.15	----	
B1	05/18/1999	15:51	29.74	11.79	17.95	----	
B1	09/21/1999	12:19	29.74	14.63	15.11	----	
B1	12/06/1999	14:38	29.74	14.25	15.49	----	
B1	02/16/2000	10:55	29.74	12.20	17.54	----	
B1	05/23/2000	17:32	29.74	13.25	16.49	----	
B1	08/29/2000	14:22	29.74	14.93	14.81	----	
B1	11/09/2000	13:30	29.74	15.56	14.18	----	
B1	02/12/2001	15:26	29.74	15.19	14.55	----	
B1	06/04/2001	12:50	29.74	15.06	14.68	----	
B1	08/16/2001	11:55	29.74	15.72	14.02	----	
B1	11/28/2001	12:45	29.74	15.47	14.27	----	
B1	02/27/2002	14:34	29.74	12.15	17.59	----	
B1	03/05/2002	11:06	29.74	12.28	17.46	----	
B1	04/05/2002	08:42	29.74	12.40	17.34	----	
B1	05/29/2002	00:00	29.74	13.20	16.54	----	
B1	06/27/2002	15:06	29.74	13.77	15.97	----	
B1	08/26/2002	17:00	29.74	14.79	14.95	----	
B1	11/13/2002	09:02	29.74	16.00	13.74	----	
B1	02/11/2003	10:15	29.74	12.86	16.88	----	
B1	05/08/2003	08:12	29.74	12.25	17.49	----	
B1	08/27/2003	15:31	29.74	14.79	14.95	----	
B1	10/23/2003	14:07	29.74	15.61	14.13	----	
B1	02/19/2004	14:13	29.74	12.39	17.35	----	
B1	06/09/2004	09:01	29.74	14.10	15.64	----	
C	03/25/1997	12:32	28.89	5.56	23.33	----	
C	03/31/1997	11:38	28.89	6.16	22.73	----	
C	07/16/1997	08:47	28.89	8.28	20.61	----	
C	10/21/1997	15:15	28.89	10.00	18.89	----	
C	01/27/1998	13:41	28.89	7.98	20.91	----	
C	05/18/1998	18:08	28.89	9.54	19.35	----	
C	08/17/1998	11:11	28.89	dry	----	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
C	11/13/1998	10:36	28.89	10.36	18.53	----	
C	02/16/1999	13:58	28.89	5.91	22.98	----	
C	05/18/1999	16:04	28.89	7.90	20.99	----	
C	09/21/1999	12:44	28.89	dry	----	----	
C	12/06/1999	14:50	28.89	9.82	----	----	Water in endcap
C	02/16/2000	09:51	28.89	8.78	20.11	----	
C	05/23/2000	17:55	28.89	dry	----	----	
C	08/29/2000	14:33	28.89	dry	----	----	
C	11/09/2000	13:47	28.89	9.94	18.95	----	Dry?
C	02/12/2001	15:08	28.89	dry	----	----	
C	06/04/2001	13:25	28.89	dry	----	----	
C	08/16/2001	12:11	28.89	dry	----	----	
C	11/28/2001	13:03	28.89	dry	----	----	
C	02/27/2002	14:44	28.89	8.94	19.95	----	
C	06/27/2002	15:36	28.89	dry	----	----	
C	08/26/2002	17:31	28.89	dry	----	----	
C	11/13/2002	09:25	28.89	dry	----	----	
C	02/11/2003	10:46	28.89	dry	----	----	1" water
C	05/08/2003	08:35	28.89	8.53	20.36	----	
C	08/27/2003	15:08	28.89	dry	----	----	
D	03/25/1997	12:25	30.04	8.32	21.72	----	
D	03/31/1997	11:31	30.04	8.66	21.38	----	
D	07/16/1997	08:35	30.04	10.45	19.59	----	
D	10/21/1997	17:10	30.04	13.27	16.77	----	
D	01/27/1998	13:31	30.04	10.72	19.32	----	
D	05/18/1998	17:36	30.04	12.23	17.81	----	
D	08/17/1998	10:57	30.04	13.83	16.21	----	
D	11/13/1998	09:05	30.04	15.01	15.03	----	
D	02/16/1999	13:45	30.04	8.50	21.54	----	
D	05/18/1999	15:59	30.04	11.00	19.04	----	
D	09/21/1999	12:37	30.04	14.41	15.63	----	
D	12/06/1999	14:46	30.04	14.04	16.00	----	
D	02/16/2000	09:55	30.04	11.50	18.54	----	
D	05/23/2000	12:56	30.04	12.74	17.30	----	
D	08/29/2000	14:35	30.04	14.70	15.34	----	
D	11/09/2000	13:43	30.04	15.49	14.55	----	
D	02/12/2001	15:12	30.04	14.99	15.05	----	
D	06/04/2001	12:35	30.04	14.95	15.09	----	
D	08/16/2001	11:46	30.04	15.64	14.40	----	
D	11/28/2001	12:43	30.04	15.45	14.59	----	
D	02/27/2002	14:21	30.04	11.37	18.67	----	
D	03/05/2002	11:00	30.04	11.51	18.53	----	
D	04/05/2002	08:45	30.04	11.65	18.39	----	
D	05/29/2002	00:00	30.04	12.73	17.31	----	
D	06/27/2002	15:00	30.04	13.43	16.61	----	
D	08/26/2002	17:04	30.04	14.68	15.36	----	
D	11/13/2002	09:19	30.04	15.96	14.08	----	
D	02/11/2003	10:41	30.04	12.10	17.94	----	
D	05/08/2003	08:30	30.04	11.48	18.56	----	
D	08/27/2003	15:03	30.04	14.60	15.44	----	
D	10/23/2003	13:50	30.04	15.54	14.50	----	
D	02/19/2004	14:22	30.04	11.83	18.21	----	
D	06/09/2004	09:28	30.04	13.78	16.26	----	
F	08/18/1998	08:10	NA	14.77	NA		
F							Abandoned August 2003
G	03/25/1997	11:57	30.24	14.49	15.75	----	
G	03/31/1997	09:13	30.24	14.01	16.23	----	
G	07/16/1997	07:37	30.24	14.30	15.94	----	
G	10/21/1997	16:20	30.24	dry	----	----	
G	01/27/1998	11:49	30.24	dry	----	----	
G	05/18/1998	17:30	30.24	dry	----	----	
G	08/17/1998	11:06	30.24	dry	----	----	
G	11/13/1998	09:53	30.24	dry	----	----	
G	02/16/1999	13:14	30.24	dry	----	----	
G	05/18/1999	14:50	30.24	dry	----	----	
G	09/21/1999	11:30	30.24	dry	----	----	
G	12/06/1999	14:07	30.24	dry	----	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G	02/16/2000	10:19	30.24	dry	----	----	
G	05/23/2000	16:33	30.24	dry	----	----	
G	08/29/2000	13:18	30.24	dry	----	----	
G	11/09/2000	12:30	30.24	dry	----	----	
G	02/12/2001	16:02	30.24	dry	----	----	
G	06/04/2001	11:41	30.24	dry	----	----	
G	08/16/2001	10:50	30.24	dry	----	----	
G	11/28/2001	11:33	30.24	dry	----	----	
G	02/27/2002	13:38	30.24	dry	----	----	
G	06/27/2002	14:13	30.24	dry	----	----	
G	08/26/2002	16:05	30.24	dry	----	----	
G	11/13/2002	07:37	30.24	dry	----	----	
G	02/11/2003	08:58	30.24	dry	----	----	
G	05/08/2003	06:57	30.24	dry	----	----	
G	08/27/2003	13:38	30.24	dry	----	----	
G	10/23/2003	12:38	30.24	dry	----	----	
G	02/19/2004	12:58	30.24	dry	----	----	
G	06/09/2004	07:54	30.24	dry	----	----	
H	03/31/1997	11:51	27.08	5.42	21.66	----	
H	07/16/1997	08:44	27.08	7.29	19.79	----	
H	10/21/1997	17:45	27.08	10.08	17.00	----	
H	01/27/1998	13:45	27.08	7.56	19.52	----	
H	05/18/1998	17:50	27.08	9.06	18.02	----	
H	08/17/1998	09:15	27.08	10.68	16.40	----	
H	11/13/1998	10:54	27.08	11.84	15.24	----	
H	02/16/1999	13:50	27.08	5.35	21.73	----	
H	05/18/1999	15:41	27.08	7.78	19.30	----	
H	09/21/1999	12:15	27.08	11.23	15.85	----	
H	12/06/1999	15:13	27.08	10.91	16.17	----	
H	02/16/2000	10:52	27.08	8.28	18.80	----	
H	05/23/2000	17:20	27.08	9.48	17.60	----	
H	08/29/2000	14:06	27.08	11.55	15.53	----	
H	11/09/2000	13:23	27.08	12.34	14.74	----	
H	02/12/2001	15:36	27.08	11.88	15.20	----	
H	06/04/2001	12:27	27.08	11.81	15.27	----	
H	08/16/2001	11:41	27.08	12.57	14.51	----	
H	11/28/2001	12:34	27.08	12.39	14.69	----	
H	02/27/2002	14:18	27.08	8.14	18.94	----	
H	03/05/2002	10:58	27.08	8.28	18.80	----	
H	04/05/2002	09:10	27.08	8.45	18.63	----	
H	05/29/2002	00:00	27.08	9.38	17.70	----	
H	06/27/2002	14:51	27.08	10.25	16.83	----	
H	08/26/2002	17:00	27.08	11.54	15.54	----	
H	11/13/2002	09:12	27.08	12.83	14.25	----	
H	02/11/2003	10:33	27.08	8.96	18.12	----	
H	05/08/2003	08:24	27.08	8.24	18.84	----	
H	08/27/2003	15:02	27.08	11.48	15.60	----	
H	10/23/2003	13:42	27.08	12.41	14.67	----	
H	02/19/2004	14:35	27.08	9.71	17.37	----	
H	06/09/2004	09:16	27.08	10.61	16.47	----	
J1	03/25/1997	12:15	29.70	8.78	20.92	----	Orange/brown algae
J1	03/31/1997	11:19	29.70	9.02	20.68	----	
J1	07/16/1997	08:22	29.70	10.49	19.21	----	
J1	10/21/1997	16:58	29.70	13.10	16.60	----	
J1	01/27/1998	13:15	29.70	11.03	18.67	----	
J1	05/18/1998	18:01	29.70	12.27	17.43	----	
J1	08/17/1998	11:00	29.70	13.78	15.92	----	
J1	11/13/1998	10:30	29.70	14.77	14.93	----	
J1	02/16/1999	13:37	29.70	8.91	20.79	----	
J1	05/18/1999	15:46	29.70	11.19	18.51	----	
J1	09/21/1999	12:28	29.70	14.36	15.34	----	
J1	12/06/1999	15:07	29.70	13.95	15.75	----	
J1	02/16/2000	11:05	29.70	11.67	18.03	----	
J1	05/23/2000	17:27	29.70	12.78	16.92	----	
J1	08/29/2000	14:14	29.70	14.58	15.12	----	
J1	11/09/2000	13:25	29.70	15.30	14.40	----	
J1	02/12/2001	15:22	29.70	14.87	14.83	----	
J1	06/04/2001	12:39	29.70	14.83	14.87	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J1	08/16/2001	11:52	29.70	15.48	14.22	----	
J1	11/28/2001	12:35	29.70	15.23	14.47	----	
J1	02/27/2002	14:30	29.70	11.62	18.08	----	
J1	03/05/2002	11:04	29.70	11.76	17.94	----	
J1	04/05/2002	08:40	29.70	11.87	17.83	----	
J1	05/29/2002	00:00	29.70	12.77	16.93	----	
J1	06/27/2002	15:02	29.70	13.40	16.30	----	
J1	08/26/2002	16:54	29.70	14.51	15.19	----	
J1	11/13/2002	09:00	29.70	15.71	13.99	----	
J1	02/11/2003	10:18	29.70	12.33	17.37	----	
J1	05/08/2003	08:14	29.70	11.65	18.05	----	
J1	08/27/2003	14:47	29.70	14.46	15.24	----	
J1	10/23/2003	13:52	29.70	15.31	14.39	----	
J1	02/19/2004	14:18	29.70	11.88	17.82	----	
J1	06/09/2004	09:08	29.70	13.71	15.99	----	
K	03/25/1997	12:08	29.42	8.20	21.22	----	
K	03/31/1997	09:32	29.42	8.46	20.96	----	
K	07/16/1997	08:00	29.42	10.03	19.39	----	
K	10/21/1997	16:45	29.42	12.71	16.71	----	
K	01/27/1998	12:37	29.42	10.46	18.96	----	
K	05/18/1998	17:52	29.42	11.77	17.65	----	
K	08/17/1998	10:50	29.42	13.34	16.08	----	
K	11/13/1998	10:14	29.42	14.30	15.12	----	
K	02/16/1999	13:55	29.42	8.41	21.01	----	
K	05/18/1999	15:30	29.42	10.68	18.74	----	
K	09/21/1999	12:08	29.42	13.91	15.51	----	
K	12/06/1999	14:32	29.42	13.44	15.98	----	
K	02/16/2000	10:48	29.42	11.15	18.27	----	
K	05/23/2000	17:12	29.42	12.25	17.17	----	
K	08/29/2000	13:56	29.42	14.16	15.26	----	
K	11/09/2000	13:16	29.42	14.84	14.58	----	
K	02/12/2001	15:41	29.42	14.35	15.07	----	
K	06/04/2001	12:20	29.42	14.22	15.20	----	
K	08/16/2001	11:35	29.42	15.12	14.30	----	
K	11/28/2001	12:26	29.42	14.68	14.74	----	
K	02/27/2002	14:17	29.42	11.05	18.37	----	
K	03/05/2002	10:55	29.42	11.25	18.17	----	
K	04/05/2002	08:55	29.42	11.30	18.12	----	
K	05/29/2002	00:00	29.42	12.22	17.20	----	
K	06/27/2002	14:47	29.42	12.92	16.50	----	
K	08/26/2002	17:17	29.42	14.12	15.30	----	
K	11/13/2002	09:11	29.42	15.18	14.24	----	
K	02/11/2003	10:29	29.42	11.80	17.62	----	
K	05/08/2003	08:21	29.42	11.14	18.28	----	
K	08/27/2003	14:52	29.42	14.08	15.34	----	
K	10/23/2003	13:40	29.42	14.91	14.51	----	
K	02/19/2004	14:39	29.42	11.41	18.01	----	
K	06/09/2004	09:23	29.42	13.26	16.16	----	
L	03/25/1997	12:35	28.10	4.98	23.12	----	
L	03/31/1997	11:40	28.10	5.24	22.86	----	
L	07/16/1997	08:49	28.10	7.50	20.60	----	
L	10/21/1997	15:18	28.10	9.55	18.55	----	
L	01/27/1998	13:39	28.10	6.45	21.65	----	
L	05/18/1998	18:07	28.10	9.21	18.89	----	
L	08/17/1998	11:10	28.10	11.59	16.51	----	
L	11/13/1998	10:35	28.10	13.02	15.08	----	
L	02/16/1999	13:57	28.10	4.78	23.32	----	
L	05/18/1999	16:03	28.10	7.62	20.48	----	
L	09/21/1999	12:43	28.10	12.30	15.80	----	
L	12/06/1999	14:49	28.10	9.51	18.59	----	
L	02/16/2000	09:49	28.10	7.13	20.97	----	
L	05/23/2000	17:54	28.10	9.11	18.99	----	
L	08/29/2000	14:32	28.10	12.66	15.44	----	
L	11/09/2000	13:46	28.10	13.56	14.54	----	
L	02/12/2001	15:07	28.10	13.04	15.06	----	
L	06/04/2001	13:24	28.10	12.78	15.32	----	
L	08/16/2001	12:10	28.10	13.66	14.44	----	
L	11/28/2001	13:02	28.10	12.34	15.76	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
L	02/27/2002	14:42	28.10	7.16	20.94	----	
L	03/05/2002	11:12	28.10	7.39	20.71	----	
L	04/05/2002	08:39	28.10	7.63	20.47	----	
L	05/29/2002	00:00	28.10	9.09	19.01	----	
L	06/27/2002	10:38	28.10	10.11	17.99	----	
L	08/26/2002	17:30	28.10	12.56	15.54	----	
L	11/13/2002	09:26	28.10	14.00	14.10	----	
L	02/11/2003	10:47	28.10	7.17	20.93	----	
L	05/08/2003	08:34	28.10	7.01	21.09	----	
L	08/27/2003	15:09	28.10	15.20	12.90	----	
L	10/23/2003	14:20	28.10	13.56	14.54	----	
L	02/19/2004	13:57	28.10	6.84	21.26	----	
L	06/09/2004	09:35	28.10	11.10	17.00	----	
N	03/25/1997	11:48	31.40	14.05	17.35	----	
N	03/31/1997	08:59	31.40	14.26	17.14	----	Hydrocarbon odor, product
N	07/16/1997	07:20	31.40	16.03	16.33	1.20	Light brown color; thick coating on probe
N	10/21/1997	16:09	31.40	16.46	14.94	----	No product - strong petroleum odor
N	10/23/1997	17:20	31.40	16.48	14.92	----	No product - strong petroleum odor
N	01/27/1998	11:13	31.40	15.01	16.41	0.02	
N	05/18/1998	17:20	31.40	16.39	15.06	0.06	
N	08/17/1998	10:40	31.40	17.16	14.26	0.02	Thin coat of thick product
N	11/13/1998	09:48	31.40	17.83	13.58	0.01	
N	02/16/1999	12:55	31.40	14.09	17.53	0.27	Strong petroleum odor
N	05/18/1999	14:47	31.40	15.79	15.64	0.04	
N	09/21/1999	11:23	31.40	17.39	14.02	0.01	
N	12/06/1999	14:00	31.40	16.57	14.83	----	
N	02/16/2000	10:10	31.40	15.69	15.71	----	
N	05/23/2000	16:24	31.40	16.42	14.98	----	Strong petroleum odor, no product
N	08/29/2000	13:07	31.40	17.61	13.79	----	
N	11/09/2000	12:26	31.40	18.23	13.19	0.03	
N	02/12/2001	15:49	31.40	17.64	13.76	----	
N	06/04/2001	11:31	31.40	17.58	13.82	----	
N	08/16/2001	10:29	31.40	18.08	13.32	----	Trace product
N	11/28/2001	11:27	31.40	18.06	13.34	----	Trace product
N	02/27/2002	13:25	31.40	15.76	15.64	----	
N	04/05/2002	08:09	31.40	15.88	15.52	----	
N	05/29/2002	00:00	31.40	16.42	14.98	----	
N	06/27/2002	14:12	31.40	16.80	14.60	----	
N	08/26/2002	15:56	31.40	17.51	13.89	----	
N	11/13/2002	07:27	31.40	18.44	12.98	0.03	Product present
N	02/11/2003	08:49	31.40	15.33	16.07	----	
N	05/08/2003	06:51	31.40	15.71	15.69	----	
N	08/27/2003	13:33	31.40	17.54	13.86	----	
N	10/23/2003	12:08	31.40	18.18	13.22	----	
N	02/19/2004	12:21	31.40	15.79	15.61	----	
N	06/09/2004	07:36	31.40	17.04	14.36	----	
P	03/25/1997	11:45	29.96	12.88	17.08	----	
P	03/31/1997	08:55	29.96	12.94	17.02	----	Hydrocarbon odor, product
P	07/16/1997	07:15	29.96	14.02	16.08	0.17	Light coating on probe; light brown color
P	10/21/1997	16:05	29.96	15.23	14.73	----	No product - strong petroleum odor
P	10/23/1997	17:25	29.96	15.21	14.75	----	No product - strong petroleum odor
P	01/27/1998	11:09	29.96	13.87	16.09	----	
P	05/18/1998	17:18	29.96	13.08	16.88	----	Trace of product on probe
P	08/17/1998	10:37	29.96	15.82	14.15	0.01	Sheen on probe, strong petroleum odor
P	11/13/1998	09:46	29.96	16.63	13.37	0.05	Strong gasoline odor
P	02/16/1999	12:52	29.96	12.91	17.10	0.06	Strong petroleum odor
P	05/18/1999	14:43	29.96	14.68	15.38	0.13	
P	09/21/1999	11:20	29.96	16.08	13.89	0.01	
P	12/06/1999	13:55	29.96	15.41	14.55	----	
P	02/16/2000	10:08	29.96	14.51	15.45	----	
P	05/23/2000	16:21	29.96	15.15	14.81	----	Trace of product on surface
P	08/29/2000	13:04	29.96	16.26	13.71	0.01	
P	11/09/2000	12:24	29.96	16.98	13.00	0.03	
P	02/12/2001	15:46	29.96	16.31	13.65	----	
P	06/04/2001	11:27	29.96	16.26	13.70	----	Trace product
P	08/16/2001	10:28	29.96	16.75	13.21	----	
P	11/28/2001	11:24	29.96	17.01	12.95	----	
P	02/27/2002	13:22	29.96	14.60	15.44	0.10	Strong ethanol-like odor

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
P	04/05/2002	08:07	29.96	14.70	15.34	0.10	
P	05/29/2002	00:00	29.96	15.00	14.96	----	Trace product
P	06/27/2002	14:11	29.96	15.49	14.47	----	
P	08/26/2002	15:54	29.96	16.15	13.81	----	
P	11/13/2002	07:25	29.96	16.99	13.00	0.04	Product present
P	02/11/2003	08:44	29.96	14.13	15.84	0.01	Product present
P	05/08/2003	06:47	29.96	15.53	14.44	0.01	Product barely present
P	08/27/2003	13:30	29.96	16.19	13.77	----	
P	10/23/2003	12:05	29.96	16.60	13.38	0.02	Trace product
P	02/19/2004	12:19	29.96	14.56	15.40	----	
P	06/09/2004	07:35	29.98	15.70	14.28	----	New reference elevation July 2004
Q	03/25/1997	11:42	30.36	13.55	16.81	----	
Q	03/31/1997	08:52	30.36	13.54	16.82	----	Hydrocarbon odor
Q	07/16/1997	07:10	30.36	14.55	15.83	0.02	Light coating on probe; light brown color
Q	10/21/1997	16:04	30.36	15.70	14.66	----	No product - strong petroleum odor
Q	10/23/1997	17:29	30.36	15.69	14.67	----	No product - strong petroleum odor
Q	01/27/1998	11:05	30.36	14.48	15.88	----	
Q	05/18/1998	17:16	30.36	15.58	14.78	----	
Q	08/17/1998	10:35	30.36	16.27	14.09	----	Slight sheen on probe; no product, strong petroleum odor
Q	11/13/1998	09:44	30.36	17.01	13.36	0.01	Strong gasoline odor
Q	02/16/1999	12:49	30.36	13.61	16.76	0.01	Strong petroleum odor
Q	05/18/1999	14:40	30.36	15.13	15.23	----	Strong odor when cap removed
Q	09/21/1999	11:17	30.36	16.51	13.85	----	
Q	12/06/1999	13:53	30.36	15.88	14.48	----	
Q	02/16/2000	10:06	30.36	15.02	15.34	----	Film of product
Q	05/23/2000	16:19	30.36	15.64	14.72	----	Strong petroleum odor, no product
Q	08/29/2000	13:01	30.36	16.69	13.67	----	
Q	11/09/2000	12:23	30.36	17.50	12.86	----	Trace of product
Q	02/12/2001	15:45	30.36	16.71	13.65	----	
Q	06/04/2001	11:25	30.36	16.66	13.70	----	
Q	08/16/2001	10:26	30.36	17.15	13.21	----	Trace product
Q	11/28/2001	11:21	30.36	17.76	12.94	0.42	
Q	02/27/2002	13:20	30.36	15.07	15.29	----	Strong petroleum odor, no product
Q	04/05/2002	08:05	30.36	15.23	15.13	----	Trace product
Q	05/29/2002	00:00	30.36	15.53	14.83	----	Trace product
Q	06/27/2002	14:10	30.36	15.95	14.41	----	Trace product
Q	08/26/2002	15:52	30.36	16.60	13.76	----	
Q	11/13/2002	07:30	30.36	17.50	12.87	0.01	Product present
Q	02/11/2003	08:47	30.36	14.67	15.69	----	
Q	05/08/2003	06:48	30.36	15.00	15.54	0.22	
Q	08/27/2003	13:28	30.36	16.60	13.76	----	
Q	10/23/2003	12:03	30.36	17.50	13.05	0.24	
Q	02/19/2004	12:17	30.36	15.07	15.29	----	Trace product
Q	06/09/2004	07:34	30.36	16.15	14.21	----	
LW001S	03/31/1997	11:12	27.96	6.65	21.31		
LW001S	07/16/1997	08:15	27.96	8.34	19.62	----	
LW001S	10/21/1997	16:53	27.96	11.02	16.94	----	
LW001S	01/27/1998	13:00	27.96	8.75	19.21	----	
LW001S	05/18/1998	17:40	27.96	9.15	18.81	----	
LW001S	08/17/1998	10:54	27.96	11.67	16.29	----	
LW001S	11/13/1998	10:02	27.96	12.76	15.20	----	
LW001S	02/16/1999	13:24	27.96	6.60	21.36	----	
LW001S	05/18/1999	15:38	27.96	8.92	19.04	----	
LW001S	09/21/1999	12:10	27.96	12.20	15.76	----	
LW001S	12/06/1999	14:33	27.96	11.86	16.10	----	
LW001S	02/16/2000	10:50	27.96	9.42	18.54	----	
LW001S	05/23/2000	17:18	27.96	10.52	17.44	----	
LW001S	08/29/2000	13:58	27.96	12.51	15.45	----	
LW001S	11/09/2000	13:17	27.96	13.26	14.70	----	
LW001S	02/12/2001	15:33	27.96	12.82	15.14	----	
LW001S	06/04/2001	12:24	27.96	12.77	15.19	----	
LW001S	08/16/2001	11:37	27.96	13.45	14.51	----	
LW001S	11/28/2001	12:28	27.96	13.25	14.71	----	
LW001S	02/27/2002	14:19	27.96	9.31	18.65	----	
LW001S	03/05/2002	10:56	27.96	9.45	18.51	----	
LW001S	04/05/2002	09:08	27.96	9.60	18.36	----	
LW001S	05/29/2002	00:00	27.96	10.49	17.47	----	
LW001S	06/27/2002	14:50	27.96	11.26	16.70	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW001S	08/26/2002	17:11	27.96	12.47	15.49	----	
LW001S	11/13/2002	09:07	27.96	13.72	14.24	----	
LW001S	02/11/2003	10:25	27.96	10.11	17.85	----	
LW001S	05/08/2003	08:20	27.96	9.41	18.55	----	
LW001S	08/27/2003	14:51	27.96	12.46	15.50	----	
LW001S	10/23/2003	13:58	27.96	13.32	14.64	----	
LW001S	02/19/2004	14:28	27.96	9.81	18.15	----	
LW001S	06/09/2004	09:20	27.96	11.60	16.36	----	
LW002S	03/25/1997	12:22	29.56	8.06	21.50	----	
LW002S	03/31/1997	11:27	29.56	8.34	21.22	----	
LW002S	07/16/1997	08:33	29.56	10.05	19.51	----	
LW002S	10/21/1997	17:04	29.56	12.77	16.79	----	
LW002S	01/27/1998	13:25	29.56	10.39	19.17	----	
LW002S	05/18/1998	18:02	29.56	11.78	17.78	----	
LW002S	08/17/1998	10:56	29.56	13.38	16.18	----	
LW002S	11/13/1998	10:32	29.56	14.47	15.09	----	
LW002S	02/16/1999	13:42	29.56	8.27	21.29	----	
LW002S	05/18/1999	15:45	29.56	10.63	18.93	----	
LW002S	09/21/1999	12:34	29.56	13.95	15.61	----	
LW002S	12/06/1999	15:11	29.56	13.54	16.02	----	
LW002S	02/16/2000	10:38	29.56	11.08	18.48	----	
LW002S	05/23/2000	17:24	29.56	12.29	17.27	----	
LW002S	08/29/2000	14:12	29.56	14.23	15.33	----	
LW002S	11/09/2000	13:04	29.56	15.00	14.56	----	
LW002S	02/12/2001	15:30	29.56	14.52	15.04	----	
LW002S	06/04/2001	12:34	29.56	14.46	15.10	----	
LW002S	08/16/2001	11:45	29.56	15.16	14.40	----	
LW002S	11/28/2001	12:41	29.56	14.90	14.66	----	
LW002S	02/27/2002	14:19	29.56	11.02	18.54	----	
LW002S	03/05/2002	10:59	29.56	11.17	18.39	----	
LW002S	04/05/2002	08:47	29.56	11.33	18.23	----	
LW002S	05/29/2002	00:00	29.56	12.22	17.34	----	
LW002S	06/27/2002	14:56	29.56	13.00	16.56	----	
LW004S	03/31/1997	09:20	30.26	12.77	17.49	----	
LW004S	07/16/1997	07:40	30.26	14.66	15.60	----	
LW004S	10/21/1997	16:25	30.26	16.88	13.38	----	
LW004S	01/27/1998	12:00	30.26	15.13	15.13	----	
LW004S	05/18/1998	17:32	30.26	16.08	14.18	----	
LW004S	08/17/1998	11:07	30.26	17.30	12.96	----	
LW004S	11/13/1998	09:56	30.26	17.96	12.30	----	
LW004S	02/16/1999	13:16	30.26	13.10	17.16	----	
LW004S	05/18/1999	15:03	30.26	15.43	14.83	----	
LW004S	09/21/1999	11:44	30.26	17.61	12.65	----	
LW004S	12/06/1999	14:19	30.26	17.08	13.18	----	
LW004S	02/16/2000	10:31	30.26	15.84	14.42	----	
LW004S	05/23/2000	16:55	30.26	16.71	13.55	----	
LW004S	08/29/2000	13:39	30.26	17.78	12.48	----	
LW004S	11/09/2000	12:53	30.26	18.17	12.09	----	
LW004S	02/12/2001	16:38	30.26	17.08	13.18	----	
LW004S	06/04/2001	12:08	30.26	17.81	12.45	----	
LW004S	08/16/2001	11:14	30.26	18.39	11.87	----	
LW004S	11/28/2001	12:05	30.26	17.84	12.42	----	
LW004S	02/27/2002	14:01	30.26	15.82	14.44	----	
LW004S	03/05/2002	11:35	30.26	15.95	14.31	----	
LW004S	04/05/2002	08:20	30.26	16.02	14.24	----	
LW004S	05/29/2002	00:00	30.26	16.74	13.52	----	
LW004S	06/27/2002	14:39	30.26	16.89	13.37	----	
LW004S	08/26/2002	16:31	30.26	17.68	12.58	----	
LW004S	11/13/2002	08:22	30.26	19.04	11.22	----	
LW004S	02/11/2003	09:31	30.26	16.03	14.23	----	
LW004S	05/08/2003	07:43	30.26	15.75	14.51	----	
LW004S	08/27/2003	13:59	30.26	17.87	12.39	----	
LW004S	10/23/2003	13:18	30.26	18.52	11.74	----	
LW004S	02/19/2004	13:46	30.26	16.49	13.77	----	
LW004S	06/09/2004	08:31	30.32	17.24	13.08	----	New reference elevation July 2004
LW005S	03/25/1997	12:29	30.79	10.57	20.22	----	
LW005S	03/31/1997	11:35	30.79	10.84	19.95	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW005S	07/16/1997	08:53	30.79	12.29	18.50	----	
LW005S	10/21/1997	15:16	30.79	15.00	15.79	----	
LW005S	01/27/1998	13:36	30.79	12.90	17.89	----	
LW005S	05/18/1998	18:05	30.79	14.19	16.60	----	
LW005S	08/17/1998	11:09	30.79	15.54	15.25	----	
LW005S	11/13/1998	10:38	30.79	16.55	14.24	----	
LW005S	02/16/1999	13:16	30.79	10.59	20.20	----	
LW005S	05/18/1999	16:01	30.79	13.12	17.67	----	
LW005S	09/21/1999	12:40	30.79	16.00	14.79	----	
LW005S	12/06/1999	14:47	30.79	15.64	15.15	----	
LW005S	02/16/2000	09:56	30.79	13.54	17.25	----	
LW005S	05/23/2000	17:51	30.79	14.80	15.99	----	
LW005S	08/29/2000	14:37	30.79	16.35	14.44	----	
LW005S	11/09/2000	13:45	30.79	16.98	13.81	----	
LW005S	02/12/2001	15:13	30.79	16.51	14.28	----	
LW005S	06/04/2001	13:23	30.79	16.43	14.36	----	
LW005S	08/16/2001	12:07	30.79	17.03	13.76	----	
LW005S	11/28/2001	13:01	30.79	16.94	13.85	----	
LW005S	02/27/2002	14:39	30.79	13.48	17.31	----	
LW005S	03/05/2002	11:13	30.79	13.62	17.17	----	
LW005S	04/05/2002	08:38	30.79	13.60	17.19	----	
LW005S	05/29/2002	00:00	30.79	14.81	15.98	----	
LW005S	06/27/2002	10:43	30.79	15.15	15.64	----	
LW005S	08/26/2002	17:08	30.79	16.12	14.67	----	
LW005S	11/13/2002	09:22	30.79	17.39	13.40	----	
LW005S	02/11/2003	10:43	30.79	13.95	16.84	----	
LW005S	05/08/2003	08:32	30.79	13.58	17.21	----	
LW005S	08/27/2003	15:07	30.79	16.11	14.68	----	
LW005S	10/23/2003	14:17	30.79	16.92	13.87	----	
LW005S	02/19/2004	14:00	30.79	13.76	17.03	----	
LW005S	06/09/2004	09:34	30.79	15.50	15.29	----	
LW007S	03/31/1997	11:05	28.10	6.75	21.35	----	
LW007S	07/16/1997	08:05	28.10	8.62	19.48	----	
LW007S	10/21/1997	16:45	28.10	11.26	16.84	----	
LW007S	01/27/1998	12:47	28.10	8.85	19.25	----	
LW007S	05/18/1998	17:48	28.10	10.34	17.76	----	
LW007S	08/17/1998	10:48	28.10	11.85	16.25	----	
LW007S	11/13/1998	10:12	28.10	12.90	15.20	----	Strong gasoline odor
LW007S	02/16/1999	13:53	28.10	6.81	21.29	----	
LW007S	05/18/1999	15:23	28.10	9.14	18.96	----	
LW007S	09/21/1999	12:03	28.10	12.37	15.73	----	
LW007S	12/06/1999	14:27	28.10	12.00	16.10	----	
LW007S	02/16/2000	10:46	28.10	9.60	18.50	----	
LW007S	05/23/2000	17:09	28.10	10.70	17.40	----	
LW007S	08/29/2000	13:53	28.10	12.64	15.46	----	
LW007S	11/09/2000	13:14	28.10	13.36	14.74	----	
LW007S	02/12/2001	15:39	28.10	12.94	15.16	----	
LW007S	06/04/2001	12:17	28.10	12.87	15.23	----	
LW007S	08/16/2001	11:33	28.10	13.58	14.52	----	
LW007S	11/28/2001	12:22	28.10	13.34	14.76	----	
LW007S	02/27/2002	14:15	28.10	9.47	18.63	----	
LW007S	03/05/2002	10:52	28.10	9.62	18.48	----	
LW007S	04/05/2002	08:57	28.10	9.73	18.37	----	
LW007S	05/29/2002	00:00	28.10	10.63	17.47	----	
LW007S	06/27/2002	14:45	28.10	11.36	16.74	----	
LW007S	08/26/2002	17:18	28.10	12.69	15.41	----	
LW007S	11/13/2002	09:16	28.10	13.82	14.28	----	
LW007S	02/11/2003	10:37	28.10	10.18	17.92	----	
LW007S	05/08/2003	08:27	28.10	9.54	18.56	----	
LW007S	08/27/2003	14:58	28.10	12.62	15.48	----	
LW007S	10/23/2003	13:39	28.10	13.45	14.65	----	
LW007S	02/19/2004	14:42	28.10	10.01	18.09	----	
LW007S	06/09/2004	09:25	28.10	11.75	16.35	----	
LW008S	05/18/1999	14:55	31.28	14.84	16.44	----	
LW008S	09/21/1999	12:24	31.28	16.94	14.34	----	
LW008S	12/06/1999	14:40	31.28	16.63	14.65	----	
LW008S	02/16/2000	10:16	31.28	15.18	16.10	----	
LW008S	05/23/2000	17:42	31.28	15.88	15.40	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW008S	08/29/2000	14:26	31.28	17.06	14.22	----	
LW008S	11/09/2000	13:32	31.28	17.55	13.73	----	
LW008S	02/12/2001	15:58	31.28	17.24	14.04	----	
LW008S	06/04/2001	13:05	31.28	17.14	14.14	----	
LW008S	08/16/2001	12:00	31.28	17.70	13.58	----	
LW008S	11/28/2001	12:57	31.28	17.63	13.68	0.04	
LW008S	02/27/2002	14:37	31.28	15.12	16.16	----	
LW008S	03/05/2002	11:09	31.28	15.26	16.02	----	
LW008S	04/05/2002	08:17	31.28	15.34	15.94	----	
LW008S	05/29/2002	00:00	31.28	15.91	15.37	----	
LW008S	06/27/2002	15:21	31.28	16.21	15.07	----	
LW008S	08/26/2002	16:38	31.28	16.95	14.33	----	
LW008S	11/13/2002	08:50	31.28	17.88	13.40	----	
LW008S	02/11/2003	09:48	31.28	15.57	15.71	----	
LW008S	05/08/2003	08:00	31.28	15.11	16.17	----	
LW008S	08/27/2003	14:25	31.28	16.97	14.31	----	
LW008S	10/23/2003	12:42	31.28	17.54	13.74	----	
LW008S	02/19/2004	15:03	31.28	15.34	15.94	----	
LW008S	06/09/2004	08:43	31.28	16.50	14.78	----	
LW009S	05/18/1999	14:57	31.04	19.58	11.46	----	Water level appears to be more representative of lower zone
LW009S	09/21/1999	11:36	31.04	dry	----	----	
LW009S	12/06/1999	14:13	31.04	19.64	----	----	Water in endcap
LW009S	02/16/2000	10:24	31.04	19.59	----	----	Water in endcap
LW009S	05/23/2000	16:39	31.04	dry	----	----	
LW009S	08/29/2000	13:28	31.04	dry	----	----	
LW009S	11/09/2000	12:42	31.04	dry	----	----	
LW009S	02/12/2001	16:12	31.04	dry	----	----	
LW009S	06/04/2001	11:50	31.04	dry	----	----	
LW009S	08/16/2001	11:01	31.04	dry	----	----	
LW009S	11/28/2001	11:52	31.04	dry	----	----	
LW009S	02/27/2002	13:48	31.04	dry	----	----	
LW009S	03/05/2002	11:15	31.04	dry	----	----	
LW009S	04/05/2002	08:26	31.04	dry	----	----	
LW009S	05/29/2002	00:00	31.04	dry	----	----	
LW009S	06/27/2002	14:24	31.04	dry	----	----	
LW009S	08/26/2002	16:09	31.04	dry	----	----	
LW009S	11/13/2002	07:49	31.04	dry	----	----	
LW009S	02/11/2003	09:06	31.04	dry	----	----	Recorded DTW of 19.58; well most likely dry
LW009S	05/08/2003	07:11	31.04	dry	----	----	
LW009S	08/27/2003	13:48	31.04	dry	----	----	
LW009S	10/23/2003	12:46	31.04	dry	----	----	
LW009S	02/19/2004	13:04	31.04	dry	----	----	
LW009S	06/09/2004	08:12	31.04	dry	----	----	
LW010S	05/18/1999	14:59	30.75	17.24	13.51	----	
LW010S	09/21/1999	11:38	30.75	19.13	11.62	----	
LW010S	12/06/1999	14:14	30.75	18.54	12.21	----	
LW010S	02/16/2000	10:26	30.75	17.62	13.13	----	
LW010S	05/23/2000	16:41	30.75	18.25	12.50	----	
LW010S	08/29/2000	13:30	30.75	dry	----	----	
LW010S	11/09/2000	12:45	30.75	dry	----	----	
LW010S	02/12/2001	16:14	30.75	dry	----	----	
LW010S	06/04/2001	11:53	30.75	dry	----	----	
LW010S	08/16/2001	11:03	30.75	dry	----	----	
LW010S	11/28/2001	11:54	30.75	dry	----	----	
LW010S	02/27/2002	13:50	30.75	17.77	12.98	----	
LW010S	03/05/2002	11:32	30.75	17.84	12.91	----	
LW010S	04/05/2002	08:24	30.75	17.82	12.93	----	
LW010S	05/29/2002	00:00	30.75	18.22	12.53	----	
LW010S	06/27/2002	14:28	30.75	18.27	12.48	----	
LW010S	08/26/2002	16:15	30.75	dry	----	----	
LW010S	11/13/2002	08:00	30.75	dry	----	----	
LW010S	02/11/2003	09:20	30.75	17.50	13.25	----	
LW010S	05/08/2003	07:32	30.75	17.68	13.07	----	
LW010S	08/27/2003	13:51	30.75	dry	----	----	
LW010S	10/23/2003	12:51	30.75	dry	----	----	
LW010S	02/19/2004	13:26	30.75	17.77	12.98	----	
LW010S	06/09/2004	08:22	30.75	18.67	12.08	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW011S	05/18/1999	15:10	29.10	11.47	17.63	----	
LW011S	09/21/1999	11:51	29.10	14.23	14.87	----	
LW011S	12/06/1999	15:05	29.10	14.00	15.10	----	
LW011S	02/16/2000	11:01	29.10	11.94	17.16	----	
LW011S	05/23/2000	11:01	29.10	13.01	16.09	----	
LW011S	08/29/2000	14:55	29.10	14.51	14.59	----	
LW011S	11/09/2000	13:36	29.10	15.48	13.92	0.37	First occurrence of product in well.
LW011S	02/12/2001	15:18	29.10	14.62	14.48	----	
LW011S	06/04/2001	13:12	29.10	14.65	14.45	----	
LW011S	08/16/2001	11:24	29.10	15.46	13.86	0.28	
LW011S	11/28/2001	12:51	29.10	15.10	14.00	----	Trace product
LW011S	02/27/2002	14:59	29.10	11.86	17.24	----	
LW011S	03/05/2002	11:40	29.10	11.96	17.14	----	
LW011S	04/05/2002	08:34	29.10	12.07	17.03	----	
LW011S	05/29/2002	00:00	29.10	13.00	16.10	----	
LW011S	06/27/2002	15:09	29.10	13.40	15.70	----	
LW011S	08/26/2002	16:48	29.10	14.37	14.73	----	
LW011S	11/13/2002	08:54	29.10	15.53	13.57	----	
LW011S	02/11/2003	10:03	29.10	12.46	16.64	----	
LW011S	05/08/2003	08:07	29.10	11.91	17.19	----	
LW011S	08/27/2003	14:36	29.10	14.32	14.78	----	
LW011S	10/23/2003	14:12	29.10	15.12	13.98	----	
LW011S	02/19/2004	14:02	29.10	12.13	16.97	----	
LW011S	06/09/2004	08:56	29.10	13.72	15.38	----	
LW013S	05/23/2000	16:51	30.17	17.23	12.94	----	
LW013S	08/29/2000	13:37	30.17	18.27	11.90	----	
LW013S	11/09/2000	12:51	30.17	18.75	11.42	----	
LW013S	02/12/2001	16:30	30.17	18.26	11.91	----	
LW013S	06/04/2001	12:06	30.17	18.30	11.87	----	
LW013S	08/16/2001	11:13	30.17	18.81	11.36	----	
LW013S	11/28/2001	12:03	30.17	18.37	11.80	----	
LW013S	02/27/2002	13:58	30.17	16.60	13.57	----	
LW013S	03/05/2002	11:33	30.17	16.68	13.49	----	
LW013S	04/05/2002	08:22	30.17	16.73	13.44	----	
LW013S	05/29/2002	00:00	30.17	17.30	12.87	----	
LW013S	06/27/2002	14:37	30.17	17.38	12.79	----	
LW013S	08/26/2002	16:30	30.17	18.11	12.06	----	
LW013S	11/13/2002	08:14	30.17	19.04	11.13	----	
LW013S	02/11/2003	09:30	30.17	16.57	13.60	----	
LW013S	05/08/2003	07:41	30.17	16.53	13.64	----	
LW013S	08/27/2003	13:57	30.17	18.27	11.90	----	
LW013S	10/23/2003	13:14	30.17	18.81	11.36	----	
LW013S	02/19/2004	13:40	30.17	16.62	13.55	----	
LW013S	06/09/2004	08:30	30.17	17.66	12.51	----	
LW019S	10/23/2003	11:54	27.72	16.62	11.10	----	
LW019S	02/19/2004	15:00	27.72	13.84	13.88	----	
LW019S	06/09/2004	07:27	27.72	15.46	12.26	----	
LW020S	10/23/2003	12:14	29.51	14.86	14.65	----	
LW020S	02/19/2004	14:45	29.51	12.55	16.96	----	
LW020S	06/09/2004	07:47	29.51	14.18	15.33	----	
LW021S	10/23/2003	12:16	30.29	16.57	13.72	----	
LW021S	02/19/2004	14:54	30.29	13.82	17.29	1.03	
LW021S	06/09/2004	07:44	30.29	15.36	15.02	0.11	
LW027S	10/23/2003	12:20	30.59	25.40	5.19	----	
LW027S	02/19/2004	12:44	30.59	22.07	9.07	0.69	
LW027S	06/09/2004	07:39	30.59	21.26	9.33	----	
LW028S	10/23/2003	14:26	30.98	dry	----	----	
LW028S	02/19/2004	15:17	30.98	12.87	18.11	----	
LW028S	06/09/2004	09:52	30.98	15.15	15.83	----	
LW029S	10/23/2003	14:39	31.34	18.88	12.46	----	
LW029S	02/19/2004	15:30	31.34	16.52	14.82	----	
LW029S	06/09/2004	09:43	31.34	17.85	13.49	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW030S	10/23/2003	14:41	30.08	17.91	12.17	----	
LW030S	02/19/2004	15:32	30.08	15.58	14.50	----	
LW030S	06/09/2004	09:46	30.08	16.91	13.17	----	
LW031S	10/23/2003	14:30	31.26	18.87	12.39	----	
LW031S	02/19/2004	15:21	31.26	16.07	15.19	----	
LW031S	06/09/2004	09:56	31.26	17.67	13.59	----	
LW032S	10/23/2003	14:32	30.71	17.02	13.69	----	
LW032S	02/19/2004	15:29	30.71	13.59	17.12	----	
LW032S	06/09/2004	09:58	30.71	15.66	15.05	----	
LW033S	10/23/2003	14:35	29.89	dry	----	----	
LW033S	02/19/2004	15:23	29.89	13.89	16.00	----	
LW033S	06/09/2004	10:02	29.89	15.60	14.29	----	
LW034S	10/23/2003	14:24	30.93	16.99	13.94	----	
LW034S	02/19/2004	15:15	30.93	13.29	17.64	----	
LW034S	06/09/2004	09:50	30.93	15.53	15.40	----	
LW101S	03/31/1997	09:54	29.41	4.51	24.90	----	
LW101S	07/16/1997	09:01	29.41	6.81	22.60	----	
LW101S	10/21/1997	18:01	29.41	7.28	22.13	----	
LW101S	01/27/1998	14:15	29.41	4.10	25.31	----	
LW101S	05/18/1998	18:18	29.41	6.68	22.73	----	
LW101S	08/17/1998	11:21	29.41	8.14	21.27	----	
LW101S	11/13/1998	10:48	29.41	8.61	20.80	----	
LW101S	02/16/1999	14:11	29.41	3.21	26.20	----	
LW101S	05/18/1999	16:17	29.41	6.00	23.41	----	
LW101S	09/21/1999	12:54	29.41	8.60	20.81	----	
LW101S	12/06/1999	14:58	29.41	6.98	22.43	----	
LW101S	02/16/2000	09:44	29.41	4.96	24.45	----	
LW101S	05/23/2000	18:06	29.41	6.83	22.58	----	
LW101S	08/29/2000	14:47	29.41	8.67	20.74	----	
LW101S	11/09/2000	13:56	29.41	9.39	20.02	----	
LW101S	02/12/2001	15:02	29.41	8.02	21.39	----	
LW101S	06/04/2001	13:35	29.41	8.40	21.01	----	
LW101S	08/16/2001	12:20	29.41	9.44	19.97	----	
LW101S	11/28/2001	13:12	29.41	8.58	20.83	----	
LW101S	02/27/2002	14:52	29.41	5.70	23.71	----	
LW101S	06/27/2002	15:32	29.41	7.80	21.61	----	
LW101S	08/26/2002	17:34	29.41	8.85	20.56	----	
LW101S	11/13/2002	09:35	29.41	9.92	19.49	----	
LW101S	02/11/2003	10:59	29.41	5.27	24.14	----	
LW101S	05/08/2003	08:43	29.41	5.40	24.01	----	
LW101S	08/27/2003	15:14	29.41	8.59	20.82	----	
LW102S	03/31/1997	10:01	25.77	1.86	23.91	----	
LW102S	07/16/1997	09:09	25.77	3.91	21.86	----	
LW102S	10/21/1997	17:59	25.77	4.03	21.74	----	
LW102S	01/27/1998	14:07	25.77	1.26	24.51	----	
LW102S	05/18/1998	18:15	25.77	3.57	22.20	----	
LW102S	08/17/1998	11:18	25.77	4.88	20.89	----	
LW102S	11/13/1998	10:45	25.77	5.14	20.63	----	
LW102S	02/16/1999	14:08	25.77	0.45	25.32	----	
LW102S	05/18/1999	16:12	25.77	3.24	22.53	----	
LW102S	09/21/1999	12:52	25.77	5.33	20.44	----	
LW102S	12/06/1999	14:56	25.77	3.67	22.10	----	
LW102S	02/16/2000	09:41	25.77	1.91	23.86	----	
LW102S	05/23/2000	18:03	25.77	3.72	22.05	----	
LW102S	08/29/2000	14:45	25.77	5.40	20.37	----	
LW102S	11/09/2000	13:53	25.77	5.94	19.83	----	
LW102S	02/12/2001	15:00	25.77	4.52	21.25	----	
LW102S	06/04/2001	13:32	25.77	4.93	20.84	----	
LW102S	08/16/2001	12:17	25.77	5.96	19.81	----	
LW102S	11/28/2001	13:10	25.77	5.15	20.62	----	
LW102S	02/27/2002	14:48	25.77	2.14	23.63	----	
LW102S	06/27/2002	15:30	25.77	4.50	21.27	----	
LW102S	08/26/2002	17:39	25.77	5.48	20.29	----	
LW102S	11/13/2002	09:32	25.77	6.50	19.27	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW102S	02/11/2003	10:55	25.77	1.88	23.89	----	
LW102S	05/08/2003	08:40	25.77	2.22	23.55	----	
LW102S	08/27/2003	15:17	25.77	5.24	20.53	----	
LW103S	03/31/1997	09:50	29.07	5.50	23.57	----	
LW103S	07/16/1997	08:59	29.07	6.93	22.14	----	
LW103S	10/21/1997	18:03	29.07	7.08	21.99	----	
LW103S	01/27/1998	14:20	29.07	5.11	23.96	----	
LW103S	05/18/1998	18:21	29.07	6.57	22.50	----	
LW103S	08/17/1998	11:24	29.07	7.80	21.27	----	
LW103S	11/13/1998	10:51	29.07	7.91	21.16	----	
LW103S	02/16/1999	14:14	29.07	4.54	24.53	----	
LW103S	05/18/1999	16:20	29.07	6.20	22.87	----	
LW103S	09/21/1999	12:57	29.07	8.30	20.77	----	
LW103S	12/06/1999	15:00	29.07	6.60	22.47	----	
LW103S	02/16/2000	09:46	29.07	5.50	23.57	----	
LW103S	05/23/2000	18:10	29.07	6.64	22.43	----	
LW103S	08/29/2000	14:50	29.07	8.41	20.66	----	
LW103S	11/09/2000	13:58	29.07	8.78	20.29	----	
LW103S	02/12/2001	15:04	29.07	7.39	21.68	----	
LW103S	06/04/2001	13:37	29.07	7.83	21.24	----	
LW103S	08/16/2001	12:23	29.07	9.07	20.00	----	
LW103S	11/28/2001	13:16	29.07	8.02	21.05	----	
LW103S	02/27/2002	14:50	29.07	5.26	23.81	----	
LW103S	06/27/2002	15:34	29.07	7.42	21.65	----	
LW103S	08/26/2002	17:36	29.07	8.57	20.50	----	
LW103S	11/13/2002	09:37	29.07	9.48	19.59	----	
LW103S	02/11/2003	11:03	29.07	5.65	23.42	----	
LW103S	05/08/2003	08:46	29.07	5.86	23.21	----	
LW103S	08/27/2003	15:15	29.07	8.33	20.74	----	
LW104S	03/31/1997	10:06	26.57	3.55	23.02	----	
LW104S	07/16/1997	08:54	26.57	5.71	20.86	----	
LW104S	10/21/1997	16:22	26.57	5.71	20.86	----	
LW104S	01/27/1998	14:00	26.57	2.84	23.73	----	
LW104S	05/18/1998	18:11	26.57	5.17	21.40	----	
LW104S	08/17/1998	11:15	26.57	6.64	19.93	----	
LW104S	11/13/1998	10:41	26.57	6.72	19.85	----	
LW104S	02/16/1999	14:03	26.57	2.11	24.46	----	
LW104S	05/18/1999	16:08	26.57	4.97	21.60	----	
LW104S	09/21/1999	12:48	26.57	7.18	19.39	----	
LW104S	12/06/1999	14:54	26.57	5.00	21.57	----	
LW104S	02/16/2000	09:39	26.57	3.61	22.96	----	
LW104S	05/23/2000	17:59	26.57	5.61	20.96	----	
LW104S	08/29/2000	14:43	26.57	7.08	19.49	----	
LW104S	11/09/2000	13:51	26.57	7.49	19.08	----	
LW104S	02/12/2001	14:57	26.57	6.28	20.29	----	
LW104S	06/04/2001	13:30	26.57	6.64	19.93	----	
LW104S	08/16/2001	12:15	26.57	7.56	19.01	----	
LW104S	11/28/2001	13:06	26.57	6.30	20.27	----	
LW104S	02/27/2002	14:46	26.57	4.07	22.50	----	
LW104S	06/27/2002	15:27	26.57	6.28	20.29	----	
LW104S	08/26/2002	17:41	26.57	7.13	19.44	----	
LW104S	11/13/2002	09:30	26.57	7.85	18.72	----	
LW104S	02/11/2003	10:51	26.57	3.72	22.85	----	
LW104S	05/08/2003	08:38	26.57	4.94	21.63	----	
LW104S	08/27/2003	15:19	26.57	6.87	19.70	----	
RW1	05/18/1999	15:06	31.46	15.70	15.76	----	
RW1	09/21/1999	11:46	31.46	18.02	13.44	----	
RW1	12/06/1999	14:43	31.46	17.73	13.73	----	
RW1	02/16/2000	10:33	31.46	16.14	15.32	----	
RW1	05/23/2000	17:46	31.46	17.09	14.37	----	
RW1	08/29/2000	14:28	31.46	18.29	13.17	----	
RW1	11/09/2000	12:57	31.46	18.67	12.79	----	
RW1	02/12/2001	16:44	31.46	18.30	13.16	----	
RW1	06/04/2001	13:17	31.46	18.22	13.24	----	
RW1	08/16/2001	10:55	31.46		31.46	----	Vapor/water recovery system test running - not measured
RW1	11/28/2001	12:02	31.46	18.55	12.91	----	
RW1	02/27/2002	14:03	31.46	16.12	15.34	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RW1	03/05/2002	11:38	31.46	16.33	15.13	----	
RW1	04/05/2002	08:27	31.46	16.28	15.18	----	
RW1	05/29/2002	00:00	31.46	17.00	14.46	----	
RW1	06/27/2002	15:16	31.46	17.33	14.13	----	
RW1	08/26/2002	16:40	31.46	18.00	13.46	----	
RW1	11/13/2002	08:26	31.46	18.85	12.61	----	
RW1	02/11/2003	09:34	31.46	16.50	14.96	----	
RW1	05/08/2003	07:46	31.46	16.23	15.23	----	
RW1	08/27/2003	14:04	31.46	18.09	13.37	----	
RW1	10/23/2003	13:23	31.46	18.55	12.91	----	
RW1	02/19/2004	13:52	31.46	16.31	15.15	----	
RW1	06/09/2004	08:35	31.46	17.60	13.86	----	
RW3	12/06/1999	15:24	29.96	14.20	15.76	----	
RW3	02/16/2000	10:37	29.96	11.88	18.08	----	
RW3	05/23/2000	17:26	29.96	13.02	16.94	----	
RW3	08/29/2000	13:42	29.96	14.88	15.08	----	
RW3	11/09/2000	13:03	29.96	15.58	14.38	----	
RW3	02/12/2001	15:28	29.96	15.13	14.83	----	
RW3	06/04/2001	12:30	29.96	15.09	14.87	----	
RW3	08/16/2001	11:44	29.96	15.74	14.22	----	
RW3	11/28/2001	12:40	29.96	15.52	14.44	----	
RW3	02/27/2002	14:26	29.96	11.80	18.16	----	
RW3	03/05/2002	11:02	29.96	11.94	18.02	----	
RW3	04/05/2002	08:44	29.96	12.06	17.90	----	
RW3	05/29/2002	00:00	29.96	13.00	16.96	----	
RW3	06/27/2002	14:59	29.96	13.64	16.32	----	
RW3							Abandoned August 2003
PZ1	05/23/2000	17:47	28.04	14.21	13.83	----	
PZ1	08/29/2000	14:30	28.04	15.33	12.71	----	
PZ1	11/09/2000	12:55	28.04	15.68	12.36	----	
PZ1	02/12/2001	16:42	28.04	15.30	12.74	----	
PZ1	06/04/2001	13:20	28.04	15.29	12.75	----	
PZ1	08/16/2001	11:17	28.04	15.94	12.10	----	
PZ1	11/28/2001	12:09	28.04	15.48	12.56	----	
PZ1	02/27/2002	14:02	28.04	13.28	14.76	----	
PZ1	03/05/2002	11:34	28.04	13.40	14.64	----	
PZ1	04/05/2002	08:32	28.04	13.44	14.60	----	
PZ1	05/29/2002	00:00	28.04	14.16	13.88	----	
PZ1	06/27/2002	15:17	28.04	14.50	13.54	----	
PZ1	08/26/2002	16:33	28.04	15.17	12.87	----	
PZ1	11/13/2002	08:42	28.04	15.83	12.21	----	
PZ1	02/11/2003	09:36	28.04	13.58	14.46	----	
PZ1	05/08/2003	07:58	28.04	13.25	14.79	----	
PZ1	08/27/2003	14:20	28.04	15.32	12.72	----	
PZ1	10/23/2003	13:19	28.04	15.75	12.29	----	
PZ1	02/19/2004	13:56	28.04	13.41	14.63	----	
PZ1	06/09/2004	08:37	28.04	14.75	13.29	----	
PZ2	06/27/2002	15:18	31.97	18.31	13.66	----	
PZ2	08/26/2002	16:34	31.97	18.88	13.09	----	
PZ2	11/13/2002	08:25	31.97	19.40	12.57	----	
PZ2	02/11/2003	09:44	31.97	17.46	14.51	----	
PZ2	05/08/2003	07:45	31.97	17.15	14.82	----	
PZ2	08/27/2003	14:03	31.97	19.02	12.95	----	
PZ2	10/23/2003	13:21	31.97	19.27	12.75	0.06	
PZ2	02/19/2004	13:50	31.97	17.36	14.61	----	
PZ2	06/09/2004	08:33	31.97	18.51	13.46	----	
PZ3	06/27/2002	15:19	31.12	19.35	11.77	----	
PZ3	08/26/2002	16:35	31.12	19.74	11.38	----	
PZ3	11/13/2002	08:45	31.12	16.87	----	----	
PZ3	02/11/2003	09:40	31.12	19.05	12.07	----	
PZ3	05/08/2003	07:53	31.12	18.95	12.17	----	
PZ3	08/27/2003	14:26	31.12	19.82	11.30	----	
PZ3	10/23/2003	12:39	31.12	dry	----	----	
PZ3	02/19/2004	15:09	31.12	19.07	12.05	----	
PZ3	06/09/2004	08:39	31.12	19.53	11.59	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
PZ4	06/27/2002	15:20	28.47	dry	----	----	
PZ4	08/26/2002	16:36	28.47	dry	----	----	
PZ4	11/13/2002	08:48	28.47	16.87	11.60	----	
PZ4	02/11/2003	09:41	28.47	dry	----	----	
PZ4	05/08/2003	07:52	28.47	17.78	10.69	----	
PZ4	08/27/2003	14:27	28.47	dry	----	----	
PZ4	10/23/2003	12:36	28.47	dry	----	----	
PZ4	02/19/2004	15:08	28.47	dry	----	----	
PZ4	06/09/2004	08:41	28.47	dry	----	----	
OX001S	06/27/2002	15:13	33.38	17.85	15.53	----	
OX001S	08/26/2002	16:45	33.38	18.75	14.63	----	
OX001S	11/13/2002	08:30	33.38	19.92	13.46	----	
OX001S	02/11/2003	09:59	33.38	16.96	16.42	----	
OX001S	05/08/2003	08:04	33.38	16.48	16.90	----	
OX001S	08/27/2003	14:38	33.38	18.76	14.62	----	
OX001S	10/23/2003	14:09	33.38	19.51	13.87	----	
OX001S	02/19/2004	14:10	33.38	16.64	16.74	----	
OX001S	06/09/2004	08:45	33.38	18.16	15.22	----	
OX002S	06/27/2002	15:12	28.69	13.22	15.47	----	
OX002S	08/26/2002	16:44	28.69	14.26	14.43	----	
OX002S	11/13/2002	08:33	28.81	15.39	13.42	----	New reference elevation September 2002
OX002S	02/11/2003	10:06	28.81	12.39	16.42	----	
OX002S	05/08/2003	08:09	28.81	11.90	16.91	----	
OX002S	08/27/2003	14:33	28.81	14.55	14.26	----	
OX002S	10/23/2003	14:14	28.81	15.22	13.84	0.31	
OX002S	02/19/2004	14:07	28.81	12.06	16.75	----	
OX002S	06/09/2004	08:52	28.95	13.61	15.34	----	New reference elevation July 2004
OX003S	06/27/2002	15:14	30.01	14.65	15.36	----	
OX003S	08/26/2002	16:42	30.01	15.50	14.51	----	
OX003S	11/13/2002	08:31	30.01	16.65	13.36	----	
OX003S	02/11/2003	09:58	30.01	13.78	16.23	----	
OX003S	05/08/2003	08:03	30.01	13.30	16.71	----	
OX003S	08/27/2003	14:40	30.01	15.52	14.49	----	
OX003S	10/23/2003	14:10	30.01	16.22	13.79	----	
OX003S	02/19/2004	14:09	30.01	13.47	16.54	----	
OX003S	06/09/2004	08:51	30.01	14.96	15.05	----	
OX004S	06/27/2002	15:15	33.42	19.07	14.35	----	
OX004S	08/26/2002	16:39	33.42	19.74	13.68	----	
OX004S	11/13/2002	08:24	33.54	20.73	12.81	----	New reference elevation September 2002
OX004S	02/11/2003	09:38	33.54	18.39	15.15	----	
OX004S	05/08/2003	07:47	33.54	19.07	14.47	----	
OX004S	08/27/2003	14:07	33.54	19.95	13.59	----	
OX004S	10/23/2003	12:43	33.54	dry	----	----	
OX004S	02/19/2004	13:54	33.54	18.21	15.33	----	
OX004S	06/09/2004	08:38	33.51	19.44	14.07	----	New reference elevation July 2004
OX005S	10/23/2003	13:44	30.74	16.15	14.59	----	
OX005S	02/19/2004	14:25	30.74	12.46	18.28	----	
OX005S	06/09/2004	09:14	30.74	14.35	16.39	----	
OX006S	10/23/2003	13:45	30.92	16.43	14.49	----	
OX006S	02/19/2004	14:24	30.92	12.85	18.07	----	
OX006S	06/09/2004	09:12	31.03	14.71	16.32	----	New reference elevation July 2004
OX007S	10/23/2003	13:46	30.68	16.25	14.43	----	
OX007S	02/19/2004	14:23	30.68	12.67	18.01	----	
OX007S	06/09/2004	09:11	30.68	14.55	16.13	----	
OX008S	10/23/2003	13:47	30.74	16.41	14.33	----	
OX008S	02/19/2004	14:19	30.74	12.96	17.78	----	
OX008S	06/09/2004	09:09	30.74	14.81	15.93	----	
Deep Wells:							
B2	08/11/1993	10:02	30.31	25.44	4.87	----	Slight sheen, slight to mod solvent-like odor
B2	10/26/1993	13:32	30.31	25.25	5.06	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
B2	11/17/1993	13:32	30.31	25.23	5.08	----	
B2	12/17/1993	12:59	30.31	23.88	6.43	----	
B2	01/17/1994	13:12	30.31	23.99	6.32	----	
B2	02/18/1994	14:20	30.31	23.73	6.58	----	
B2	03/18/1994	12:59	30.31	23.15	7.16	----	
B2	04/18/1994	14:42	30.31	24.35	5.96	----	
B2	05/18/1994	15:22	30.31	23.12	7.19	----	
B2	06/17/1994	14:54	30.31	22.90	7.41	----	
B2	07/19/1994	09:20	30.31	24.38	5.93	----	
B2	08/17/1994	07:35	30.31	25.22	5.09	----	
B2	09/16/1994	07:27	30.31	25.89	4.42	----	
B2	10/17/1994	09:03	30.31	25.43	4.88	----	
B2	11/21/1994	11:51	30.31	24.56	5.75	----	
B2	12/19/1994	11:10	30.31	21.82	8.49	----	
B2	01/18/1995	11:18	30.31	18.93	11.38	----	
B2	02/21/1995	13:23	30.31	17.12	13.19	----	
B2	03/21/1995	13:05	30.31	20.37	9.94	----	
B2	04/19/1995	12:48	30.31	21.21	9.10	----	
B2	05/19/1995	13:38	30.31	19.30	11.01	----	
B2	07/17/1995	13:55	30.31	22.72	7.59	----	
B2	08/22/1995	07:53	30.31	24.42	5.89	----	
B2	09/22/1995	08:28	30.31	25.28	5.03	----	
B2	11/20/1995	07:57	30.31	22.02	8.29	----	
B2	12/01/1995	08:29	30.31	13.63	16.68	----	
B2	12/19/1995	07:26	30.31	15.57	14.74	----	
B2	01/19/1996	08:38	30.31	16.48	13.83	----	
B2	02/20/1996	10:42	30.31	10.63	19.68	----	
B2	03/19/1996	09:23	30.31	16.61	13.70	----	
B2	04/19/1996	11:53	30.31	16.20	14.11	----	
B2	07/22/1996	14:24	30.31	22.29	8.02	----	
B2	08/20/1996	14:20	30.31	23.43	6.88	----	
B2	09/24/1996	08:11	30.31	24.30	6.01	----	
B2	10/28/1996	11:09	30.31	23.76	6.55	----	
B2	12/13/1996	10:47	30.31	16.70	13.61	----	
B2	03/25/1997	12:02	30.31	15.85	14.46	----	
B2	03/31/1997	09:27	30.31	14.91	15.40	----	
B2	07/16/1997	07:45	30.31	19.91	10.40	----	
B2	10/21/1997	16:30	30.31	23.56	6.75	----	
B2	01/27/1998	12:06	30.31	19.32	10.99	----	
B2	05/18/1998	17:54	30.31	18.80	11.51	----	
B2	08/17/1998	10:23	30.31	24.38	5.93	----	
B2	11/13/1998	10:17	30.31	25.33	4.98	----	
B2	02/16/1999	13:34	30.31	19.64	10.67	----	
B2	05/18/1999	15:50	30.31	19.04	11.27	----	
B2	09/21/1999	12:18	30.31	25.34	4.97	----	
B2	12/06/1999	14:39	30.31	20.25	10.06	----	
B2	02/16/2000	10:56	30.31	20.57	9.74	----	
B2	05/23/2000	17:33	30.31	20.99	9.32	----	
B2	08/29/2000	14:20	30.31	25.38	4.93	----	
B2	11/09/2000	13:29	30.31	25.31	5.00	----	
B2	02/12/2001	15:27	30.31	24.62	5.69	----	
B2	06/04/2001	13:04	30.31	24.84	5.47	----	
B2	08/16/2001	11:58	30.31	26.75	3.56	----	
B2	11/28/2001	12:46	30.31	24.14	6.17	----	
B2	02/27/2002	14:35	30.31	22.90	7.41	----	
B2	06/27/2002	15:07	30.31	20.16	10.15	----	
B2	08/26/2002	17:01	30.31	25.32	4.99	----	
B2	11/13/2002	09:03	30.31	25.28	5.03	----	
B2	02/11/2003	10:14	30.31	23.58	6.73	----	
B2	05/08/2003	08:13	30.31	21.33	8.98	----	
B2	08/27/2003	15:32	30.31	24.25	6.06	----	
B2	10/23/2003	14:08	30.31	25.85	4.46	----	
B2	02/19/2004	14:12	30.31	22.21	8.10	----	
B2	06/09/2004	09:02	30.31	21.45	8.86	----	
B2	08/10/2004	08:50	30.31	25.73	4.58	----	
G1A	03/25/1997	11:55	29.72	14.84	14.88	----	
G1A	03/31/1997	09:11	29.72	14.28	15.44	----	
G1A	07/16/1997	07:33	29.72	18.94	10.78	----	
G1A	10/21/1997	16:18	29.72	22.44	7.28	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G1A	01/27/1998	11:46	29.72	18.42	11.30	----	
G1A	05/18/1998	17:31	29.72	18.05	11.67	----	
G1A	08/17/1998	10:07	29.72	23.35	6.37	----	
G1A	11/13/1998	09:54	29.72	24.59	5.13	----	
G1A	02/16/1999	13:14	29.72	18.28	11.44	----	
G1A	05/18/1999	14:51	29.72	18.42	11.30	----	
G1A	09/21/1999	11:29	29.72	24.32	5.40	----	
G1A	12/06/1999	14:05	29.72	19.82	9.90	----	
G1A	02/16/2000	10:18	29.72	19.81	9.91	----	
G1A	05/23/2000	16:31	29.72	20.08	9.64	----	Replaced lock and tubing
G1A	08/29/2000	13:13	29.72	24.36	5.36	----	
G1A	11/09/2000	12:32	29.72	24.85	4.87	----	
G1A	02/12/2001	16:01	29.72	24.08	5.64	----	
G1A	06/04/2001	11:40	29.72	24.10	5.62	----	
G1A	08/16/2001	10:52	29.72	25.51	4.21	----	
G1A	11/28/2001	11:32	29.72	23.84	5.88	----	
G1A	02/27/2002	13:39	29.72	21.96	7.76	----	
G1A	06/27/2002	14:17	29.72	19.48	10.24	----	
G1A	08/26/2002	16:06	29.72	24.36	5.36	----	
G1A	11/13/2002	07:35	29.72	24.60	5.12	----	
G1A	02/11/2003	08:59	29.72	22.32	7.40	----	
G1A	05/08/2003	06:58	29.72	20.51	9.21	----	
G1A	08/27/2003	13:36	29.72	24.16	5.56	----	
G1A	10/23/2003	12:37	29.72	25.20	4.52	----	
G1A	02/19/2004	12:57	29.72	21.51	8.21	----	
G1A	06/09/2004	07:55	29.72	20.91	8.81	----	
J2	03/25/1997	12:18	29.65	15.22	14.43	----	
J2	03/31/1997	11:21	29.65	14.38	15.27	----	
J2	07/16/1997	08:24	29.65	19.28	10.37	----	
J2	10/21/1997	17:00	29.65	23.02	6.63	----	
J2	01/27/1998	13:19	29.65	18.69	10.96	----	
J2	05/18/1998	18:00	29.65	18.14	11.51	----	
J2	08/17/1998	10:21	29.65	23.70	5.95	----	
J2	11/13/1998	10:28	29.65	24.64	5.01	----	
J2	02/16/1999	13:40	29.65	19.00	10.65	----	
J2	05/18/1999	15:46	29.65	18.40	11.25	----	
J2	09/21/1999	12:30	29.65	24.73	4.92	----	
J2	12/06/1999	15:08	29.65	19.53	10.12	----	
J2	02/16/2000	11:07	29.65	19.89	9.76	----	
J2	05/23/2000	17:28	29.65	20.33	9.32	----	
J2	08/29/2000	14:15	29.65	24.67	4.98	----	
J2	11/09/2000	13:26	29.65	24.66	4.99	----	
J2	02/12/2001	15:23	29.65	23.92	5.73	----	
J2	06/04/2001	13:02	29.65	24.17	5.48	----	
J2	08/16/2001	11:51	29.65	25.57	4.08	----	
J2	11/28/2001	12:36	29.65	23.45	6.20	----	
J2	02/27/2002	14:31	29.65	22.21	7.44	----	
J2	06/27/2002	15:03	29.65	19.48	10.17	----	
J2	08/26/2002	16:56	29.65	24.67	4.98	----	
J2	11/13/2002	08:59	29.65	24.60	5.05	----	
J2	02/11/2003	10:19	29.65	22.95	6.70	----	
J2	05/08/2003	08:16	29.65	20.65	9.00	----	
J2	08/27/2003	14:48	29.65	24.12	5.53	----	
J2	10/23/2003	13:54	29.65	25.18	4.47	----	
J2	02/19/2004	14:17	29.65	21.52	8.13	----	
J2	06/09/2004	09:07	29.65	20.76	8.89	----	
J3	03/25/1997	12:20	29.58	14.70	14.88	----	
J3	03/31/1997	11:25	29.58	14.03	15.55	----	
J3	07/16/1997	08:25	29.58	18.91	10.67	----	
J3	10/21/1997	17:02	29.58	22.37	7.21	----	
J3	01/27/1998	13:21	29.58	18.28	11.30	----	
J3	05/18/1998	17:58	29.58	17.84	11.74	----	
J3	08/17/1998	10:22	29.58	23.12	6.46	----	
J3	11/13/1998	10:26	29.58	24.14	5.44	----	
J3	02/16/1999	13:41	29.58	18.32	11.26	----	
J3	05/18/1999	15:48	29.58	18.01	11.57	----	
J3	09/21/1999	12:31	29.58	24.12	5.46	----	
J3	12/06/1999	15:09	29.58	19.31	10.27	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J3	02/16/2000	10:07	29.58	19.50	10.08	----	
J3	05/23/2000	17:29	29.58	19.86	9.72	----	
J3	08/29/2000	14:17	29.58	24.05	5.53	----	
J3	11/09/2000	13:27	29.58	24.24	5.34	----	
J3	02/12/2001	15:24	29.58	23.45	6.13	----	
J3	06/04/2001	12:44	29.58	23.62	5.96	----	
J3	08/16/2001	11:50	29.58	24.98	4.60	----	
J3	11/28/2001	12:37	29.58	22.98	6.60	----	
J3	02/27/2002	14:32	29.58	21.52	8.06	----	
J3	06/27/2002	15:04	29.58	19.14	10.44	----	
J3	08/26/2002	16:57	29.58	23.99	5.59	----	
J3	11/13/2002	08:58	29.58	24.10	5.48	----	
J3	02/11/2003	10:20	29.58	22.28	7.30	----	
J3	05/08/2003	08:17	29.58	20.16	9.42	----	
J3	08/27/2003	14:49	29.58	23.60	5.98	----	
J3	10/23/2003	13:56	29.58	24.70	4.88	----	
J3	02/19/2004	14:16	29.58	21.18	8.40	----	
J3	06/09/2004	09:06	29.58	20.40	9.18	----	
O	03/25/1997	11:40	32.03	17.01	15.02	----	
O	03/31/1997	08:48	32.03	16.39	15.64	----	
O	07/16/1997	07:05	32.03	21.93	10.10	----	
O	10/21/1997	16:01	32.03	22.23	9.80	----	
O	01/27/1998	11:03	32.03	20.51	11.52	----	
O	05/18/1998	17:14	32.03	20.25	11.78	----	
O	08/17/1998	10:13	32.03	25.42	6.61	----	
O	11/13/1998	09:31	32.03	26.49	5.54	----	
O	02/16/1999	12:45	32.03	20.25	11.78	----	
O	05/18/1999	14:36	32.03	21.23	10.80	----	
O	09/21/1999	11:09	32.03	26.22	5.81	----	
O	12/06/1999	13:48	32.03	21.90	10.13	----	
O	02/16/2000	10:04	32.03	22.21	9.82	----	
O	05/23/2000	16:15	32.03	22.18	9.85	----	
O	08/29/2000	12:56	32.03	26.49	5.54	----	
O	11/09/2000	12:18	32.03	27.01	5.02	----	
O	02/12/2001	15:52	32.03	26.12	5.91	----	
O	06/04/2001	11:22	32.03	26.08	5.95	----	
O	08/16/2001	10:22	32.03	27.58	4.45	----	
O	11/28/2001	11:18	32.03	26.15	5.88	----	
O	02/27/2002	13:15	32.03	24.08	7.95	----	
O	06/27/2002	14:09	32.03	21.29	10.74	----	
O	08/26/2002	15:47	32.03	25.91	6.12	----	
O	11/13/2002	07:21	32.03	26.56	5.47	----	
O	02/11/2003	08:38	32.03	22.81	9.22	----	
O	05/08/2003	06:44	32.03	22.70	9.33	----	
O	08/27/2003	13:23	32.03	26.43	5.60	----	
O	10/23/2003	12:02	32.03	27.11	4.92	----	
O	02/19/2004	12:15	32.03	23.71	8.32	----	
O	06/09/2004	07:32	32.03	22.76	9.27	----	
R	03/25/1997	11:36	30.47	15.56	14.91	----	
R	03/31/1997	08:43	30.47	14.85	15.62	----	
R	07/16/1997	07:00	30.47	20.37	10.10	----	
R	10/21/1997	15:56	30.47	22.54	7.93	----	
R	01/27/1998	10:57	30.47	18.98	11.49	----	
R	05/18/1998	17:15	30.47	18.73	11.74	----	
R	08/17/1998	10:12	30.47	23.93	6.54	----	
R	11/13/1998	09:35	30.47	25.17	5.30	----	
R	02/16/1999	13:05	30.47	18.79	11.68	----	
R	05/18/1999	14:37	30.47	19.64	10.83	----	
R	09/21/1999	11:15	30.47	24.53	5.94	----	
R	12/06/1999	13:46	30.47	20.33	10.14	----	
R	02/16/2000	10:12	30.47	20.65	9.82	----	
R	05/23/2000	16:17	30.47	20.64	9.83	----	
R	08/29/2000	12:58	30.47	24.97	5.50	----	
R	11/09/2000	12:20	30.47	25.47	5.00	----	
R	02/12/2001	15:54	30.47	24.46	6.01	----	
R	06/04/2001	11:36	30.47	24.53	5.94	----	
R	08/16/2001	10:35	30.47	26.02	4.45	----	
R	11/28/2001	11:19	30.47	24.57	5.90	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
R	02/27/2002	13:17	30.47	22.50	7.97	----	
R	06/27/2002	14:08	30.47	19.75	10.72	----	
R	08/26/2002	15:58	30.47	24.38	6.09	----	
R	11/13/2002	07:22	30.47	25.04	5.43	----	
R	02/11/2003	08:41	30.47	21.22	9.25	----	
R	05/08/2003	06:46	30.47	21.14	9.33	----	
R	08/27/2003	13:25	30.47	24.91	5.56	----	
R	10/23/2003	11:56	30.47	25.60	4.87	----	
R	02/19/2004	12:05	30.47	22.15	8.32	----	
R	06/09/2004	07:30	30.47	21.21	9.26	----	
LW001D	03/31/1997	11:11	28.31	12.71	15.60	----	
LW001D	07/16/1997	08:12	28.31	17.65	10.66	----	
LW001D	10/21/1997	16:55	28.31	21.29	7.02	----	
LW001D	01/27/1998	13:07	28.31	17.06	11.25	----	
LW001D	05/18/1998	17:39	28.31	16.53	11.78	----	
LW001D	08/17/1998	10:30	28.31	21.82	6.49	----	
LW001D	11/13/1998	10:01	28.31	22.77	5.54	----	
LW001D	02/16/1999	13:21	28.31	17.30	11.01	----	
LW001D	05/18/1999	15:36	28.31	16.76	11.55	----	
LW001D	09/21/1999	12:12	28.31	22.91	5.40	----	
LW001D	12/06/1999	14:34	28.31	18.00	10.31	----	
LW001D	02/16/2000	10:49	28.31	18.16	10.15	----	
LW001D	05/23/2000	17:19	28.31	18.62	9.69	----	
LW001D	08/29/2000	13:59	28.31	22.81	5.50	----	
LW001D	11/09/2000	13:20	28.31	22.98	5.33	----	
LW001D	02/12/2001	15:35	28.31	22.23	6.08	----	
LW001D	06/04/2001	12:23	28.31	22.36	5.95	----	
LW001D	08/16/2001	11:38	28.31	23.73	4.58	----	
LW001D	11/28/2001	12:29	28.31	21.73	6.58	----	
LW001D	02/27/2002	14:17	28.31	20.31	8.00	----	
LW001D	06/27/2002	14:49	28.31	17.81	10.50	----	
LW001D	08/26/2002	17:12	28.31	22.85	5.46	----	
LW001D	11/13/2002	09:08	28.31	22.91	5.40	----	
LW001D	02/11/2003	10:27	28.31	21.11	7.20	----	
LW001D	05/08/2003	08:19	28.31	18.91	9.40	----	
LW001D	08/27/2003	14:50	28.31	22.40	5.91	----	
LW001D	10/23/2003	13:57	28.31	23.51	4.80	----	
LW001D	02/19/2004	14:30	28.31	19.91	8.40	----	
LW001D	06/09/2004	09:21	28.31	19.13	9.18	----	
LW003D	03/31/1997	11:45	30.80	19.38	11.42	----	Time estimated
LW003D	07/16/1997	08:38	30.80	28.09	2.71	----	
LW003D	10/21/1997	17:07	30.80	23.36	7.44	----	
LW003D	01/27/1998	13:30	30.80	21.66	9.14	----	
LW003D	05/18/1998	17:35	30.80	19.21	11.59	----	
LW003D	08/17/1998	10:24	30.80	24.62	6.18	----	
LW003D	11/13/1998	09:03	30.80	25.56	5.24	----	
LW003D	02/16/1999	13:44	30.80	20.00	10.80	----	
LW003D	05/18/1999	15:58	30.80	19.42	11.38	----	Purged dry at 11:00
LW003D	09/21/1999	10:40	30.80	25.76	5.04	----	
LW003D	12/06/1999	14:45	30.80	20.69	10.11	----	
LW003D	02/16/2000	09:54	30.80	20.98	9.82	----	
LW003D	05/23/2000	14:40	30.80	21.16	9.64	----	Purged dry at 13:10
LW003D	08/29/2000	14:36	30.80	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW003D	11/09/2000		30.80	----	----	----	Well sampled 11/8/00 - water level not representative
LW003D	02/12/2001	15:11	30.80	24.85	5.95	----	
LW003D	06/04/2001	12:35	30.80	25.09	5.71	----	
LW003D	08/16/2001	11:47	30.80	26.43	4.37	----	
LW003D	11/28/2001	12:42	30.80	24.48	6.32	----	
LW003D	02/27/2002	14:20	30.80	23.13	7.67	----	
LW003D	06/27/2002	14:59	30.80	20.55	10.25	----	
LW003D	08/26/2002	17:03	30.80	25.63	5.17	----	
LW003D	11/13/2002	09:20	30.80	25.57	5.23	----	
LW003D	02/11/2003	10:40	30.80	24.03	6.77	----	
LW003D	05/08/2003	08:29	30.80	21.68	9.12	----	
LW003D	08/27/2003	15:04	30.80	25.10	5.70	----	
LW003D	10/23/2003	13:49	30.80	26.18	4.62	----	
LW003D	02/19/2004	14:21	30.80	22.65	8.15	----	
LW003D	06/09/2004	09:29	30.80	21.82	8.98	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW004D	03/31/1997	09:18	30.17	14.73	15.44	----	
LW004D	07/16/1997	07:42	30.17	19.43	10.74	----	
LW004D	10/21/1997	16:27	30.17	23.02	7.15	----	
LW004D	01/27/1998	11:56	30.17	18.84	11.33	----	
LW004D	05/18/1998	17:33	30.17	18.54	11.63	----	
LW004D	08/17/1998	10:18	30.17	23.81	6.36	----	
LW004D	11/13/1998	09:57	30.17	24.99	5.18	----	
LW004D	02/16/1999	13:17	30.17	18.79	11.38	----	
LW004D	05/18/1999	15:04	30.17	18.77	11.40	----	Completed sampling at 13:40
LW004D	09/21/1999	11:41	30.17	24.78	5.39	----	
LW004D	12/06/1999	14:18	30.17	20.21	9.96	----	
LW004D	02/16/2000	10:30	30.17	20.23	9.94	----	
LW004D	05/23/2000	16:54	30.17	20.55	9.62	----	
LW004D	08/29/2000	13:38	30.17	24.78	5.39	----	
LW004D	11/09/2000	12:52	30.17	25.19	4.98	----	
LW004D	02/12/2001	16:39	30.17	24.71	5.46	----	
LW004D	06/04/2001	12:07	30.17	24.66	5.51	----	
LW004D	08/16/2001	11:15	30.17	26.27	3.90	----	
LW004D	11/28/2001	12:04	30.17	24.41	5.76	----	
LW004D	02/27/2002	14:00	30.17	22.65	7.52	----	
LW004D	03/05/2002	11:36	30.17	22.94	7.23	----	
LW004D	04/05/2002	08:19	30.17	23.75	6.42	----	
LW004D	05/29/2002	00:00	30.17	20.48	9.69	----	
LW004D	06/27/2002	14:41	30.17	20.15	10.02	----	
LW004D	08/26/2002	16:32	30.17	25.02	5.15	----	
LW004D	11/13/2002	08:23	30.17	25.26	4.91	----	
LW004D	02/11/2003	09:32	30.17	23.08	7.09	----	
LW004D	05/08/2003	07:44	30.17	21.21	8.96	----	
LW004D	08/27/2003	14:01	30.17	24.78	5.39	----	
LW004D	10/23/2003	13:16	30.17	25.85	4.32	----	
LW004D	02/19/2004	13:45	30.17	22.14	8.03	----	
LW004D	06/09/2004	08:32	30.17	21.60	8.57	----	
LW006D	03/25/1997	11:52	30.84	16.51	14.33	----	
LW006D	03/31/1997	09:05	30.84	15.53	15.31	----	Faint odor
LW006D	07/16/1997	07:30	30.84	20.74	10.10	----	
LW006D	10/21/1997	16:16	30.84	24.05	6.79	----	
LW006D	01/27/1998	11:38	30.84	19.94	10.90	----	
LW006D	05/18/1998	17:28	30.84	19.36	11.48	----	
LW006D	08/17/1998	10:05	30.84	24.92	5.92	----	
LW006D	11/13/1998	09:50	30.84	25.94	4.90	----	
LW006D	02/16/1999	13:11	30.84	20.40	10.44	----	
LW006D	05/18/1999	14:53	30.84	19.81	11.03	----	
LW006D	09/21/1999	11:32	30.84	25.92	4.92	----	
LW006D	12/06/1999	14:09	30.84	20.86	9.98	----	
LW006D	02/16/2000	10:20	30.84	21.27	9.57	----	
LW006D	05/23/2000	16:35	30.84	21.64	9.20	----	
LW006D	08/29/2000	13:20	30.84	25.93	4.91	----	
LW006D	11/09/2000	12:35	30.84	26.21	4.63	----	
LW006D	02/12/2001	16:03	30.84	25.37	5.47	----	
LW006D	06/04/2001	11:42	30.84	25.30	5.54	----	
LW006D	08/16/2001	10:54	30.84	26.72	4.12	----	
LW006D	11/28/2001	11:46	30.84	24.92	5.92	----	
LW006D	02/27/2002	13:35	30.84	23.62	7.22	----	
LW006D	06/27/2002	14:19	30.84	20.68	10.16	----	
LW006D	08/26/2002	16:04	30.84	25.79	5.05	----	
LW006D	11/13/2002	07:42	30.84	25.82	5.02	----	
LW006D	02/11/2003	09:01	30.84	24.08	6.76	----	
LW006D	05/08/2003	07:01	30.84	21.97	8.87	----	
LW006D	08/27/2003	13:40	30.84	25.37	5.47	----	
LW006D	10/23/2003	12:31	30.84	26.47	4.37	----	
LW006D	02/19/2004	12:37	30.84	23.00	7.84	----	
LW006D	06/09/2004	08:00	30.84	21.90	8.94	----	
LW009D	05/18/1999	14:56	30.98	20.02	10.96	----	
LW009D	09/21/1999	11:34	30.98	25.23	5.75	----	
LW009D	12/06/1999	14:11	30.98	21.04	9.94	----	
LW009D	02/16/2000	10:23	30.98	21.17	9.81	----	
LW009D	05/23/2000	16:39	30.98	21.15	9.83	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW009D	08/29/2000	13:27	30.98	25.36	5.62	----	
LW009D	11/09/2000	12:43	30.98	25.96	5.02	----	
LW009D	02/12/2001	16:11	30.98	25.13	5.85	----	
LW009D	06/04/2001	11:49	30.98	25.15	5.83	----	
LW009D	08/16/2001	11:02	30.98	26.57	4.41	----	
LW009D	11/28/2001	11:53	30.98	25.40	5.58	----	
LW009D	02/27/2002	13:47	30.98	22.97	8.01	----	
LW009D	06/27/2002	14:25	30.98	20.38	10.60	----	
LW009D	08/26/2002	16:11	30.98	24.90	6.08	----	
LW009D	11/13/2002	07:48	30.98	25.73	5.25	----	
LW009D	02/11/2003	09:07	30.98	22.03	8.95	----	
LW009D	05/08/2003	07:12	30.98	21.65	9.33	----	
LW009D	08/27/2003	13:47	30.98	25.50	5.48	----	
LW009D	10/23/2003	12:50	30.98	26.22	4.76	----	
LW009D	02/19/2004	13:02	30.98	22.55	8.43	----	
LW009D	06/09/2004	08:11	30.98	21.91	9.07	----	
LW010D	05/18/1999	15:00	31.12	19.82	11.30	----	
LW010D	09/21/1999	11:37	31.12	25.81	5.31	----	
LW010D	12/06/1999	14:15	31.12	21.18	9.94	----	
LW010D	02/16/2000	10:27	31.12	21.20	9.92	----	
LW010D	05/23/2000	16:42	31.12	21.51	9.61	----	
LW010D	08/29/2000	13:29	31.12	25.86	5.26	----	
LW010D	11/09/2000	12:46	31.12	26.26	4.86	----	
LW010D	02/12/2001	16:15	31.12	25.63	5.49	----	
LW010D	06/04/2001	11:52	31.12	25.62	5.50	----	
LW010D	08/16/2001	11:04	31.12	27.16	3.96	----	
LW010D	11/28/2001	11:55	31.12	25.46	5.66	----	
LW010D	02/27/2002	13:49	31.12	23.58	7.54	----	
LW010D	06/27/2002	14:29	31.12	21.03	10.09	----	
LW010D	08/26/2002	16:17	31.12	25.91	5.21	----	
LW010D	11/13/2002	08:01	31.12	26.17	4.95	----	
LW010D	02/11/2003	09:21	31.12	23.83	7.29	----	
LW010D	05/08/2003	07:33	31.12	22.10	9.02	----	
LW010D	08/27/2003	13:53	31.12	25.74	5.38	----	
LW010D	10/23/2003	13:10	31.12	26.79	4.33	----	
LW010D	02/19/2004	13:25	31.12	22.98	8.14	----	
LW010D	06/09/2004	08:23	31.12	22.46	8.66	----	
LW011D	05/18/1999	15:09	29.04	18.59	10.45	----	
LW011D	09/21/1999	11:50	29.04	20.76	8.28	----	
LW011D	12/06/1999	15:06	29.04	21.81	7.23	----	
LW011D	02/16/2000	11:02	29.04	20.35	8.69	----	
LW011D	05/23/2000	17:37	29.04	19.50	9.54	----	
LW011D	08/29/2000	14:54	29.04	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW011D	11/09/2000		29.04	----	----	----	Well sampled 11/8/00 - water level not representative
LW011D	02/12/2001	15:16	29.04	23.14	5.90	----	
LW011D	06/04/2001	13:11	29.04	23.35	5.69	----	
LW011D	08/16/2001	11:25	29.04	26.94	2.10	----	
LW011D	11/28/2001	12:53	29.04	24.54	4.50	----	
LW011D	02/27/2002	14:57	29.04	21.80	7.24	----	
LW011D	06/27/2002	15:11	29.04	18.84	10.20	----	
LW011D	08/26/2002	16:47	29.04	22.71	6.33	----	
LW011D	11/13/2002	08:55	29.04	23.87	5.17	----	
LW011D	02/11/2003	10:04	29.04	21.79	7.25	----	
LW011D	05/08/2003	08:08	29.04	19.28	9.76	----	
LW011D	08/27/2003	14:34	29.04	23.35	5.69	----	
LW011D	10/23/2003	14:11	29.04	23.98	5.06	----	
LW011D	02/19/2004	14:05	29.04	21.08	7.96	----	
LW011D	06/09/2004	08:55	29.04	20.04	9.00	----	
LW012D1	05/18/1999	15:13	30.02	18.45	11.57	----	
LW012D1	09/21/1999	11:54	30.02	24.44	5.58	----	
LW012D1	12/06/1999	14:21	30.02	19.72	10.30	----	
LW012D1	02/16/2000	10:35	30.02	19.89	10.13	----	
LW012D1	05/23/2000	17:00	30.02	20.23	9.79	----	
LW012D1	08/29/2000	13:45	30.02	24.38	5.64	----	
LW012D1	11/09/2000	13:00	30.02	24.66	5.36	----	
LW012D1	02/12/2001	15:57	30.02	23.92	6.10	----	
LW012D1	06/04/2001	12:32	30.02	23.99	6.03	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW012D1	08/16/2001	11:42	30.02	25.39	4.63	----	
LW012D1	11/28/2001	12:38	30.02	23.33	6.69	----	
LW012D1	02/27/2002	14:28	30.02	21.88	8.14	----	
LW012D1	06/27/2002	14:57	30.02	19.58	10.44	----	
LW012D1							Abandoned August 2003
LW012D2	05/18/1999	15:14	29.24	18.23	11.01	----	
LW012D2	09/21/1999	11:53	29.24	24.69	4.55	----	
LW012D2	12/06/1999	14:22	29.24	19.40	9.84	----	
LW012D2	02/16/2000	10:36	29.24	19.90	9.34	----	
LW012D2	05/23/2000	16:59	29.24	20.38	8.86	----	
LW012D2	08/29/2000	13:44	29.24	24.68	4.56	----	
LW012D2	11/09/2000	13:01	29.24	24.56	4.68	----	
LW012D2	02/12/2001	15:56	29.24	23.88	5.36	----	
LW012D2	06/04/2001	12:31	29.24	24.10	5.14	----	
LW012D2	08/16/2001	11:43	29.24	25.43	3.81	----	
LW012D2	11/28/2001	12:39	29.24	23.17	6.07	----	
LW012D2	02/27/2002	14:29	29.24	22.38	6.86	----	
LW012D2	06/27/2002	14:58	29.24	19.44	9.80	----	
LW012D2							Abandoned August 2003
LW014D	05/23/2000	16:50	30.54	21.26	9.28	----	
LW014D	08/29/2000	13:35	30.54	25.68	4.86	----	
LW014D	11/09/2000	12:49	30.54	25.90	4.64	----	
LW014D	02/12/2001	16:20	30.54	25.33	5.21	----	
LW014D	06/04/2001	12:00	30.54	25.37	5.17	----	
LW014D	08/16/2001	11:08	30.54	27.00	3.54	----	
LW014D	11/28/2001	11:56	30.54	25.03	5.51	----	
LW014D	02/27/2002	13:55	30.54	23.57	6.97	----	
LW014D	06/27/2002	14:33	30.54	20.70	9.84	----	
LW014D	08/26/2002	16:26	30.54	25.90	4.64	----	
LW014D	11/13/2002	08:07	30.54	25.76	4.78	----	
LW014D	02/11/2003	09:27	30.54	24.33	6.21	----	
LW014D	05/08/2003	07:38	30.54	21.92	8.62	----	
LW014D	08/27/2003	13:56	30.54	25.32	5.22	----	
LW014D	10/23/2003	13:13	30.54	26.56	3.98	----	
LW014D	02/19/2004	13:30	30.54	22.86	7.68	----	
LW014D	06/09/2004	08:27	30.54	22.11	8.43	----	
LW015D	05/23/2000	16:49	30.85	21.26	9.59	----	
LW015D	08/29/2000	13:34	30.85	25.54	5.31	----	
LW015D	11/09/2000	12:48	30.85	25.98	4.87	----	
LW015D	02/12/2001	16:18	30.85	25.43	5.42	----	
LW015D	06/04/2001	11:59	30.85	25.41	5.44	----	
LW015D	08/16/2001	11:07	30.85	27.05	3.80	----	
LW015D	11/28/2001	11:55	30.85	25.29	5.56	----	
LW015D	02/27/2002	13:52	30.85	23.42	7.43	----	
LW015D	06/27/2002	14:32	30.85	20.91	9.94	----	
LW015D	08/26/2002	16:25	30.85	25.77	5.08	----	
LW015D	11/13/2002	08:05	30.85	26.04	4.81	----	
LW015D	02/11/2003	09:23	30.85	23.65	7.20	----	
LW015D	05/08/2003	07:37	30.85	21.95	8.90	----	
LW015D	08/27/2003	13:55	30.85	25.58	5.27	----	
LW015D	10/23/2003	13:12	30.85	26.61	4.24	----	
LW015D	02/19/2004	13:30	30.85	22.83	8.02	----	
LW015D	06/09/2004	08:25	30.85	22.36	8.49	----	
LW016D	05/23/2000	16:48	28.40	18.79	9.61	----	
LW016D	08/29/2000	13:32	28.40	23.07	5.33	----	
LW016D	11/09/2000	12:47	28.40	23.59	4.81	----	
LW016D	02/12/2001	16:17	28.40	22.94	5.46	----	
LW016D	06/04/2001	11:57	28.40	23.00	5.40	----	
LW016D	08/16/2001	11:05	28.40	24.43	3.97	----	
LW016D	11/28/2001	11:57	28.40	22.87	5.53	----	
LW016D	02/27/2002	13:54	28.40	20.94	7.46	----	
LW016D	06/27/2002	14:31	28.40	18.46	9.94	----	
LW016D	08/26/2002	16:23	28.40	23.24	5.16	----	
LW016D	11/13/2002	08:08	28.40	23.45	4.95	----	
LW016D	02/11/2003	09:25	28.40	21.14	7.26	----	
LW016D	05/08/2003	07:36	28.40	19.65	8.75	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW016D	08/27/2003	13:54	28.40	23.08	5.32	----	
LW016D	10/23/2003	13:11	28.40	24.10	4.30	----	
LW016D	02/19/2004	13:31	28.40	20.30	8.10	----	
LW016D	06/09/2004	08:26	28.40	19.91	8.49	----	
LW017D	08/29/2000	13:21	27.82	22.96	4.86	----	
LW017D	11/09/2000	12:36	27.82	23.17	4.65	----	
LW017D	02/12/2001	16:04	27.82	22.44	5.38	----	
LW017D	06/04/2001	11:44	27.82	22.42	5.40	----	
LW017D	08/16/2001	10:55	27.82	23.80	4.02	----	
LW017D	11/28/2001	11:50	27.82	22.00	5.82	----	
LW017D	02/27/2002	13:37	27.82	19.82	8.00	----	
LW017D	03/05/2002	11:30	27.82	20.46	7.36	----	
LW017D	04/05/2002	08:15	27.82	21.34	6.48	----	
LW017D	05/29/2002	00:00	27.82	17.90	9.92	----	
LW017D	06/27/2002	14:20	27.82	17.64	10.18	----	
LW017D	08/26/2002	16:07	27.82	22.67	5.15	----	
LW017D	11/13/2002	07:45	27.82	22.80	5.02	----	
LW017D	02/11/2003	09:03	27.82	20.79	7.03	----	
LW017D	05/08/2003	07:05	27.82	18.82	9.00	----	
LW017D	08/27/2003	13:43	27.82	22.38	5.44	----	
LW017D	10/23/2003	12:34	27.82	23.46	4.36	----	
LW017D	02/19/2004	12:52	27.82	19.82	8.00	----	
LW017D	06/09/2004	08:04	27.82	19.00	8.82	----	
LW018D	08/29/2000	13:25	27.82	22.79	5.03	----	
LW018D	11/09/2000	12:40	27.82	22.91	4.91	----	
LW018D	02/12/2001	16:10	27.82	22.56	5.26	----	
LW018D	06/04/2001	11:47	27.82	22.28	5.54	----	
LW018D	08/16/2001	11:00	27.82	23.81	4.01	----	
LW018D	11/28/2001	11:51	27.82	22.00	5.82	----	
LW018D	02/27/2002	13:43	27.82	20.44	7.38	----	
LW018D	06/27/2002	14:23	27.82	17.72	10.10	----	
LW018D	08/26/2002	16:13	27.82	21.90	5.92	----	
LW018D	11/13/2002	07:51	27.82	22.71	5.11	----	
LW018D	02/11/2003	09:05	27.82	20.95	6.87	----	
LW018D	05/08/2003	07:10	27.82	18.75	9.07	----	
LW018D	08/27/2003	13:45	27.82	22.41	5.41	----	
LW018D	10/23/2003	12:45	27.82	23.46	4.36	----	
LW018D	02/19/2004	13:10	27.82	19.74	8.08	----	
LW018D	06/09/2004	08:07	27.82	19.45	8.37	----	
LW020D	10/23/2003	12:15	29.51	24.86	4.65	----	
LW020D	02/19/2004	14:46	29.51	21.00	8.51	----	
LW020D	06/09/2004	07:48	29.51	20.45	9.06	----	
LW022D	10/23/2003	11:58	32.56	27.72	4.84	----	
LW022D	02/19/2004	12:14	32.56	24.44	8.12	----	
LW022D	06/09/2004	07:22	32.56	23.35	9.21	----	
LW023D	10/23/2003	12:00	31.41	26.56	4.85	----	
LW023D	02/19/2004	12:13	31.41	23.31	8.10	----	
LW023D	06/09/2004	07:21	31.41	22.24	9.17	----	
LW024D	10/23/2003	12:23	33.47	28.61	4.86	----	
LW024D	02/19/2004	12:40	33.47	25.28	8.19	----	
LW024D	06/09/2004	07:57	33.47	24.30	9.17	----	
LW025D	10/23/2003	12:28	35.38	30.50	4.88	----	
LW025D	02/19/2004	12:38	35.38	27.25	8.13	----	
LW025D	06/09/2004	07:59	35.38	26.26	9.12	----	
LW026D	10/23/2003	12:09	31.49	27.17	4.32	----	
LW026D	02/19/2004	12:22	31.49	23.64	7.85	----	
LW026D	06/09/2004	07:37	31.49	22.67	8.82	----	
LW027D	10/23/2003	12:21	29.71	25.47	4.24	----	
LW027D	02/19/2004	12:43	29.71	21.96	7.75	----	
LW027D	06/09/2004	07:38	29.71	20.97	8.74	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW029D	10/23/2003	14:40	31.12	26.45	4.67	----	
LW029D	02/19/2004	15:31	31.12	22.55	8.57	----	
LW029D	06/09/2004	09:44	31.12	22.16	8.96	----	
LW030D	10/23/2003	14:52	30.06	25.58	4.48	----	
LW030D	02/19/2004	15:33	30.06	21.55	8.51	----	
LW030D	06/09/2004	09:47	30.06	21.21	8.85	----	
LW032D	10/23/2003	14:33	30.86	25.23	5.63	----	
LW032D	02/19/2004	15:28	30.86	21.95	8.91	----	
LW032D	06/09/2004	09:59	30.86	21.41	9.45	----	
LW035D	10/23/2003	11:48	33.19	28.33	4.86	----	
LW035D	02/19/2004	12:34	33.19	24.86	8.33	----	
LW035D	06/09/2004	07:24	33.19	23.88	9.31	----	
OX008D	10/23/2003	13:48	30.84	26.12	4.72	----	
OX008D	02/19/2004	14:20	30.84	22.52	8.32	----	
OX008D	06/09/2004	09:10	30.84	21.77	9.07	----	
RW2	05/18/1999	15:02	30.68	19.50	11.18	----	
RW2	09/21/1999	11:40	30.68	25.75	4.93	----	
RW2	12/06/1999	14:17	30.68	20.77	9.91	----	
RW2	02/16/2000	10:29	30.68	20.99	9.69	----	
RW2	05/23/2000	16:52	30.68	21.37	9.31	----	
RW2	08/29/2000	13:36	30.68	25.36	5.32	----	
RW2	11/09/2000	12:50	30.68	25.83	4.85	----	Groundwater interim action pumping began 10/5/00 in the lower zone at this well. Pump not running at time of measurement.
RW2	02/12/2001	16:37	30.68	26.40	4.28	----	
RW2	06/04/2001	12:05	30.68	26.26	4.42	----	
RW2	08/16/2001	11:11	30.68	28.98	1.70	----	
RW2	11/28/2001	12:02	30.68	26.86	3.82	----	
RW2	02/27/2002	13:57	30.68	26.02	4.66	----	
RW2	06/27/2002	14:35	30.68	23.68	7.00	----	
RW2	08/26/2002	16:29	30.68	28.26	2.42	----	
RW2	11/13/2002	08:20	30.68	28.50	2.18	----	
RW2	02/11/2003	09:29	30.68	26.96	3.72	----	
RW2	05/07/2003	17:30	30.68	24.80	5.88	----	Date of measurement is day of sampling
RW2	08/27/2003	13:57	30.68	27.91	2.77	----	
RW2	10/23/2003	13:30	30.68	28.73	1.95	----	
RW2	02/19/2004	13:43	30.68	25.53	5.15	----	
RW2	06/10/2004	08:13	30.68	25.19	5.49	----	
RIVER_GAUGE	08/11/1993	12:57	28.13	24.90	3.23	----	
RIVER_GAUGE	10/26/1993	13:17	28.13	25.27	2.86	----	
RIVER_GAUGE	11/17/1993	13:21	28.13	24.18	3.95	----	
RIVER_GAUGE	12/17/1993	12:46	28.13	22.48	5.65	----	
RIVER_GAUGE	01/17/1994	12:58	28.13	22.90	5.23	----	
RIVER_GAUGE	02/18/1994	14:10	28.13	22.30	5.83	----	
RIVER_GAUGE	03/18/1994	12:48	28.13	21.70	6.43	----	
RIVER_GAUGE	04/18/1994	14:34	28.13	23.50	4.63	----	
RIVER_GAUGE	05/18/1994	15:14	28.13	21.80	6.33	----	
RIVER_GAUGE	06/17/1994	14:45	28.13	21.32	6.81	----	
RIVER_GAUGE	07/19/1994	09:10	28.13	23.25	4.88	----	
RIVER_GAUGE	08/17/1994	07:26	28.13	24.00	4.13	----	
RIVER_GAUGE	09/16/1994	07:30	28.13	24.66	3.47	----	
RIVER_GAUGE	10/17/1994	08:58	28.13	24.10	4.03	----	
RIVER_GAUGE	11/21/1994	11:43	28.13	23.20	4.93	----	
RIVER_GAUGE	12/19/1994	10:58	28.13	19.95	8.18	----	
RIVER_GAUGE	01/18/1995	11:04	28.13	16.70	11.43	----	
RIVER_GAUGE	02/21/1995	13:14	28.13	14.65	13.48	----	
RIVER_GAUGE	03/21/1995	12:58	28.13	18.90	9.23	----	
RIVER_GAUGE	04/19/1995	12:37	28.13	19.80	8.33	----	
RIVER_GAUGE	05/19/1995	13:22	28.13	17.40	10.73	----	
RIVER_GAUGE	07/17/1995	13:48	28.13	22.00	6.13	----	
RIVER_GAUGE	08/22/1995	07:45	28.13	23.24	4.89	----	
RIVER_GAUGE	09/22/1995	08:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/20/1995	07:50	28.13	20.20	7.93	----	
RIVER_GAUGE	12/01/1995	08:23	28.13	8.45	19.68	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	12/19/1995	07:11	28.13	14.10	14.03	----	
RIVER_GAUGE	01/19/1996	08:29	28.13	14.06	14.07	----	
RIVER_GAUGE	02/20/1996	10:36	28.13	8.00	20.13	----	
RIVER_GAUGE	03/19/1996	09:15	28.13	15.95	12.18	----	
RIVER_GAUGE	04/19/1996	11:45	28.13	13.95	14.18	----	
RIVER_GAUGE	07/22/1996	14:18	28.13	22.00	6.13	----	
RIVER_GAUGE	07/22/1996	15:05	28.13	22.20	5.93	----	
RIVER_GAUGE	08/20/1996	14:09	28.13	22.80	5.33	----	
RIVER_GAUGE	08/20/1996	15:10	28.13	23.00	5.13	----	
RIVER_GAUGE	09/24/1996	07:55	28.13	23.41	4.72	----	
RIVER_GAUGE	09/24/1996	10:15	28.13	24.25	3.88	----	
RIVER_GAUGE	10/28/1996	10:53	28.13	22.95	5.18	----	
RIVER_GAUGE	10/28/1996	12:12	28.13	23.21	4.92	----	
RIVER_GAUGE	12/13/1996	12:09	28.13	14.50	13.63	----	
RIVER_GAUGE	03/25/1997	11:33	28.13	14.60	13.53	----	
RIVER_GAUGE	03/31/1997		28.13	----	----	----	Locked
RIVER_GAUGE	07/16/1997	06:55	28.13	18.73	9.40	----	
RIVER_GAUGE	07/16/1997	07:55	28.13	18.84	9.29	----	
RIVER_GAUGE	07/16/1997	09:14	28.13	18.92	9.21	----	
RIVER_GAUGE	10/21/1997	15:52	28.13	23.38	4.75	----	
RIVER_GAUGE	10/21/1997	16:11	28.13	23.44	4.69	----	
RIVER_GAUGE	10/21/1997	17:55	28.13	23.59	4.54	----	
RIVER_GAUGE	01/27/1998	10:46	28.13	18.20	9.93	----	
RIVER_GAUGE	01/27/1998	12:25	28.13	18.31	9.82	----	
RIVER_GAUGE	01/27/1998	13:56	28.13	17.89	10.24	----	
RIVER_GAUGE	05/18/1998	17:12	28.13	16.97	11.16	----	
RIVER_GAUGE	05/18/1998	17:45	28.13	17.15	10.98	----	
RIVER_GAUGE	08/17/1998	09:58	28.13	23.98	4.15	----	
RIVER_GAUGE	08/17/1998	10:34	28.13	24.15	3.98	----	
RIVER_GAUGE	11/13/1998	09:30	28.13	24.64	3.49	----	
RIVER_GAUGE	11/13/1998	10:05	28.13	24.45	3.68	----	
RIVER_GAUGE	02/16/1999	12:40	28.13	19.36	8.77	----	
RIVER_GAUGE	02/16/1999	13:27	28.13	19.43	8.70	----	
RIVER_GAUGE	05/18/1999	14:33	28.13	17.24	10.89	----	
RIVER_GAUGE	05/18/1999	15:19	28.13	17.30	10.83	----	
RIVER_GAUGE	09/21/1999	11:10	28.13	24.94	3.19	----	
RIVER_GAUGE	09/21/1999	11:59	28.13	25.03	3.10	----	
RIVER_GAUGE	12/06/1999	13:43	28.13	18.24	9.89	----	
RIVER_GAUGE	12/06/1999	14:25	28.13	18.06	10.07	----	
RIVER_GAUGE	02/16/2000	10:03	28.13	19.18	8.95	----	
RIVER_GAUGE	02/16/2000	10:41	28.13	19.07	9.06	----	
RIVER_GAUGE	05/23/2000	16:12	28.13	19.80	8.33	----	
RIVER_GAUGE	05/23/2000	17:04	28.13	19.94	8.19	----	
RIVER_GAUGE	08/29/2000	12:54	28.13	24.63	3.50	----	
RIVER_GAUGE	08/29/2000	13:49	28.13	24.91	3.22	----	
RIVER_GAUGE	11/09/2000	12:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/09/2000	13:10	28.13	23.67	4.46	----	
RIVER_GAUGE	02/12/2001	15:45	28.13	23.75	4.38	----	
RIVER_GAUGE	02/12/2001	16:43	28.13	24.00	4.13	----	
RIVER_GAUGE	06/04/2001	11:20	28.13	23.62	4.51	----	
RIVER_GAUGE	06/04/2001	12:15	28.13	23.79	4.34	----	
RIVER_GAUGE	08/16/2001	10:20	28.13	24.83	3.30	----	
RIVER_GAUGE	08/16/2001	11:29	28.13	25.23	2.90	----	
RIVER_GAUGE	11/28/2001	11:16	28.13	22.50	5.63	----	
RIVER_GAUGE	11/28/2001	12:18	28.13	23.13	5.00	----	
RIVER_GAUGE	02/27/2002	13:11	28.13	22.24	5.89	----	
RIVER_GAUGE	02/27/2002	14:12	28.13	22.27	5.86	----	
RIVER_GAUGE	03/05/2002	11:25	28.13	21.42	6.71	----	
RIVER_GAUGE	04/05/2002	08:00	28.13	23.10	5.03	----	
RIVER_GAUGE	05/29/2002	14:07	28.13	17.31	10.82	----	
RIVER_GAUGE	06/27/2002	14:07	28.13	18.31	9.82	----	
RIVER_GAUGE	06/27/2002	14:43	28.13	18.36	9.77	----	
RIVER_GAUGE	08/26/2002	15:45	28.13	24.83	3.30	----	
RIVER_GAUGE	08/26/2002	16:13	28.13	24.85	3.28	----	
RIVER_GAUGE	11/13/2002	07:19	28.13	24.10	4.03	----	
RIVER_GAUGE	11/13/2002	07:54	28.13	24.21	3.92	----	
RIVER_GAUGE	02/11/2003	08:34	28.13	23.70	4.43	----	
RIVER_GAUGE	02/11/2003	09:14	28.13	23.43	4.70	----	
RIVER_GAUGE	05/08/2003	06:40	28.13	20.02	8.11	----	
RIVER_GAUGE	05/08/2003	07:17	28.13	20.00	8.13	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - FEBRUARY 2004
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	08/27/2003	13:18	28.13	23.36	4.77	----	
RIVER_GAUGE	08/27/2003	14:15	28.13	23.66	4.47	----	
RIVER_GAUGE	10/23/2003	11:46	28.13	25.00	3.13	----	
RIVER_GAUGE	10/23/2003	13:35	28.13	24.94	3.19	----	
RIVER_GAUGE	02/19/2004	12:10	28.13	21.14	6.99	----	
RIVER_GAUGE	02/19/2004	13:20	28.13	20.89	7.24	----	
RIVER_GAUGE	06/09/2004	07:18	28.13	19.79	8.34	----	
RIVER_GAUGE	06/09/2004	08:16	28.13	19.78	8.35	----	

NM Not measured.
NA Not available.
-- No measurable product or odor observed.
* Well Point

(a) Reference Elevation (Ref. Elev) is the north side of the top of the 1.25-, 2- or 4-inch well casing, reference elevation surveys were conducted by Zarosinski-Tatone Engineers, Inc., Portland, Oregon. For the river gauge, the reference elevation was measured at a marked location on the south side of the dock on the Willamette River.
(b) Depth to water (DTW) measured from surveyed reference elevation [see note (1)].
(c) Where LNAPL thickness measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "*Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells* " [Lenhard and Parker 1990; Groundwater 28(1):57-67].

TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW010S 06/10/2004 Primary	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary
Acenaphthene	(ug/l)	0.05U	NT	NT	NT	1.19	1.41
Acenaphthylene	(ug/l)	0.05U	NT	NT	NT	0.3	0.39
Anthracene	(ug/l)	0.05U	NT	NT	NT	0.18	0.17
Benzo(a)anthracene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Benzo(a)pyrene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Benzo(b)fluoranthene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Benzo(ghi)perylene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Benzo(k)fluoranthene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Chrysene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Dibenzo(a,h)anthracene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Fluoranthene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.06
Fluorene	(ug/l)	0.05U	NT	NT	NT	3.88	3.92
Indeno(1,2,3-cd)pyrene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05U
Naphthalene	(ug/l)	5.73	NT	NT	NT	0.76	0.85
Pentachlorophenol	(ug/l)	0.499U	0.517U	0.491U	0.478U	NT	NT
Phenanthrene	(ug/l)	0.05U	NT	NT	NT	1.34	2.06
Pyrene	(ug/l)	0.05U	NT	NT	NT	0.05U	0.05

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
Acenaphthene	(ug/l)	1.24	0.05U	0.05U	0.83	0.05U	0.3
Acenaphthylene	(ug/l)	0.21	0.05U	0.05U	0.19	0.05U	0.08
Anthracene	(ug/l)	0.06	0.05U	0.05U	0.08	0.05U	0.05
Benzo(a)anthracene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Benzo(a)pyrene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Benzo(b)fluoranthene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Benzo(ghi)perylene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Benzo(k)fluoranthene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Chrysene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Dibenzo(a,h)anthracene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Fluoranthene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Fluorene	(ug/l)	2.89	0.0599	0.05U	1.54	0.05U	0.36
Indeno(1,2,3-cd)pyrene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U
Naphthalene	(ug/l)	1.28	0.05U	0.05U	0.51	0.05U	0.63
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.29	0.05U	0.05U	1.35	0.05U	0.14
Pyrene	(ug/l)	0.05U	0.05U	0.05U	0.05U	0.05U	0.05U

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary
Acenaphthene	(ug/l)	0.05U	0.05U
Acenaphthylene	(ug/l)	0.05U	0.05U
Anthracene	(ug/l)	0.05U	0.05U
Benzo(a)anthracene	(ug/l)	0.05U	0.05U
Benzo(a)pyrene	(ug/l)	0.05U	0.05U
Benzo(b)fluoranthene	(ug/l)	0.05U	0.05U
Benzo(ghi)perylene	(ug/l)	0.05U	0.05U
Benzo(k)fluoranthene	(ug/l)	0.05U	0.05U
Chrysene	(ug/l)	0.05U	0.05U
Dibenzo(a,h)anthracene	(ug/l)	0.05U	0.05U
Fluoranthene	(ug/l)	0.05U	0.05U
Fluorene	(ug/l)	0.05U	0.05U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.05U	0.05U
Naphthalene	(ug/l)	0.05U	0.05U
Pentachlorophenol	(ug/l)	NT	NT
Phenanthrene	(ug/l)	0.05U	0.05U
Pyrene	(ug/l)	0.05U	0.05U

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
1,2-Dichlorobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
1,3-Dichlorobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
1,4-Dichlorobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
2,4,5-Trichlorophenol	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
2,4,6-Trichlorophenol	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
2,4-Dichlorophenol	(ug/l)	3.02U	3.12U	2.98U	3.05U	3.05U	2.98U
2,4-Dimethylphenol	(ug/l)	3.02U	3.12U	2.98U	3.05U	3.05U	2.98U
2,4-Dinitrophenol	(ug/l)	10.1U	10.4U	9.94U	10.2U	10.2U	9.92U
2,4-Dinitrotoluene	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
2,6-Dinitrotoluene	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
2-Chloronaphthalene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
2-Chlorophenol	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
2-Methylnaphthalene	(ug/l)	1.01U	19.6	22.1	2.07	1.02U	0.992U
2-Methylphenol	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
2-Nitroaniline	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
2-Nitrophenol	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
3- & 4-Methylphenol	(ug/l)	10.1U	10.4U	9.94U	10.2U	10.2U	9.92U
3,3-Dichlorobenzidine	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
3-Nitroaniline	(ug/l)	6.05U	6.25U	5.96U	6.1U	6.09U	5.95U
4,6-Dinitro-2-Methylphenol	(ug/l)	10.1U	10.4U	9.94U	10.2U	10.2U	9.92U

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BZTO104(e)017823

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
4-Chloro-3-methylphenol	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
4-Chloroaniline	(ug/l)	3.02U	3.12U	2.98U	3.05U	3.05U	2.98U
4-Chlorophenylphenyl ether	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
4-Nitroaniline	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
4-Nitrophenol	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
Acenaphthene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	1.32
Acenaphthylene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Anthracene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzo(a)anthracene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzo(a)pyrene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzo(b)fluoranthene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzo(ghi)perylene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzo(k)fluoranthene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Benzoic acid	(ug/l)	20.2U	20.8U	19.9U	20.3U	20.3U	19.8U
Benzyl alcohol	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
Bis(2-chloroethoxy)methane	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Bis(2-chloroethyl)ether	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
Bis(2-chloroisopropyl)ether	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Butyl benzyl phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U

BZTO104(e)017824

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary
Carbazole	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Chrysene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Dibenzo(a,h)anthracene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Dibenzofuran	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.08	1.24
Diethyl phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Dimethyl phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Di-n-butyl phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Di-n-octyl phthalate	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Fluoranthene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Fluorene	(ug/l)	1.01U	1.04U	0.994U	1.02U	3.04	3.64
Hexachlorobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Hexachlorobutadiene	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
Hexachlorocyclopentadiene	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U
Hexachloroethane	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Isophorone	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Naphthalene	(ug/l)	5.13	25.4	29.2	3.55	1.02U	0.992U
Nitrobenzene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
N-Nitrosodimethylamine	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
N-Nitrosodiphenylamine	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U

BZTO104(e)017825

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary
Pentachlorophenol	(ug/l)	5.04U	5.21U	4.97U	2130	5.08U	4.96U
Phenanthrene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.41	2.38
Phenol	(ug/l)	2.02U	2.08U	1.99U	2.03U	2.03U	1.98U
Pyrene	(ug/l)	1.01U	1.04U	0.994U	1.02U	1.02U	0.992U
Pyridine	(ug/l)	5.04U	5.21U	4.97U	5.09U	5.08U	4.96U

BZTO104(e)017826

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
1,2-Dichlorobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
1,3-Dichlorobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
1,4-Dichlorobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
2,4,5-Trichlorophenol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
2,4,6-Trichlorophenol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
2,4-Dichlorophenol	(ug/l)	2.9U	2.91U	3.02U	2.96U	2.86U	2.98U
2,4-Dimethylphenol	(ug/l)	2.9U	2.91U	3.02U	2.96U	2.86U	2.98U
2,4-Dinitrophenol	(ug/l)	9.66U	9.71U	10.1U	9.85U	9.52U	9.93U
2,4-Dinitrotoluene	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
2,6-Dinitrotoluene	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
2-Chloronaphthalene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
2-Chlorophenol	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
2-Methylnaphthalene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
2-Methylphenol	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
2-Nitroaniline	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
2-Nitrophenol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
3- & 4-Methylphenol	(ug/l)	9.66U	9.71U	10.1U	9.85U	9.52U	9.93U
3,3-Dichlorobenzidine	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
3-Nitroaniline	(ug/l)	5.8U	5.83U	6.04U	5.91U	5.71U	5.96U
4,6-Dinitro-2-Methylphenol	(ug/l)	9.66U	9.71U	10.1U	9.85U	9.52U	9.93U

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BZTO104(e)017827

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
4-Chloro-3-methylphenol	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
4-Chloroaniline	(ug/l)	2.9U	2.91U	3.02U	2.96U	2.86U	2.98U
4-Chlorophenylphenyl ether	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
4-Nitroaniline	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
4-Nitrophenol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
Acenaphthene	(ug/l)	1.25	0.971U	1.01U	1.02	0.952U	0.993U
Acenaphthylene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Anthracene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzo(a)anthracene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzo(a)pyrene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzo(b)fluoranthene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzo(ghi)perylene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzo(k)fluoranthene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Benzoic acid	(ug/l)	19.3U	19.4U	20.1U	19.7U	19U	19.9U
Benzyl alcohol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
Bis(2-chloroethoxy)methane	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Bis(2-chloroethyl)ether	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
Bis(2-chloroisopropyl)ether	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Bis(2-ethylhexyl)phthalate	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Butyl benzyl phthalate	(ug/l)	4.13	0.971U	1.01U	0.985U	0.952U	0.993U

BZTO104(e)017828

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
Carbazole	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Chrysene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Dibenzo(a,h)anthracene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Dibenzofuran	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Diethyl phthalate	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Dimethyl phthalate	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Di-n-butyl phthalate	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Di-n-octyl phthalate	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Fluoranthene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Fluorene	(ug/l)	2.68	0.971U	1.01U	2.02	0.952U	0.993U
Hexachlorobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Hexachlorobutadiene	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
Hexachlorocyclopentadiene	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
Hexachloroethane	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Isophorone	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Naphthalene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Nitrobenzene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
N-Nitrosodimethylamine	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
N-Nitroso-Di-N-Propylamine	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
N-Nitrosodiphenylamine	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U

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BZTO104(e)017829

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
Pentachlorophenol	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U
Phenanthrene	(ug/l)	0.966U	0.971U	1.01U	1.86	0.952U	0.993U
Phenol	(ug/l)	1.93U	1.94U	2.01U	1.97U	1.9U	1.99U
Pyrene	(ug/l)	0.966U	0.971U	1.01U	0.985U	0.952U	0.993U
Pyridine	(ug/l)	4.83U	4.85U	5.04U	4.93U	4.76U	4.97U

BZTO104(e)017830

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
1,2-Dichlorobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
1,3-Dichlorobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
1,4-Dichlorobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
2,4,5-Trichlorophenol	(ug/l)	4.85U	4.93U	9.9	5.12U	4.88U	7.59
2,4,6-Trichlorophenol	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
2,4-Dichlorophenol	(ug/l)	2.91U	2.96U	2.95U	3.07U	2.93U	2.98U
2,4-Dimethylphenol	(ug/l)	2.91U	2.96U	2.95U	3.07U	2.93U	2.98U
2,4-Dinitrophenol	(ug/l)	9.71U	9.85U	9.83U	10.2U	9.77U	9.93U
2,4-Dinitrotoluene	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
2,6-Dinitrotoluene	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
2-Chloronaphthalene	(ug/l)	0.971U	0.985U	16.2	11.1	0.977U	0.993U
2-Chlorophenol	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
2-Methylnaphthalene	(ug/l)	0.971U	0.985U	5.53	6.53	13.5	42.9
2-Methylphenol	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
2-Nitroaniline	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
2-Nitrophenol	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
3- & 4-Methylphenol	(ug/l)	9.71U	9.85U	9.83U	10.2U	9.77U	9.93U
3,3-Dichlorobenzidine	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
3-Nitroaniline	(ug/l)	5.83U	5.91U	5.9U	6.14U	5.86U	5.96U
4,6-Dinitro-2-Methylphenol	(ug/l)	9.71U	9.85U	9.83U	10.2U	9.77U	9.93U

BZTO104(e)017831

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
4-Chloro-3-methylphenol	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
4-Chloroaniline	(ug/l)	2.91U	2.96U	2.95U	3.07U	2.93U	2.98U
4-Chlorophenylphenyl ether	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
4-Nitroaniline	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
4-Nitrophenol	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
Acenaphthene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Acenaphthylene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Anthracene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzo(a)anthracene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzo(a)pyrene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzo(b)fluoranthene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzo(ghi)perylene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzo(k)fluoranthene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Benzoic acid	(ug/l)	19.4U	19.7U	19.7U	20.5U	19.5U	19.9U
Benzyl alcohol	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
Bis(2-chloroethoxy)methane	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Bis(2-chloroethyl)ether	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
Bis(2-chloroisopropyl)ether	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Bis(2-ethylhexyl)phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	1.42
Butyl benzyl phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U

BZTO104(e)017832

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary
Carbazole	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Chrysene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Dibenzo(a,h)anthracene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Dibenzofuran	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Diethyl phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Dimethyl phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Di-n-butyl phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	1.53
Di-n-octyl phthalate	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Fluoranthene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Fluorene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Hexachlorobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Hexachlorobutadiene	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
Hexachlorocyclopentadiene	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U
Hexachloroethane	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Isophorone	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Naphthalene	(ug/l)	0.971U	0.985U	10.4	13.5	29.9	43.7
Nitrobenzene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
N-Nitrosodimethylamine	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
N-Nitroso-Di-N-Propylamine	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
N-Nitrosodiphenylamine	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U

BZTO104(e)017833

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary
Pentachlorophenol	(ug/l)	4.85U	4.93U	58.2	5030	728	634
Phenanthrene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Phenol	(ug/l)	1.94U	1.97U	1.97U	2.05U	1.95U	1.99U
Pyrene	(ug/l)	0.971U	0.985U	0.983U	1.02U	0.977U	0.993U
Pyridine	(ug/l)	4.85U	4.93U	4.92U	5.12U	4.88U	4.97U

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BZTO104(e)017834

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary	RW1 06/10/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
1,2-Dichlorobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
1,3-Dichlorobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
1,4-Dichlorobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
2,4,5-Trichlorophenol	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
2,4,6-Trichlorophenol	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
2,4-Dichlorophenol	(ug/l)	2.92U	3U	2.98U	2.95U	2.85U
2,4-Dimethylphenol	(ug/l)	2.92U	3U	2.98U	2.95U	2.85U
2,4-Dinitrophenol	(ug/l)	9.73U	10U	9.92U	9.84U	9.49U
2,4-Dinitrotoluene	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
2,6-Dinitrotoluene	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
2-Chloronaphthalene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
2-Chlorophenol	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
2-Methylnaphthalene	(ug/l)	0.973U	1U	0.992U	0.984U	4.13
2-Methylphenol	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
2-Nitroaniline	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
2-Nitrophenol	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
3- & 4-Methylphenol	(ug/l)	9.73U	10U	9.92U	9.84U	9.49U
3,3-Dichlorobenzidine	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
3-Nitroaniline	(ug/l)	5.84U	6.01U	5.95U	5.91U	5.69U
4,6-Dinitro-2-Methylphenol	(ug/l)	9.73U	10U	9.92U	9.84U	9.49U

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BZTO104(e)017835

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary	RW1 06/10/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
4-Chloro-3-methylphenol	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
4-Chloroaniline	(ug/l)	2.92U	3U	2.98U	2.95U	2.85U
4-Chlorophenylphenyl ether	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
4-Nitroaniline	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
4-Nitrophenol	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
Acenaphthene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Acenaphthylene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Anthracene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzo(a)anthracene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzo(a)pyrene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzo(b)fluoranthene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzo(ghi)perylene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzo(k)fluoranthene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Benzoic acid	(ug/l)	19.5U	20U	19.8U	19.7U	19U
Benzyl alcohol	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
Bis(2-chloroethoxy)methane	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Bis(2-chloroethyl)ether	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
Bis(2-chloroisopropyl)ether	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Bis(2-ethylhexyl)phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Butyl benzyl phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U

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BZTO104(e)017836

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary	RW1 06/10/2004 Primary
Carbazole	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Chrysene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Dibenzo(a,h)anthracene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Dibenzofuran	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Diethyl phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Dimethyl phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Di-n-butyl phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Di-n-octyl phthalate	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Fluoranthene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Fluorene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Hexachlorobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Hexachlorobutadiene	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
Hexachlorocyclopentadiene	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U
Hexachloroethane	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Isophorone	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Naphthalene	(ug/l)	0.973U	1U	1.86	3.38	8.1
Nitrobenzene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
N-Nitrosodimethylamine	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
N-Nitroso-Di-N-Propylamine	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
N-Nitrosodiphenylamine	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U

BZTO104(e)017837

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary	RW1 06/10/2004 Primary
Pentachlorophenol	(ug/l)	4.86U	3280	634	206	903
Phenanthrene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Phenol	(ug/l)	1.95U	2U	1.98U	1.97U	1.9U
Pyrene	(ug/l)	0.973U	1U	0.992U	0.984U	0.949U
Pyridine	(ug/l)	4.86U	5.01U	4.96U	4.92U	4.74U

BZTO104(e)017838

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	NT	NT	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	NT	NT	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	NT	NT	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	NT	NT	3.34	1U	1U	99.4
1,2-Dibromoethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	NT	NT	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	NT	NT	4.24	1U	1U	27.7
1,3-Dichlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	NT	NT	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	NT	NT	1U	1U	1U	1U
2-Butanone	(ug/l)	NT	NT	10U	10U	10U	11.6

BZTO104(e)017839

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary
2-Chlorotoluene	(ug/l)	NT	NT	1U	1U	1U	1U
2-Hexanone	(ug/l)	NT	NT	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	NT	NT	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	NT	NT	1U	1U	1U	3.19
4-Methyl-2-Pentanone (MIBK)	(ug/l)	NT	NT	20U	20U	20U	20U
Acetone	(ug/l)	NT	NT	50U	50U	50U	50U
Acrylonitrile	(ug/l)	NT	NT	5U	5U	5U	5U
Benzene	(ug/l)	0.3U	0.3U	0.3U	9.45	9.52	11.6
Bromobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
Bromochloromethane	(ug/l)	NT	NT	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	NT	NT	1U	1U	1U	1U
Bromoform	(ug/l)	NT	NT	1U	1U	1U	1U
Bromomethane	(ug/l)	NT	NT	1U	1U	1U	1U
Carbon disulfide	(ug/l)	NT	NT	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	NT	NT	1U	1U	1U	1U
Chlorobenzene	(ug/l)	NT	NT	1U	1U	1U	1U
Chloroethane	(ug/l)	NT	NT	1U	1U	1U	1U
Chloroform	(ug/l)	NT	NT	1U	1U	1U	1U
Chloromethane	(ug/l)	NT	NT	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	NT	NT	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	NT	NT	1U	1U	1U	1U

BZTO104(e)017840

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary
Dibromochloromethane	(ug/l)	NT	NT	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	NT	NT	1U	1U	1U	1U
Dibromomethane	(ug/l)	NT	NT	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	NT	NT	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	50.8	272J	204J	38.6
Hexachlorobutadiene	(ug/l)	NT	NT	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	NT	NT	24.9	244	215	12
m,p-Xylene	(ug/l)	2U	2U	21.6	2U	2U	59
Methyl tert-butyl ether	(ug/l)	NT	NT	1U	1U	1U	1U
Methylene chloride	(ug/l)	NT	NT	20U	20U	20U	20U
Naphthalene	(ug/l)	NT	NT	11.3	51.7	46.6	8.95
n-Butylbenzene	(ug/l)	NT	NT	2.16	10.2	9.5	2.47
n-Propylbenzene	(ug/l)	NT	NT	41.8	275	228	18.1
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	67.8
sec-Butylbenzene	(ug/l)	NT	NT	2.15	29.8	29.5	5.49
Styrene	(ug/l)	NT	NT	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	NT	NT	1U	8.3	8.1	1.16
Tetrachloroethene	(ug/l)	NT	NT	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	NT	NT	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	NT	NT	1U	1U	1U	1U

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BZTO104(e)017841

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary
Trichloroethene	(ug/l)	NT	NT	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	NT	NT	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	NT	NT	1U	1U	1U	1U

BZTO104(e)017842

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U	10U

BZTO104(e)017843

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U	5U
Benzene	(ug/l)	0.3U	0.3U	0.3U	0.3U	0.3U	0.3U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)017844

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	7.29	7.53	6.97	1U	1U	8.76
m,p-Xylene	(ug/l)	2U	2U	2U	2U	2U	2U
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	1U	1U	1U	1U	1U	1U
n-Butylbenzene	(ug/l)	3.17	3.12	2.24	1U	1U	3.98
n-Propylbenzene	(ug/l)	12.3	13.5	9.41	1U	1U	36.4
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	5.87	6.65	2.24	1U	1U	2.3
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW019S	LW020S	LW027S	LW028S	LW029S	LW030S
	DATE	06/08/2004	06/08/2004	06/10/2004	06/07/2004	06/08/2004	06/08/2004
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	208	307
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	73.5	83.1
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U	10U

BZTO104(e)017847

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	6.85	10.1
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U	5U
Benzene	(ug/l)	0.3U	0.3U	0.3U	0.3U	112	6.51
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)017848

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	118	91.3
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	1U	7.05	1U	1U	35.5	48.5
m,p-Xylene	(ug/l)	2U	2U	2U	2U	273	105
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	1U	1U	1U	1U	18.2	22.6
n-Butylbenzene	(ug/l)	1U	2.69	1U	1U	4.85	6.92
n-Propylbenzene	(ug/l)	1U	9.16	1U	1U	54.7	62.8
o-Xylene	(ug/l)	1U	1U	1U	1U	112	190
sec-Butylbenzene	(ug/l)	1U	3.73	1U	1U	9.01	22.9
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1.95	2.91
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	4.66	1.19
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)017849

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)017850

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	331	524	1U	83.7	27.3	109
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	92.3	158	1U	17.7	3.24	32
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U	10U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	12.1	22.3	1U	2.71	1U	4.03
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U	5U
Benzene	(ug/l)	130	109	0.3U	0.3U	0.3U	0.3U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	206	292	1U	1.31	1U	3.06
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	70.1	108	1U	4.94	1.23	10.6
m,p-Xylene	(ug/l)	477	236	2U	2U	2U	2U
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	48.7	64.9	1U	5.3	4.59	6.04
n-Butylbenzene	(ug/l)	8.37	17.7	1U	2.06	1U	3.89
n-Propylbenzene	(ug/l)	103	125	1U	9.71	1.85	19.6
o-Xylene	(ug/l)	225	318	1U	5.49	2.79	12.4
sec-Butylbenzene	(ug/l)	15	24.6	1U	6.54	1.4	20.1
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	2.81	3.95	1U	1U	1U	2.14
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Toluene	(ug/l)	7.84	2.77	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 06/10/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U
1,1,1-Trichloroethane	(ug/l)	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U
1,1,2-Trichloroethane	(ug/l)	1U
1,1-Dichloroethane	(ug/l)	1U
1,1-Dichloroethene	(ug/l)	1U
1,1-Dichloropropene	(ug/l)	1U
1,2,3-Trichlorobenzene	(ug/l)	1U
1,2,3-Trichloropropane	(ug/l)	1U
1,2,4-Trichlorobenzene	(ug/l)	1U
1,2,4-Trimethylbenzene	(ug/l)	226
1,2-Dibromoethane	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,2-Dichloroethane	(ug/l)	1U
1,2-Dichloropropane	(ug/l)	1U
1,3,5-Trimethylbenzene	(ug/l)	66.6
1,3-Dichlorobenzene	(ug/l)	1U
1,3-Dichloropropane	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2-Dichloropropane	(ug/l)	1U
2-Butanone	(ug/l)	10U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 06/10/2004 Primary
2-Chlorotoluene	(ug/l)	1U
2-Hexanone	(ug/l)	10U
4-Chlorotoluene	(ug/l)	1U
4-Isopropyltoluene	(ug/l)	5.98
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U
Acetone	(ug/l)	50U
Acrylonitrile	(ug/l)	5U
Benzene	(ug/l)	6.78
Bromobenzene	(ug/l)	1U
Bromochloromethane	(ug/l)	1U
Bromodichloromethane	(ug/l)	1U
Bromoform	(ug/l)	1U
Bromomethane	(ug/l)	1U
Carbon disulfide	(ug/l)	2U
Carbon tetrachloride	(ug/l)	1U
Chlorobenzene	(ug/l)	1U
Chloroethane	(ug/l)	1U
Chloroform	(ug/l)	1U
Chloromethane	(ug/l)	1U
cis-1,2-Dichloroethene	(ug/l)	1U
cis-1,3-Dichloropropene	(ug/l)	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW1
	DATE	06/10/2004
	RESULT TYPE	Primary
Dibromochloromethane	(ug/l)	1U
Dibromochloropropane	(ug/l)	1U
Dibromomethane	(ug/l)	1U
Dichlorodifluoromethane	(ug/l)	1U
Ethylbenzene	(ug/l)	90.7
Hexachlorobutadiene	(ug/l)	1U
Isopropylbenzene	(ug/l)	35.7
m,p-Xylene	(ug/l)	110
Methyl tert-butyl ether	(ug/l)	1U
Methylene chloride	(ug/l)	20U
Naphthalene	(ug/l)	16.7
n-Butylbenzene	(ug/l)	4.07
n-Propylbenzene	(ug/l)	57.3
o-Xylene	(ug/l)	130
sec-Butylbenzene	(ug/l)	10.5
Styrene	(ug/l)	1U
tert-Butylbenzene	(ug/l)	1.95
Tetrachloroethene	(ug/l)	1U
Toluene	(ug/l)	1U
trans-1,2-Dichloroethene	(ug/l)	1U
trans-1,3-Dichloropropene	(ug/l)	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW1
	DATE	06/10/2004
	RESULT TYPE	Primary
Trichloroethene	(ug/l)	1U
Trichlorofluoromethane	(ug/l)	1U
Vinyl Chloride	(ug/l)	1U

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TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW019S 06/08/2004 Primary
Diesel Range Hydrocarbons	(mg/l)	NT	NT	0.651	8.52	8.36	7.12
Gasoline Range Hydrocarbons	(ug/l)	100U	100U	380	8620	8370	1280
TPH-Motor Oil Range	(mg/l)	NT	NT	0.567	0.496U	0.506U	0.516U

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TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW020S 06/08/2004 Primary	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary
Diesel Range Hydrocarbons	(mg/l)	10.7	6.95	0.331	0.255U	2.23	0.469
Gasoline Range Hydrocarbons	(ug/l)	981	1660	100U	100U	1000	100U
TPH-Motor Oil Range	(mg/l)	0.498U	0.498U	0.513U	0.511U	0.497U	0.492U

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TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW032S	LW033S	LW034S
	DATE	06/08/2004	06/08/2004	06/08/2004
	RESULT TYPE	Primary	Primary	Primary
Diesel Range Hydrocarbons	(mg/l)	3.48	0.244U	0.242U
Gasoline Range Hydrocarbons	(ug/l)	1170	100U	100U
TPH-Motor Oil Range	(mg/l)	0.5U	0.487U	0.484U

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS AND FERROUS IRON (SW6000,SM3500)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW007S	LW008S	LW008S	LW011S	LW019S	LW020S
	DATE	06/09/2004	06/09/2004	06/09/2004	06/10/2004	06/08/2004	06/08/2004
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Primary	Primary
Arsenic	(ug/l)	14.6	22.5	22.8	4.58	39.3	29.3
Chromium	(mg/l)	0.0148	0.0144	0.0161	0.0173	0.005U	0.0133
Copper	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Ferrous Iron	(mg/l)	NT	NT	NT	39.8	NT	NT
Lead	(ug/l)	0.1U	0.1U	0.1U	0.1U	0.1U	0.105
Nickel	(mg/l)	0.005U	0.005U	0.005U	0.005U	0.005U	0.005U
Selenium	(mg/l)	NT	NT	NT	0.02U	NT	NT
Zinc	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS AND FERROUS IRON (SW6000,SM3500)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary
Arsenic	(ug/l)	24.3	1U	1.46	15.4	1U	25.5
Chromium	(mg/l)	0.0144	0.005U	0.0178	0.005U	0.0187	0.0162
Copper	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Ferrous Iron	(mg/l)	NT	NT	NT	NT	NT	NT
Lead	(ug/l)	0.1U	0.195	0.1U	1.21	0.1U	0.1U
Nickel	(mg/l)	0.005U	0.0094	0.005U	0.005U	0.005U	0.005U
Selenium	(mg/l)	NT	NT	NT	NT	NT	NT
Zinc	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS AND FERROUS IRON (SW6000,SM3500)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary
Arsenic	(ug/l)	1U	1U	15.1	3.61	21.2	14.5
Chromium	(mg/l)	0.005U	0.005U	0.0173	0.0134	0.0119	0.034
Copper	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.0256
Ferrous Iron	(mg/l)	NT	NT	48.6	26.6	65	38.8
Lead	(ug/l)	0.1U	0.15	0.1U	0.1U	0.1U	8.39
Nickel	(mg/l)	0.005U	0.005U	0.0078	0.005U	0.005U	0.0219
Selenium	(mg/l)	NT	NT	0.02U	0.02U	0.02U	0.02U
Zinc	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.0674

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS AND FERROUS IRON (SW6000,SM3500)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary	RW1 06/10/2004 Primary
Arsenic	(ug/l)	9.5	13	10.5	12.1	11.8
Chromium	(mg/l)	0.0126	0.0147	0.0162	0.0143	0.0382
Copper	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.0286
Ferrous Iron	(mg/l)	16.4	24.2	20.8	14	66
Lead	(ug/l)	0.1U	0.1U	0.1U	0.1U	8.18
Nickel	(mg/l)	0.005U	0.005U	0.005U	0.005U	0.0199
Selenium	(mg/l)	0.02U	0.02U	0.02U	0.02U	0.02U
Zinc	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.102

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	K 06/09/2004 Primary	LW001S 06/09/2004 Primary	LW007S 06/09/2004 Primary	LW008S 06/09/2004 Primary	LW008S 06/09/2004 Duplicate 1	LW011S 06/10/2004 Primary
Chloride	(mg/l)	NT	NT	3.53	2.96	3.39	3.92
Dissolved Oxygen	(mg/l)	2.12	1.46	1.23	0.74	0.74	1.24
pH	(s.u.)	4.41	5.1	5.13	4.87	4.87	6.31
Redox	(mv)	NT	NT	NT	NT	NT	20
Specific Conductivity	(us)	197	207	352	368	368	418
Temperature	(c)	15.2	16.2	15.6	14.7	14.7	14.3
Total Dissolved Solids	(mg/l)	NT	NT	259	271	300	389
Turbidity	(ntu)	39	47	962	114	114	153

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW019S 06/08/2004 Primary	LW020S 06/08/2004 Primary	LW027S 06/10/2004 Primary	LW028S 06/07/2004 Primary	LW029S 06/08/2004 Primary	LW030S 06/08/2004 Primary
Chloride	(mg/l)	1.19	1.91	1.9	1.04	1.32	1.41
Dissolved Oxygen	(mg/l)	1.05	1.94	0.81	4.51	2.36	2.55
pH	(s.u.)	6.64	6.56	6.33	4.93	6.65	6.67
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	452	445	413	67	88	210
Temperature	(c)	15	14.5	12.8	13.2	13.6	13.6
Total Dissolved Solids	(mg/l)	148	281	311	92	103	179
Turbidity	(ntu)	167	45	119	48	28	22

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW031S 06/08/2004 Primary	LW032S 06/08/2004 Primary	LW033S 06/08/2004 Primary	LW034S 06/08/2004 Primary	OX001S 06/10/2004 Primary	OX002S 06/10/2004 Primary
Chloride	(mg/l)	2.53	3.19	1.93	2.85	3.07	3.58
Dissolved Oxygen	(mg/l)	2.6	1.45	1.85	1.43	0.94	1.07
pH	(s.u.)	5.86	6.36	6.08	6.03	6.23	6.25
Redox	(mv)	NT	NT	NT	NT	23	23
Specific Conductivity	(us)	128	316	140	218	387	434
Temperature	(c)	13	13.4	14.2	13.8	14.2	14.8
Total Dissolved Solids	(mg/l)	143	232	150	201	301	389
Turbidity	(ntu)	10	93	108	23	234	1

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX003S 06/10/2004 Primary	OX004S 06/10/2004 Primary	OX005S 06/10/2004 Primary	OX006S 06/10/2004 Primary	OX007S 06/10/2004 Primary	OX008S 06/10/2004 Primary
Chloride	(mg/l)	4.44	4.11	3.44	3.13	2.88	4.22
Dissolved Oxygen	(mg/l)	0.74	1.1	1.76	1.38	3.02	1.21
pH	(s.u.)	6.16	6.19	6.27	6.38	6.3	6.33
Redox	(mv)	28	26	17	15	20	17
Specific Conductivity	(us)	447	384	346	374	370	437
Temperature	(c)	15	14.9	12.3	14.6	14.2	13.9
Total Dissolved Solids	(mg/l)	369	271	255	284	315	379
Turbidity	(ntu)	313	950	0	297	192	983

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 06/10/2004 Primary
Chloride	(mg/l)	6.59
Dissolved Oxygen	(mg/l)	2.42
pH	(s.u.)	6.35
Redox	(mv)	17
Specific Conductivity	(us)	575
Temperature	(c)	16.3
Total Dissolved Solids	(mg/l)	472
Turbidity	(ntu)	107

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TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXINS AND FURANS (SW8290)
SECOND QUARTERLY SAMPLING EVENT, JULY 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	OX002S 07/12/2004	OX006S 07/12/2004	RW1 07/12/2004
1,2,3,4,6,7,8-HpCDD	(ng/l)	4.502444	0.160343	0.003583J
1,2,3,4,6,7,8-HpCDF	(ng/l)	0.705588	0.023098	0.001827U
1,2,3,4,7,8,9-HpCDF	(ng/l)	0.035143	0.001711U	0.002484U
1,2,3,4,7,8-HxCDD	(ng/l)	0.00466J	0.001267U	0.001465U
1,2,3,4,7,8-HxCDF	(ng/l)	0.027685	0.002389J	0.000811U
1,2,3,6,7,8-HxCDD	(ng/l)	0.115964	0.006653J	0.001233U
1,2,3,6,7,8-HxCDF	(ng/l)	0.012362J	0.000732U	0.000804U
1,2,3,7,8,9-HxCDD	(ng/l)	0.011181J	0.001076U	0.001245U
1,2,3,7,8,9-HxCDF	(ng/l)	0.001979U	0.000894U	0.000982U
1,2,3,7,8-PeCDD	(ng/l)	0.001145U	0.001091U	0.001184U
1,2,3,7,8-PeCDF	(ng/l)	0.005426J	0.000721U	0.002537J
2,3,4,6,7,8-HxCDF	(ng/l)	0.01246J	0.000802U	0.000882U
2,3,4,7,8-PeCDF	(ng/l)	0.003945J	0.000702U	0.000886U
2,3,7,8-TCDD	(ng/l)	0.001186U	0.001143U	0.001296U
2,3,7,8-TCDF	(ng/l)	0.00099U	0.001007U	0.001172U
OCDD	(ng/l)	33.577997J	0.761183	0.036956UJ
OCDF	(ng/l)	3.277332	0.087928	0.006121UJ
Total HpCDD	(ng/l)	7.076281	0.251496	0.006947
Total HpCDF	(ng/l)	3.428142	0.125689	0.001856
Total HxCDD	(ng/l)	0.294442	0.017614	0.001233U
Total HxCDF	(ng/l)	0.873515	0.037855	0.000804U

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TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXINS AND FURANS (SW8290)
SECOND QUARTERLY SAMPLING EVENT, JULY 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 07/12/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	OX002S 07/12/2004	OX006S 07/12/2004	RW1 07/12/2004
Total PeCDD	(ng/l)	0.001145U	0.001091U	0.001184U
Total PeCDF	(ng/l)	0.093578	0.00675	0.008505
Total TCDD	(ng/l)	0.001186U	0.001143U	0.001296U
Total TCDF	(ng/l)	0.008498	0.001007U	0.01243
Total TEQ	(ng/l)	0.11	0.003588	0.00016272

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	G1A 06/07/2004	LW006D 06/07/2004	LW009D 06/07/2004	LW010D 06/10/2004	LW020D 06/08/2004	LW022D 06/07/2004
Acenaphthene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Acenaphthylene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Anthracene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Benzo(a)anthracene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Benzo(a)pyrene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Chrysene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Fluoranthene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Fluorene	(ug/l)	NT	NT	NT	NT	0.17	0.0482U
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Naphthalene	(ug/l)	NT	NT	NT	NT	0.06	0.106
Pentachlorophenol	(ug/l)	0.507U	0.498U	0.494U	0.509U	NT	NT
Phenanthrene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U
Pyrene	(ug/l)	NT	NT	NT	NT	0.05U	0.0482U

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW023D 06/07/2004	LW024D 06/07/2004	LW025D 06/07/2004	LW026D 06/07/2004	LW027D 06/07/2004	LW029D 06/08/2004
Acenaphthene	(ug/l)	0.429	1.21	0.112	0.0482U	0.0871	0.05U
Acenaphthylene	(ug/l)	0.0683	0.303	0.0509U	0.0482U	0.0484U	0.05U
Anthracene	(ug/l)	0.0488U	0.162	0.214	0.0482U	0.0484U	0.05U
Benzo(a)anthracene	(ug/l)	0.0488U	0.0607	0.102	0.0482U	0.0484U	0.05U
Benzo(a)pyrene	(ug/l)	0.0488U	0.0506U	0.0916	0.0482U	0.0484U	0.05U
Benzo(b)fluoranthene	(ug/l)	0.0488U	0.0506U	0.0814	0.0482U	0.0484U	0.05U
Benzo(ghi)perylene	(ug/l)	0.0488U	0.0506U	0.0509U	0.0482U	0.0484U	0.05U
Benzo(k)fluoranthene	(ug/l)	0.0488U	0.0506U	0.0509U	0.0482U	0.0484U	0.05U
Chrysene	(ug/l)	0.0488U	0.0506U	0.0712	0.0482U	0.0484U	0.05U
Dibenzo(a,h)anthracene	(ug/l)	0.0488U	0.0506U	0.0509U	0.0482U	0.0484U	0.05U
Fluoranthene	(ug/l)	0.0488U	0.212	0.387	0.0482U	0.0484U	0.05U
Fluorene	(ug/l)	0.0585	2.81	0.285	0.0482U	0.0484U	0.05U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.0488U	0.0506U	0.0509U	0.0482U	0.0484U	0.05U
Naphthalene	(ug/l)	0.517	0.87	0.397	0.0482U	0.126	0.05U
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.0585	1.63	0.234	0.0482U	0.0484U	0.05U
Pyrene	(ug/l)	0.0585	0.263	0.529	0.0482U	0.0484U	0.05U

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PAHS AND PENTACHLOROPHENOL (SW8270SIM)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW030D 06/08/2004	LW032D 06/08/2004	LW035D 06/07/2004
Acenaphthene	(ug/l)	0.05U	0.05U	0.0513U
Acenaphthylene	(ug/l)	0.05U	0.05U	0.0513U
Anthracene	(ug/l)	0.05U	0.05U	0.0513U
Benzo(a)anthracene	(ug/l)	0.05U	0.05U	0.0616
Benzo(a)pyrene	(ug/l)	0.05U	0.05U	0.0513
Benzo(b)fluoranthene	(ug/l)	0.05U	0.05U	0.0513
Benzo(ghi)perylene	(ug/l)	0.05U	0.05U	0.0513U
Benzo(k)fluoranthene	(ug/l)	0.05U	0.05U	0.0513U
Chrysene	(ug/l)	0.05U	0.05U	0.0513U
Dibenzo(a,h)anthracene	(ug/l)	0.05U	0.05U	0.0513U
Fluoranthene	(ug/l)	0.05U	0.05U	0.0719
Fluorene	(ug/l)	0.05U	0.05U	0.0513U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.05U	0.05U	0.0513U
Naphthalene	(ug/l)	0.05U	0.05U	0.133
Pentachlorophenol	(ug/l)	NT	NT	NT
Phenanthrene	(ug/l)	0.05U	0.05U	0.0513U
Pyrene	(ug/l)	0.05U	0.05U	0.0924

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
1,2-Dichlorobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
1,3-Dichlorobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
1,4-Dichlorobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
2,4,5-Trichlorophenol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
2,4,6-Trichlorophenol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
2,4-Dichlorophenol	(ug/l)	3.19U	2.99U	3.41U	3.21U	3.12U	2.85U
2,4-Dimethylphenol	(ug/l)	3.19U	2.99U	3.41U	3.21U	3.12U	2.85U
2,4-Dinitrophenol	(ug/l)	10.6U	9.98U	11.4U	10.7U	10.4U	9.51U
2,4-Dinitrotoluene	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
2,6-Dinitrotoluene	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
2-Chloronaphthalene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
2-Chlorophenol	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
2-Methylnaphthalene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
2-Methylphenol	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
2-Nitroaniline	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
2-Nitrophenol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
3- & 4-Methylphenol	(ug/l)	10.6U	9.98U	11.4U	10.7U	10.4U	9.51U
3,3-Dichlorobenzidine	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
3-Nitroaniline	(ug/l)	6.39U	5.99U	6.81U	6.42U	6.23U	5.71U
4,6-Dinitro-2-Methylphenol	(ug/l)	10.6U	9.98U	11.4U	10.7U	10.4U	9.51U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
4-Chloro-3-methylphenol	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
4-Chloroaniline	(ug/l)	3.19U	2.99U	3.41U	3.21U	3.12U	2.85U
4-Chlorophenylphenyl ether	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
4-Nitroaniline	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
4-Nitrophenol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
Acenaphthene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Acenaphthylene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Anthracene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzo(a)anthracene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzo(a)pyrene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzo(b)fluoranthene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzo(ghi)perylene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzo(k)fluoranthene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Benzoic acid	(ug/l)	21.3U	20U	22.7U	21.4U	20.8U	19U
Benzyl alcohol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
Bis(2-chloroethoxy)methane	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Bis(2-chloroethyl)ether	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
Bis(2-chloroisopropyl)ether	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Butyl benzyl phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Carbazole	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Chrysene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Dibenzo(a,h)anthracene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Dibenzofuran	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Diethyl phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Dimethyl phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Di-n-butyl phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Di-n-octyl phthalate	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Fluoranthene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Fluorene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Hexachlorobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Hexachlorobutadiene	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
Hexachlorocyclopentadiene	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
Hexachloroethane	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Isophorone	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Naphthalene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Nitrobenzene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
N-Nitrosodimethylamine	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
N-Nitrosodiphenylamine	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U

BZTO104(e)017878

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Pentachlorophenol	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U
Phenanthrene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Phenol	(ug/l)	2.13U	2U	2.27U	2.14U	2.08U	1.9U
Pyrene	(ug/l)	1.06U	0.998U	1.14U	1.07U	1.04U	0.951U
Pyridine	(ug/l)	5.32U	4.99U	5.68U	5.35U	5.19U	4.76U

BZTO104(e)017879

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
1,2,4-Trichlorobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
1,2-Dichlorobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
1,3-Dichlorobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
1,4-Dichlorobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
2,4,5-Trichlorophenol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
2,4,6-Trichlorophenol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
2,4-Dichlorophenol	(ug/l)	2.9U	2.85U	3.06U	2.92U	2.97U	2.96U
2,4-Dimethylphenol	(ug/l)	2.9U	2.85U	3.06U	2.92U	2.97U	2.96U
2,4-Dinitrophenol	(ug/l)	9.68U	9.51U	10.2U	9.72U	9.89U	9.87U
2,4-Dinitrotoluene	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
2,6-Dinitrotoluene	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
2-Chloronaphthalene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
2-Chlorophenol	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
2-Methylnaphthalene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
2-Methylphenol	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
2-Nitroaniline	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
2-Nitrophenol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
3- & 4-Methylphenol	(ug/l)	9.68U	9.51U	10.2U	9.72U	9.89U	9.87U
3,3-Dichlorobenzidine	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
3-Nitroaniline	(ug/l)	5.81U	5.7U	6.13U	5.83U	5.93U	5.92U
4,6-Dinitro-2-Methylphenol	(ug/l)	9.68U	9.51U	10.2U	9.72U	9.89U	9.87U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
4-Bromophenyl-phenylether	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
4-Chloro-3-methylphenol	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
4-Chloroaniline	(ug/l)	2.9U	2.85U	3.06U	2.92U	2.97U	2.96U
4-Chlorophenylphenyl ether	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
4-Nitroaniline	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
4-Nitrophenol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
Acenaphthene	(ug/l)	0.968U	1.27	1.02U	0.972U	0.989U	0.987U
Acenaphthylene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Anthracene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzo(a)anthracene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzo(a)pyrene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzo(b)fluoranthene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzo(ghi)perylene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzo(k)fluoranthene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Benzoic acid	(ug/l)	19.4U	19U	20.4U	19.4U	19.8U	19.7U
Benzyl alcohol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
Bis(2-chloroethoxy)methane	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Bis(2-chloroethyl)ether	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
Bis(2-chloroisopropyl)ether	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Bis(2-ethylhexyl)phthalate	(ug/l)	0.968U	1.07	3.53	0.972U	0.989U	0.987U
Butyl benzyl phthalate	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Carbazole	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Chrysene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Dibenzo(a,h)anthracene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Dibenzofuran	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Diethyl phthalate	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Dimethyl phthalate	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Di-n-butyl phthalate	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Di-n-octyl phthalate	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Fluoranthene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Fluorene	(ug/l)	0.968U	3.06	1.02U	0.972U	0.989U	0.987U
Hexachlorobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Hexachlorobutadiene	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
Hexachlorocyclopentadiene	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
Hexachloroethane	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Isophorone	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Naphthalene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Nitrobenzene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
N-Nitrosodimethylamine	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
N-Nitroso-Di-N-Propylamine	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
N-Nitrosodiphenylamine	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Pentachlorophenol	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U
Phenanthrene	(ug/l)	0.968U	2.13	1.02U	0.972U	0.989U	0.987U
Phenol	(ug/l)	1.94U	1.9U	2.04U	1.94U	1.98U	1.97U
Pyrene	(ug/l)	0.968U	0.951U	1.02U	0.972U	0.989U	0.987U
Pyridine	(ug/l)	4.84U	4.75U	5.11U	4.86U	4.95U	4.94U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
1,2,4-Trichlorobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
1,2-Dichlorobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
1,3-Dichlorobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
1,4-Dichlorobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
2,4,5-Trichlorophenol	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
2,4,6-Trichlorophenol	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
2,4-Dichlorophenol	(ug/l)	2.93U	3.04U	3.01U	3.07U	2.92U
2,4-Dimethylphenol	(ug/l)	2.93U	3.04U	3.01U	3.07U	2.92U
2,4-Dinitrophenol	(ug/l)	9.76U	10.1U	10U	10.2U	9.75U
2,4-Dinitrotoluene	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
2,6-Dinitrotoluene	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
2-Chloronaphthalene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
2-Chlorophenol	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
2-Methylnaphthalene	(ug/l)	0.976U	1.01U	1U	5.41	6.08
2-Methylphenol	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
2-Nitroaniline	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
2-Nitrophenol	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
3- & 4-Methylphenol	(ug/l)	9.76U	10.1U	10U	10.2U	9.75U
3,3-Dichlorobenzidine	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
3-Nitroaniline	(ug/l)	5.85U	6.07U	6.02U	6.15U	5.85U
4,6-Dinitro-2-Methylphenol	(ug/l)	9.76U	10.1U	10U	10.2U	9.75U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
4-Bromophenyl-phenylether	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
4-Chloro-3-methylphenol	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
4-Chloroaniline	(ug/l)	2.93U	3.04U	3.01U	3.07U	2.92U
4-Chlorophenylphenyl ether	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
4-Nitroaniline	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
4-Nitrophenol	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
Acenaphthene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Acenaphthylene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Anthracene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzo(a)anthracene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzo(a)pyrene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzo(b)fluoranthene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzo(ghi)perylene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzo(k)fluoranthene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Benzoic acid	(ug/l)	19.5U	20.2U	20.1U	20.5U	19.5U
Benzyl alcohol	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
Bis(2-chloroethoxy)methane	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Bis(2-chloroethyl)ether	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
Bis(2-chloroisopropyl)ether	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Bis(2-ethylhexyl)phthalate	(ug/l)	0.976U	2.21	1U	1.02U	0.975U
Butyl benzyl phthalate	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Carbazole	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Chrysene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Dibenzo(a,h)anthracene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Dibenzofuran	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Diethyl phthalate	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Dimethyl phthalate	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Di-n-butyl phthalate	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Di-n-octyl phthalate	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Fluoranthene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Fluorene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Hexachlorobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Hexachlorobutadiene	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
Hexachlorocyclopentadiene	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U
Hexachloroethane	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Isophorone	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Naphthalene	(ug/l)	0.976U	1.01U	1U	1.56	1.69
Nitrobenzene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
N-Nitrosodimethylamine	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
N-Nitroso-Di-N-Propylamine	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
N-Nitrosodiphenylamine	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U

BZTO104(e)017886

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Pentachlorophenol	(ug/l)	4.88U	5.06U	5.02U	47.3	46.7
Phenanthrene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Phenol	(ug/l)	1.95U	2.02U	2.01U	2.05U	1.95U
Pyrene	(ug/l)	0.976U	1.01U	1U	1.02U	0.975U
Pyridine	(ug/l)	4.88U	5.06U	5.02U	5.12U	4.87U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U	10U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U	5U
Benzene	(ug/l)	0.3U	0.3U	0.3U	0.3U	0.3U	0.3U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	105	2.05	1U	1U	1U	13.8
m,p-Xylene	(ug/l)	2U	2U	2U	2U	2U	2U
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	1U	1U	1U	1U	1U	1U
n-Butylbenzene	(ug/l)	15	1U	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	112	1U	1U	1U	1U	5.59
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	27.5	1U	1U	1U	1U	1.26
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	5.1	1.76	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U	10U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U	5U
Benzene	(ug/l)	132	0.3U	0.3U	0.3U	0.3U	0.3U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	13.7	8.96	1.29	1U	1U	1U
m,p-Xylene	(ug/l)	2U	2U	2U	2U	2U	2U
Methyl tert-butyl ether	(ug/l)	51.2	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	1U	1U	1U	1U	1U	1U
n-Butylbenzene	(ug/l)	1.4	3.51	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	6.9	11.5	1U	1U	1U	1U
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	2.86	4.84	1.4	1U	1U	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U
1,2,3-Trichloropropane	(ug/l)	1U	1U	1U	1U	1U
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	20.5	19.8
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	6.98	7.1
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U
2-Butanone	(ug/l)	10U	10U	10U	10U	10U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	10U	10U	10U	10U	10U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	20U	20U	20U	20U	20U
Acetone	(ug/l)	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	5U	5U	5U	5U	5U
Benzene	(ug/l)	0.3U	0.3U	0.3U	3.57	3.32
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U
Bromoform	(ug/l)	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	2U	2U	2U	2U	2U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U
Chloromethane	(ug/l)	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	1U	1U	1U	1U	1U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U
Dichlorodifluoromethane	(ug/l)	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	3.41	3.97
Hexachlorobutadiene	(ug/l)	1U	1U	1U	1U	1U
Isopropylbenzene	(ug/l)	1U	1U	1U	39.3	41
m,p-Xylene	(ug/l)	2U	2U	2U	3.34	3.08
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	20U	20U	20U	20U	20U
Naphthalene	(ug/l)	1U	1U	1U	5.64	6.03
n-Butylbenzene	(ug/l)	1U	1U	1U	4.62	4.5
n-Propylbenzene	(ug/l)	1U	1U	1U	60.8	62.7
o-Xylene	(ug/l)	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	1U	1U	1U	8.48	8.82
Styrene	(ug/l)	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1.56	1.64
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U
Toluene	(ug/l)	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U

BZTO104(e)017899

TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Diesel Range Hydrocarbons	(mg/l)	3.98	1.9	0.246U	0.238U	0.573	3.43
Gasoline Range Hydrocarbons	(ug/l)	NT	NT	NT	NT	100U	239
TPH-Motor Oil Range	(mg/l)	0.536U	0.51U	0.492U	0.476U	0.504U	0.499U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Diesel Range Hydrocarbons	(mg/l)	4.44	6.84	2.31	4.07	2.43	0.249U
Gasoline Range Hydrocarbons	(ug/l)	732	1230	409J	129	240	100U
TPH-Motor Oil Range	(mg/l)	0.527U	0.541U	0.494U	0.491U	0.557U	0.497U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (NWTPH)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Diesel Range Hydrocarbons	(mg/l)	0.488	0.72	4.13	1.64	1.45
Gasoline Range Hydrocarbons	(ug/l)	100U	100U	102	1720	1830
TPH-Motor Oil Range	(mg/l)	0.517U	0.559U	0.492U	0.517U	0.5U

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TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Arsenic	(ug/l)	32.6	13.1	27.2	18.6	26.8	25.6
Chromium	(mg/l)	0.0155	0.0208	0.0173	0.0156	0.0199	0.0235
Copper	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Lead	(ug/l)	0.437	0.216	0.597	0.1U	1.39	3.74
Nickel	(mg/l)	0.0955	0.005U	0.005U	0.005U	0.005U	0.005U
Zinc	(mg/l)	0.0102	0.01U	0.01U	0.01U	0.0167	0.0175

BZTO104(e)017903

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Arsenic	(ug/l)	44.4	57.6	27.6	5.61	7.1	6.31
Chromium	(mg/l)	0.0248	0.0421	0.0345	0.0185	0.0203	0.0164
Copper	(mg/l)	0.01U	0.0256	0.0179	0.01U	0.01U	0.01U
Lead	(ug/l)	4.65	12.6	10.8	2.13	0.552	1.32
Nickel	(mg/l)	0.005U	0.0069	0.0084	0.005U	0.005U	0.005U
Zinc	(mg/l)	0.024	0.0779	0.0647	0.0161	0.01U	0.0105

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TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000)
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Arsenic	(ug/l)	14.6	9.73	3.8	18.8	18.8
Chromium	(mg/l)	0.119	0.0261	0.0326	0.0136	0.0144
Copper	(mg/l)	0.156	0.01U	0.0107	0.01U	0.01U
Lead	(ug/l)	29.2	1.98	8.21	0.1U	0.1U
Nickel	(mg/l)	0.0682	0.005U	0.0114	0.005U	0.005U
Zinc	(mg/l)	0.264	0.0189	0.0444	0.0105	0.011

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 06/07/2004 Primary	LW006D 06/07/2004 Primary	LW009D 06/07/2004 Primary	LW010D 06/10/2004 Primary	LW020D 06/08/2004 Primary	LW022D 06/07/2004 Primary
Chloride	(mg/l)	6.83	2.91	1.39	1.53	2.8	1.55
Dissolved Oxygen	(mg/l)	1.54	1.62	5.05	1.71	1.19	3.19
pH	(s.u.)	5.4	5.37	5.41	6.71	6.82	5.19
Specific Conductivity	(us)	473	311	125	140	264	377
Temperature	(c)	14.9	15.3	15.6	14.5	14.8	14.6
Total Dissolved Solids	(mg/l)	364	325	237	161	222	308
Turbidity	(ntu)	113	168	63	150	347	781

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 06/07/2004 Primary	LW024D 06/07/2004 Primary	LW025D 06/07/2004 Primary	LW026D 06/07/2004 Primary	LW027D 06/07/2004 Primary	LW029D 06/08/2004 Primary
Chloride	(mg/l)	2.54	1.89	1.51	2.6	3.72	4.33
Dissolved Oxygen	(mg/l)	3.01	1.6	3.2	3.7	1.56	1.41
pH	(s.u.)	5.51	5.43	5.05	5.53	5.53	7.02
Specific Conductivity	(us)	547	426	232	397	363	474
Temperature	(c)	14.5	15.5	16	17.8	14.5	14.5
Total Dissolved Solids	(mg/l)	456	350	232	356	318	432
Turbidity	(ntu)	618	999	999	259	142	244

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
SECOND QUARTERLY SAMPLING EVENT, JUNE 2004
TIME OIL NORTHWEST TERMINAL

PERIOD: From 06/07/2004 thru 06/10/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 06/08/2004 Primary	LW032D 06/08/2004 Primary	LW035D 06/07/2004 Primary	RW2 06/09/2004 Primary	RW2 06/09/2004 Duplicate 1
Chloride	(mg/l)	7.41	2.92	1.97	4.16	3.74
Dissolved Oxygen	(mg/l)	1.34	1.35	2.15	1.12	1.12
pH	(s.u.)	6.69	6.85	5.19	5.41	5.41
Specific Conductivity	(us)	478	421	428	395	395
Temperature	(c)	14.7	14.6	13.8	15.2	15.2
Total Dissolved Solids	(mg/l)	248	343	364	254	276
Turbidity	(ntu)	999	115	904	32	32

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TABLE A-5
KEY TO FOOTNOTES AND ANALYTICAL DATA QUALIFIERS

Footnotes:

NA = Not analyzed.

NM = Not measured.

U = Indicates compound was analyzed for, but was not detected at the reported sample detection limit.

UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.

M = Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.

J = Data validation flag indicating the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R = The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

[ ] = Detected constituent.

(a) The laboratory reported that hydrocarbon patterns that eluted in the gas range were detected; however the elution patterns do not match available standards.

(b) The laboratory reported that these samples have a pattern in the mineral spirits and diesel standard pattern range that does not resemble the standard patterns. This could possibly be a weathered mixture of mineral spirits and diesel.

(c) The laboratory reported that these samples have a pattern in the diesel and motor oil range that do not resemble the diesel or motor oil standard pattern. This could possibly be a weathered fuel.

(d) The laboratory reported that these samples show a pattern in the diesel range that does not resemble the diesel standard pattern. This could possibly be a weathered diesel.

(e) The laboratory reported that these samples show a pattern in the gas and diesel range that does not resemble either of the typical peak patterns for these standards.

(f) These results are questionable because of laboratory blank contamination within this data set and the lack of PCP detections in these wells historically. However, the results were not qualified because the method blank contamination could not be linked directly to the sample results.

APPENDIX B

Groundwater Interim Action Recovery Summary

TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

Monitoring Period	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			Comments
	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	
Fourth Quarter 2000																
October 2000	439,003			0.35									0			Mass removal calculated using 11/00 PCP concentration.
November 2000	305,601	11/9/2000	95	0.24									467,478	11/7/2000	ND (a)	
December 2000	348,720	12/20/2000	39	0.11									497,656	12/6/2000	5.89	
														12/20/2000	9.73	
Quarterly Totals	*1,093,324*			*0.70*									*965,134*			
First Quarter 2001																
January 2001	416,140	1/18/2001	38.8	0.13									239,207	1/18/2001	14.3	
February 2001	335,008	2/13/2001	30	0.08									184,192			
March 2001	332,963	3/7/2001	ND (b)	0.03									517,332	3/7/2001	ND (b)	
Quarterly Totals	*1,084,111*			*0.25*									*940,731*			
Second Quarter 2001																
April 2001	377,931			0.04									275,519			
May 2001	344,252	5/22/2001	12.3	0.04									195,522	5/22/2001	5.29	
June 2001	361,846	6/4/2001	0.68	0.04									563,853			
Quarterly Totals	*1,084,029*			*0.11*									*1,034,894*			
Third Quarter 2001																
July 2001	351,509			0.01									559,015			
August 2001	486,123	8/13/2001	5	0.02									66,876			
Quarterly Totals	*837,632*			*0.03*									*625,891*			
Fourth Quarter 2001																
October 2001	393,168	10/11/2001	ND (a)	0.01									484,158	10/11/2001	ND (a)	
November 2001	319,798			0.01									118,786	11/1 & 11/15/01	ND (a)	
December 2001	361,058	12/6/2001	ND (c)	0.01									717,769	12/6/2001	ND (c)	
Quarterly Totals	*680,856*			*0.02*									*836,555*			
First Quarter 2002																
January 2002	331,224			0.02	1,812			0.01					340,688			Recovered groundwater from HRW-1 from January 22-29. Re-initiated groundwater recovery from HRW-1 on February 28.
February 2002	282,480	2/27/2002	8.6	0.02	58			0.00					437,943			HRW-1 mass removal estimates for January and February are based on the March 12 sampling event.
March 2002	280,814			0.02	40,294	3/12/2002	786	0.26					234,816			RW-2 mass removal estimates for January and March are based on February 27 sampling event.
Quarterly Totals	*894,518*			*0.06*	*42,164*			*0.28*					*1,013,447*			
Second Quarter 2002																
April 2002	292,099			0.19	74,996	4/5/2002	94	0.06					391,263	4/5/02	34.4	
														4/22/02	9.33	RW-2 mass removal estimates for April and May are based on June 27 sampling event.
May 2002	310,584			0.20	23,427	5/29/2002	452	0.09					247,440			
June 2002	272,393	6/27/2002	76	0.17	25,484	6/25/2002	410	0.09					307,810			
Quarterly Totals	*875,076*			*0.56*	*123,907*			*0.23*					*946,513*			
Third Quarter 2002																
July 2002	272,771			0.08	51,111			0.18					188,300	7/24/2002	2.09	
August 2002	270,746	8/27/2002	36	0.08	7								301,613	8/20/2002	9.15	HRW-1 shut down on July 24 due to dry pumping conditions and potential biofouling of the well. HRW-1 mass removal rate estimate based on June 2002 data.
September 2002	143,662			0.04	0				110,000	9/23/2002	47.0		369,469	9/23/2002	11.8	RW-2 temporarily shut down on September 25. Water being intercepted from SDM-1 and pumped to treatment system beginning on September 16.
Quarterly Totals	*687,179*				*51,118*								*859,382*			RW-2 mass removal rates based on August 27 sampling event. Total Volume pumped from SDM-1 estimated based on throughout of VWTP and volume recovered from RW-2; Flowmeter to be installed for SDM-1 in October 2002.
Fourth Quarter 2002																
October 2002	177,937			0.06	0				Not metered				112,129	10/3/2002	8.84	
November 2002	275,033	11/13/2002	37	0.09	0				95,157				399,747			The storage tank gauge was moved to groundwater sump SDM-1 on November 1.
December 2002	418,846			0.13	0				124,894				507,766			
Quarterly Totals	*871,816*				*0*								*1,019,642*			RW-2 mass removal rates based on November 13 sampling event.
First Quarter 2003																
January 2003	417,646			0.12	0				166,663			0.38	574,451	1/15/2003	11.6	
February 2003	398,299	2/11/2003	33	0.11	0				192,395	2/13/2003	290	0.43	483,579			
March 2003	458,160			0.13	0				210,400			0.47	624,807			SDM-1 mass removal rates based on February 13 sampling event.
Quarterly Totals	*1,140,149*				*51,118*				*95,157*				*1,371,258*			RW-2 mass removal rates based on February 11 sampling event.

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TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

Monitoring Period	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			Comments
	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	
Second Quarter 2003																
April 2003	445,275			0.04	0				55,037			0.00	481,816	4/9/2003	22.2	
May 2003	455,994	5/7/2003	12	0.05	0	Not Analyzed			0	5/7/2003	0.93	0.00	469,079			
June 2003	385,658			0.04	4,175				89,243			0.00	446,127			RW-2 mass removal rates based on April 8, 2003 sampling event.
Quarterly Totals	*1,286,927*				*4,175*				*144,280*				*1,397,022*			
Third Quarter 2003																
July 2003	330,738	7/28/2003	<5.0	0.01	30,104	7/28/2003	370	0.09	128,562	7/28/2003	409	0.44	441,023	7/11/2003	87.4	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
														7/30/2003	8.6	
August 2003	366,307	8/27/2003	10	0.03	7,388			0.02	119,831	8/27/2003	120	0.41	397,748	8/4/2003	<5.0	
														8/6/2003	<5.0	HRW-1 mass removal rates based on July 28 sampling event.
														8/11/2003	<4.76	
														8/13/2003	<4.83	SDM-1 mass removal rates based on July 28 sampling event.
														8/18/2003	<4.75	
														8/20/2003	<5.16	RW-2 mass removal rates based on August 27 sampling event.
														8/25/2003	23.8	
														8/27/2003	36.5	
September 2003	262,403			0.02	0			0.00	87,439			0.09	479,703	9/3/2003	19.3	
														9/5/2003	19.6	
														9/9/2003	7.09	
														9/23/2003	16.9	
														9/29/2003	5.96	
Quarterly Totals	*959,448*				*37,492*				*335,832*				*1,318,474*			
Fourth Quarter 2003																
October 2003	298,092	10/23/2003	8.1	0.02					74,025	10/20/2003	43	0.03	350,921	10/6/2003	<4.75	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
														10/13/2003	<4.76	
														10/20/2003	<4.84	
														10/30/2003	<5.19	
November 2003	216,630			0.01					45,472			0.02	216,711	11/3/2003	<4.73	
														11/10/2003	<4.78	SDM-1 mass removal rates based on October 20 sampling event.
														11/17/2003	<4.84	
														11/21/2003	<4.79	RW-2 mass removal rates based on October 23 sampling event.
December 2003	367,462			0.02					95,504			0.03	488,055	12/1/2003	<4.79	
														12/15/2003	<4.92	
														12/29/2003	30.4	
Quarterly Totals	*882,184*								*335,832*				*3,692,635*			
First Quarter 2004																
January 2004	348,926	2/23/2004	8.69	0.03					141,282	2/23/2004	791	0.93	367,831	1/15/2004	32.1	
														1/23/2004	45.7	
														1/26/2004	31.9	
February 2004	267,665			0.02					197,525			1.31	321,085	2/19/2004	57.2	
March 2004	246,667			0.02					17,825			0.12	197,621	3/2/2004	112	
														3/4/2004	48.5	Multiple treatment system discharge samples collected due to upset.
														3/16/2004	113	
														3/19/2004	85.9	
														3/24/2004	6.23	
														3/26/2004	7.07	
Quarterly Totals	*863,258*								*356,632*				*886,537*			
Second Quarter 2004																
April 2004	190,512	6/9/2004	47.3	0.08	0	6/9/2004	278	0.00					315,554	4/22/2004	194	
May 2004	87,481			0.03	3,624			0.01	146	6/9/2004	595	0.001	242,530	5/19/2004	39.3	SDM-1 flow meter replaced May 28, 2004
														5/27/2004	5.81	
June 2004	168,615			0.07	6,681			0.02	44,155			0.22	263,730	6/3/2004	ND	
														6/9/2004	7.55	
														6/15/2004	8.78	
Quarterly Totals	*446,608*				*10,305*				*44,301*				*821,814*			

ND = Not Detected.

(a) PCP not detected above the detection limit of 5 µg/L; concentration-dependent calculations based on half the detection limit
(b) PCP not detected above the detection limit of 25 µg/L; concentration-dependent calculations based on half the detection limit
(c) PCP not detected above the detection limit of 5.25 µg/L; concentration-dependent calculations based on half the detection limit

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APPENDIX C

Measurement and Evaluation Procedures

APPENDIX C
MEASUREMENT AND EVALUATION PROCEDURES

This appendix discusses the procedures for conducting groundwater level and product (where observed) measurements during the quarterly groundwater events and the method used to evaluate the groundwater elevations.

MEASUREMENT PROCEDURES

Groundwater level measurements and the check for the presence of product were conducted using an electronic oil-water interface probe. Measurements were taken from the top of the PVC well casing at a marked survey point or at the north side of the casing, and recorded to the nearest 0.01 ft. Measurements in the Willamette River were taken from a surveyed PK nail with washer located on the south side of the dock. Surveyed reference elevations for each water level measurement location, obtained by a licensed land surveyor (ZTec Engineers, Inc., Portland, Oregon), are shown in Table A-2 of this report.

Water level measurements for the quarterly event were obtained over about a 2.5-hour period beginning at about 2.5 hours after a predicted mean river stage, based on predictions for the St. Johns station on the Willamette River. The timing for water level measurements was scheduled to estimate a mean water level elevation or elevation minimally influenced by river stage, and to reduce the time-dependent variation between wells screened in the same water-bearing zone. The timing of the water level measurements was based on average time lag calculations presented in the additional groundwater investigation technical memorandum (Landau Associates 1998), aquifer test report (Landau Associates 1999), and previous quarterly measurements.

GROUNDWATER LEVEL EVALUATION METHODS

For evaluation purposes, the groundwater level measurements were converted from depth-to-water readings to groundwater elevations using the survey information for each location. At locations where product was observed, the groundwater elevations were adjusted to account for the presence of product using the method defined by Lenhard and Parker (1990). Groundwater elevations for the upper and lower zones were contoured using GIS/Key or manually in conjunction with the evaluations conducted to evaluate the capture zone of the groundwater interim action for the upper and lower zones.

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GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the shallow wells using a peristaltic pump attached to dedicated polyethylene tubing immediately following purging. The deep wells were sampled with disposable bailers, with the following exceptions: the sample from RW-2 was collected from the in-line sampling port on the groundwater interim action system, and the sample from the groundwater intercept system at SDM-1 was collected from the discharge line at the output into Tank 16804. Wells were purged using a peristaltic pump or a centrifugal purge pump. Purging continued until at least 3 casing volumes of water had been removed and specific conductance and temperature had stabilized or until the well purged dry. Four replicate measurements of field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature) were collected at each well during sampling. To prevent degassing of volatile organic compounds during sampling, the pumping rate was maintained below about 100 milliliters per minute. All sampling was conducted in accordance with the Phase I/II RI/FS work plan (Landau Associates 1996) and appropriate provisions of the revised quality assurance project plan and project health and safety plan (Landau Associates 2001). A more detailed description of groundwater sampling procedures is provided in the Phase II RI report (Landau Associates 2000).

REFERENCES

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APPENDIX D

Summary of Modifications to Quarterly Groundwater Analysis Program

APPENDIX D
SUMMARY OF MODIFICATIONS TO QUARTERLY GROUNDWATER ANALYSIS PROGRAM

A summary of modifications to the Phase II RI quarterly groundwater monitoring program for the Time Oil Northwest Terminal in Portland, Oregon is presented below by the date of first implementation. A reference list for the modifications is attached.

- ***Second Quarter 1998*** (Landau Associates 1998; DEQ 1998):
  - Annual sampling of east property wells LW-101S, LW-102S, LW-103S, and LW-104S
  - Elimination of 2-chloroethylvinylether from the volatile analyte list
  - Reduction of the suite of metals analyses to include only arsenic, chromium, copper, lead, nickel, and zinc
  - Quarterly analysis of only metals in well K and only chlorinated phenols and metals in well H
  - Elimination of PCB analysis
  - Annual analysis for major ions; quarterly analysis for chloride and dissolved oxygen.

- ***First Quarter 1999*** (Landau Associates 1999; Urbanowicz, K., 12 February 1999, personal communication):
  - Analysis of polycyclic aromatic hydrocarbons (PAHs) using analytical techniques that provide lower detection limits at upper zone wells LW-2S, LW-7S and LW-101S and at lower zone wells G1A, O, and LW-4D for the first quarter 1999 event only
  - Elimination of sampling at well J3.

- ***Second Quarter 2000*** (Landau Associates 2000a; DEQ 2000):
  - Elimination of dioxin/furan analyses.

- ***Third Quarter 2000*** (Landau Associates 2000b; Roick 2000):
  - Reduction of sampling frequency of wells H, L, and LW-5S from quarterly to annually.

- ***Second Quarter 2001*** (Landau Associates 2001a, 2001b; Roick 2001):
  - Reduction of the list of chlorinated phenols being analyzed by EPA Method 8040 to pentachlorophenol (PCP) only using EPA Method 8270 SIM
  - Reduction of the frequency of total petroleum hydrocarbon (TPH) analysis from quarterly to annually at upper zone wells J1 and LW-1S; lower zone wells B2, J2, LW-1D; and deep sand unit well LW-12D2. In addition, TPH analysis was eliminated for the following wells: upper zone wells D, L, LW-5S, LW-101S through -104S, and lower zone well LW-3D.

- ***First Quarter 2004*** (Landau Associates 2004; Roick 2004):
  - Elimination of eight wells from the Phase II sampling program for future events. These wells included five upper zone wells (H, K, L, LW-1S, and LW-5S), and three lower zone wells (O, R, LW-1D).
  - Reduction of the monitoring frequency for selected Phase II wells from quarterly to semiannually. These wells include: B1, B2, D, J1, J2, LW-3D, LW-4S, LW-4D, LW-

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11S, LW-11D, LW-13S, LW-14D, LW-17D, LW-18D, OX-1S through OX-8S, OX-8D, and RW-1. Semiannual sampling of these wells will be conducted in conjunction with the first and third quarter sampling of the Phase III wells.

REFERENCES
(Modifications to Quarterly Groundwater Analysis Program)

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Landau Associates. 2001a. Letter: *Recommendation for Reduction of Analyses, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. January 30.

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Roick, T.E. 2004. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Recommendation for Reduction of Sampling Frequency, Phase II Monitoring Wells, Time Oil Northwest Terminal.* February 3.

Roick, T.E. 2001. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Reduction of Total Petroleum Hydrocarbon Analysis, Time Oil Co. Northwest Terminal.* May 30.

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APPENDIX E

Data Validation Report

TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Rebekah Brooks, Project Manager

cc: Tom Roick, DEQ
Mark Chandler, Time Oil Co.
Patty Dost, Schwabe, Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

FROM: Anne Halvorsen

DATE: August 31, 2004

RE: SECOND QUARTER 2004 GROUNDWATER MONITORING
LABORATORY DATA QUALITY EVALUATION
TIME OIL NORTHWEST TERMINAL

This technical memorandum provides the results of a data quality evaluation for 58 groundwater samples and 4 trip blanks collected at the Time Oil Northwest Terminal between June 7 and July 12, 2004 for the Phase II/III remedial investigation (RI) second quarter 2004 groundwater monitoring event. A data quality evaluation was performed for analyses of total petroleum hydrocarbons (NWTPH-Dx, and NWTPH-Gx); volatile organic compounds [VOCs; U.S. Environmental Protection Agency (EPA) Method 8260B]; pentachlorophenol [PCP; EPA Method 8270 with selected ion monitoring (SIM)]; polycyclic aromatic hydrocarbons (PAHs; EPA Method 8270 SIM); semivolatile organic compounds (SVOCs; EPA Method 8270C); selected priority pollutant (PP) total metals (EPA Method 6010/6020 series); chloride (EPA Method 9056); total dissolved solids (TDS; EPA Method 160.1); dioxin/furans (EPA Method 8290); and ferrous iron (EPA Method SM3500 FeD). The analyses were performed by Specialty Analytical, Tualatin, Oregon; Columbia Analytical Services (CAS), Houston, Texas; and Analytical Resources, Inc. (ARI), Tukwila, Washington. This data quality evaluation covers Specialty data packages 0406039, 0406040, 0406050, 0406059, 0406060, 0406072, 0406073, and 0406074; CAS data package E2400644; and ARI data package GS40. The data quality evaluation was performed in accordance with the revised quality assurance project plan (QAPP) contained in Appendix C of the *Phase III Remedial Investigation* work plan (Landau Associates 2001), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994a,b).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
- Surrogate spike recoveries
- Matrix spike and matrix spike duplicate (MS/MSD) results

- Laboratory control sample (LCS) results
- Method blank results
- Duplicate (laboratory and field) results
- Reporting limits
- Overall data quality and completeness.

Data validation qualifiers are added to sample results based on the evaluation of data quality. The absence of a data qualifier indicates that the datum is acceptable without qualification. Applicable data validation qualifiers are summarized in Table 1. The data quality evaluation is summarized below.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. The laboratory received all samples in good condition and all analyses requested were performed.

HOLDING TIMES

For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding.

METHOD BLANK RESULTS

Method blanks were analyzed with each batch of samples for each analysis. Contamination was detected in the method blanks, as indicated in Table 1 and as discussed below:

- Methylene chloride and n-butylbenzene were detected in the method blank associated with the VOC analyses reported in data packages 0406039, 0406040, 0406060, 0406072, 0406073, and 0406074. Results for methylene chloride and n-butylbenze in all project samples were either not detected or were at concentrations greater than five times the method blank concentration; therefore, no qualification of the data was necessary.

- Methylene chloride was detected in the method blank associated with the VOC analyses reported in data packages 0406050 and 0406059. Methylene chloride was not detected in the associated project samples; therefore, no qualification of the data was necessary.

- Several SVOCs were detected at concentrations below the reporting limit in the method blank associated with the SVOC analyses reported in data packages 0406039, 0406040, 0406050, 0406059, and 0406074. None of the SVOCs detected in the method blanks were detected in the associated project samples; therefore, no qualification of the data was necessary with the following exceptions. Fluorene was detected in samples LW024D, LW020S, and LW019S at concentrations greater than five times the method blank concentration. No qualification of the data was necessary. Fluorene was detected in samples LW030S and LW027S at a concentration less than five times the method blank concentration. The fluorene result for these samples were qualified as non-detect (U) at the concentration reported, as indicated in Table 1.

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- Gasoline-range petroleum hydrocarbons were detected in the method blank associated with the NWTPH-Gx analyses reported in data package 0406050. There were no detections in the project samples associated with this method blank; therefore, no qualifiers were assigned.

- Benzo (a) anthracene, benzo (g,h,i) perylene, dibenzo (a,h) anthracene, and indeno (1,2,3-cd) pyrene were detected in the method blank associated with the PAH analyses reported in data packages 0406050, 0406059, and 0406072. None of the PAHs detected in the method blanks were detected in the associated project samples; therefore, no qualification of the data was necessary.

- Chromium was detected in the method blank associated with total metals analyses reported in data packages 0406072, 0406073, and 0406074. The chromium results for samples LW010D, LW027S, OX001S, OX002S, OX003S, OX005S, OX006S, OX007S, OX008S, and LW011S were reported at concentrations less than five times the method blank concentration; therefore, they were qualified as non-detect (U) at the concentration reported, as indicated in Table 1.

FIELD BLANK RESULTS

In accordance with the QAPP, field equipment rinsate blanks were not collected (all sampling equipment was dedicated and/or disposable, which eliminated the potential for cross contamination). Trip blanks were submitted for analysis of VOCs. No VOCs were detected in the trip blanks. No qualification of the data was necessary.

SURROGATE SPIKE RECOVERIES

Surrogate spikes were performed with each organic analysis (or internal standards for dioxin/furan analysis). Recovery values for the surrogate spikes were within the current laboratory control limits, except as indicated below.

- **Data Package 0406039 – SVOC analyses.** Recovery of surrogates 2,4,6-dibromophenol and 4-terphenyl-d14 associated with the SVOC analysis of sample G1A was above the upper laboratory control limit, indicating a potential high bias. However, no qualifiers were assigned because, in accordance with the EPA guidelines (1994a), two or more surrogates of the same fraction must be outside the control limits to qualify SVOC results based on surrogate recoveries.

- **Data Package 0406040 – SVOC analyses.** Recovery of surrogate 2,4,6-tribromophenol associated with SVOC analyses of samples LW023D, LW024D, LW025D, LW026D, LW027D, and LW035D were above the upper laboratory control limit, indicating a potential high bias. However, no qualifiers were assigned because, in accordance with the EPA guidelines (1994a), two or more surrogates of the same fraction must be outside the control limits to qualify SVOC results based on surrogate recoveries.

- **Data Package 0406050 – SVOC analyses.** Recovery of surrogate 2,4,6-tribromophenol associated with SVOC analyses of LW032S was above the upper laboratory control limit, indicating a potential high bias. Additionally, recovery of surrogates 2,4,6-tribromophenol and 2-fluorobiphenyl associated with SVOC analysis of LW030S were above the upper

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laboratory control limit, indicating a potential high bias. However, no qualifiers were assigned because, in accordance with the EPA guidelines (1994a), two or more surrogates of the same fraction must be outside the control limits to qualify SVOC results based on surrogate recoveries.

- **Data Package 0406059 – PCP analyses.** Recovery of surrogate 2,4,6-tribromophenol associated with the PCP (SIM) analysis of samples HRW-1, SDM-1, X, and LW008S exceeded the upper laboratory control limit, indicating a potential high bias. No qualifiers were assigned because surrogate 2,4,6-tribromophenol was diluted out in the diluted PCP (SIM) analysis of samples. Because surrogate recoveries during the initial (nondiluted) analysis of this sample were within the laboratory control limits, no qualifiers were assigned.

- **Data Package E2400644 – Dioxin analyses.** Recovery of surrogate OCDD in the method blank, samples RW-1 and OX006S were below the lower laboratory control limit, indicating a potential low bias. Detected results for and non-detected reporting limits for samples the method blank, RW-1 and OX006S were qualified as estimates (J,UJ), as indicated in Table 1.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

MS/MSD samples were performed and qualifiers assigned as discussed below.

- **Data Package GS40:** One matrix spike was performed with the ferrous iron analyses. The recovery of ferrous iron in the matrix spike was slightly below the lower laboratory control limit. The laboratory narrative indicates that the recovery is low because the native level of ferrous iron in the sample was high and a larger volume of spike solution was necessary to achieve an appropriate spike level. A higher volume of solution results in a slight dilution effect. Recovery in the LCS was within the laboratory control limits. No qualifiers were assigned.

- **Data Package 0406039:** One MS/MSD pair was performed with the total metals, VOC, SVOC, and chloride analyses. The MS/MSD pair for total metals was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits with the following exception. The recovery of chromium in the MS/MSD was slightly below the lower laboratory control limit; however, no qualifiers were assigned because the post digestion spike was in control and the LCS reportedly meets continuing calibration and EPA criteria. The MS/MSD pair for SVOC, VOC, and chloride was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406040:** One MS/MSD pair was performed with the total metals, VOC, SVOC, and chloride analyses. The MS/MSD pair for VOCs was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits. The MS/MSD pair for SVOC, total metals, and chloride was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406050:** One MS/MSD pair was performed with the total metals, VOC, SVOC, chloride, PAH, and NWTPH-Dx analyses. Each MS/MSD pair was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits with the following exceptions. The recovery values for copper and zinc in the MS were slightly below the lower laboratory control limit, indicating a

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potential low bias. However, no qualification of the data was deemed necessary because the recoveries for the MSD were within the laboratory control limits.

- **Data Package 0406059:** One MS/MSD pair was performed with the total metals, VOC, chloride, and PAH analyses. The MS/MSD pair for total metals was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits. The MS/MSD pair for VOC, PAHs, and chloride was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406060:** One MS/MSD pair was performed with the VOC analyses. The MS/MSD pair for VOC was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406072:** One MS/MSD pair was performed with the total metals, VOC, SVOC, chloride, NWTPH-Dx, and PAH analyses. The MS/MSD pair for total metals was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits with the following exception. The recovery of chromium in the MS/MSD was slightly below the lower laboratory control limit; however, no qualifiers were assigned because the post digestion spike was in control and the LCS reportedly meets continuing calibration and EPA criteria. The MS/MSD pair for VOC, SVOC, chloride, NWTPH-Dx, and PAH analyses was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406073:** One MS/MSD pair was performed with the total metals, VOC, chloride, and NWTPH-Dx analyses. None of the MS/MSD pairs were performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package 0406074:** One MS/MSD pair was performed with the total metals, VOC, and chloride. The MS/MSD pair for VOC and chloride was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits. The MS/MSD pair for total metals was not performed using a project sample; therefore, the MS/MSD results were not used for this data quality evaluation.

- **Data Package E2400644:** A MS/MSD pair was not performed with the dioxin/furan analyses. Batch precision was determined by LCS/LCSD.

LABORATORY CONTROL SAMPLE (LCS) RESULTS

At least one LCS (or blank spike sample) was analyzed with each batch of samples for each analysis. LCS duplicates were also performed with some of the analyses. Recoveries and RPDs for the LCSs and associated duplicates were within laboratory control limits except as indicated below.

- The recovery of chromium in the blank spike associated with total metals analyses reported in data packages 0406039, 0406040, 0406072, 0406073, and 0406074 was slightly below the lower laboratory control limit. No qualification of the data was deemed necessary because the continuing calibration verification reportedly met the required criteria.

- The recovery of benzo(g,h,i)perylene in the LCS and LCSD associated with PAH analyses reported in data packages 0406040 was slightly above the upper laboratory control limit. No qualification of the data was deemed necessary because the continuing calibration verification reportedly met the required criteria.

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- The recovery of acenaphthene, benzo(g,h,i)perylene, chrysene, phenanthrene, and pyrene in the blank spike associated with PAH analyses reported in data packages 0406050, 0406059, and 0406072 were above the upper laboratory control limit. No qualification of the data was deemed necessary because the continuing calibration verification reportedly met the required criteria.

LABORATORY DUPLICATE RESULTS

Laboratory duplicate samples were generally performed with the TDS, NWTPH-Gx, and total metals analyses. RPDs between the laboratory duplicate results were within the laboratory control limits with the following exception:

- The RPD between the gasoline results for the laboratory duplicates performed using sample LW025D in data package 0406040, exceeded the laboratory control limit. The gasoline result for sample LW025D was qualified as estimates (J), as indicated in Table 1.

When laboratory duplicates were not performed using a project sample, the laboratory duplicate results were not evaluated.

FIELD DUPLICATE RESULTS

Two blind field duplicate pairs (RW-2/W and LW008S/X) were collected during this sampling event. A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for both duplicate sample pairs submitted for analysis were within the project-specified control limits, except as indicated in Table 1 and as discussed below:

- The RPD between results for ethylbenzene exceeded project-specified control limits for field duplicate pair LW008S/X. Detected concentrations of this compound in all samples reported in the associated data package (0406059) were qualified as estimates (J), as indicated in Table 1.

REPORTING LIMITS

Method and/or project-specified reporting limits were met.

OTHER

Other factors which required qualification of the data include the following:

- Another factor that may affect the use of the data but does not require qualification includes the identification of lube oil in data packages 0406039, 0406040, 0406050, 0406059, and 0406072. As indicated by the laboratory in the case narrative, in the opinion of the laboratory results for samples LW006D, G1A, LW035D, LW022D, LW023D, LW027D, LW026D, LW024D, LW025D, LW032S, LW020S, LW019S, X, LW008S, and LW027S results for lube oil were determined to be non-detect based on hydrocarbon pattern

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recognition. The product was carry-over from another hydrocarbon type. In addition, as noted by the laboratory, the detected result for diesel in sample G1A in data package 0406039 contains a diesel range organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.

- The OCDD and OCDF results for sample RW1 were qualified by the laboratory as an estimated maximum possible concentration (EMPC); therefore, the OCDD and OCDF results for this sample was qualified as non-detect (U) at the EMPC, as indicated in Table 1.

- The result for OCDD for sample OX002S was qualified as an estimate (J) by the laboratory because the concentrations exceed the method calibration limits, as indicated in Table 1.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, field duplicates, matrix spike duplicates, and laboratory control samples duplicates. Data accuracy was evaluated through surrogate spikes, matrix spikes, and laboratory control samples. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected.

The completeness for this set of data is 100 percent, which exceeds the project-specified goal of 90 percent.

REFERENCES

EPA. 1994a. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. U.S. Environmental Protection Agency.

EPA. 1994b. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. U.S. Environmental Protection Agency.

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

TABLE 1
SUMMARY OF DATA QUALIFIERS
SECOND QUARTER 2004 EVENT GROUNDWATER SAMPLE RESULTS
SPECIALTY DATA PACKAGES 0406039, 0406040, 0406050, 0406059, 0406060, 0406072, 0406073 and 0406074 (a)

Data Package Number	Analyte	Qualifier	Sample Number	Reason
0406040	Gasoline	J	LW025D	High RPD between laboratory control sample duplicate results
0406050	Fluorene	U	LW030S	Method blank contamination
0406059	Ethylbenzene	J	LW008S	High RPD between field duplicate results
		J	X	High RPD between field duplicate results
0406072	Fluorene	U	LW027S	Method blank contamination
	Chromium	U	LW027S	Method blank contamination
0406073	Chromium	U	LW010D	Method blank contamination
0406074	Chromium	U	OX001S	Method blank contamination
	Chromium	U	OX002S	Method blank contamination
	Chromium	U	OX003S	Method blank contamination
	Chromium	U	OX005S	Method blank contamination
	Chromium	U	OX006S	Method blank contamination
	Chromium	U	OX007S	Method blank contamination
	Chromium	U	OX008S	Method blank contamination
	Chromium	U	LW011S	Method blank contamination
E2400644	OCDD	UJ	Method blank	Low surrogate recovery
	OCDD	UJ	RW1	Low surrogate recovery
	OCDD	J	OX006S	Low surrogate recovery
	OCDD	U	RW1	Estimated maximum possible concentration
	OCDF	U	RW1	Estimated maximum possible concentration
	OCDD	J	OX002s	Concentration exceeds method calibration limit

(a) = Also includes ARI data package GS40 and CAS data package E2400644.

J = Indicates the analyte was positively identified; the associated numerical is the approximate concentration of the analyte in the sample.

U = The analyte was not detected in the sample; the reported sample reporting limit is an estimate.

APPENDIX F

Laboratory Data

LANDAU ASSOCIATES

February 2, 2004

RECEIVED FEB 0 8 2004

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

Attn: Mr. Tom Roick

RE: RECOMMENDATION FOR REDUCTION OF SAMPLING FREQUENCY
PHASE II MONITORING WELLS
TIME OIL NORTHWEST TERMINAL

Dear Tom:

On behalf of Time Oil Co., this letter provides our recommendation for modification of the groundwater quality sampling and analysis requirements for future groundwater monitoring events for Phase II monitoring wells at the Time Oil Northwest Terminal. This recommendation is based on groundwater results from previous quarterly and annual sampling events conducted at the Phase II monitoring wells since April 1997 or since installation. We propose that this recommendation be applied to the upcoming first quarter 2004 groundwater sampling event, currently scheduled to begin the week of February 16, 2004. This recommendation does not apply to the monitoring wells recently installed in the Phase III remedial investigation (RI) areas, including specifically within the main tank farm and Bell terminal areas. Quarterly sampling of the new Phase III wells is planned for at least one year. Also, measurement of water levels in selected Phase II and Phase III wells will continue on a quarterly basis.

This recommendation proposes to modify future Phase II groundwater sampling events in the following ways:

- Eliminate eight wells from the Phase II sampling program for future events. These wells include five upper zone wells (H, K, L, LW-1S, and LW-5S), and three lower wells (O, R, LW-1D). These wells have been sampled on a quarterly basis since April 1997 or annually since 2000. Groundwater from these wells has been determined to contain nondetect or low level concentrations of pentachlorophenol (PCP) and metals, and low concentrations of a few other analyzed constituents over time. As demonstrated by the information provided in previous quarterly groundwater reports, the data collected to date at these wells are adequate for evaluation of temporal trends and distribution of groundwater concentrations, and collection of additional data from these wells is not necessary. Wells O and R, located in the main tank farm area, will be replaced by new Phase III wells LW-22D, LW-23D, and LW-35D. These Phase III wells are located farther downgradient and closer to the groundwater-surface water interface than O and R and have comparable screened intervals with other lower zone wells. If future groundwater results from other monitoring wells indicate that data collection at any of these wells would benefit data evaluation efforts, then we will reinstate these wells into the sampling program at that time.

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- Reduction of the monitoring frequency for selected Phase II wells from quarterly to semiannually. Twenty-four Phase II wells are proposed for semiannual sampling, including wells B1, B2, D, J1, J2, LW-3D, LW-4S, LW-4D, LW-11S, LW-11D, LW-13S, LW-14D, LW-15D, LW-16D, OX-1S through OX-8S, OX-8D, and RW-1. These wells have been sampled either quarterly or annually since April 1997 or since installation. Any other Phase II wells not included in this list will be retained for use in quarterly evaluations with wells installed as part of the Phase III RI, and for evaluation of performance of the groundwater interim action system. The OX wells and well LW-11S will also be used for monitoring during full-scale implementation of the *in situ* chemical oxidation (ISCO) technique in the upper zone. Semiannual sampling of these wells will be conducted in conjunction with the first and third quarter sampling of the Phase III wells.

* * * * * *

We hope that this letter provides you with the information that you need for DEQ and Time Oil to come to an agreement on this recommendation. We would like to get a response from you by February 9, 2004, if possible, so that we can make the appropriate arrangements for the forthcoming sampling event. Please call me or Kevin Murphy with any questions or comments.

LANDAU ASSOCIATES, INC.

Rebekah Brooks, L.G.
Associate Hydrogeologist

RB/tam
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Enclosure

cc: Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

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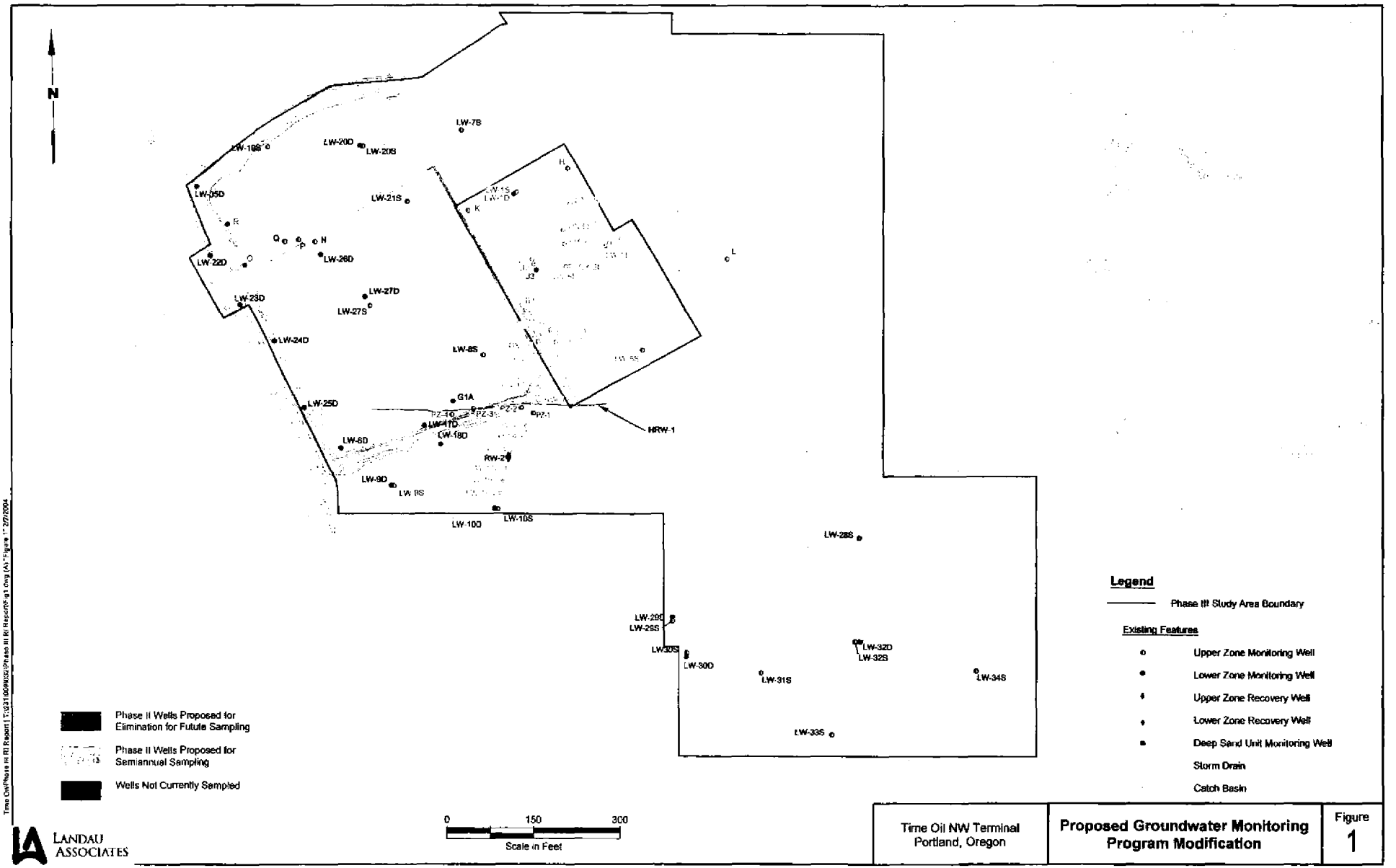

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**Proposed Groundwater Monitoring Program Modification**	Figure 1

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2
4			S177C		T176O		U235I		V224S		W371J		Y336B		Z225N		Z960F		AH49A		AU36B		BC27M		BH96P		BR55J
5			4/1/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		2/16/00		5/23/00
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	0.25	U	**0.17**	J1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		1.0	U	**0.6**	J1	1.0	U	1.0
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**5.6**		5.0	U	5.0	U	5.0	U	5.0	U	5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.48**		0.25	U	0.25	U	**0.36**		**0.28**
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.008**		**0.008**		0.05	U	0.05	U	**0.014**		**0.022**		**0.010**		**0.026**		**0.010**		**0.012**		**0.012**		**0.017**		**0.012**
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2	
4			CB68B		CL03J		CT67G		DE68K		DM30N		DW37C		ED23B		EM75K		ES04H		EY88D		FF88P		FL41G		FU50D	
5			8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		11/11/02		2/13/03		5/7/03		8/29/03	
7	**CHLORINATED PHENOLS (µg/L)**																											
8	**EPA Method SW8040**																											
9	Pentachlorophenol	UJ	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.27	U	0.25	U	0.26	U	0.25	U	0.5	U
10	2,4,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																												
17	**SEMIVOLATILES (µg/L)**																											
18	**EPA Method SW8270**																											
19	Phenol	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.1	U	2.2	U	2	U	2	U	2	U
20	4-Methylphenol	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.2	U	3.3	U	3.1	U	3	U	3	U
23	Benzoic Acid	U	10	U	10	U	10	U	10	U	10	U	50	U	50	U	50	U	53	U	56	U	51	U	50	U	50	U
24	Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.6	U	5.1	U	5	U	5	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.6	U	5.1	U	5	U	5	U
28	Acenaphthene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
30	Fluorene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.6	U	5.1	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.0	U	4.3	U	4.4	U	1	U	1	U	**6.1**	
33																												
34	**VOLATILES (µg/L)**																											
35	**EPA Method SW8260**																											
36	Acetone	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**7.2**		5.0	U	5.0	U	5	U	5	U	5	U	**12**		5	U
37	Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	**Method OR-DEQ**																											
58	**TPH-Diesel**		0.25	U	0.25	U	0.25	U	NA		NA		NA		0.25	U	NA		NA		NA		0.25	U	NA		NA	
59	**TPH-D Motor Oil**		NA		0.50	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																												
62	**PRIORITY POLLUTANT**																											
63	**METALS (mg/L)**																											
64	Arsenic (7060)		**0.015**		**0.006**		**0.006**		**0.005**		**0.010**		**0.009**		**0.011**		**0.010**		**0.013**		0.05	U	**0.027**		**0.048**		**0.01**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2
4			S177C		T176O		U235I		V224S		W371J		Y336B		Z225N		Z960F		AH49A		AU36B		BC27M		BH96P		BR55J
5			4/1/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		2/16/00		5/23/00
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	63	Zinc (6010)	0.004	U	0.004	U	**0.013**		0.004	U	0.004	U	**0.005**		0.004	U	**0.007**	J	**0.006**		**0.005**		0.006	U	**0.007**		**0.011**
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**66.1**		**65.6**		**40.1**		**41.8**		NA		NA		NA		**38.8**		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	**45.2**		**47**		**14.4**		**13.5**		NA		NA		NA		**11.9**		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	**2.0**		**1.9**		**4.7**		**4.5**		NA		NA		NA		**4.5**		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	**18.8**		**19.6**		**11.5**		**9.59**		NA		NA		NA		**9.03**		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**370**		**380**	J2	**38**		**190**		NA		NA		NA		**170**		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**370**		**380**	J2	**38**		**190**		NA		NA		NA		**170**		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**420**	J2	**210**		**190**		**180**		**200**		**230**		**180**		**170**		**210**		**160**		**180**		**190**
80	74	Chloride (mg/L) (EPA 325.2)	**7.6**		**9.1**		**2.6**		**1.9**		**3.4**		**1.6**		**2.7**		**1.0**		**3.9**		**2.7**		**3.9**		**3.6**		**2.8**
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	**0.027**		**0.018**	J2	NA		NA		NA		**0.012**		NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.02	J	**0.028**	J2	**0.32**		0.010	UJ	NA		NA		NA		**0.019**		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.019**		0.010	U	**0.35**		**0.018**	J2	NA		NA		NA		**0.031**		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	2.5	U	2.5	U	2.5	U	2.5	U	NA		NA		NA		**3.8**		NA		NA		NA		NA		NA
85	79																										

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2	
4			CB68B		CL03J		CT67G		DE68K		DM30N		DW37C		ED23B		EM75K		ES04H		EY88D		FF88P		FL41G		FU50D	
5			8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		11/11/02		2/13/03		5/7/03		8/29/03	
66	Copper (6010)	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	Lead (7421)	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.02	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)		**0.011**		0.006	U	0.006	U	**0.009**		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.01**		**0.016**	J	0.006	U
70																												
71	**MAJOR IONS AND CONVENTIONALS**																											
72	Calcium (mg/L) (6010)		NA		NA		**43.6**		**48.0**		**42.0**		**56.4**	J	**43.3**		NA		NA		NA		**46.7**		NA		NA	
73	Magnesium (mg/L) (6010)		NA		NA		**19.4**		**23.8**		**18.3**		**32.6**	J	**14.5**		NA		NA		NA		**20.5**		NA		NA	
74	Potassium (mg/L) (6010)		NA		NA		**3.4**		**3.4**		**3.9**		**2.4**		**5.2**		NA		NA		NA		**3.9**		NA		NA	
75	Sodium (mg/L) (6010)		NA		NA		**11.0**		**12.1**		**11.4**		**15.0**		**9.84**		NA		NA		NA		**11.3**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		**200**		NA		NA		NA		**240**		NA		NA		NA		**270**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		1.0	U	NA		NA		NA		**1.0**	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		**200**		NA		NA		NA		**240**		NA		NA		NA		**270**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**220**		**240**		**260**		**260**		**270**		**280**		**240**		**190**		**210**		**360**		**250**		**220**		**240**	
80	Chloride (mg/L) (EPA 325.2)		**2.5**		**3.2**		**3.9**	J	**3.2**		**6.1**		**3.9**		**3.3**		**5.1**		**5.2**		**4.3**		**5.9**		**3.5**		**2.9**	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA		**0.81**		NA		NA		NA		**0.73**		NA		NA		NA		**0.2**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		0.010	J	NA		NA		NA		**0.021**		NA		NA		NA		**0.023**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		**0.81**		NA		NA		NA		**0.75**	J	NA		NA		NA		**0.22**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA		**4.1**		NA		NA		NA		**2.6**		NA		NA		NA		**3**		NA		NA	
85																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2
4			S177C		T176O		U235I		V224S		W371J		Y336B		Z225N		Z960F		AH49A		AU36B		BC27M		BH96P		BR55J
5			4/1/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		2/16/00		5/23/00
6																											
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.75		6.73		7.28		6.96		6.61		6.43		6.48		7.16		6.27		6.61		6.88		6.70		6.51
88	82	Temperature (° C) (avg)	13.4		16.3		13.9		14.4		13.0		15.5		12.9		13.3		14.1		15.0		12.6		13.4		16.1
89	83	Conductivity (um/hos)	769		675		297		385		494		643		234		357		253		285		305		653		665
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		1.44		1.50		3.24		3.13		1.53		2.93		1.98		1.09		0.67
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119	113																										
120																											
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2	
4			CB68B		CL03J		CT67G		DE68K		DM30N		DW37C		ED23B		EM75K		ES04H		EY88D		FF88P		FL41G		FU50D	
5			8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		11/11/02		2/13/03		5/7/03		8/29/03	
86	**FIELD PARAMETERS**																											
87	pH (avg)		7.00		5.53		6.97		6.80		6.96		6.71		6.90		7.01		7.21		6.8		7.06		7.25		6.96	
88	Temperature (° C) (avg)		15.6		13.3		13.5		14.0		16.3		12.8		13.1		15.3		15.9		14.1		14.4		15.2		14.9	
89	Conductivity (um/hos)		346		319		315		611		608		384		362		272		272		595		598		319		340	
90	Dissolved oxygen (mg/L) (avg)		1.16		2.17		1.81		1.59		1.98		4.27		7.72		4.80		1.09		2.52		0		4.22		1.75	
91																												
92	**DIOXINS AND FURANS (ng/L)**																											
93	**Method 8290**																											
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2
4			S177C		T176O		U235I		V224S		W371J		Y336B		Z225N		Z960F		AH49A		AU36B		BC27M		BH96P		BR55J
5			4/1/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		2/16/00		5/23/00
122	114	**PAHs (µg/L)**																									
123	115	**EPA Method SW8270 SIM**																									
124	116	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125	117	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126	118	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127	119	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128	120	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129	121	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130	122	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2		B2	
4			CB68B		CL03J		CT67G		DE68K		DM30N		DW37C		ED23B		EM75K		ES04H		EY88D		FF88P		FL41G		FU50D	
5			8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		11/11/02		2/13/03		5/7/03		8/29/03	
122	**PAHs (µg/L)**																											
123	**EPA Method SW8270 SIM**																											
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2									Dup of G1A				Dup of G1A													
3			G1A		G1A		G1A		G1B		G1A		S		G1A		G1A		G1A		G1A		G1A		G1A	
4			S177E		T176H		U258C		U258A		V224T		V224L		W391G		Y313D		Z225C		Z960O		AH27J		AU45F	
5			4/2/97		7/15/97		10/23/97		10/23/97		1/29/98		1/29/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	**66**		**170**		**25**		**21**		**99**		**96**		**0.16**	J1	**0.37**		0.25	U	**0.28**		0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	**0.25**		**5.1**		**0.58**		**0.59**		**1.8**	J2	**1.3**	J2	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	**0.40**		0.91	U	0.25	U	0.25	U	**0.26**		**0.20**	J1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.49	U	1.7	U	0.35	U	1.0	U	**1.1**		**0.86**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**3.4**		**21**		**2.5**		**2.3**		**5.4**		**5.1**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	**0.49**		**3.6**		**0.50**		**0.49**		**0.50**		**0.41**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	**7.5**		3.4	U	2.5	U	2.0	U	2.0	U	**2.3**		**6.0**		2.0	U	2.0	U	**3.2**		**10**	
20	14	4-Methylphenol	1.0	U	**2.2**		1.7	U	1.2	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**15**		1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.7	U	1.2	U	**1.2**		**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	5.2	U	3.8	U	3.0	U	**3.3**		**11**	J2	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	17	U	12	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	**16**	
24	18	Naphthalene	**9.7**		**14**		**11**		**11**		30	J2	**23**	J2	**8.4**	J2	**9.0**		**1.6**		**2.4**		**15**		**6.4**	
25	19	2-Methylnaphthalene	**29**		**37**		**33**		**35**		**44**	J2	**30**	J2	**19**	J2	**25**		**7.2**		**14**		**23**		**16**	
26	20	2,4,6-Trichlorophenol	5.0	U	**9.6**		8.6	U	6.2	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	**5.6**		8.6	U	6.2	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.7	U	1.2	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.7	U	1.2	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.7	U	1.2	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**65**		**180**		**34**		**37**		**4.3**	J1	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.7	U	**2.1**		1.0	U	**1.8**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**6.8**		5.0	U	5.0	U	5.0	U	**14**		**16**	M
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	150	J	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**36**		**22**	
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.7**	
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	**1.2**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.3**		1.0	U
42	36	Ethylbenzene	31		**49**		**74**	J2	**59**	J2	**28**		**32**		**34**		**42**		**3.1**		1.0	U	**81**		**7.4**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**51**		**74**		**160**	J2	**120**	J2	**74**		**89**		**74**		**93**		**5.7**		**2.0**		**120**		**24**	
45	39	o-Xylene	**3.4**		**5.2**		**10**		**8.3**		**4.1**		**4.1**		1.0	U	**2.5**		1.0	U	1.0	U	**5.6**		1.0	U
46	40	1,3,5-Trimethylbenzene	**36**		**58**		**120**	J2	**85**	J2	**59**		**60**		**38**		**52**		**3.2**		**4.2**		**35**		**20**	
47	41	1,2,4-Trimethylbenzene	**130**		**150**		**350**	J2	**250**	J2	140		**160**		**120**		**99**		**8.8**		**9.9**		**110**		**57**	
48	42	Isopropylbenzene	**180**		**200**		**310**	J2	**240**	J2	**130**		**140**		**200**	E	**180**		**170**		**170**		**190**		**96**	
49	43	n-Propylbenzene	**200**		**220**		**340**	J2	**270**	J2	**140**		**160**		**210**	E	**180**		**170**		**160**		**220**		**93**	
50	44	tert-Butylbenzene	**3.6**		**5.1**	J2	**6.9**		**5.7**		**3.6**		**4.0**		**5.3**	M	**6.9**		**4.6**		**4.1**		**3.9**		**3.7**	
51	45	sec-Butylbenzene	**18**		**25**		**33**		**27**		**14**		**17**		**24**		**30**	J2	**23**		**18**		**20**		**19**	
52	46	4-Isopropyltoluene	**2.8**		**3.6**		**9.2**	J2	**6.2**	J2	**4.8**		**5.6**		**4.0**		**6.5**		1.0	U	1.0	U	**2.9**		**1.3**	
53	47	n-Butylbenzene	**14**	M	**19**		**26**		**22**		**12**		**14**		**19**		**23**		**15**		**11**		**15**		14	U
54	48	Naphthalene	**20**		**32**		**73**	J2	**50**	J2	**22**		**78**		**36**		**41**		**5.2**		**5.3**		**28**		**18**	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**4.0**		**3.9**		**3.5**		**3.6**		**3.3**		**3.5**		**3.0**		**2.6**		**2.7**		**2.5**		**2.6**		**2.6**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.031**		**0.034**		0.05	U	0.05	U	0.05	U	0.05	U	**0.039**		**0.039**		**0.10**		**0.041**		**0.032**		**0.040**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.008**	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
3		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A	
4		BC27E		BH96J		BR64I		CB85G		CL03E		CT55A		DE87L		DM30A		DW37F		ED23I		EM85J		ER93D		EZ03D	
5		12/7/99		2/17/00		5/24/00		8/30/00		11/8/00		2/13/01		6/6/01		8/13/01		11/28/01		2/26/02		6/26/02		08/26/02		11/12/02	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.26	U	0.25	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.1	U	2.2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.1	U	3.3	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	50	U	50	U	50	U	52	U	54	U
24	Naphthalene	**3.0**		**6.7**		**3.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
25	2-Methylnaphthalene	**12**		**24**		**14**		**7.7**		**4.1**		**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.2	U	5.4	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.2	U	5.4	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1.1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.2	U	5.4	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	**1.7**		1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.0	U	4.2	U	4.3	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		R	5.0	U	**5.6**		5.0	U	5.0	U	**7.8**		5	U	5	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	**9.0**		21	U	**21**		5.0	U	**6.2**		**13**		**6.4**		**7.5**		5.0	U	**11**	M	5	U
39	Benzene	1.0	U	**4.4**		**1.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
42	Ethylbenzene	**2.3**		1.0	U	**1.9**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.3**		1	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
44	m,p-Xylene	**1.5**		1.0	U	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
46	1,3,5-Trimethylbenzene	**11**		**1.6**		**7.9**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
47	1,2,4-Trimethylbenzene	**14**		**17**		**11**		**3.8**		2.4	M	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
48	Isopropylbenzene	**66**		**140**		**95**		**100**		**140**		**120**		**150**		**130**		**200**		**140**		**170**		**140**		**150**	
49	n-Propylbenzene	**64**		**130**		**90**		**92**		**130**		**110**		**140**		**120**		**190**		**120**		**150**		**110**		**130**	
50	tert-Butylbenzene	**1.7**		**4.8**		**2.6**		**4.0**		**3.7**		**3.2**		**4.5**		**3.2**		**4.9**		**3.6**		**4.7**		**3.8**		**3.7**	
51	sec-Butylbenzene	**6.9**		**24**		**9.6**		**20**		**19**		**16**		**20**		**17**		**23**		**16**		**23**		**18**		**18**	
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**7.9**		1.0	U	1.0	U	1	U	1	U
53	n-Butylbenzene	1.0	U	**17**		**6.2**	M	**14**	M	**12**		**10**		14	U	**11**		**14**	M	**12**		**13**	M	**11**	M	**11**	M
54	Naphthalene	5.0	U	**13**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	**2.3**		**2.3**		**3.2**		**2.1**		**2.2**		**3.4**		**2.3**		**3.3**		**4.5**		**4.3**		**5.0**		**4.8**		**4.4**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.039**		**0.036**		**0.036**		**0.036**		**0.033**		**0.035**		**0.036**		**0.040**		**0.034**		**0.035**		**0.037**		**0.039**		0.05	U
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	**0.005**		0.005	U	0.005	U	0.005	U	**0.013**		**0.005**		**0.005**		0.005	U	0.005	U	**0.008**	

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF
3		G1A		G1A		G1A	
4		FF76E		FL66D		FU50F	
5		2/12/03		5/9/03		8/29/03	
7	**CHLORINATED PHENOLS (µg/L)**						
8	**EPA Method SW8040**						
9	Pentachlorophenol	**0.39**		0.25	U	0.51	U
10	2,4,6-Trichlorophenol	NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA	
16							
17	**SEMIVOLATILES (µg/L)**						
18	**EPA Method SW8270**						
19	Phenol	2.1	U	2	U	2	U
20	4-Methylphenol	1	U	1	U	1	U
21	Isophorone	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.1	U	3	U	3	U
23	Benzoic Acid	52	U	50	U	51	U
24	Naphthalene	1	U	1	U	1	U
25	2-Methylnaphthalene	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.2	U	5	U	5.1	U
27	2,4,5-Trichlorophenol	5.2	U	5	U	5.1	U
28	Acenaphthene	1	U	1	U	1	U
29	Dibenzofuran	1	U	1	U	1	U
30	Fluorene	1	U	1	U	1	U
31	Pentachlorophenol	5.2	U	5	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	1	U	1	U	**2.8**	
33							
34	**VOLATILES (µg/L)**						
35	**EPA Method SW8260**						
36	Acetone	5	U	**5.6**	M	**9.3**	M
37	Carbon Disulfide	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	**10**	M
39	Benzene	1	U	1	U	1	U
40	Bromoform	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U
42	Ethylbenzene	1	U	1	U	1	U
43	Styrene	1	U	1	U	1	U
44	m,p-Xylene	1	U	1	U	1	U
45	o-Xylene	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1	U	1	U	1	U
48	Isopropylbenzene	**180**		**65**		**180**	
49	n-Propylbenzene	**150**		**49**		**160**	
50	tert-Butylbenzene	**4.7**		**2.6**		**5.1**	
51	sec-Butylbenzene	**22**		**7.2**		**23**	
52	4-Isopropyltoluene	1	U	1	U	1	U
53	n-Butylbenzene	**14**	M	**4.3**	M	**14**	
54	Naphthalene	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**						
57	**Method OR-DEQ**						
58	**TPH-Diesel**	**4.4**		**3.3**		**3.7**	
59	**TPH-D Motor Oil**	NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA	
61							
62	**PRIORITY POLLUTANT**						
63	**METALS (mg/L)**						
64	Arsenic (7060)	**0.024**		**0.028**		**0.036**	
65	Chromium (6010)	0.005	U	0.005	U	**0.006**	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2									Dup of G1A				Dup of G1A													
3			G1A		G1A		G1A		G1B		G1A		S		G1A		G1A		G1A		G1A		G1A		G1A	
4			S177E		T176H		U258C		U258A		V224T		V224L		W391G		Y313D		Z225C		Z960O		AH27J		AU45F	
5			4/2/97		7/15/97		10/23/97		10/23/97		1/29/98		1/29/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99	
66	60	Copper (6010)	0.002	U	0.002	U	**0.002**		**0.003**		**0.004**		**0.004**		0.002	U	**0.004**		**0.004**		0.002	U	0.002	U	**0.009**	
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.02	U	0.02	U	**0.001**		**0.005**		**0.002**		0.001	U	**0.003**		**0.007**	
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.02	U
69	63	Zinc (6010)	0.004	U	0.004	U	**0.024**		**0.024**		**0.008**		**0.010**		**0.005**	J2	**0.013**		**0.012**		**0.011**	J	0.009	U	**0.020**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**59.1**		**51**		**53.5**		**53.0**		**46.7**		**46.4**		NA		NA		NA		**55.5**		NA		NA	
73	67	Magnesium (mg/L) (6010)	**21.6**		**19.1**		**17.9**		**17.6**		**15.8**		**15.7**		NA		NA		NA		**19.5**		NA		NA	
74	68	Potassium (mg/L) (6010)	**0.8**		**0.7**		**6.8**		**7.6**		**1.5**		**1.5**		NA		NA		NA		**1.0**		NA		NA	
75	69	Sodium (mg/L) (6010)	**11.5**		**10.5**		**15.2**		**15.4**		**10.4**		**10.2**		NA		NA		NA		**11.0**		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**260**		**230**		**210**		**210**		**250**		**210**		NA		NA		NA		**240**		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**260**		**230**		**210**		**210**		**250**		**210**		NA		NA		NA		**240**		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**300**	J2	**270**		**260**		**230**		**270**		**300**		**290**		**260**		**340**		**670**		**580**	
80	74	Chloride (mg/L) (EPA 325.2)	**13**		**14**		**14**		**13**		**13**		**12**		**12**		**11**		**12**		**12**		**9.1**		**11**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	0.010	U	0.010	U	**0.022**	J2	**0.024**	J2	NA		NA		NA		**0.010**		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.036**	J	**0.042**	J2	**0.013**		**0.019**		**0.011**	J2	0.010	UJ	NA		NA		NA		**0.015**		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.024**		0.010	U	**0.020**		**0.020**		**0.033**	J2	**0.024**	J2	NA		NA		NA		**0.025**		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	3.7		NA		NA		NA		**4.7**		NA		NA	
85	79																									

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A	
4		BC27E		BH96J		BR64I		CB85G		CL03E		CT55A		DE87L		DM30A		DW37F		ED23I		EM85J		ER93D		EZ03D	
5		12/7/99		2/17/00		5/24/00		8/30/00		11/8/00		2/13/01		6/6/01		8/13/01		11/28/01		2/26/02		6/26/02		08/26/02		11/12/02	
66	Copper (6010)	**0.003**		0.002	U	0.002	U	**0.015**		**0.004**		0.002	U	**0.003**		**0.017**		**0.005**	J	**0.005**		**0.002**		**0.004**		**0.01**	
67	Lead (7421)	**0.001**		0.001	U	**0.001**		**0.004**		**0.003**		**0.002**		**0.001**		**0.008**		**0.004**		**0.002**		0.001	U	**0.003**		0.02	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	0.01	U	**0.01**	
69	Zinc (6010)	0.008	U	0.006	U	0.006	U	**0.014**		**0.009**		**0.008**		**0.009**		**0.033**		**0.015**	J	**0.008**		**0.008**		**0.034**		**0.02**	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		**65.6**		**60.3**		**67.9**		**56.9**	J	**62.8**		NA		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		**21.6**		**20.2**		**24.9**		**18.7**	J	**21.1**		NA		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		**1.8**		**3.4**		**2.4**		**3.6**		**3.2**		NA		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		**11.2**		**12.1**		**13.5**		**13.4**		**13.0**		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		**310**		NA		NA		NA		**290**		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		**310**		NA		NA		NA		**290**		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**420**		**450**		**390**		**460**		**380**		**350**	J	**340**	J	**330**	J	**330**		**380**		**320**		**330**		**430**	
80	Chloride (mg/L) (EPA 325.2)	**9.3**		**18**		**8.4**		**6.7**		**8.2**		**8.8**		**8.2**		**10**		**3.3**		**26**		**5.1**		**5**		**4.8**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		**0.010**		NA		NA		NA		0.010	U	NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.074**		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		**0.010**		NA		NA		NA		**0.057**	J	NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		**4.7**		NA		NA		NA		**2.5**		NA		NA		NA	
85																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF
1							
2							
3		G1A		G1A		G1A	
4		FF76E		FL66D		FU50F	
5		2/12/03		5/9/03		8/29/03	
66	Copper (6010)	**0.01**		0.002	U	**0.004**	
67	Lead (7421)	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	**0.05**	
69	Zinc (6010)	**0.013**		**0.011**		**0.009**	
70							
71	**MAJOR IONS AND CONVENTIONALS**						
72	Calcium (mg/L) (6010)	**61.7**		NA		NA	
73	Magnesium (mg/L) (6010)	**22**		NA		NA	
74	Potassium (mg/L) (6010)	**7**		NA		NA	
75	Sodium (mg/L) (6010)	**17**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	**300**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**300**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**350**		**350**		**400**	
80	Chloride (mg/L) (EPA 325.2)	**3.6**		**6**		**7.3**	
81	N-Nitrate (mg-N/L) (Calculated)	**0.045**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	**0.023**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.068**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	2.5	U	NA		NA	
85							

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2									Dup of G1A				Dup of G1A													
3			G1A		G1A		G1A		G1B		G1A		S		G1A		G1A		G1A		G1A		G1A		G1A	
4			S177E		T176H		U258C		U258A		V224T		V224L		W391G		Y313D		Z225C		Z960O		AH27J		AU45F	
5			4/2/97		7/15/97		10/23/97		10/23/97		1/29/98		1/29/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.77		6.67		6.82		6.82		6.73		6.70		6.43		6.50		6.30		6.87		5.75		6.67	
88	82	Temperature (° C) (avg)	14.1		16.0		14.5		14.5		14.2		14.0		13.8		15.2		12.6		13.0		15.5		17.9	
89	83	Conductivity (um/hos)	625		585		496		496		473		480		444		680		127		559		825		850	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		NA		2.18		0.93		1.58		1.54		1.83		0.68	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120																										
121																										

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A	
4		BC27E		BH96J		BR64I		CB85G		CL03E		CT55A		DE87L		DM30A		DW37F		ED23I		EM85J		ER93D		EZ03D	
5		12/7/99		2/17/00		5/24/00		8/30/00		11/8/00		2/13/01		6/6/01		8/13/01		11/28/01		2/26/02		6/26/02		08/26/02		11/12/02	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.45		6.68		6.47		5.92		5.84		6.42		6.83		6.79		6.58		6.64		6.48		6.69		6.76	
88	Temperature (° C) (avg)	13.0		13.9		17.2		15.0		13.7		15.2		14.4		15.5		13.4		14.3		17.5		17.7		13.7	
89	Conductivity (um/hos)	742		828		796		799		679		645		651		614		586		578		592		513		665	
90	Dissolved oxygen (mg/L) (avg)	2.00		0.86		0.31		0.67		0.64		1.76		1.84		1.41		4.16		7.50		2.72		0.69		1.06	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120																											
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF
1							
2							
3		G1A		G1A		G1A	
4		FF76E		FL66D		FU50F	
5		2/12/03		5/9/03		8/29/03	
86	**FIELD PARAMETERS**						
87	pH (avg)	7.18		6.92		6.69	
88	Temperature (° C) (avg)	14.4		14.9		15	
89	Conductivity (um/hos)	682		566		588	
90	Dissolved oxygen (mg/L) (avg)	1.68		2.83		1.35	
91							
92	**DIOXINS AND FURANS (ng/L)**						
93	**Method 8290**						
94	2,3,7,8-TCDF	NA		NA		NA	
95	Total TCDF	NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA	
97	Total TCDD	NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA	
100	Total PeCDF	NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA	
102	Total PeCDD	NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA	
107	Total HxCDF	NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA	
111	Total HxCDD	NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA	
114	Total HpCDF	NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA	
116	Total HpCDD	NA		NA		NA	
117	OCDF	NA		NA		NA	
118	OCDD	NA		NA		NA	
119							
120						NA	
121							

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2									Dup of G1A				Dup of G1A													
3			G1A		G1A		G1A		G1B		G1A		S		G1A		G1A		G1A		G1A		G1A		G1A	
4			S177E		T176H		U258C		U258A		V224T		V224L		W391G		Y313D		Z225C		Z960O		AH27J		AU45F	
5			4/2/97		7/15/97		10/23/97		10/23/97		1/29/98		1/29/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		**2.5**		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		**16**		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		**0.23**	M	NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		**0.16**	M	NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A		G1A	
4		BC27E		BH96J		BR64I		CB85G		CL03E		CT55A		DE87L		DM30A		DW37F		ED23I		EM85J		ER93D		EZ03D	
5		12/7/99		2/17/00		5/24/00		8/30/00		11/8/00		2/13/01		6/6/01		8/13/01		11/28/01		2/26/02		6/26/02		08/26/02		11/12/02	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF
1							
2							
3		G1A		G1A		G1A	
4		FF76E		FL66D		FU50F	
5		2/12/03		5/9/03		8/29/03	
122	**PAHs (µg/L)**						
123	**EPA Method SW8270 SIM**						
124	Naphthalene	NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA	
126	Acenaphthylene	NA		NA		NA	
127	Acenaphthene	NA		NA		NA	
128	Fluorene	NA		NA		NA	
129	Anthracene	NA		NA		NA	
130	Dibenzofuran	NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																													
2																													
3			J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		
4			S177J		T176Q		U235K		V224P		W371L		Y314J		Z225P		Z960D		AH49D		AU22I		BC27L		BH96S		BR64E		
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/20/99		12/8/99		2/16/00		5/24/00		
6																													
7	1	**CHLORINATED PHENOLS (µg/L)**																											
8	2	**EPA Method SW8040**																											
9	3	Pentachlorophenol	**0.15**	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.36**		0.25	U	0.25	U	
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	
16	10																												
17	11	**SEMIVOLATILES (µg/L)**																											
18	12	**EPA Method SW8270**																											
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	**2.8**		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
32	26	bis(2-Ethylhexyl)phthalate	1.1	U	**1.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
33	27																												
34	28	**VOLATILES (µg/L)**																											
35	29	**EPA Method SW8260**																											
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
37	31	Carbon Disulfide	1.0	U	1.0	U	**44**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	
55	49																												
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	51	**Method OR-DEQ**																											
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.36**		0.25	U	0.25	U	**0.28**		**0.31**		**0.28**		**0.30**		**0.38**		
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		
61	55																												
62	56	**PRIORITY POLLUTANT**																											
63	57	**METALS (mg/L)**																											
64	58	Arsenic (7060)	**0.011**		**0.012**		0.05	U	0.05	U	**0.010**		**0.008**		**0.008**		**0.009**		**0.006**		**0.010**		**0.010**		**0.012**		**0.006**		
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	

BZTO104(e)017952

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4		CB49H		CL03I		CT55E		DE68J		DM52A		DW48D		ED23D		EM85E		ES04E		EZ03L		FF76I		FL58J		FU31B	
5		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.33**		0.25	U	0.25	U	0.28	U	0.25	U	0.26	U	0.25	U	0.5	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.2	U	2.2	U	2	U	2	U	2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.3	U	3.3	U	3.1	U	3	U	3	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	56	U	56	U	51	U	50	U	50	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.6	U	5.1	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.6	U	5.1	U	5	U	5	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.6	U	5.1	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.4	U	4.4	U	1	U	1	U	1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U		R	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	**0.26**		**0.40**		**0.35**		NA		NA		NA		**0.41**		NA		NA		NA		**0.39**		NA		NA	
59	**TPH-D Motor Oil**	NA		0.50	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.004**		**0.008**		**0.008**		**0.010**		**0.010**		**0.008**		**0.012**		**0.005**		**0.008**		0.05	U	**0.008**		**0.005**		**0.005**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4			S177J		T176Q		U235K		V224P		W371L		Y314J		Z225P		Z960D		AH49D		AU22I		BC27L		BH96S		BR64E	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/20/99		12/8/99		2/16/00		5/24/00	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.004	U	0.004	U	**0.012**		0.004	U	**0.005**	J2	**0.008**		0.004	U	**0.017**	J	**0.004**		**0.005**		0.006	U	0.006	U	**0.008**	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	**63.6**		**63**		**61.6**		**57.8**		NA		NA		NA		**59.4**		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**43.1**		**43.9**		**39.7**		**37.1**		NA		NA		NA		**38.5**		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**2.4**		**2.1**		**2.5**		**2.2**		NA		NA		NA		**4.0**		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**17.7**		**17.7**		**18.1**		**17.1**		NA		NA		NA		**18.3**		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**350**		**360**	J2	**170**		**380**		NA		NA		NA		**350**		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**350**		**360**	J2	**170**		**380**		NA		NA		NA		**350**		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**410**	J2	**360**		**410**		**360**		**390**		**360**		**380**		**350**		**380**		**360**		**330**		**320**	
80	74	Chloride (mg/L) (EPA 325.2)	**7.3**		**7.0**		**9.0**		**8.0**		**8.2**		**7.7**		**8.1**		**8.0**		**6.9**		**6.3**		**7.2**		**7.7**		**5.6**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	**0.028**		**0.027**	J2	NA		NA		NA		0.010	U	NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.022**	J	**0.019**	J2	**0.015**		**0.013**	J2	NA		NA		NA		**0.022**		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.015**		0.010	U	**0.043**		**0.040**	J2	NA		NA		NA		**0.016**		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	2.5	U	2.5	U	2.5	U	2.5	U	NA		NA		NA		**5.7**		NA		NA		NA		NA		NA	
85	79																											

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4		CB49H		CL03I		CT55E		DE68J		DM52A		DW48D		ED23D		EM85E		ES04E		EZ03L		FF76I		FL58J		FU31B	
5		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	**0.003**		0.002	U	0.002	U	0.002	U	0.002	U
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.02	U	**0.001**		0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.011**		**0.009**		**0.007**		**0.008**		**0.006**	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		**53.0**		**57.1**		**49.5**		**53.9**		**55.8**		NA		NA		NA		**54.1**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**31.3**		**33.2**		**30.0**		**28.8**		**31.7**		NA		NA		NA		**29.2**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**1.8**		**2.1**		**2.1**		**2.6**		**2.8**		NA		NA		NA		**2.8**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**14.5**		**15.2**		**14.8**		**14.9**		**15.9**		NA		NA		NA		**15**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**330**		NA		NA		NA		**370**		NA		NA		NA		**310**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**330**		NA		NA		NA		**370**		NA		NA		NA		**310**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**380**		**340**		**370**		**370**		**350**		**350**		**340**		**290**		**330**		**360**		**330**		**320**		**360**	
80	Chloride (mg/L) (EPA 325.2)	**4.4**		**5.1**		**5.0**		**4.2**		**5.9**		**4.3**		**5.3**		**4.8**		**4.1**		**4.6**		**4.5**		**4.6**		**3.9**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		**0.046**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.010	U	NA		NA		NA		**0.013**		NA		NA		NA		**0.012**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		0.010	U	NA		NA		NA		**0.019**	J	NA		NA		NA		**0.058**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**5.6**		NA		NA		NA		**3.5**		NA		NA		NA		**5.9**		NA		NA	
85																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB		
1																														
2																														
3			J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2			
4			S177J		T176Q		U235K		V224P		W371L		Y314J		Z225P		Z960D		AH49D		AU22I		BC27L		BH96S		BR64E			
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/20/99		12/8/99		2/16/00		5/24/00			
86	80	**FIELD PARAMETERS**																												
87	81	pH (avg)	6.76		6.74		6.91		6.76		6.49		6.37		6.35		6.89		5.95		6.30		6.56		6.69		6.49			
88	82	Temperature (° C) (avg)	13.9		16.8		13.8		14.3		13.0		16.5		12.7		14.1		14.7		14.9		12.1		13.6		16.1			
89	83	Conductivity (um/hos)	721		650		551		646		663		756		399		683		565		587		631		657		637			
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		0.73		0.77		2.50		2.54		1.96		2.18		2.42		1.12		0.90			
91	85																													
92	86	**DIOXINS AND FURANS (ng/L)**																												
93	87	**Method 8290**																												
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
119																														
120																														
121																														

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4		CB49H		CL03I		CT55E		DE68J		DM52A		DW48D		ED23D		EM85E		ES04E		EZ03L		FF76I		FL58J		FU31B	
5		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.71		5.46		6.27		6.72		6.91		6.61		6.62		6.58		6.93		6.61		7.06		6.87		6.73	
88	Temperature (° C) (avg)	14.7		12.8		13.9		13.7		15.7		13.4		13.8		15.3		15.5		14.1		14		14.5		15.1	
89	Conductivity (um/hos)	584		578		574		619		594		584		592		467		416		456		654		464		523	
90	Dissolved oxygen (mg/L) (avg)	1.10		1.02		0.62		1.12		1.30		3.69		6.76		3.17		1.32		1.19		0		2.73		1.76	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120																										NA	
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4			S177J		T176Q		U235K		V224P		W371L		Y314J		Z225P		Z960D		AH49D		AU22I		BC27L		BH96S		BR64E	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/20/99		12/8/99		2/16/00		5/24/00	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2		J2	
4		CB49H		CL03I		CT55E		DE68J		DM52A		DW48D		ED23D		EM85E		ES04E		EZ03L		FF76I		FL58J		FU31B	
5		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D
4			S167L		T176F		U235U		V208G		W371H		Y336H		Z225D		Z960H		AH27H		AU45K		BC21AC		BH75H		BR55F
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	**0.60**		0.25	U	0.25	U	0.25	U	0.25	U	**0.16**	J1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	15	Isophorone	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10
24	18	Naphthalene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
25	19	2-Methylnaphthalene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	22	Acenaphthene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	23	Dibenzofuran	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	24	Fluorene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	UJ	3.5	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		**6.5**		1.0	U	1.0	U	1.0
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.36**		0.25	U	0.25	U	0.25	U	**0.67**		0.25	U	0.25	U	0.25
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.004**		**0.006**		0.05	U	0.05	U	**0.006**		**0.006**		**0.007**		**0.007**		**0.005**		**0.006**		**0.006**		**0.008**		**0.006**
65	59	Chromium (6010)	0.005	U	**0.007**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.007**		**0.006**		0.005	U	0.005

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D	
4			CB49B		CK77E		CT37C		DE68E		DM52D		DW48L		ED16I		EM75H		ER92D		EY88F		FF88L		FL41E		FU31D	
5			8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
7	**CHLORINATED PHENOLS (µg/L)**																											
8	**EPA Method SW8040**																											
9	Pentachlorophenol	UJ	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.26**		**0.26**		0.25	U	0.27	U	0.25	U	0.25	U	0.25	U	0.6	U
10	2,4,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																												
17	**SEMIVOLATILES (µg/L)**																											
18	**EPA Method SW8270**																											
19	Phenol	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.1	U	2	U	2	U	2	U	2.4	U
20	4-Methylphenol	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
21	Isophorone	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.2	U	3	U	3	U	3	U	3.6	U
23	Benzoic Acid	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	53	U	50	U	50	U	50	U	60	U
24	Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
25	2-Methylnaphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5	U	5	U	5	U	6	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5	U	5	U	5	U	6	U
28	Acenaphthene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
29	Dibenzofuran	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
30	Fluorene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.2	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5	U	5	U	5	U	6	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.3	U	4	U	1	U	1	U	1.2	U
33																												
34	**VOLATILES (µg/L)**																											
35	**EPA Method SW8260**																											
36	Acetone	U	5.0	U	5.0	U	7.6	U	5.0	U	5.0	U	**20**		**6.9**		**6.4**		**16**		5	U	5	U	**6.3**		5	U
37	Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	**Method OR-DEQ**																											
58	**TPH-Diesel**	U	0.25	U	0.25	U	**0.27**		NA		NA		NA		0.25	U	NA		NA		NA		0.25	U	NA		NA	
59	**TPH-D Motor Oil**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																												
62	**PRIORITY POLLUTANT**																											
63	**METALS (mg/L)**																											
64	Arsenic (7060)		**0.006**		**0.005**		**0.006**		**0.005**		**0.006**		**0.006**		**0.006**		**0.005**		**0.006**		0.05	U	**0.006**		**0.006**		**0.006**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D
4			S167L		T176F		U235U		V208G		W371H		Y336H		Z225D		Z960H		AH27H		AU45K		BC21AC		BH75H		BR55F
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00
66	60	Copper (6010)	0.002	U	**0.009**		**0.004**		**0.003**		0.002	U	0.004		0.002	U	0.002	U	0.002	U	**0.007**		**0.003**		**0.003**		0.002
67	61	Lead (7421)	0.001	U	**0.002**		0.02	U	0.02	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.003**		**0.001**		**0.002**		**0.001**
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	63	Zinc (6010)	0.004	U	**0.019**	J2	**0.021**		**0.010**		**0.008**	J2	**0.014**		**0.006**		**0.009**	J	0.007	U	**0.021**		**0.012**		**0.017**		**0.007**
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**69.1**		**71.1**		**72.9**		**65.8**		NA		NA		NA		**63.4**		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	**40.5**		**42.6**		**43.1**		**37.0**		NA		NA		NA		**38.6**		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	**1.9**		**2.0**		**2.0**		**1.1**		NA		NA		NA		**1.5**		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	**15.3**		**16.4**		**16.3**		**15.9**		NA		NA		NA		**15.1**		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**360**		**350**		**360**		**370**		NA		NA		NA		**360**		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**360**		**350**		**360**		**370**		NA		NA		NA		**360**		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**400**	J2	**400**		**370**	J2	**310**		**350**		**310**		**340**		**340**		**360**		**360**		**360**		**350**
80	74	Chloride (mg/L) (EPA 325.2)	**3.2**	J	**3.0**		**3.5**		**3.3**		**3.9**		**2.0**		**2.8**		**3.6**		**1.6**		**3.2**		**3.7**		**3.5**		**10**
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.012**	J	0.010	U	**0.017**		**0.021**		NA		NA		NA		0.010	U	NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	0.010	U	NA		NA		NA		**0.020**		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.012**	J	0.010	U	**0.017**		**0.021**		NA		NA		NA		**0.020**		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	**3.4**	J	2.5	U	2.5	U	2.5	U	NA		NA		NA		**7.2**		NA		NA		NA		NA		NA
85	79																										

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D	
4			CB49B		CK77E		CT37C		DE68E		DM52D		DW48L		ED16I		EM75H		ER92D		EY88F		FF88L		FL41E		FU31D	
5			8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
66	Copper (6010)	U	0.002	U	**0.002**	J2	0.002	U	0.002	U	0.002	U	0.003	U	**0.005**		0.002	U	**0.005**		**0.003**		**0.004**		0.002	U	**0.002**	
67	Lead (7421)		0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	**0.005**		**0.002**		0.02	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)		**0.011**		**0.007**		**0.007**		0.006	U	0.006	U	**0.01**		**0.011**		**0.006**		**0.011**		**0.009**		**0.014**		**0.01**	J	**0.012**	
70																												
71	**MAJOR IONS AND CONVENTIONALS**																											
72	Calcium (mg/L) (6010)		NA		NA		**51.5**		**53.8**		**50.2**		**45.3**		**51.6**		NA		NA		NA		**48.2**		NA		NA	
73	Magnesium (mg/L) (6010)		NA		NA		**32.5**		**33.0**		**32.0**		**29.2**		**34.0**		NA		NA		NA		**30.9**		NA		NA	
74	Potassium (mg/L) (6010)		NA		NA		**1.1**		**1.3**		**1.4**		**1.3**		**1.8**		NA		NA		NA		**1.4**		NA		NA	
75	Sodium (mg/L) (6010)		NA		NA		**13.0**		**12.9**		**13.3**		**12.4**		**14.4**		NA		NA		NA		**13.6**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		**300**		NA		NA		NA		**280**		NA		NA		NA		**270**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		**300**		NA		NA		NA		**280**		NA		NA		NA		**270**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**380**		**360**		**380**		**360**		**360**		**320**		**320**		**300**		**340**		**320**		**280**		**300**		**320**	
80	Chloride (mg/L) (EPA 325.2)		**3.2**		**3.2**		**3.0**		**3.2**		**3.1**		**2.6**		**3.0**		**1.6**		**2.6**		**2.7**		**4.9**		**3.1**		**2.2**	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		**0.031**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		0.010	U	NA		NA		NA		**0.010**		NA		NA		NA		0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		0.010	UJ	NA		NA		NA		**0.017**		NA		NA		NA		**0.031**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA		**11**		NA		NA		NA		**6.1**		NA		NA		NA		**4.6**		NA		NA	
85																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D
4			S167L		T176F		U235U		V208G		W371H		Y336H		Z225D		Z960H		AH27H		AU45K		BC21AC		BH75H		BR55F
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00
6																											
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.91		6.99		7.14		6.94		6.64		6.61		6.45		6.97		6.05		6.90		6.36		6.88		6.65
88	82	Temperature (° C) (avg)	14.1		16.5		14.4		14.1		12.7		16.0		13.8		14.6		16.4		15.9		14.1		14.7		14.7
89	83	Conductivity (um/hos)	678		654		576		594		522		633		137		586		459		488		536		521		482
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		0.95		2.22		2.43		2.41		0.76		3.26		1.89		0.97
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120																											
121																											

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D	
4			CB49B		CK77E		CT37C		DE68E		DM52D		DW48L		ED16I		EM75H		ER92D		EY88F		FF88L		FL41E		FU31D	
5			8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
86	**FIELD PARAMETERS**																											
87	pH (avg)		6.55		5.47		6.64		6.96		7.11		6.86		6.36		6.86		6.96		7.03		7.12		7.31		7.05	
88	Temperature (° C) (avg)		15.2		14.0		15.0		15.6		16.3		14.3		14.1		16.0		16.0		14.9		15.5		14.6		16.7	
89	Conductivity (um/hos)		553		481		476		484		503		467		445		451		389		495		508		411		388	
90	Dissolved oxygen (mg/L) (avg)		1.78		2.23		1.51		1.99		1.34		4.23		4.78		5.36		1.91		2.59		0		4.2		1.54	
91																												
92	**DIOXINS AND FURANS (ng/L)**																											
93	**Method 8290**																											
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D
4			S167L		T176F		U235U		V208G		W371H		Y336H		Z225D		Z960H		AH27H		AU45K		BC21AC		BH75H		BR55F
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D		LW1D	
4			CB49B		CK77E		CT37C		DE68E		DM52D		DW48L		ED16I		EM75H		ER92D		EY88F		FF88L		FL41E		FU31D	
5			8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
122	**PAHs (µg/L)**																											
123	**EPA Method SW8270 SIM**																											
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D
4			S177F		T176V		U235S		V224M		W391H		Y336C		Z225H		Z960M		AH76I		AU36C		BC27B		BH96K		BR55I
5			4/2/97		7/16/97		10/23/97		1/29/98		5/20/98		8/18/98		11/13/98		2/18/99		5/19/99		9/21/99		12/7/99		2/18/00		5/23/00
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	**0.23**	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		1.0	U	1.0
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	**5.3**	J2	5.4	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	**4.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
40	34	Bromoform	1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U	1.0
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.38**		**0.32**
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.010**		**0.009**		0.05	U	0.05	U	**0.018**		**0.014**		**0.015**		**0.017**		**0.017**		**0.017**		**0.017**		**0.021**		**0.019**
65	59	Chromium (6010)	0.005	U	**0.164**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005

BZTO104(e)017968

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D	
4			CB49E		CK77G		CT55C		DE68H		DM52C		DW48A		ED34F		EM85A		ES04B		EZ03A		FF88B		FL66J		FU50A	
5			8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
7	**CHLORINATED PHENOLS (µg/L)**																											
8	**EPA Method SW8040**																											
9	Pentachlorophenol	UJ	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**3.0**		**0.76**		0.25	U	0.29	U	0.25	U	**0.28**		0.25	U	0.55	U
10	2,4,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																												
17	**SEMIVOLATILES (µg/L)**																											
18	**EPA Method SW8270**																											
19	Phenol	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.3	U	2.2	U	2	U	2	U	2.2	U
20	4-Methylphenol	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
21	Isophorone	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.5	U	3.3	U	3	U	3	U	3.3	U
23	Benzoic Acid	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	58	U	54	U	50	U	50	U	55	U
24	Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
25	2-Methylnaphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.8	U	5.4	U	5	U	5	U	5.5	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.8	U	5.4	U	5	U	5	U	5.5	U
28	Acenaphthene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
29	Dibenzofuran	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
30	Fluorene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1.1	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**26**		5.0	U	5.8	U	5.4	U	5	U	5	U	5.5	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		4.0	U	4.0	U	4.7	U	4.3	U	1	U	1	U	1.1	U
33																												
34	**VOLATILES (µg/L)**																											
35	**EPA Method SW8260**																											
36	Acetone	U	5.0	U	**15**			R	**23**		**38**		**80**		**10**		**50**		**13**		5	U	**12**		**24**		**17**	
37	Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	**Method OR-DEQ**																											
58	**TPH-Diesel**		0.25	U	0.25	U	**0.28**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	**TPH-D Motor Oil**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																												
62	**PRIORITY POLLUTANT**																											
63	**METALS (mg/L)**																											
64	Arsenic (7060)		**0.017**		**0.016**		**0.015**		**0.016**		**0.018**		**0.020**		**0.016**		**0.019**		**0.016**		0.05	U	**0.014**		**0.016**		**0.018**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.010**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D
4			S177F		T176V		U235S		V224M		W391H		Y336C		Z225H		Z960M		AH76I		AU36C		BC27B		BH96K		BR55I
5			4/2/97		7/16/97		10/23/97		1/29/98		5/20/98		8/18/98		11/13/98		2/18/99		5/19/99		9/21/99		12/7/99		2/18/00		5/23/00
66	60	Copper (6010)	**0.003**		**0.164**		0.002	U	**0.004**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002
67	61	Lead (7421)	0.001	U	**0.062**		0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001
68	62	Nickel (6010)	0.01	U	**0.12**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	63	Zinc (6010)	**0.021**		**0.464**		**0.016**		**0.015**		**0.009**	J2	**0.011**		**0.007**		**0.012**	J	**0.009**		**0.012**		0.010	U	**0.011**		0.006
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**54.4**		**82.6**		**58.7**		**61.3**		NA		NA		NA		**62.7**		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	**26.1**		**55.4**		**27.7**		**28.4**		NA		NA		NA		**29.0**		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	**3.4**		**11.5**		**3.9**		**3.7**		NA		NA		NA		**3.5**		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	**51.0**		**92.1**		**35.7**		**27.8**		NA		NA		NA		**17.8**		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**370**		**340**	J2	**340**		**360**		NA		NA		NA		**350**		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**370**		**340**	J2	**340**		**360**		NA		NA		NA		**350**		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**360**	J2	**350**		**360**		**380**		**340**		**330**		**380**		**340**		**340**		**360**		**360**		**360**
80	74	Chloride (mg/L) (EPA 325.2)	**4.8**		**4.3**		**4.9**		**3.9**		**4.7**		**3.1**		**3.5**		**5.3**		**3.5**		**3.4**		**4.5**		**4.3**		**4.4**
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.012**		0.010	U	**0.026**		**0.023**	J2	NA		NA		NA		0.010	U	NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.012**	J	**0.012**	J2	**0.014**		0.010	UJ	NA		NA		NA		**0.021**		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.024**		0.010	U	**0.040**		**0.023**	J2	NA		NA		NA		**0.020**		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	**12**	J	**4.3**		2.5	U	**2.6**		NA		NA		NA		**5.4**		NA		NA		NA		NA		NA
85	79																										

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D	
4			CB49E		CK77G		CT55C		DE68H		DM52C		DW48A		ED34F		EM85A		ES04B		EZ03A		FF88B		FL66J		FU50A	
5			8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
66	Copper (6010)	U	0.002	U	**0.004**	J2	0.002	U	0.002	U	0.002	U	0.002	U	**0.004**		**0.002**		**0.003**		**0.002**		0.002	U	**0.003**		**0.003**	
67	Lead (7421)	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001	U	0.001	U	0.02	U	**0.002**		**0.001**		0.001	U
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	U	**0.015**		**0.017**		**0.007**		0.006	U	**0.012**		**0.013**		**0.008**		**0.008**		**0.014**		0.006	U	0.006	U	**1.1**		**0.008**	
70																												
71	**MAJOR IONS AND CONVENTIONALS**																											
72	Calcium (mg/L) (6010)		NA		NA		**61.4**		**62.1**		**55.1**		**57.3**		**60.9**		NA		NA		NA		**57.8**		NA		NA	
73	Magnesium (mg/L) (6010)		NA		NA		**27.5**		**28.4**		**25.4**		**26.3**		**27.6**		NA		NA		NA		**27.7**		NA		NA	
74	Potassium (mg/L) (6010)		NA		NA		**3.2**		**3.5**		**3.4**		**3.2**		**3.9**		NA		NA		NA		**3.6**		NA		NA	
75	Sodium (mg/L) (6010)		NA		NA		**13.4**		**13.4**		**12.6**		**13.2**		**14.5**		NA		NA		NA		**13.7**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		**330**		NA		NA		NA		**350**		NA		NA		NA		**310**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		**330**		NA		NA		NA		**350**		NA		NA		NA		**310**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**410**		**350**		**360**		**370**		**310**		**330**		**390**		**310**		**380**		**380**		**350**		**330**		**330**	
80	Chloride (mg/L) (EPA 325.2)		**3.5**		**6.9**		**3.3**		**6.2**		**4.5**		**3.4**		**3.7**		**3.4**		**3.4**		**3.5**		**4.7**		**3.3**		**2.6**	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA		**0.012**		NA		NA		NA		NA		NA		NA		NA		**0.031**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		0.010	U	NA		NA		NA		NA		NA		NA		NA		**0.032**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		**0.012**		NA		NA		NA		NA		NA		NA		NA		**0.063**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA		**6.5**		NA		NA		NA		**5.5**		NA		NA		NA		**4.1**		NA		NA	
85																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D
4			S177F		T176V		U235S		V224M		W391H		Y336C		Z225H		Z960M		AH76I		AU36C		BC27B		BH96K		BR55I
5			4/2/97		7/16/97		10/23/97		1/29/98		5/20/98		8/18/98		11/13/98		2/18/99		5/19/99		9/21/99		12/7/99		2/18/00		5/23/00
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.76		6.74		6.59		6.87		6.48		6.40		6.21		6.58		6.08		6.44		6.31		6.30		6.55
88	82	Temperature (° C) (avg)	12.7		16.2		13.4		16.5		13.3		14.2		13.3		12.4		13.9		15.5		12.2		12.3		16.0
89	83	Conductivity (um/hos)	706		646		627		668		504		673		159		695		635		588		657		667		627
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		2.21		1.60		2.22		2.47		1.99		2.10		2.44		2.05		1.49
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120																											
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D	
4			CB49E		CK77G		CT55C		DE68H		DM52C		DW48A		ED34F		EM85A		ES04B		EZ03A		FF88B		FL66J		FU50A	
5			8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
86	**FIELD PARAMETERS**																											
87	pH (avg)		5.92		5.58		6.29		6.56		6.54		6.47		6.50		6.30		6.45		6.39		6.8		6.87		6.52	
88	Temperature (° C) (avg)		14.0		12.7		12.4		13.6		14.4		12.7		12.5		14.4		15.2		13.3		13.1		14.5		15.1	
89	Conductivity (um/hos)		629		624		638		655		628		628		617		629		595		664		826		534		525	
90	Dissolved oxygen (mg/L) (avg)		1.04		1.28		0.60		0.92		11.14		3.61		7.98		4.43		1.20		1.94		0		4.28		1.13	
91																												
92	**DIOXINS AND FURANS (ng/L)**																											
93	**Method 8290**																											
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D
4			S177F		T176V		U235S		V224M		W391H		Y336C		Z225H		Z960M		AH76I		AU36C		BC27B		BH96K		BR55I
5			4/2/97		7/16/97		10/23/97		1/29/98		5/20/98		8/18/98		11/13/98		2/18/99		5/19/99		9/21/99		12/7/99		2/18/00		5/23/00
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D		LW3D	
4			CB49E		CK77G		CT55C		DE68H		DM52C		DW48A		ED34F		EM85A		ES04B		EZ03A		FF88B		FL66J		FU50A	
5			8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
122	**PAHs (µg/L)**																											
123	**EPA Method SW8270 SIM**																											
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
2							Dup of LW4D										Dup of LW4D				Dup of LW4D			
3			LW4D		LW4D		LW40D		LW4D		LW4D		LW4D (a)		LW4D		LW40D		LW4D		LW40D		LW4D	
4			S167I		T176M		T176L		U235N		V232F		B802035-02		W391E		W391I		Y314E		Y314B		Z225J	
5			4/1/97		7/16/97		7/16/97		10/22/97		1/30/98		1/30/98		5/20/98		5/20/98		8/17/98		8/17/98		11/14/98	
7	1	**CHLORINATED PHENOLS (µg/L)**																						
8	2	**EPA Method SW8040**																						
9	3	Pentachlorophenol	**450**		**8200**		**7200**		**8700**		**14000**		**16500**		**4300**		**4400**		**3300**		**3300**		**2400**	
10	4	2,4,6-Trichlorophenol	**0.44**		**4.0**		**3.7**		**4.8**		**8.8**		NA		**5.3**		**5.4**		**6.3**		**6.5**		**20**	J2
11	5	2,3,6-Trichlorophenol	0.29	U	1.8	U	1.8	U	0.73	U	0.25	U	NA		0.25	U	0.25	U	0.82	U	0.90	U	0.46	U
12	6	2,4,5-Trichlorophenol	11	U	39	U	30	U	76	U	**39**		NA		**90**		**90**		51	U	51	U	60	U
13	7	2,3,4-Trichlorophenol	0.28	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**20**		**880**		**770**		**600**		**940**		**746**		**240**		**250**		**270**		**280**		**210**	J2
15	9	2,3,4,5-Tetrachlorophenol	**6.1**		**29**		**26**		**19**		**20**		NA		50	U	50	U	**16**		**14**		**8.4**	
16	10																							
17	11	**SEMIVOLATILES (µg/L)**																						
18	12	**EPA Method SW8270**																						
19	13	Phenol	**150**		**180**		**200**		**58**		**30**		100	U	**16**		**17**		**10**		**8.1**		**7.7**	
20	14	4-Methylphenol	**11**		**33**		**32**		1.0	U	**8.7**		100	U	**16**		**15**		1.0	U	1.0	U	**10**	
21	15	Isophorone	1.0	U	1.0	U	1.0	U	**1.8**		**2.3**		NA		1.0	U	1.0	U	**1.1**		1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	200	U	**17**	J2	**18**	J2	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	**22**		**28**	J2	**47**	J2	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	**35**		**44**		**46**		**36**		**30**		NA		**16**	J2	**21**	J2	**18**	J2	**23**	J2	**28**	
25	19	2-Methylnaphthalene	**52**		**67**		**74**		**45**		**44**		NA		**24**	J2	**32**	J2	**42**		**49**		**57**	
26	20	2,4,6-Trichlorophenol	5.0	U	**8.0**		**9.4**		**7.5**		**9.3**		100	U	**7.3**	J2	**9.4**	J2	5.0	U	5.0	U	**18**	J2
27	21	2,4,5-Trichlorophenol	**14**		**43**		**49**		**69**		**78**		100	U	**57**		**60**		**7.4**		**6.7**		**69**	
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**390**		**10000**		**12000**		**18000**		**16000**		**13500**		**5300**		**5200**		**3100**		**2900**		**4600**	
32	26	bis(2-Ethylhexyl)phthalate	10	UJ	1.0	U	1.0	U	**2.0**		1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																							
34	28	**VOLATILES (µg/L)**																						
35	29	**EPA Method SW8260**																						
36	30	Acetone	**16**		**42**		**43**		**25**		**29**		NA		**17**		**17**		**11**		**9.2**		**12**	
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	**12**		**12**		5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	**10**		**6.4**		**6.3**		**17**		**11**		NA		**5.4**		**5.4**		**10**		**9.6**		**5.7**	
42	36	Ethylbenzene	**140**		**190**		**190**		**180**		**130**		NA		**12**		**13**		**100**		**95**		**93**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**390**		**580**		**600**		**730**		**500**		NA		**450**		**450**		**320**		**320**		**340**	
45	39	o-Xylene	**77**		**140**		**140**		**150**		**100**		NA		**110**		**110**		**120**		**95**		**94**	
46	40	1,3,5-Trimethylbenzene	**170**		**190**		**180**		**330**		**140**		NA		**160**		**150**		**180**		**170**		**120**	
47	41	1,2,4-Trimethylbenzene	**580**		**630**		720		**1100**	J2	**560**		NA		**480**		**550**		**590**		**570**		**460**	J2
48	42	Isopropylbenzene	**110**		**120**		**120**		**140**	J2	**81**		NA		**7.5**		**7.4**		**100**		**85**		**54**	
49	43	n-Propylbenzene	**140**		**160**		**150**		**190**		**110**		NA		**7.6**		**7.3**		**120**		**110**		**78**	
50	44	tert-Butylbenzene	1.0	U	1.0	U	**4.1**	J2	**3.8**		**2.6**		NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	**15**		**20**		**18**		**18**	J2	**12**		NA		1.0	U	1.0	U	**22**	J2	1.0	UJ	1.0	U
52	46	4-Isopropyltoluene	**10**		**15**		**14**		**14**	J2	**10**		NA		**5.4**		**5.4**		**15**		**12**		**8.5**	
53	47	n-Butylbenzene	**14**		**20**		**18**		**17**	J2	**13**		NA		4.4	U	4.2	U	**21**	J2	**16**	J2	**12**	J2
54	48	Naphthalene	**54**		**87**		**84**		**92**	J2	**78**		NA		**41**		**41**		**50**		**48**		**28**	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	51	**Method OR-DEQ**																						
58	52	**TPH-Diesel**	**7.2**		**12**		**12**		**15**		**11**		NA		**7.2**		**6.8**		**6.5**	J2	**8.2**	J2	**4.6**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																							
62	56	**PRIORITY POLLUTANT**																						
63	57	**METALS (mg/L)**																						
64	58	Arsenic (7060)	**0.024**		**0.025**		**0.025**		0.05	U	0.05	U	NA		**0.028**		**0.028**		**0.028**		**0.029**		**0.028**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU
2		Dup of LW4D				Dup of LW4D						Dup of LW4D				Dup of LW4D								
3		LW40D		LW4D		LW40D		LW4D		LW4D		LW40D		LW4D		LW40D		LW4D		LW4D		LW4D		LW4D
4		Z225L		Z960P		Z960K		AH49H		AU45G		AU45I		BC21J		BC27P		BH96E		BR55D		CB68D		CL03G
5		11/14/98		2/17/99		2/17/99		5/18/99		9/22/99		9/22/99		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00
7	**CHLORINATED PHENOLS (µg/L)**																							
8	**EPA Method SW8040**																							
9	Pentachlorophenol	**2300**		**2300**		**2400**		**2.5**		**0.85**	J2	**0.58**	J2	**1.5**	J2	**3.4**	J2	**0.60**		**0.41**	J2	**0.30**		0.25
10	2,4,6-Trichlorophenol	**16**	J2	**9.6**	J	**13**	J	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
11	2,3,6-Trichlorophenol	0.47	U	1.2	U	1.1	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
12	2,4,5-Trichlorophenol	26	U	80	U	48	U	0.39	U	0.25	U	0.25	U	0.34	U	0.69	U	0.25	U	0.25	U	0.41	U	0.25
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**160**	J2	**130**		**140**		**0.26**		0.25	U	0.25	U	**1.4**	J2	**3.0**	J2	0.25	U	0.25	U	0.25	U	0.25
15	2,3,4,5-Tetrachlorophenol	**8.4**		**67**	J	**42**	J	**0.49**		0.25	U	0.25	U	0.25	U	**0.19**	J1	0.25	U	0.25	U	0.25	U	0.25
16																								
17	**SEMIVOLATILES (µg/L)**																							
18	**EPA Method SW8270**																							
19	Phenol	**7.6**		**23**		**25**		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	**110**		2.0
20	4-Methylphenol	**9.4**		**7.5**		**7.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	**11**		10
24	Naphthalene	**28**		**23**		**25**		1.0	U	**27**	J2	**14**	J2	**19**		**19**		**24**		**10**		**11**		**5.4**
25	2-Methylnaphthalene	**58**		**64**		**65**		1.0	U	**41**	J2	**22**	J2	**30**		**30**		**30**		**18**		**18**		**11**
26	2,4,6-Trichlorophenol	**20**	J2	**12**		**11**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	2,4,5-Trichlorophenol	**66**		**59**		**55**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	Pentachlorophenol	**3800**		**4000**		**3700**		**6.5**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**8.9**		5.0
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**0.7**	J1	**0.7**	J1	1.0	U	1.0	U	1.0	U	2.8
33																								
34	**VOLATILES (µg/L)**																							
35	**EPA Method SW8260**																							
36	Acetone	**13**		**16**		**15**		**16**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	25	U	17
37	Carbon Disulfide	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0
38	2-Butanone	5.0	U	15	U	**7.4**		**8.2**		**28**		**32**		5.0	U	5.0	U	5.0	U	5.0	U	25	U	**14**
39	Benzene	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		5.0	U	1.0
40	Bromoform	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0
41	Toluene	**5.0**		**6.0**		**6.5**		**11**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.4**		5.0	U	1.0
42	Ethylbenzene	**80**		**52**		**62**		**220**		**39**		**38**		**21**		**21**		**18**		**22**		**39**		**1.3**
43	Styrene	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0
44	m,p-Xylene	**300**		**320**		**320**		**720**		**110**		**110**		**88**		**90**		**76**		**100**		**120**		**3.6**
45	o-Xylene	**78**		**84**		**95**		**130**		**5.4**		**4.5**		**20**		**20**		**8.1**		**11**		**13**		1.0
46	1,3,5-Trimethylbenzene	**99**		**170**		**140**		**160**		**70**		**70**		**94**		**96**		**90**		**70**		**50**		**12**
47	1,2,4-Trimethylbenzene	**590**	J2	**550**		**520**		**700**		**320**		**310**		**260**		**280**		**290**		**300**		**270**		**240**
48	Isopropylbenzene	**46**		**42**		**43**		**92**		**65**		**68**		**40**		**39**		**79**		**54**		**62**		**56**
49	n-Propylbenzene	**65**		**51**		**54**		**130**		**69**		**71**		**45**		**45**		**87**		**61**		**76**		**60**
50	tert-Butylbenzene	1.0	U	**3.0**		**2.9**		**4.3**		1.0	U	1.0	U	**2.0**		**2.0**		**4.2**		**2.6**		5.0	U	**2.9**
51	sec-Butylbenzene	1.0	U	**8.3**		**9.2**		**16**		**14**		**14**		**7.3**		**7.3**		**15**		**9.8**		**11**		**9.1**
52	4-Isopropyltoluene	**6.8**		**8.3**		**8.1**		**11**		**7.6**		**6.9**		**7.3**		**7.5**		**6.6**		**4.3**		**7.6**		1.0
53	n-Butylbenzene	**8.9**	J2	**9.7**		**10**		**16**		12	U	12	U	8.0	U	8.3	U	**14**		9.2	U	9.7	U	**7.0**
54	Naphthalene	**28**		**41**		**44**		**57**		**34**		**33**		**28**		**30**		**50**		**34**		**26**		**12**
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																							
57	**Method OR-DEQ**																							
58	**TPH-Diesel**	**4.6**		**6.9**		**7.3**		**5.0**		**4.2**	J2	**3.2**	J2	**3.1**		**2.9**		**3.8**		**2.8**		**3.3**		**5.4**
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.50
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61																								
62	**PRIORITY POLLUTANT**																							
63	**METALS (mg/L)**																							
64	Arsenic (7060)	**0.030**		**0.030**		**0.029**		**0.029**		**0.030**		**0.033**		**0.024**		**0.025**		**0.030**		**0.025**		**0.029**		**0.028**
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.007**		**0.008**		0.005	U	0.005	U	0.005	U	0.005

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR
3			LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D	
4			CT67D		DE87K		DM30D		DW29G		ED30H		EN00H		ER93L		EZ17F		FF65G		FL58E		FU45N	
5			2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**																							
8	**EPA Method SW8040**																							
9	Pentachlorophenol	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.3	U	0.25	U	0.26	U	0.26	U	**1**	J
10	2,4,6-Trichlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																								
17	**SEMIVOLATILES (µg/L)**																							
18	**EPA Method SW8270**																							
19	Phenol	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.4	U	2.3	U	2.1	U	2	U	2	U
20	4-Methylphenol	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
21	Isophorone	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.6	U	3.4	U	3.1	U	3.1	U	3.1	U
23	Benzoic Acid	U	10	U	10	U	10	U	30	U	50	U	50	U	60	U	57	U	52	U	51	U	51	U
24	Naphthalene		**2.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene		**11**		**3.6**		**3.3**		**1.4**		**1.8**		**1.6**		1.2	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.7	U	5.2	U	5.1	U	5.1	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.7	U	5.2	U	5.1	U	5.1	U
28	Acenaphthene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
30	Fluorene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.7	U	5.2	U	5.1	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.8	U	4.5	U	1	U	1	U	1	U
33																								
34	**VOLATILES (µg/L)**																							
35	**EPA Method SW8260**																							
36	Acetone	U	5.0	U	**22**		**42**		**77**		**14**		20	U	**8.2**		9	U	**96**		**11**	M	**12**	J
37	Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone		**26**		**14**		5.0	U	5.0	U	**14**		5.0	U	**13**	M	5	U	5	U	5	U	**13**	M
39	Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene		**1.3**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene		**3.0**		**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene		**14**		**13**		**3.4**		**1.4**		**2.4**		**1.1**		1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene		**120**		**84**		**49**		**7.2**		**48**		**9.5**		**15**		1	U	**3**		**5.5**		1	U
48	Isopropylbenzene		**58**		**31**		**14**		**3.9**		**14**		**5.0**		**5.7**		**4.2**		**3.7**		**7**		**2.6**	
49	n-Propylbenzene		**60**		**39**		**16**		**5.2**		**14**		**5.1**		**4.9**		**4.2**		**2.9**		**5.3**		**1.6**	
50	tert-Butylbenzene		**2.8**		**1.7**		**1.3**	M	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene		**9.8**		**7.4**		**4.1**		**1.6**		**2.8**		**1.7**		**1.8**		**1.3**		1	U	**1.6**		1	U
52	4-Isopropyltoluene	U	1.0	U	**2.3**		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene		**7.8**		**6.2**		**3.4**	M	1.7	U	**2.3**		1.6	U	**1.6**		**1.1**	M	1	U	**1.2**		1	U
54	Naphthalene		**8.9**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																							
57	**Method OR-DEQ**																							
58	**TPH-Diesel**		**4.4**		**3.5**		**3.4**		**1.8**		**4.0**		**2.8**		**3.2**		**2.4**		**3**		**2.6**		**1.8**	
59	**TPH-D Motor Oil**	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																								
62	**PRIORITY POLLUTANT**																							
63	**METALS (mg/L)**																							
64	Arsenic (7060)		**0.03**		**0.028**		**0.032**		**0.022**		**0.040**		**0.027**		**0.028**		0.05	U	**0.03**		**0.04**		**0.04**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2							Dup of LW4D										Dup of LW4D				Dup of LW4D			
3			LW4D		LW4D		LW40D		LW4D		LW4D		LW4D (a)		LW4D		LW40D		LW4D		LW40D		LW4D	
4			S167I		T176M		T176L		U235N		V232F		B802035-02		W391E		W391I		Y314E		Y314B		Z225J	
5			4/1/97		7/16/97		7/16/97		10/22/97		1/30/98		1/30/98		5/20/98		5/20/98		8/17/98		8/17/98		11/14/98	
66	60	Copper (6010)	**0.003**		**0.004**		**0.003**		**0.002**		**0.005**		NA		**0.002**		**0.002**		**0.003**		**0.003**		0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.001	U	0.02	U	0.02	U	NA		0.001	U	0.001	U	**0.001**		**0.001**		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.004	U	**0.008**	J2	**0.005**	J2	**0.023**		**0.014**		NA		0.004	U	**0.010**	J2	**0.006**		**0.010**		**0.007**	
70	64																							
71	65	**MAJOR IONS AND CONVENTIONALS**																						
72	66	Calcium (mg/L) (6010)	**49.9**		**49.7**		**51**		**45.6**		**42.2**		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**21.9**		**21.7**		**22.3**		**19.4**		**17.7**		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**1.2**		**1.0**		**1.0**		**1.2**		**1.0**		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**10.9**		**10.4**		**10.6**		**10.1**		**9.60**		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**240**		**200**		**200**		**200**		**140**		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**240**		**200**		**200**		**200**		**140**		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**240**	J2	**340**	J2	**260**		**250**	J2	NA		**240**		**230**		**240**		**270**		**270**	
80	74	Chloride (mg/L) (EPA 325.2)	**19**	J	**15**		**15**		**16**		**15**		NA		**13**		**12**		**13**		**12**		**11**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	0.010	U	**0.025**		0.010	UJ	NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.026**	J	**0.032**	J2	**0.025**	J2	**0.010**		**0.019**	J2	NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.019**	J	**0.01**		**0.01**		**0.035**		**0.010**	J2	NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**3.2**	J	2.5	U	**2.5**	U	2.5	U	2.5	U	NA		NA		NA		NA		NA		NA	
85	79																							

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU
2		Dup of LW4D				Dup of LW4D						Dup of LW4D				Dup of LW4D								
3		LW40D		LW4D		LW40D		LW4D		LW4D		LW40D		LW4D		LW40D		LW4D		LW4D		LW4D		LW4D
4		Z225L		Z960P		Z960K		AH49H		AU45G		AU45I		BC21J		BC27P		BH96E		BR55D		CB68D		CL03G
5		11/14/98		2/17/99		2/17/99		5/18/99		9/22/99		9/22/99		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00
66	Copper (6010)	0.002	U	**0.005**		**0.005**		0.002	U	**0.004**		**0.003**		**0.011**		**0.012**		**0.007**		0.002	U	**0.002**		**0.004**
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		**0.002**		**0.001**		0.001	U	0.001
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01
69	Zinc (6010)	**0.006**		**0.009**	J	**0.008**	J	**0.005**		**0.007**	J2	**0.016**	J2	0.020	U	0.021	U	**0.019**		**0.008**		**0.020**		**0.013**
70																								
71	**MAJOR IONS AND CONVENTIONALS**																							
72	Calcium (mg/L) (6010)	NA		**50.4**		**51.7**		NA		NA		NA		NA		NA		NA		NA		NA		NA
73	Magnesium (mg/L) (6010)	NA		**21.6**		**22.0**		NA		NA		NA		NA		NA		NA		NA		NA		NA
74	Potassium (mg/L) (6010)	NA		**0.7**	J	**0.9**	J	NA		NA		NA		NA		NA		NA		NA		NA		NA
75	Sodium (mg/L) (6010)	NA		**10.6**		**10.9**		NA		NA		NA		NA		NA		NA		NA		NA		NA
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		**210**		**210**		NA		NA		NA		NA		NA		NA		NA		NA		NA
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		**210**		**210**		NA		NA		NA		NA		NA		NA		NA		NA		NA
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**280**		**360**		**320**		**310**		**300**		**270**		**260**		**290**		**270**		**270**		**360**		**370**
80	Chloride (mg/L) (EPA 325.2)	**13**		**17**		**18**		**12**		**12**		**12**		**13**		**14**		**12**		**12**		**9.8**		**16**
81	N-Nitrate (mg-N/L) (Calculated)	NA		**0.010**		0.010	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		**0.015**	J	**0.023**	J	NA		NA		NA		NA		NA		NA		NA		NA		NA
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		**0.025**	J	**0.018**	J	NA		NA		NA		NA		NA		NA		NA		NA		NA
84	Sulfate (mg/L) (EPA 375.2)	NA		**6.1**	J	**8.8**	J	NA		NA		NA		NA		NA		NA		NA		NA		NA
85																								

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR
1																								
2																								
3			LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D	
4			CT67D		DE87K		DM30D		DW29G		ED30H		EN00H		ER93L		EZ17F		FF65G		FL58E		FU45N	
5			2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
66	Copper (6010)		**0.005**		**0.003**		**0.004**		**0.003**		**0.004**		**0.003**		**0.004**		**0.004**		**0.002**		**0.002**		**0.005**	
67	Lead (7421)	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.002**		0.02	U	0.001	U	**0.002**		0.001	U
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.02**	
69	Zinc (6010)		**0.016**		**0.011**		0.012		**0.011**		**0.010**	J	**0.009**		**0.009**		**0.011**		**0.021**		**0.009**		**0.006**	
70																								
71	**MAJOR IONS AND CONVENTIONALS**																							
72	Calcium (mg/L) (6010)		**71.3**		**74.5**		**81.3**		**57.1**		**67.1**		**65.9**		NA		NA		**56.5**		NA		NA	
73	Magnesium (mg/L) (6010)		**30.1**		**31.0**		**35.2**		**25.2**		**31.9**		**29.4**		NA		NA		**25.9**		NA		NA	
74	Potassium (mg/L) (6010)		**1.6**		**1.4**		**1.5**		**1.8**		**1.0**		**1.3**		NA		NA		**1.4**		NA		NA	
75	Sodium (mg/L) (6010)		**14.5**		**14.5**		**16.5**		**16.4**		**15.9**		**18.2**		NA		NA		**16.1**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		**360**		NA		NA		NA		**430**		NA		NA		NA		**330**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		**360**		NA		NA		NA		**430**		NA		NA		NA		**330**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**430**		**460**	J	**430**	J	**350**		**400**		**360**		**430**		**390**		**360**		**400**		**390**	
80	Chloride (mg/L) (EPA 325.2)		**24**	J	**18**		**18**		**12**		**14**	J	**15**		**13**		**15**		**15**		**11**		**7.8**	
81	N-Nitrate (mg-N/L) (Calculated)		0.010	U	NA		NA		NA		**0.012**		NA		NA		NA		0.01	U	NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		**0.037**	J	NA		NA		NA		**0.012**		NA		NA		NA		**0.052**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		**0.045**		NA		NA		NA		**0.024**		NA		NA		NA		**0.045**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		**8.6**		NA		NA		NA		**9.5**		NA		NA		NA		**8.5**		NA		NA	
85																								

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2							Dup of LW4D										Dup of LW4D				Dup of LW4D			
3			LW4D		LW4D		LW40D		LW4D		LW4D		LW4D (a)		LW4D		LW40D		LW4D		LW40D		LW4D	
4			S167I		T176M		T176L		U235N		V232F		B802035-02		W391E		W391I		Y314E		Y314B		Z225J	
5			4/1/97		7/16/97		7/16/97		10/22/97		1/30/98		1/30/98		5/20/98		5/20/98		8/17/98		8/17/98		11/14/98	
86	80	**FIELD PARAMETERS**																						
87	81	pH (avg)	6.65		6.67		6.67		6.94		6.84		6.84		6.51		6.51		6.49		6.48		6.39	
88	82	Temperature (° C) (avg)	12.9		15.1		14.9		13.6		13.5		13.5		13.3		13.3		18.1		18.3		13.5	
89	83	Conductivity (um/hos)	559		491		490		375		381		381		368		367		557		560		120	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		NA		1.74		1.74		1.00		1.00		1.44	
91	85																							
92	86	**DIOXINS AND FURANS (ng/L)**																						
93	87	**Method 8290**																						
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		0.0027	U	NA		NA		NA		0.0049	U	NA		0.0023	U
95	89	Total TCDF	NA		NA		NA		NA		0.0027	U	NA		NA		NA		0.0049	U	NA		0.0023	U
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		0.0029	U	NA		NA		NA		0.0063	U	NA		0.0045	U
97	91	Total TCDD	NA		NA		NA		NA		0.0029	U	NA		NA		NA		0.0063	U	NA		0.0045	U
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		0.0018	U	NA		NA		NA		0.0035	U	NA		**0.0012**	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		0.0019	U	NA		NA		NA		0.0050	U	NA		0.0034	U
100	94	Total PeCDF	NA		NA		NA		NA		0.0019	U	NA		NA		NA		0.0043	U	NA		**0.0012**	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		0.0052	U	NA		NA		NA		0.0071	U	NA		0.0072	U
102	96	Total PeCDD	NA		NA		NA		NA		0.0052	U	NA		NA		NA		**0.019**		NA		0.0072	U
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		0.0024	U	NA		NA		NA		0.0880	U	NA		0.0059	U
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		0.0026	U	NA		NA		NA		0.0390	U	NA		0.0020	U
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		0.0049	U	NA		NA		NA		0.0088	U	NA		0.0049	U
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		0.0052	U	NA		NA		NA		**0.066**		NA		0.0036	U
107	101	Total HxCDF	NA		NA		NA		NA		0.0110	U	NA		NA		NA		**0.210**		NA		0.0041	U
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		0.0032	U	NA		NA		NA		0.0140	U	NA		0.0056	U
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		0.0044	U	NA		NA		NA		0.0097	U	NA		0.0043	U
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		0.0031	U	NA		NA		NA		0.0048	U	NA		0.0040	U
111	105	Total HxCDD	NA		NA		NA		NA		0.0036	U	NA		NA		NA		**0.043**		NA		0.0046	U
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		0.0140	U	NA		NA		NA		0.0140	U	NA		0.0038	U
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		0.0030	U	NA		NA		NA		0.0062	U	NA		0.0022	U
114	108	Total HpCDF	NA		NA		NA		NA		0.0220	U	NA		NA		NA		**0.022**		NA		0.0030	U
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		**0.0240**		NA		NA		NA		**0.031**		NA		**0.0095**	
116	110	Total HpCDD	NA		NA		NA		NA		**0.0400**		NA		NA		NA		**0.045**		NA		**0.0160**	
117	111	OCDF	NA		NA		NA		NA		**0.0140**		NA		NA		NA		**0.032**		NA		**0.0088**	
118	112	OCDD	NA		NA		NA		NA		**0.1500**		NA		NA		NA		**0.300**		NA		**0.0720**	
119																								
120																								
121																								

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU
2		Dup of LW4D				Dup of LW4D						Dup of LW4D				Dup of LW4D								
3		LW40D		LW4D		LW40D		LW4D		LW4D		LW40D		LW4D		LW40D		LW4D		LW4D		LW4D		LW4D
4		Z225L		Z960P		Z960K		AH49H		AU45G		AU45I		BC21J		BC27P		BH96E		BR55D		CB68D		CL03G
5		11/14/98		2/17/99		2/17/99		5/18/99		9/22/99		9/22/99		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00
86	**FIELD PARAMETERS**																							
87	pH (avg)	6.37		6.86		6.85		5.88		5.99		6.60		6.68		6.65		6.72		6.66		6.02		5.96
88	Temperature (° C) (avg)	13.3		13.3		13.2		14.7		18.8		16.3		12.8		12.9		16.4		16.5		14.4		13.3
89	Conductivity (um/hos)	120		500		500		462		491		359		436		424		548		437		526		656
90	Dissolved oxygen (mg/L) (avg)	1.80		2.39		2.57		2.40		1.35		1.42		1.76		1.86		0.12		1.00		1.39		0.31
91																								
92	**DIOXINS AND FURANS (ng/L)**																							
93	**Method 8290**																							
94	2,3,7,8-TCDF	NA		0.0017	U	NA		0.0011	U	0.0018	U	NA		0.00068	U	NA		0.0034	U	NA		NA		NA
95	Total TCDF	NA		0.0017	U	NA		0.0011	U	0.0018	U	NA		0.00068	U	NA		0.0034	U	NA		NA		NA
96	2,3,7,8-TCDD	NA		0.0043	U	NA		0.0016	U	0.0031	U	NA		0.00130	U	NA		0.0058	U	NA		NA		NA
97	Total TCDD	NA		0.0043	U	NA		0.0016	U	0.0031	U	NA		0.00130	U	NA		0.0058	U	NA		NA		NA
98	1,2,3,7,8-PeCDF	NA		0.0028	U	NA		0.0021	U	0.0031	U	NA		0.00120	U	NA		0.0025	U	NA		NA		NA
99	2,3,4,7,8-PeCDF	NA		0.0036	U	NA		0.0027	U	0.0032	U	NA		0.00088	U	NA		0.0033	U	NA		NA		NA
100	Total PeCDF	NA		0.0032	U	NA		0.0024	U	0.0032	U	NA		0.00110	U	NA		0.0029	U	NA		NA		NA
101	1,2,3,7,8-PeCDD	NA		0.0046	U	NA		0.0023	U	0.0048	U	NA		0.00094	U	NA		0.0051	U	NA		NA		NA
102	Total PeCDD	NA		0.0046	U	NA		0.0023	U	0.0048	U	NA		0.00094	U	NA		0.0051	U	NA		NA		NA
103	1,2,3,4,7,8-HxCDF	NA		**0.0013**		NA		0.0035	U	0.0024	U	NA		0.00150	U	NA		0.0031	U	NA		NA		NA
104	1,2,3,6,7,8-HxCDF	NA		0.0024	U	NA		**0.0014**		0.0019	U	NA		0.00150	U	NA		0.0029	U	NA		NA		NA
105	2,3,4,6,7,8-HxCDF	NA		0.0036	U	NA		**0.0032**		**0.0024**		NA		0.0025	U	NA		0.0034	U	NA		NA		NA
106	1,2,3,7,8,9-HxCDF	NA		0.0044	U	NA		0.0039	U	0.0021	U	NA		0.00170	U	NA		0.0036	U	NA		NA		NA
107	Total HxCDF	NA		**0.0013**		NA		**0.0046**		**0.0024**		NA		0.0025	U	NA		0.0033	U	NA		NA		NA
108	1,2,3,4,7,8-HxCDD	NA		0.0054	U	NA		0.0051	U	0.0039	U	NA		0.00150	U	NA		0.0050	U	NA		NA		NA
109	1,2,3,6,7,8-HxCDD	NA		0.0037	U	NA		0.0052	U	0.0035	U	NA		0.00170	U	NA		0.0037	U	NA		NA		NA
110	1,2,3,7,8,9-HxCDD	NA		0.0036	U	NA		0.0039	U	0.0025	U	NA		0.00150	U	NA		0.0034	U	NA		NA		NA
111	Total HxCDD	NA		0.0042	U	NA		0.0047	U	0.0033	U	NA		0.00160	U	NA		0.0040	U	NA		NA		NA
112	1,2,3,4,6,7,8-HpCDF	NA		0.0026	U	NA		0.0039	U	0.0022	U	NA		0.0015	U	NA		0.0024	U	NA		NA		NA
113	1,2,3,4,7,8,9-HpCDF	NA		0.0045	U	NA		**0.0036**	U	0.0060	U	NA		0.00200	U	NA		0.0065	U	NA		NA		NA
114	Total HpCDF	NA		0.0036	U	NA		**0.0051**		0.0041	U	NA		**0.0036**	J1	NA		0.0044	U	NA		NA		NA
115	1,2,3,4,6,7,8-HpCDD	NA		**0.0055**		NA		**0.0110**		**0.0044**		NA		**0.0090**	J1	NA		0.0059	U	NA		NA		NA
116	Total HpCDD	NA		**0.0055**		NA		**0.0160**		**0.0044**		NA		**0.0160**	J1	NA		0.0040	U	NA		NA		NA
117	OCDF	NA		**0.0100**		NA		**0.0100**		0.0042	U	NA		**0.0058**	J1	NA		0.0048	U	NA		NA		NA
118	OCDD	NA		0.0420	U	NA		**0.0770**		**0.0440**		NA		0.0660	U	NA		**0.044**	J1	NA		NA		NA
119																								
120																								
121																								

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR
1																								
2																								
3			LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D	
4			CT67D		DE87K		DM30D		DW29G		ED30H		EN00H		ER93L		EZ17F		FF65G		FL58E		FU45N	
5			2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
86	**FIELD PARAMETERS**																							
87	pH (avg)		6.49		6.91		6.94		6.61		6.48		6.65		7.04		6.31		7		6.97		7	
88	Temperature (° C) (avg)		13.8		14.7		15.4		13.3		14.2		14.4		15.8		14		14.1		14.1		17.3	
89	Conductivity (um/hos)		673		778		757		592		705		624		613		564		704		599		526	
90	Dissolved oxygen (mg/L) (avg)		0.19		0.48		0.98		4.41		7.10		4.00		1.24		0.37		0.76		1.68		1.66	
91																								
92	**DIOXINS AND FURANS (ng/L)**																							
93	**Method 8290**																							
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																								
120																							NA	
121																								

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2							Dup of LW4D										Dup of LW4D				Dup of LW4D			
3			LW4D		LW4D		LW40D		LW4D		LW4D		LW4D (a)		LW4D		LW40D		LW4D		LW40D		LW4D	
4			S167I		T176M		T176L		U235N		V232F		B802035-02		W391E		W391I		Y314E		Y314B		Z225J	
5			4/1/97		7/16/97		7/16/97		10/22/97		1/30/98		1/30/98		5/20/98		5/20/98		8/17/98		8/17/98		11/14/98	
122		**PAHs (µg/L)**																						
123		**EPA Method SW8270 SIM**																						
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU
1																								
2		Dup of LW4D				Dup of LW4D						Dup of LW4D				Dup of LW4D								
3		LW40D		LW4D		LW40D		LW4D		LW4D		LW40D		LW4D		LW40D		LW4D		LW4D		LW4D		LW4D
4		Z225L		Z960P		Z960K		AH49H		AU45G		AU45I		BC21J		BC27P		BH96E		BR55D		CB68D		CL03G
5		11/14/98		2/17/99		2/17/99		5/18/99		9/22/99		9/22/99		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00
122	**PAHs (µg/L)**																							
123	**EPA Method SW8270 SIM**																							
124	Naphthalene	NA		**22**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125	2-Methylnaphthalene	NA		**60**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126	Acenaphthylene	NA		0.10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127	Acenaphthene	NA		**0.44**	M	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128	Fluorene	NA		0.10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129	Anthracene	NA		0.10	U	NA		NA		NA		NA				NA		NA		NA		NA		NA
130	Dibenzofuran	NA		**0.34**	M	NA		NA		NA		NA				NA		NA		NA		NA		NA

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR
1																								
2																								
3			LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D		LW4D	
4			CT67D		DE87K		DM30D		DW29G		ED30H		EN00H		ER93L		EZ17F		FF65G		FL58E		FU45N	
5			2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
122	**PAHs (µg/L)**																							
123	**EPA Method SW8270 SIM**																							
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4			S167G		T176I		U235R		V208I		W391D		Y314C		Z225B		Z960G		AH27I		AU45D		BC27F		BH96I	
5			3/31/97		7/15/97		10/22/97		1/28/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/17/00	
6																										
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.42**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	**1.1**	J2	**1.3**		**1.2**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**4.6**	
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	**5.1**		5.0	U	**7.1**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	**2.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
48	42	Isopropylbenzene	**41**		**61**		**78**	J2	**76**		**56**		**96**		**93**		**32**		**31**		**52**		**43**		**68**	
49	43	n-Propylbenzene	**14**		**28**		**40**		**36**		**20**		**44**		**32**		**8.9**		**9.3**		**14**		**7.7**		**10**	
50	44	tert-Butylbenzene	**2.4**		**2.7**	J2	**2.8**		**2.3**		**2.8**		**3.8**		**3.2**		**2.0**		**2.4**		**3.5**		**3.0**		**4.1**	
51	45	sec-Butylbenzene	**5.7**		**8.3**		**8.5**	J2	**7.1**		**7.8**		**14**	J2	**9.7**		**3.6**		**5.4**		**10**		**8.2**		**12**	
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	**1.6**		**2.8**		**2.8**	J2	**2.9**		2.7	U	**5.0**		**3.2**		**1.2**		**2.1**		3.0	U	2.3	U	**3.6**	
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
55	49																									
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**1.0**		**1.0**		**1.2**		**0.80**		**0.86**		**1.3**		**1.0**		**0.62**		**0.92**		**1.4**		**1.0**		**1.0**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.013**		**0.015**		0.05	U	0.05	U	**0.017**		**0.011**		**0.016**		**0.014**		**0.018**		**0.016**		**0.016**		**0.016**	
65	59	Chromium (6010)	0.005	U	0.005	U	**0.011**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
3		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4		BR64J		CB85E		CL03C		CT55B		DE87G		DM30B		DW29H		ED23H		EM85I		ER93C		EZ03E		FF76F		FL66E	
5		5/24/00		8/30/00		11/8/00		2/13/01		6/5/01		8/13/01		11/27/01		2/26/02		6/26/02		08/26/02		11/12/02		2/12/03		5/9/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	**0.46**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.3	U	0.25	U	0.25	U	**0.47**	
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.4	U	2.2	U	2	U	2	U
20	4-Methylphenol	**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.6	U	3.3	U	3	U	3	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	60	U	54	U	50	U	50	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.4	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.4	U	5	U	5	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1	U	1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6	U	5.4	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.8	U	4.3	U	**13**		1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	5.0	U		R	5.0	U	5.0	U	5.0	U	5.0	U	**6.8**		5	U	**16**		5	U	**9.6**	
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	**24**		**16**		**24**		**14**		**10**		**8.8**		**2.6**		**7.0**		**2.6**		**7.5**		**3.4**		**4**		**2.7**	
49	n-Propylbenzene	**4.4**		1.0	U	**2.8**		**1.4**		**1.1**		**1.4**		1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	**2.3**		**3.5**		**2.8**		**2.8**		**3.4**		**2.8**		**3.1**		**3.1**		**1.8**		**3.4**		**3.2**		**3.1**		**2**	
51	sec-Butylbenzene	**4.4**		**6.0**		**6.4**		**5.3**		**4.7**		**4.3**		**2.4**		**3.4**		**1.7**		**3.3**		**2.2**		**2.5**		**1.8**	
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	**1.7**	M	1.2	U	1.0	U	**1.3**	M	1.3	U	1.4	U	1.0	U	**1.2**	M	1.0	U	1	U	1	U	1	U	1	U
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	**1.1**		**1.2**		**1.2**		**1.8**		**1.4**		**1.7**		**1.8**		**1.9**		**1.6**		**2.6**		**2.2**		**2.3**		**2.2**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.012**		**0.018**		**0.015**		**0.015**		**0.017**		**0.020**		**0.021**		**0.016**		**0.016**		**0.02**		0.05	U	**0.011**		**0.017**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB
1			
2			
3		LW6D	
4		FU45R	
5		8/28/03	
6			
7	**CHLORINATED PHENOLS (µg/L)**		
8	**EPA Method SW8040**		
9	Pentachlorophenol	**0.6**	J
10	2,4,6-Trichlorophenol	NA	
11	2,3,6-Trichlorophenol	NA	
12	2,4,5-Trichlorophenol	NA	
13	2,3,4-Trichlorophenol	NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	2,3,4,5-Tetrachlorophenol	NA	
16			
17	**SEMIVOLATILES (µg/L)**		
18	**EPA Method SW8270**		
19	Phenol	2.1	U
20	4-Methylphenol	1	U
21	Isophorone	1	U
22	2,4-Dimethylphenol	3.1	U
23	Benzoic Acid	52	U
24	Naphthalene	1	U
25	2-Methylnaphthalene	1	U
26	2,4,6-Trichlorophenol	5.2	U
27	2,4,5-Trichlorophenol	5.2	U
28	Acenaphthene	1	U
29	Dibenzofuran	1	U
30	Fluorene	1	U
31	Pentachlorophenol	5.2	U
32	bis(2-Ethylhexyl)phthalate	1	U
33			
34	**VOLATILES (µg/L)**		
35	**EPA Method SW8260**		
36	Acetone	**6.2**	J
37	Carbon Disulfide	1	U
38	2-Butanone	5	U
39	Benzene	1	U
40	Bromoform	1	U
41	Toluene	1	U
42	Ethylbenzene	1	U
43	Styrene	1	U
44	m,p-Xylene	1	U
45	o-Xylene	1	U
46	1,3,5-Trimethylbenzene	1	U
47	1,2,4-Trimethylbenzene	1	U
48	Isopropylbenzene	**3.5**	
49	n-Propylbenzene	1	U
50	tert-Butylbenzene	**2.3**	
51	sec-Butylbenzene	**2.1**	
52	4-Isopropyltoluene	1	U
53	n-Butylbenzene	1	U
54	Naphthalene	5	U
55			
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	**Method OR-DEQ**		
58	**TPH-Diesel**	**1.9**	
59	**TPH-D Motor Oil**	NA	
60	**TPH-Gasoline**	NA	
61			
62	**PRIORITY POLLUTANT**		
63	**METALS (mg/L)**		
64	Arsenic (7060)	**0.014**	
65	Chromium (6010)	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4			S167G		T176I		U235R		V208I		W391D		Y314C		Z225B		Z960G		AH27I		AU45D		BC27F		BH96I	
5			3/31/97		7/15/97		10/22/97		1/28/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/17/00	
66	60	Copper (6010)	**0.004**		**0.003**		**0.014**		**0.002**		**0.003**		0.002	U	0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	0.002	U
67	61	Lead (7421)	**0.001**		**0.002**		0.02	U	0.02	U	**0.001**		0.001	U	**0.002**		0.001	U	0.001	U	0.001	U	**0.001**		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.006**		**0.009**	J2	**0.045**		**0.011**		**0.017**	J2	**0.006**		**0.009**		**0.008**	J	0.007	U	**0.009**		**0.011**	U	**0.010**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**47.2**		**44.2**		**49.1**		**41.8**		NA		NA		NA		**42.9**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**19.9**		**19**		**20.3**		**16.3**		NA		NA		NA		**17.6**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.0**		**2.7**		**3.5**		**2.4**		NA		NA		NA		**2.3**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**15.6**		**13.9**		**14.1**		**12.1**		NA		NA		NA		**11.6**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**250**		**190**		**210**		**200**		NA		NA		NA		**210**		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**250**		**190**		**210**		**200**		NA		NA		NA		**210**		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**260**	J2	**260**		**230**		**220**		**240**		**240**		**260**		**240**		**240**		**250**		**240**	
80	74	Chloride (mg/L) (EPA 325.2)	**8.4**	J	**4.1**		**3.9**		**2.7**		**3.3**		**2.0**		**2.6**		**4.2**		1.0	U	**3.1**		**4.3**		**2.8**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.016**	J	0.010	U	**0.013**		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.025**	J	**0.014**		**0.010**		**0.014**		NA		NA		NA		**0.018**		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.041**	J	0.010	U	**0.023**		**0.016**		NA		NA		NA		**0.017**		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**4.7**	J	2.5	U	2.5	U	2.5	U	NA		NA		NA		**5.5**		NA		NA		NA		NA	
85	79																									

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
3		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4		BR64J		CB85E		CL03C		CT55B		DE87G		DM30B		DW29H		ED23H		EM85I		ER93C		EZ03E		FF76F		FL66E	
5		5/24/00		8/30/00		11/8/00		2/13/01		6/5/01		8/13/01		11/27/01		2/26/02		6/26/02		08/26/02		11/12/02		2/12/03		5/9/03	
66	Copper (6010)	0.002	U	**0.002**		**0.006**		0.002	U	**0.003**		**0.003**		0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	**0.005**		0.002	U
67	Lead (7421)	**0.001**		**0.002**		**0.002**		**0.001**		**0.002**		**0.002**		0.001	U	0.001	U	0.001	U	0.001	U	0.02	U	0.001	U	**0.001**	
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	**0.007**		**0.008**		**0.007**		**0.008**		**0.009**		0.006	U	**0.008**		0.006	U	**0.007**		0.006	U	**0.01**		**0.007**	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		**40.8**		**44.2**		**40.8**		**40.9**		**42.5**		NA		NA		NA		**39.5**		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		**16.1**		**18.4**		**16.8**		**16.5**		**17.6**		NA		NA		NA		**16.7**		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		**2.1**		**3.2**		**2.6**		**2.0**		**2.7**		NA		NA		NA		**1.9**		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		**10.3**		**11.5**		**10.4**		**10.3**		**11.1**		NA		NA		NA		**9.6**		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		**200**		NA		NA		NA		**220**		NA		NA		NA		**300**		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		**200**		NA		NA		NA		**220**		NA		NA		NA		**300**		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**230**		**240**		**220**		**290**	J	**240**	J	**220**	J	**250**		**260**		**240**		**270**		**310**		**280**		**260**	
80	Chloride (mg/L) (EPA 325.2)	**2.1**		**1.4**		**2.2**		**1.8**		**2.2**		**3.8**		**2.1**		**2.8**		**2.5**		**2.2**		**2.8**		**4.2**		**1.8**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		0.010	U	NA		NA		NA		**0.010**		NA		NA		NA		**0.048**		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		0.010	U	NA		NA		NA		**0.023**		NA		NA		NA		**0.015**		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		0.010	U	NA		NA		NA		**0.033**	J	NA		NA		NA		**0.063**		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		**3.3**		NA		NA		NA		2.5	U	NA		NA		NA		2.5	U	NA	
85																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB
1			
2			
3		LW6D	
4		FU45R	
5		8/28/03	
66	Copper (6010)	**0.004**	
67	Lead (7421)	0.001	U
68	Nickel (6010)	0.01	U
69	Zinc (6010)	**0.007**	
70			
71	**MAJOR IONS AND CONVENTIONALS**		
72	Calcium (mg/L) (6010)	NA	
73	Magnesium (mg/L) (6010)	NA	
74	Potassium (mg/L) (6010)	NA	
75	Sodium (mg/L) (6010)	NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**290**	
80	Chloride (mg/L) (EPA 325.2)	**1.6**	
81	N-Nitrate (mg-N/L) (Calculated)	NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA	
85			

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4			S167G		T176I		U235R		V208I		W391D		Y314C		Z225B		Z960G		AH27I		AU45D		BC27F		BH96I	
5			3/31/97		7/15/97		10/22/97		1/28/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/17/00	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.53		6.63		6.84		6.65		6.35		6.34		6.17		6.78		5.66		6.64		6.38		6.57	
88	82	Temperature (° C) (avg)	12.2		15.7		13.2		13.5		13.0		17.9		13.1		13.7		14.6		15.5		12.8		13.5	
89	83	Conductivity (um/hos)	504		501		377		431		369		559		134		448		360		398		409		420	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		1.85		NA		1.58		2.77		1.60		1.96		1.86		0.82	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		0.0027	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		0.0011-0.0028	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		0.0013	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		0.0011-0.0029	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		0.0035	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		0.0029	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		0.0013-0.0045	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		0.0052	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		0.0019-0.0061	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		0.0030	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		0.0032	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		0.0047	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		0.0051	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		0.0076	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		0.0024-0.0089	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		0.0047	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		0.0054	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		0.0017-0.0069	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		**0.0250**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		**0.0360**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		**0.0350**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		**0.2400**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120																										
121																										

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4		BR64J		CB85E		CL03C		CT55B		DE87G		DM30B		DW29H		ED23H		EM85I		ER93C		EZ03E		FF76F		FL66E	
5		5/24/00		8/30/00		11/8/00		2/13/01		6/5/01		8/13/01		11/27/01		2/26/02		6/26/02		08/26/02		11/12/02		2/12/03		5/9/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.42		5.85		5.73		6.32		6.58		6.72		6.58		6.54		6.41		6.58		6.73		6.96		6.81	
88	Temperature (° C) (avg)	17.1		15.1		13.8		16.6		14.1		15.7		13.4		15.7		16.6		17.3		13.7		14.5		14.5	
89	Conductivity (um/hos)	421		398		360		408		428		413		410		381		331		373		499		494		354	
90	Dissolved oxygen (mg/L) (avg)	0.48		1.36		1.20		2.16		2.06		1.50		3.91		7.27		3.07		1.39		1.14		1.68		2.47	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120																											
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB
1			
2			
3		LW6D	
4		FU45R	
5		8/28/03	
86	**FIELD PARAMETERS**		
87	pH (avg)	6.87	
88	Temperature (° C) (avg)	16.3	
89	Conductivity (um/hos)	364	
90	Dissolved oxygen (mg/L) (avg)	2.1	
91			
92	**DIOXINS AND FURANS (ng/L)**		
93	**Method 8290**		
94	2,3,7,8-TCDF	NA	
95	Total TCDF	NA	
96	2,3,7,8-TCDD	NA	
97	Total TCDD	NA	
98	1,2,3,7,8-PeCDF	NA	
99	2,3,4,7,8-PeCDF	NA	
100	Total PeCDF	NA	
101	1,2,3,7,8-PeCDD	NA	
102	Total PeCDD	NA	
103	1,2,3,4,7,8-HxCDF	NA	
104	1,2,3,6,7,8-HxCDF	NA	
105	2,3,4,6,7,8-HxCDF	NA	
106	1,2,3,7,8,9-HxCDF	NA	
107	Total HxCDF	NA	
108	1,2,3,4,7,8-HxCDD	NA	
109	1,2,3,6,7,8-HxCDD	NA	
110	1,2,3,7,8,9-HxCDD	NA	
111	Total HxCDD	NA	
112	1,2,3,4,6,7,8-HpCDF	NA	
113	1,2,3,4,7,8,9-HpCDF	NA	
114	Total HpCDF	NA	
115	1,2,3,4,6,7,8-HpCDD	NA	
116	Total HpCDD	NA	
117	OCDF	NA	
118	OCDD	NA	
119			
120		NA	
121			

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4			S167G		T176I		U235R		V208I		W391D		Y314C		Z225B		Z960G		AH27I		AU45D		BC27F		BH96I	
5			3/31/97		7/15/97		10/22/97		1/28/98		5/20/98		8/17/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/17/00	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D		LW6D	
4		BR64J		CB85E		CL03C		CT55B		DE87G		DM30B		DW29H		ED23H		EM85I		ER93C		EZ03E		FF76F		FL66E	
5		5/24/00		8/30/00		11/8/00		2/13/01		6/5/01		8/13/01		11/27/01		2/26/02		6/26/02		08/26/02		11/12/02		2/12/03		5/9/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB
1			
2			
3		LW6D	
4		FU45R	
5		8/28/03	
122	**PAHs (µg/L)**		
123	**EPA Method SW8270 SIM**		
124	Naphthalene	NA	
125	2-Methylnaphthalene	NA	
126	Acenaphthylene	NA	
127	Acenaphthene	NA	
128	Fluorene	NA	
129	Anthracene	NA	
130	Dibenzofuran	NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
3			LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D	
4			AH76Q		AU45E		BC27G		BH96Q		BR64M		CB85F		CL03D		CT67B		DE87H		DM30F		DW29B		ED34J		EM85H	
5			5/19/99		9/22/99		12/7/99		2/16/00		5/25/00		8/30/00		11/8/00		2/14/01		6/5/01		8/14/01		11/27/01		2/28/02		6/26/02	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	**17**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.2	U	**2.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.1**		1.0	U	1.0	U	**3.1**		4.0	U	4.0	U
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**6.1**		5.0	U	**6.7**		**37**		**14**	
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
48	42	Isopropylbenzene	**10**		**5.5**		**8.5**		**1.1**		**3.0**		**3.0**		1.0	U	**2.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
49	43	n-Propylbenzene	**8.4**		**8.7**		**3.8**		1.0	U	**1.2**		**2.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	1.0	U	**2.3**		**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.25**		0.25	U	**0.35**		0.25	U	**0.26**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.50	U	NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.25	U	NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	**0.025**		**0.030**		**0.022**		**0.028**		**0.028**		**0.032**		**0.030**		**0.037**		**0.033**		**0.044**		**0.042**		**0.030**		**0.033**	
65	59	Chromium (6010)	**0.025**		**0.020**		**0.009**		**0.014**		0.005	U	**0.013**		**0.010**		**0.012**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-11
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GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
3		LW9D		LW9D		LW9D		LW9D		LW9D	
4		ER93M		EZ03F		FF76K		FL66H		FU45P	
5		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**										
8	**EPA Method SW8040**										
9	Pentachlorophenol	0.28	U	0.25	U	0.26	U	0.25	U	**0.55**	J
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA	
16											
17	**SEMIVOLATILES (µg/L)**										
18	**EPA Method SW8270**										
19	Phenol	2.2	U	2.3	U	2.1	U	2	U	2.1	U
20	4-Methylphenol	1.1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	1.1	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.3	U	3.4	U	3.1	U	3	U	3.1	U
23	Benzoic Acid	56	U	57	U	52	U	50	U	52	U
24	Naphthalene	1.1	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene	1.1	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.6	U	5.7	U	5.2	U	5	U	5.2	U
27	2,4,5-Trichlorophenol	5.6	U	5.7	U	5.2	U	5	U	5.2	U
28	Acenaphthene	1.1	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.1	U	1.1	U	1	U	1	U	1	U
30	Fluorene	1.1	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.6	U	5.7	U	5.2	U	5	U	5.2	U
32	bis(2-Ethylhexyl)phthalate	4.4	U	4.6	U	1	U	1	U	1	U
33											
34	**VOLATILES (µg/L)**										
35	**EPA Method SW8260**										
36	Acetone	5	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	5	U	5	U	5	U
39	Benzene	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1	U	1	U	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1	U	1	U	1	U	1	U	1	U
43	Styrene	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	1	U	1	U	**3.3**		1	U	**14**	
49	n-Propylbenzene	1	U	1	U	1		1	U	**7.8**	
50	tert-Butylbenzene	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1	U	1	U	1	U	1	U	**1.6**	
52	4-Isopropyltoluene	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	**Method OR-DEQ**										
58	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	**0.34**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61											
62	**PRIORITY POLLUTANT**										
63	**METALS (mg/L)**										
64	Arsenic (7060)	**0.033**		0.05	U	**0.021**		**0.03**		**0.03**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D	
4			AH76Q		AU45E		BC27G		BH96Q		BR64M		CB85F		CL03D		CT67B		DE87H		DM30F		DW29B		ED34J		EM85H	
5			5/19/99		9/22/99		12/7/99		2/16/00		5/25/00		8/30/00		11/8/00		2/14/01		6/5/01		8/14/01		11/27/01		2/28/02		6/26/02	
66	60	Copper (6010)	**0.027**		**0.019**		**0.011**		**0.016**		**0.004**		**0.013**		**0.015**		**0.014**		**0.009**		**0.002**		**0.005**		**0.004**		**0.002**	
67	61	Lead (7421)	**0.006**		**0.006**		**0.004**		**0.003**		**0.002**		**0.005**		**0.003**		**0.006**		0.001	U	0.001	U	**0.003**		0.001	U	0.001	U
68	62	Nickel (6010)	**0.02**		0.02	U	0.01	U	**0.02**		0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.070**		**0.052**		**0.032**	U	**0.042**		**0.013**		**0.033**		**0.028**		**0.039**		**0.012**		0.006	U	**0.019**		**0.009**		**0.011**	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**28.8**		**37.0**		**39.8**		**39.3**		**40.0**		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**11.0**	J	**13.2**		**13.8**		**13.7**		**13.8**		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**2.0**		**1.9**		**1.8**		**1.6**		**2.0**		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**5.18**		**5.47**		**5.76**		**6.14**		**7.23**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**150**		NA		NA		NA		**180**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**150**		NA		NA		NA		**180**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**130**		**120**		**130**		**110**		**140**		**150**		**170**		**190**		**210**	J	**200**		**220**		**260**		**220**	
80	74	Chloride (mg/L) (EPA 325.2)	**1.4**		**2.6**		**2.7**		**3.1**		**2.6**		**2.4**		**2.1**		**2.9**	J	**2.1**		**3.3**		**1.8**		**2.4**		**3.0**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		**0.011**	J	NA		NA		NA		**0.018**		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		**0.018**		NA		NA		NA		**0.025**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**4.6**		NA		NA		NA		**5.3**		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW9D		LW9D		LW9D		LW9D		LW9D	
4		ER93M		EZ03F		FF76K		FL66H		FU45P	
5		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
66	Copper (6010)	0.002	U	0.002	U	**0.002**		0.002	U	**0.004**	
67	Lead (7421)	**0.002**		0.02	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	**0.012**		**0.008**		**0.008**		0.006	U	**0.008**	
70											
71	**MAJOR IONS AND CONVENTIONALS**										
72	Calcium (mg/L) (6010)	NA		NA		**34.3**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**11.8**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**1.6**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**5.3**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**130**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**130**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**190**		**210**		**250**		**180**		**180**	
80	Chloride (mg/L) (EPA 325.2)	**2.5**		**2.2**		**1.9**		**2**		1	U
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.11**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		**0.019**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.13**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**16**		NA		NA	
85											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D	
4			AH76Q		AU45E		BC27G		BH96Q		BR64M		CB85F		CL03D		CT67B		DE87H		DM30F		DW29B		ED34J		EM85H	
5			5/19/99		9/22/99		12/7/99		2/16/00		5/25/00		8/30/00		11/8/00		2/14/01		6/5/01		8/14/01		11/27/01		2/28/02		6/26/02	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.35		6.71		6.62		6.90		6.69		6.05		5.91		6.35		6.81		6.97		6.72		6.52		6.41	
88	82	Temperature (° C) (avg)	14.5		14.9		13.1		13.7		14.8		14.7		13.4		14.3		14.3		14.6		13.0		14.1		16.9	
89	83	Conductivity (um/hos)	171		160		166		198		198		227		242		259		330		324		345		361		310	
90	84	Dissolved oxygen (mg/L) (avg)	3.18		1.73		1.57		1.39		0.48		1.67		1.06		0.75		1.67		1.80		132		7.46		3.30	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																												
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW9D		LW9D		LW9D		LW9D		LW9D	
4		ER93M		EZ03F		FF76K		FL66H		FU45P	
5		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
86	**FIELD PARAMETERS**										
87	pH (avg)	6.89		6.91		7.02		6.83		6.95	
88	Temperature (° C) (avg)	15.6		14.3		14.7		15		16.4	
89	Conductivity (um/hos)	249		314		281		171		205	
90	Dissolved oxygen (mg/L) (avg)	0.99		1		2.04		4.56		1.03	
91											
92	**DIOXINS AND FURANS (ng/L)**										
93	**Method 8290**										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA	
119											
120										NA	
121											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D		LW9D	
4			AH76Q		AU45E		BC27G		BH96Q		BR64M		CB85F		CL03D		CT67B		DE87H		DM30F		DW29B		ED34J		EM85H	
5			5/19/99		9/22/99		12/7/99		2/16/00		5/25/00		8/30/00		11/8/00		2/14/01		6/5/01		8/14/01		11/27/01		2/28/02		6/26/02	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW9D		LW9D		LW9D		LW9D		LW9D	
4		ER93M		EZ03F		FF76K		FL66H		FU45P	
5		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
122	**PAHs (µg/L)**										
123	**EPA Method SW8270 SIM**										
124	Naphthalene	NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C/D	E/F	G/H	I/J	K/L	M/N	O/P	Q/R	S/T	U/V	W/X	Y/Z	AA/AB
1															
2															
3			LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D	LW10D
4			AH76P	AU45H	BC27D	BH96H	BR64L	CB85H	CL03O	CT67A	DE87I	DM30E	DW29D	ED30C	EN00C
5			5/19/99	9/22/99	12/7/99	2/17/00	5/25/00	8/31/00	11/9/00	2/15/01	6/6/01	8/13/01	11/27/01	2/27/02	6/27/02
7	1	**CHLORINATED PHENOLS (µg/L)**													
8	2	**EPA Method SW8040**													
9	3	Pentachlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
10	4	2,4,6-Trichlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
11	5	2,3,6-Trichlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
12	6	2,4,5-Trichlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
13	7	2,3,4-Trichlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
15	9	2,3,4,5-Tetrachlorophenol	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	NA	NA	NA	NA	NA	NA
16	10														
17	11	**SEMIVOLATILES (µg/L)**													
18	12	**EPA Method SW8270**													
19	13	Phenol	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
20	14	4-Methylphenol	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
21	15	Isophorone	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
22	16	2,4-Dimethylphenol	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
23	17	Benzoic Acid	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	30 U	50 U	50 U
24	18	Naphthalene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
25	19	2-Methylnaphthalene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
26	20	2,4,6-Trichlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
27	21	2,4,5-Trichlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
28	22	Acenaphthene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
29	23	Dibenzofuran	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
30	24	Fluorene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
31	25	Pentachlorophenol	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
32	26	bis(2-Ethylhexyl)phthalate	3.2 U	**1.3**	1.0 U	**1.1**	**1.7**	1.0 U	**2.7**	**1.2**	1.0 U	**2.0**	1.0 U	4.0 U	4.0 U
33	27														
34	28	**VOLATILES (µg/L)**													
35	29	**EPA Method SW8260**													
36	30	Acetone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	**11**	5.0 U	5.0 U
37	31	Carbon Disulfide	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
38	32	2-Butanone	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
39	33	Benzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
40	34	Bromoform	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
41	35	Toluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
42	36	Ethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
43	37	Styrene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
44	38	m,p-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
45	39	o-Xylene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
46	40	1,3,5-Trimethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
47	41	1,2,4-Trimethylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
48	42	Isopropylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
49	43	n-Propylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
50	44	tert-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
51	45	sec-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
52	46	4-Isopropyltoluene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
53	47	n-Butylbenzene	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
54	48	Naphthalene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**													
57	51	**Method OR-DEQ**													
58	52	**TPH-Diesel**	0.25 U	**0.32**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
59	53	**TPH-D Motor Oil**	NA	NA	NA	NA	NA	NA	0.50 U	NA	NA	NA	NA	NA	NA
60	54	**TPH-Gasoline**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
61	55														
62	56	**PRIORITY POLLUTANT**													
63	57	**METALS (mg/L)**													
64	58	Arsenic (7060)	**0.038**	**0.038**	**0.022**	**0.032**	**0.025**	**0.037**	**0.022**	**0.025**	**0.023**	**0.027**	**0.017**	**0.019**	**0.031**
65	59	Chromium (6010)	0.005 U	**0.021**	**0.006**	0.005 U	0.005 U	**0.034**	**0.013**	**0.011**	**0.008**	**0.019**	**0.010**	0.005 U	0.005 U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
3		LW10D		LW10D		LW10D		LW10D		LW10D	
4		ER93E		EZ17I		FF76C		FL41N		FU45K	
5		08/27/02		11/13/02		2/12/03		5/7/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**										
8	**EPA Method SW8040**										
9	Pentachlorophenol	0.27	U	**0.47**		0.25	U	**0.36**		**4**	J
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA	
16											
17	**SEMIVOLATILES (µg/L)**										
18	**EPA Method SW8270**										
19	Phenol	2.2	U	2.1	U	2	U	2	U	2	U
20	4-Methylphenol	1.1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	1.1	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.3	U	3.2	U	3	U	3	U	3.1	U
23	Benzoic Acid	54	U	53	U	50	U	50	U	51	U
24	Naphthalene	1.1	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene	1.1	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.4	U	5.3	U	5	U	5	U	5.1	U
27	2,4,5-Trichlorophenol	5.4	U	5.3	U	5	U	5	U	5.1	U
28	Acenaphthene	1.1	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.1	U	1.1	U	1	U	1	U	1	U
30	Fluorene	1.1	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.4	U	5.3	U	5	U	5	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	4.3	U	4.3	U	1	U	1	U	1	U
33											
34	**VOLATILES (µg/L)**										
35	**EPA Method SW8260**										
36	Acetone	5	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	5	U	5	U	5	U
39	Benzene	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1	U	1	U	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1	U	1	U	1	U	1	U	1	U
43	Styrene	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	**Method OR-DEQ**										
58	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	**TPH-D Motor Oil**	NA		0.5	U	NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61											
62	**PRIORITY POLLUTANT**										
63	**METALS (mg/L)**										
64	Arsenic (7060)	**0.026**		0.05	U	**0.011**		**0.008**		**0.026**	
65	Chromium (6010)	**0.007**		**0.009**		0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D	
4			AH76P		AU45H		BC27D		BH96H		BR64L		CB85H		CL03O		CT67A		DE87I		DM30E		DW29D		ED30C		EN00C	
5			5/19/99		9/22/99		12/7/99		2/17/00		5/25/00		8/31/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02	
66	60	Copper (6010)	**0.003**		**0.028**		**0.011**		0.002	U	**0.005**		**0.045**		**0.021**		**0.015**		**0.009**		**0.024**		**0.012**		**0.009**		**0.004**	
67	61	Lead (7421)	**0.001**		**0.008**		**0.003**		0.001	U	**0.002**		**0.012**		**0.006**		**0.006**		**0.003**		**0.008**		**0.004**		**0.002**		0.001	U
68	62	Nickel (6010)	0.01	U	0.02	U	0.01	U	0.01	U	0.01	U	**0.03**		0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.018**		**0.046**		0.022	U	**0.010**		**0.010**		**0.076**		**0.030**		**0.031**		**0.018**		**0.039**		**0.022**		**0.015**	J	**0.010**	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**19.2**		**20.4**		**22.5**		**21.0**		**19.0**		**19.1**	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**9.95**		**10.3**		**12.1**		**10.3**		**9.55**		**9.37**	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**1.1**		**1.2**		**1.5**		**0.9**		**1.0**		**0.7**	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**8.31**		**9.80**		**9.09**		**9.65**		**9.06**		**8.77**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**110**		NA		NA		NA		**100**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**110**		NA		NA		NA		**100**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**180**		**180**		**170**		**150**		**150**		**170**		**160**		**150**		**150**	J	**160**	J	**150**		**100**		**140**	
80	74	Chloride (mg/L) (EPA 325.2)	**1.7**		**1.9**		**2.1**		**3.5**		**2.3**		**14**		**2.0**		**2.6**	J	**1.9**		**4.1**		**1.7**		**1.3**	J	**2.1**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.012**		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.013**		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.025**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**6.2**		NA		NA		NA		**7.5**		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW10D		LW10D		LW10D		LW10D		LW10D	
4		ER93E		EZ17I		FF76C		FL41N		FU45K	
5		08/27/02		11/13/02		2/12/03		5/7/03		8/28/03	
66	Copper (6010)	**0.009**		**0.012**		**0.004**	J	**0.003**		**0.004**	
67	Lead (7421)	**0.004**		0.02	U	0.001	U	**0.001**		0.001	U
68	Nickel (6010)	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U
69	Zinc (6010)	**0.018**		**0.026**		**0.01**		**0.019**		0.006	U
70											
71	**MAJOR IONS AND CONVENTIONALS**										
72	Calcium (mg/L) (6010)	NA		NA		**14.1**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**5.88**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**1.2**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**8.5**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**96**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**96**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**150**		**170**		**130**		**88**		**120**	J
80	Chloride (mg/L) (EPA 325.2)	**2.2**		**2.5**		**1.9**		**1.6**		**1.4**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.025**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.025**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**7.4**		NA		NA	
85											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D	
4			AH76P		AU45H		BC27D		BH96H		BR64L		CB85H		CL03O		CT67A		DE87I		DM30E		DW29D		ED30C		EN00C	
5			5/19/99		9/22/99		12/7/99		2/17/00		5/25/00		8/31/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.44		6.49		6.79		6.86		6.90		6.71		6.10		6.72		6.88		7.03		6.80		6.50		6.56	
88	82	Temperature (° C) (avg)	14.7		17.1		12.6		15.8		13.9		13.8		13.0		13.7		13.7		16.2		14.1		13.5		14.1	
89	83	Conductivity (um/hos)	195		233		220		246		255		208		203		204		228		216		216		164		189	
90	84	Dissolved oxygen (mg/L) (avg)	2.03		1.29		2.53		0.52		0.72		1.47		1.09		0.52		2.70		0.63		3.97		7.74		5.59	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																												
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW10D		LW10D		LW10D		LW10D		LW10D	
4		ER93E		EZ17I		FF76C		FL41N		FU45K	
5		08/27/02		11/13/02		2/12/03		5/7/03		8/28/03	
86	**FIELD PARAMETERS**										
87	pH (avg)	6.67		6.35		7.14		7.18		7.07	
88	Temperature (° C) (avg)	14.3		13.7		13.6		13.4		15.8	
89	Conductivity (um/hos)	180		188		178		93		122	
90	Dissolved oxygen (mg/L) (avg)	0.95		1.22		1.47		5.73		2.33	
91											
92	**DIOXINS AND FURANS (ng/L)**										
93	**Method 8290**										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA	
119											
120										NA	
121											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D		LW10D	
4			AH76P		AU45H		BC27D		BH96H		BR64L		CB85H		CL03O		CT67A		DE87I		DM30E		DW29D		ED30C		EN00C	
5			5/19/99		9/22/99		12/7/99		2/17/00		5/25/00		8/31/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW10D		LW10D		LW10D		LW10D		LW10D	
4		ER93E		EZ17I		FF76C		FL41N		FU45K	
5		08/27/02		11/13/02		2/12/03		5/7/03		8/28/03	
122	**PAHs (µg/L)**										
123	**EPA Method SW8270 SIM**										
124	Naphthalene	NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
3			LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D	
4			AH76H		AU45C		BC27I		BH96L		BR64G		CB49F		CK77H		CT55D		DE68B		DM52G		DW48B		ED34E		EM85C	
5			5/20/99		9/22/99		12/8/99		2/18/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	**46**		**8.1**		**1.1**		**0.36**		0.25	U	0.25	U	0.25	U	**1.6**		0.25	U	0.25	U	**0.62**		**0.76**		0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.57	U	1.3	U	0.39	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**2.2**		**1.5**		**0.36**		**0.12**	J1	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	**2.2**		**1.1**		**0.27**		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U
24	18	Naphthalene	**1.3**		1.0	U	**0.9**	J1	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	**0.6**	J1	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**55**		**5.0**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	3.5	U	1.0	U	**2.6**		**2.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.9**		4.0	U	4.0	U
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	**8.9**		**16**		5.0	U	5.0	U	5.0	U	**8.4**		**12**			R	**35**		**10**		**130**		5.0	U	**54**	
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	22	U	5.9	U	5.0	U	**5.4**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	**16**		**7.2**		**3.2**		**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**22**		**7.4**		**2.1**		**1.3**		**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	**21**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	**34**		**26**		**10**		**7.5**		**8.0**		**4.4**		**3.1**		**4.2**		**3.4**		**2.2**		**1.1**		1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	**97**		**40**		**12**		**9.0**		**12**		**6.7**		**5.6**		**7.0**		**5.7**		**3.6**		**1.7**		1.0	U	**1.4**	
48	42	Isopropylbenzene	**12**		**11**		**6.9**		**4.0**		**2.4**		**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
49	43	n-Propylbenzene	**18**		**20**		**13**		**7.5**		**4.8**		**2.8**		**1.6**		**1.3**		**1.2**		**1.2**		1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	**4.6**		**5.3**		**4.8**		**3.7**		**2.7**		**2.2**		**1.7**		**1.2**		**1.2**		**1.4**		**1.2**		1.0	U	1.0	U
52	46	4-Isopropyltoluene	**6.7**		**5.0**		**2.0**		**1.6**		**1.9**		**1.7**		1.0	U	**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	**5.8**		4.1	U	2.3	U	**2.3**		**2.2**	M	**2.4**	M	**1.5**		**1.4**	M	**1.5**		**1.5**		1.0	U	1.0	U	1.0	U
54	48	Naphthalene	**5.3**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	**0.68**		**1.4**		**0.76**		**0.60**		**0.74**		**0.88**		**0.70**		**1.1**		**1.0**		**0.88**		**0.98**		**0.87**		**1.1**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	**0.006**		**0.008**		**0.006**		**0.007**		**0.007**		**0.007**		**0.007**		**0.006**		**0.007**		**0.009**		**0.009**		**0.007**		**0.007**	
65	59	Chromium (6010)	**0.008**		**0.053**		**0.015**		**0.011**		**0.013**		**0.018**		**0.016**		0.005	U	0.005	U	**0.024**		0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
3		LW11D		LW11D		LW11D		LW11D		LW11D	
4		ES04C		EZ03B		FF88D		FL66I		FU50B	
5		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
7	**CHLORINATED PHENOLS (µg/L)**										
8	**EPA Method SW8040**										
9	Pentachlorophenol	0.26	U	0.25	U	0.26	U	0.26	U	**5.6**	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA	
16											
17	**SEMIVOLATILES (µg/L)**										
18	**EPA Method SW8270**										
19	Phenol	2	U	2.2	U	2	U	2	U	2.1	U
20	4-Methylphenol	1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	1	U	1.1	U	1	U	1	UJ	1	U
22	2,4-Dimethylphenol	3.1	U	3.3	U	3.1	U	3.1	U	3.1	U
23	Benzoic Acid	51	U	54	U	51	U	51	U	52	U
24	Naphthalene	1	U	1.1	U	1	U	1	UJ	1	U
25	2-Methylnaphthalene	1	U	1.1	U	1	U	1	UJ	1	U
26	2,4,6-Trichlorophenol	5.1	U	5.4	U	5.1	U	5.1	U	5.2	U
27	2,4,5-Trichlorophenol	5.1	U	5.4	U	5.1	U	5.1	U	5.2	U
28	Acenaphthene	1	U	1.1	U	1	U	1	UJ	1	U
29	Dibenzofuran	1	U	1.1	U	1	U	1	UJ	1	U
30	Fluorene	1	U	1.1	U	1	U	1	UJ	1	U
31	Pentachlorophenol	5.1	U	5.4	U	5.1	U	5.1	U	5.2	U
32	bis(2-Ethylhexyl)phthalate	4.1	U	4.3	U	**1.9**		1	UJ	**1.9**	
33											
34	**VOLATILES (µg/L)**										
35	**EPA Method SW8260**										
36	Acetone	**27**		**31**		**26**		**140**		**11**	
37	Carbon Disulfide	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	5	U	5	U	5	U
39	Benzene	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1	U	1	U	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1	U	1	U	1	U	1	U	1	U
43	Styrene	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	**Method OR-DEQ**										
58	**TPH-Diesel**	**0.97**		**0.8**		**0.74**		**0.91**		**1.1**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61											
62	**PRIORITY POLLUTANT**										
63	**METALS (mg/L)**										
64	Arsenic (7060)	**0.005**		0.05	U	**0.008**		**0.007**		**0.005**	
65	Chromium (6010)	**0.02**		**0.032**		0.005	U	0.005	U	**0.007**	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D	
4			AH76H		AU45C		BC27I		BH96L		BR64G		CB49F		CK77H		CT55D		DE68B		DM52G		DW48B		ED34E		EM85C	
5			5/20/99		9/22/99		12/8/99		2/18/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02	
66	60	Copper (6010)	**0.005**		**0.051**		**0.016**		**0.013**		**0.014**		**0.017**		**0.018**	J2	**0.005**		**0.002**		**0.024**		0.004	U	**0.007**		**0.003**	
67	61	Lead (7421)	**0.002**		**0.018**		**0.007**		**0.004**		**0.008**		**0.006**		**0.008**		**0.002**		**0.002**		**0.008**		**0.004**		**0.002**		0.001	U
68	62	Nickel (6010)	0.01	U	0.04	U	0.01	U	**0.01**		0.01	U	**0.02**		**0.01**		0.01	U	0.01	U	**0.02**		0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.030**		**0.142**		**0.047**		**0.042**		**0.040**		**0.052**		**0.058**		**0.023**		**0.018**		**0.064**		**0.022**		**0.022**		**0.013**	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**54.9**		**61.5**		**55.9**		**58.6**		**60.0**		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**26.4**		**31.0**		**27.6**		**28.6**		**31.3**		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**1.7**		**1.9**		**2.9**		**2.1**		**2.2**		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**15.6**		**16.6**		**17.5**		**16.2**		**17.6**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**350**		NA		NA		NA		**370**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**350**		NA		NA		NA		**370**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**420**		**310**		**310**		**290**		**350**		**380**		**380**		**360**		**370**		**300**		**340**		**340**		**410**	
80	74	Chloride (mg/L) (EPA 325.2)	**9.2**		**10**		**11**		**11**		**10**		**10**		**14**		**7.7**		**8.8**		**8.3**		**7.5**		**9.8**		**12**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.024**		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.025**		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.049**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**6.3**		NA		NA		NA		**7.6**		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW11D		LW11D		LW11D		LW11D		LW11D	
4		ES04C		EZ03B		FF88D		FL66I		FU50B	
5		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
66	Copper (6010)	**0.02**		**0.034**		**0.007**		**0.004**		**0.008**	
67	Lead (7421)	**0.007**		0.02	U	**0.002**		**0.002**		**0.002**	
68	Nickel (6010)	**0.01**		**0.05**		**0.05**		**0.01**		**0.01**	
69	Zinc (6010)	**0.053**		**0.096**		**0.024**		**0.019**		**0.025**	
70											
71	**MAJOR IONS AND CONVENTIONALS**										
72	Calcium (mg/L) (6010)	NA		NA		**70.4**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**31.7**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**2.6**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**17.5**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**310**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**310**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**390**		**470**		**380**		**320**		**260**	
80	Chloride (mg/L) (EPA 325.2)	**9.8**		**7.4**		**7.8**		**6.7**		**4.6**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.02**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.02**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**96**		NA		NA	
85											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D	
4			AH76H		AU45C		BC27I		BH96L		BR64G		CB49F		CK77H		CT55D		DE68B		DM52G		DW48B		ED34E		EM85C	
5			5/20/99		9/22/99		12/8/99		2/18/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.51		6.75		6.54		6.44		6.63		6.35		5.75		6.38		6.75		7.80		6.68		6.52		6.56	
88	82	Temperature (° C) (avg)	15.5		15.3		12.1		12.0		17.0		15.0		12.8		12.3		13.3		14.7		12.6		12.8		14.9	
89	83	Conductivity (um/hos)	630		487		617		551		643		523		544		454		493		488		473		576		694	
90	84	Dissolved oxygen (mg/L) (avg)	1.96		1.53		1.33		1.86		1.53		1.49		1.23		1.14		1.45		1.43		3.48		8.44		3.33	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																												
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW11D		LW11D		LW11D		LW11D		LW11D	
4		ES04C		EZ03B		FF88D		FL66I		FU50B	
5		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
86	**FIELD PARAMETERS**										
87	pH (avg)	6.44		6.2		6.96		6.81		6.7	
88	Temperature (° C) (avg)	15.7		14		13.6		14.3		14.4	
89	Conductivity (um/hos)	466		642		704		419		334	
90	Dissolved oxygen (mg/L) (avg)	1.30		0.48		0		2.57		2.31	
91											
92	**DIOXINS AND FURANS (ng/L)**										
93	**Method 8290**										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA	
119											
120										NA	
121											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D		LW11D	
4			AH76H		AU45C		BC27I		BH96L		BR64G		CB49F		CK77H		CT55D		DE68B		DM52G		DW48B		ED34E		EM85C	
5			5/20/99		9/22/99		12/8/99		2/18/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/28/02		6/26/02	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1											
2											
3		LW11D		LW11D		LW11D		LW11D		LW11D	
4		ES04C		EZ03B		FF88D		FL66I		FU50B	
5		08/28/02		11/12/02		2/13/03		5/9/03		8/29/03	
122	**PAHs (µg/L)**										
123	**EPA Method SW8270 SIM**										
124	Naphthalene	NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
2					Dup of LW14D																							
3			LW14D		W		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D	
4			BR64R		BR64Q		CT67N		DE87E		DM30Q		DW29J		ED30E		EN00E		ER93F		EZ17C		FF65E		FL58D		FU45L	
5			5/25/00		5/25/00		2/14/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.27	U	0.25	U	0.25	U	0.25	U	**2.3**	J
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
37	31	Carbon Disulfide	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
38	32	2-Butanone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
39	33	Benzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
40	34	Bromoform	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
41	35	Toluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
42	36	Ethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
43	37	Styrene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
44	38	m,p-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
45	39	o-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
48	42	Isopropylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
49	43	n-Propylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
50	44	tert-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
51	45	sec-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
52	46	4-Isopropyltoluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
53	47	n-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
54	48	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2					Dup of LW14D																							
3			LW14D		W		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D	
4			BR64R		BR64Q		CT67N		DE87E		DM30Q		DW29J		ED30E		EN00E		ER93F		EZ17C		FF65E		FL58D		FU45L	
5			5/25/00		5/25/00		2/14/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
2					Dup of LW14D																							
3			LW14D		W		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D	
4			BR64R		BR64Q		CT67N		DE87E		DM30Q		DW29J		ED30E		EN00E		ER93F		EZ17C		FF65E		FL58D		FU45L	
5			5/25/00		5/25/00		2/14/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.64		6.64		6.15		6.65		6.81		6.61		6.35		6.64		6.73		6.22		7.05		6.69		6.98	
88	82	Temperature (° C) (avg)	14.1		14.2		12.9		13.5		14.1		12.4		13.6		13.9		14.8		13.4		14.3		13.3		16.1	
89	83	Conductivity (um/hos)	312		312		345		371		296		362		356		487		434		477		426		258		224	
90	84	Dissolved oxygen (mg/L) (avg)	4.54		4.52		0.12		1.17		0.83		4.12		7.36		5.08		2.09		0.77		2.48		3.06		1.54	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2					Dup of LW14D																							
3			LW14D		W		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D		LW14D	
4			BR64R		BR64Q		CT67N		DE87E		DM30Q		DW29J		ED30E		EN00E		ER93F		EZ17C		FF65E		FL58D		FU45L	
5			5/25/00		5/25/00		2/14/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/13/02		2/11/03		5/8/03		8/28/03	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
3			LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D	
4			CB85A		CL03R		CT67L		DE87C		DM30P		DW48H		ED34B		EN00J		ER93N		EZ03H		FF88H		FL66F		FU45S	
5			8/31/00		11/8/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/13/03		5/9/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	0.25	U	**0.56**		0.25	U	0.25	U	0.25	U	**6.8**		0.25	U	0.28	U	0.25	U	**0.33**		0.25	U	0.5	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
37	31	Carbon Disulfide	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
38	32	2-Butanone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
39	33	Benzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
40	34	Bromoform	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
41	35	Toluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
42	36	Ethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
43	37	Styrene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
44	38	m,p-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
45	39	o-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
48	42	Isopropylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
49	43	n-Propylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
50	44	tert-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
51	45	sec-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
52	46	4-Isopropyltoluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
53	47	n-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
54	48	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D	
4			CB85A		CL03R		CT67L		DE87C		DM30P		DW48H		ED34B		EN00J		ER93N		EZ03H		FF88H		FL66F		FU45S	
5			8/31/00		11/8/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/13/03		5/9/03		8/28/03	
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D	
4			CB85A		CL03R		CT67L		DE87C		DM30P		DW48H		ED34B		EN00J		ER93N		EZ03H		FF88H		FL66F		FU45S	
5			8/31/00		11/8/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/13/03		5/9/03		8/28/03	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.14		5.95		6.15		6.53		6.67		6.44		6.49		6.68		6.41		6.64		6.9		6.75		6.74	
88	82	Temperature (° C) (avg)	13.8		13.5		14.4		14.0		15.3		14		13.7		14.2		16.1		13.7		15.2		13.8		17.4	
89	83	Conductivity (um/hos)	305		79		440		488		544		529		62		196		399		457		401		349		431	
90	84	Dissolved oxygen (mg/L) (avg)	2.10		1.21		0.47		2.27		1.69		3.81		7.82		4.92		1.31		0.94		0		2.33		1.01	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
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GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D		LW17D	
4			CB85A		CL03R		CT67L		DE87C		DM30P		DW48H		ED34B		EN00J		ER93N		EZ03H		FF88H		FL66F		FU45S	
5			8/31/00		11/8/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/13/03		5/9/03		8/28/03	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D	
4			CB85B		CL03S		CT67M		DE87D		DM30O		DW48G		ED34C		EN00I		ER93O		EZ03G		FF76D		FL66G		FU45Q	
5			8/31/00		11/9/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.26**		**0.44**		0.25	U	0.3	U	0.25	U	0.25	U	0.25	U	**0.58**	J
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
37	31	Carbon Disulfide	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
38	32	2-Butanone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
39	33	Benzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
40	34	Bromoform	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
41	35	Toluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
42	36	Ethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
43	37	Styrene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
44	38	m,p-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
45	39	o-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
48	42	Isopropylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
49	43	n-Propylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
50	44	tert-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
51	45	sec-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
52	46	4-Isopropyltoluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
53	47	n-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
54	48	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D	
4			CB85B		CL03S		CT67M		DE87D		DM30O		DW48G		ED34C		EN00I		ER93O		EZ03G		FF76D		FL66G		FU45Q	
5			8/31/00		11/9/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D	
4			CB85B		CL03S		CT67M		DE87D		DM30O		DW48G		ED34C		EN00I		ER93O		EZ03G		FF76D		FL66G		FU45Q	
5			8/31/00		11/9/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.48		6.12		6.08		6.38		6.60		6.44		6.26		6.45		6.64		6.57		6.83		6.62		6.79	
88	82	Temperature (° C) (avg)	14.1		12.8		13.9		14.7		15.2		13.8		14.5		15.5		16.0		14.6		14.4		15.1		18.8	
89	83	Conductivity (um/hos)	338		265		523		486		623		435		422		393		455		511		544		315		379	
90	84	Dissolved oxygen (mg/L) (avg)	2.14		1.25		0.37		0.69		1.82		3.27		7.60		4.42		0.82		0.69		0.88		1.78		0.98	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																											NA	
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D		LW18D	
4			CB85B		CL03S		CT67M		DE87D		DM30O		DW48G		ED34C		EN00I		ER93O		EZ03G		FF76D		FL66G		FU45Q	
5			8/31/00		11/9/00		2/14/01		6/5/01		8/13/01		11/29/01		2/28/02		6/27/02		08/27/02		11/12/02		2/12/03		5/9/03		8/28/03	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB		
1																														
2																														
3			O		O		O		O		O		O		O		O		O		O		O		O		O			
4			S177M		T176J		U235P		V208J		W391L		Y314M		Z225S		Z960Y		AH27A		AU45O		BC30B		BH96A		BR64A			
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00			
7	1	**CHLORINATED PHENOLS (µg/L)**																												
8	2	**EPA Method SW8040**																												
9	3	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
10	4	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
11	5	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
12	6	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
13	7	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
15	9	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
16	10																													
17	11	**SEMIVOLATILES (µg/L)**																												
18	12	**EPA Method SW8270**																												
19	13	Phenol	**8.9**		**20**		**2.8**		2.0	U	2.0	U	2.0	U	**4.1**		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U		
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		**1.0**		1.0	U	**1.2**		1.0	U	1.0	U	1.0	U	1.0	U		
29	23	Dibenzofuran	1.0	U	**2.2**		**2.0**		1.0	U	1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.2**		1.0	U	1.0	U	**1.9**		1.0	U	1.0	U	**1.7**			
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U				
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	**1.0**	J2	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
33	27																													
34	28	**VOLATILES (µg/L)**																												
35	29	**EPA Method SW8260**																												
36	30	Acetone	5.0	U	**6.2**		**9.4**		**6.0**		8.5	U	**7.0**		**27**		5.0	U	5.0	U	**17**		5.0	U	17	U	**6.7**	M		
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**7.1**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U				
39	33	Benzene	**180**		**690**		**94**		1.0	U	1.0	U	**34**		**39**		**2.3**		**37**		**28**		1.0	U	1.0	U	1.0	U				
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
41	35	Toluene	1.0	U	**1.1**		**1.6**		1.0	U	1.0	U	**6.3**		**5.3**		1.0	U	1.0	U	**2.5**		1.0	U	**1.5**		1.0	U				
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
44	38	m,p-Xylene	1.0	U	1.0	U	**1.5**		1.0	U	1.0	U	**5.0**		**3.8**		1.0	U	1.0	U	**1.6**		1.0	U	**1.1**		1.0	U				
45	39	o-Xylene	1.0	U	**1.3**		1.0	U	1.0	U	1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	**1.0**	J2	1.0	U	1.0	U	**2.2**		**4.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
48	42	Isopropylbenzene	1.0	U	**15**		**22**	J2	**1.2**		**18**		**28**		**71**		1.0	U	**2.2**		**20**		**7.8**		**27**		**6.0**				
49	43	n-Propylbenzene	1.0	U	**9.8**		**7.2**		1.0	U	1.0	U	**14**		**51**		1.0	U	**2.0**		**15**		**2.3**		**12**		**3.0**				
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**	J1	1.0	U	1.0	U	1.0	U	1.0	U				
51	45	sec-Butylbenzene	1.0	U	**7.7**		**6.1**	J2	**1.3**		**5.2**		**10**	J2	**7.4**		**8.5**		**7.9**		**6.4**		**1.6**		**4.3**		**6.9**				
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U				
53	47	n-Butylbenzene	1.0	U	**1.9**		**1.2**	J2	1.0	U	1.0	U	**2.9**		**3.7**		**1.4**		**2.9**		**2.7**		1.0	U	**1.1**		**1.0**				
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U				
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																												
57	51	**Method OR-DEQ**																												
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
61	55																													
62	56	**PRIORITY POLLUTANT**																												
63	57	**METALS (mg/L)**																												
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3		O		O		O		O		O		O		O		O		O		O		O		O		O	
4		CB85C		CL03P		CT55I		DE87A		DM30S		DW48E		ED23F		EM75L		ER93A		EY88A		FF88I		FL66B		FU45T	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.2	U	2.2	U	2	U	2	U	2.3	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1.1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1.1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.3	U	3.3	U	3.1	U	3	U	3.4	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	56	U	54	U	51	U	50	U	57	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1.1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1.1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.4	U	5.1	U	5	U	5.7	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.4	U	5.1	U	5	U	5.7	U
28	Acenaphthene	**1.9**		**1.8**		1.0	U	1.0	U	**1.3**		1.0	U	1.0	U	1.0	U	1.1	U	**1.7**		1	U	1	U	1.1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1.1	U
30	Fluorene	**2.9**		**3.5**		**2.0**		**1.6**		**1.6**		1.0	U	1.0	U	1.0	U	1.1	U	**2.1**		1	U	1	U	1.1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.4	U	5.1	U	5	U	5.7	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	**2.2**		1.0	U	**1.1**		**2.0**		1.0	U	4.0	U	4.0	U	4.4	U	4.3	U	1	U	1	U	1.1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	**45**		**11**			R	**8.7**		5.0	U	5.0	U	5.0	U	**11**		**5.7**		5	U	5	U	5	U	**11**	J
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	**18**		**7.7**		1.0	U	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U	**2.6**		**40**		1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	**1.8**		**3.0**		**2.3**		**1.6**		**1.1**		**2.4**		1.0	U	1.0	U	1	U	**2.5**		1	U	1	U	**1.4**	
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	**1.3**		**2.6**		**2.6**		**1.9**		**1.1**		**2.5**		1.0	U	1.0	U	1	U	**2.1**		1	U	1	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	**1.4**		1.0	U	**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	**26**		**33**		**26**		**37**		**32**		**64**		**31**		**30**		**5.6**		**46**		1	U	**3.4**		**27**	
49	n-Propylbenzene	**15**		**18**		**15**		**22**		**13**		**36**		**19**		**7.3**		**4.1**		**46**		1	U	**3.3**		**35**	
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	**5.1**		**6.7**		**4.4**		**5.7**		**5.0**		**6.3**		**6.6**		**5.5**		**5.9**		**7.7**		**1.5**		**5.4**		**8**	
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	**2.0**		**2.5**		**1.6**		**2.2**		**2.0**		**2.8**		**2.9**		**1.8**		**1.2**		**5.3**		1	U	1	U	**4.1**	
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			O		O		O		O		O		O		O		O		O		O		O		O		O	
4			S177M		T176J		U235P		V208J		W391L		Y314M		Z225S		Z960Y		AH27A		AU45O		BC30B		BH96A		BR64A	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**330**	J2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		O		O		O		O		O		O		O		O		O		O		O		O		O	
4		CB85C		CL03P		CT55I		DE87A		DM30S		DW48E		ED23F		EM75L		ER93A		EY88A		FF88I		FL66B		FU45T	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
66	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			O		O		O		O		O		O		O		O		O		O		O		O		O	
4			S177M		T176J		U235P		V208J		W391L		Y314M		Z225S		Z960Y		AH27A		AU45O		BC30B		BH96A		BR64A	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.77		6.82		6.86		6.79		6.43		6.39		6.32		6.62		5.57		6.70		6.27		6.62		6.39	
88	82	Temperature (° C) (avg)	12.3		15.7		13.6		14.2		14.1		15.0		13.3		14.6		15.0		17.8		13.0		15.0		15.6	
89	83	Conductivity (um/hos)	413		412		389		471		437		531		183		366		391		441		337		427		413	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		3.36		1.68		1.41		2.44		1.85		1.93		1.58		1.58		1.82	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																												
121																												

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		O		O		O		O		O		O		O		O		O		O		O		O		O	
4		CB85C		CL03P		CT55I		DE87A		DM30S		DW48E		ED23F		EM75L		ER93A		EY88A		FF88I		FL66B		FU45T	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	5.85		5.70		6.27		6.43		6.80		6.62		6.27		6.43		6.18		6.79		6.67		6.39		6.85	
88	Temperature (° C) (avg)	15.9		13.4		16.5		14.5		15.9		12.5		15.3		17.3		17.3		14.0		14.7		14		17.9	
89	Conductivity (um/hos)	409		437		445		510		563		536		500		471		464		592		431		327		514	
90	Dissolved oxygen (mg/L) (avg)	1.16		0.39		2.15		2.40		1.89		4.34		7.41		4.16		2.18		1.93		0		2.01		0.88	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120																										NA	
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			O		O		O		O		O		O		O		O		O		O		O		O		O	
4			S177M		T176J		U235P		V208J		W391L		Y314M		Z225S		Z960Y		AH27A		AU45O		BC30B		BH96A		BR64A	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		**0.47**		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		**0.31**		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		**0.92**		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		**0.28**	M	NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		O		O		O		O		O		O		O		O		O		O		O		O		O	
4		CB85C		CL03P		CT55I		DE87A		DM30S		DW48E		ED23F		EM75L		ER93A		EY88A		FF88I		FL66B		FU45T	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB		
1																														
2																														
3			R		R		R		R		R		R		R		R		R		R		R		R		R			
4			S177N		T176K		U235Q		V208K		W391M		Y314N		Z225T		Z960Z		AH27B		AU45P		BC30C		BH96Y		BR64B			
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00			
7	1	**CHLORINATED PHENOLS (µg/L)**																												
8	2	**EPA Method SW8040**																												
9	3	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
10	4	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
11	5	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
12	6	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
13	7	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
15	9	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
16	10																													
17	11	**SEMIVOLATILES (µg/L)**																												
18	12	**EPA Method SW8270**																												
19	13	Phenol	**18**		**8.4**		2.0	U	2.0	U	2.0	U	**6.1**		**22**		**16**		**3.8**		**6.3**		2.0	U	2.0	U	2.0	U		
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U		
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	**4.0**	J2	**2.8**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U		
33	27																													
34	28	**VOLATILES (µg/L)**																												
35	29	**EPA Method SW8260**																												
36	30	Acetone	5.0	U	**13**		**6.9**		5.0	U	**11**		**8.9**		**17**		15	U	**7.5**		5.0	U	5.0	U	14	U	5.0	U		
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	15	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
39	33	Benzene	**410**		**990**		**4.7**		1.0	U	**2.5**		**160**		**120**		**740**		**57**		**120**		1.0	U	**2.1**		**9.3**			
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
41	35	Toluene	1.0	U	2.9		1.0	U	1.0	U	1.0	U	**6.0**		**3.5**		3.0	U	1.0	U	**6.0**		1.0	U	**1.2**		1.0	U		
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**14**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
44	38	m,p-Xylene	1.0	U	2.9		1.0	U	1.0	U	1.0	U	**6.4**		**2.1**		**4.9**		1.0	U	**6.9**		1.0	U	1.0	U	1.0	U		
45	39	o-Xylene	1.0	U	1.8		1.0	U	1.0	U	1.0	U	**1.2**		1.0	U	3.0	U	1.0	U	**1.1**		1.0	U	1.0	U	1.0	U		
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.5**		**1.4**		**15**		1.0	U	**1.4**		1.0	U	1.0	U	1.0	U		
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3.5**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
48	42	Isopropylbenzene	**2.6**		**16**		**5.1**	J2	1.0	U	**12**		**43**		**37**		**46**		**11**		**43**		1.0	U	**8.4**		**4.8**			
49	43	n-Propylbenzene	**1.7**		**3.7**		**1.6**		1.0	U	**2.4**		**19**		**19**		**51**		**3.9**		19	U	1.0	U	**5.4**		**1.2**			
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
51	45	sec-Butylbenzene	**2.7**		**5.4**		**2.0**	J2	1.0	U	**3.2**		**5.1**	J2	**5.0**		**4.8**		**3.2**		**6.0**		1.0	U	**2.5**		**3.0**			
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
53	47	n-Butylbenzene	1.0	U	3.0		1.0	U	1.0	U	1.0	U	**2.3**		**1.4**		**16**		**1.0**		2.5	U	1.0	U	1.0	U	1.0	U		
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	15	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U		
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																												
57	51	**Method OR-DEQ**																												
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
61	55																													
62	56	**PRIORITY POLLUTANT**																												
63	57	**METALS (mg/L)**																												
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3		R		R		R		R		R		R		R		R		R		R		R		R		R	
4		CB85D		CL03Q		CT55J		DE87B		DM30T		DW48F		ED23G		EM75M		ER93B		EY88B		FF88J		FL66C		FU45U	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	**8.4**		**6.4**		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.1	U	2.2	U	2	U	2	U	2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.2	U	3.3	U	3	U	3	U	3	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	53	U	54	U	50	U	50	U	50	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.4	U	5	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.4	U	5	U	5	U	5	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	5.4	U	5	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	**1.6**		1.0	U	**5.4**		1.0	U	4.0	U	4.0	U	4.3	U	4.3	U	1	U	1	U	1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	**22**		**12**			R	5.0	U	**10**		**5.0**		5.0	U	**11**		**14**		5	U	**7.4**		5	U	**18**	J
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	**5.0**	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	**120**		**77**		**36**		**3.1**		**13**		1.0	U	**41**		1.0	U	**32**		**7.7**		1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	**6.3**		**3.6**		**3.0**		**2.9**		**2.8**		**1.5**		1.0	U	1.0	U	**2.9**		**1.6**		1	U	1	U	**2.4**	
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	**14**	
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	**5.8**		**2.4**		**1.8**		**4.1**		**3.4**		**1.6**		1.0	U	1.0	U	**3.5**		**1.4**		1	U	1	U	**26**	J
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	**33**		**24**		**11**		**26**		**30**		**17**		**2.6**		**7.3**		**36**		**34**		**8.8**		1	U	**46**	
49	n-Propylbenzene	**18**		**14**		**5.1**		**9.1**		**16**		**6.8**		1.0	U	1.0	U	**14**		**20**		**3.3**		1	U	**37**	
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	**5.6**		**4.4**		**3.4**		**4.7**		**3.8**		**2.9**		**2.3**		**2.2**		**5.4**		**4.7**		**2**		**1.4**		**6.8**	
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	2.0	U	1.3	U	1.0	U	1.4	U	1.0	U	1.0	U	1.0	U	1.0	U	2.2	U	**2**		1	U	1	U	**3.9**	
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			R		R		R		R		R		R		R		R		R		R		R		R		R	
4			S177N		T176K		U235Q		V208K		W391M		Y314N		Z225T		Z960Z		AH27B		AU45P		BC30C		BH96Y		BR64B	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**340**	J2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		R		R		R		R		R		R		R		R		R		R		R		R		R	
4		CB85D		CL03Q		CT55J		DE87B		DM30T		DW48F		ED23G		EM75M		ER93B		EY88B		FF88J		FL66C		FU45U	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
66	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
67	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
68	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
69	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			R		R		R		R		R		R		R		R		R		R		R		R		R	
4			S177N		T176K		U235Q		V208K		W391M		Y314N		Z225T		Z960Z		AH27B		AU45P		BC30C		BH96Y		BR64B	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.66		6.78		6.72		6.84		6.60		6.55		6.36		6.06		5.72		6.87		6.86		6.75		6.42	
88	82	Temperature (° C) (avg)	12.8		15.8		14.1		14.3		14.8		15.0		13.5		14.4		15.2		16.5		15.7		14.1		15.8	
89	83	Conductivity (um/hos)	503		629		1007		319		510		591		179		246		471		566		578		533		502	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		3.54		1.35		1.16		2.27		1.61		2.26		1.33		0.93		2.10	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120																												
121																												

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GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		R		R		R		R		R		R		R		R		R		R		R		R		R	
4		CB85D		CL03Q		CT55J		DE87B		DM30T		DW48F		ED23G		EM75M		ER93B		EY88B		FF88J		FL66C		FU45U	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.10		5.91		6.43		6.88		7.00		6.68		5.95		6.64		6.75		NM		6.88		6.23		7.01	
88	Temperature (° C) (avg)	15.0		13.5		15.4		14.5		15.1		14.2		14.5		15.2		15.8		NM		14.6		13.7		17	
89	Conductivity (um/hos)	560		571		661		694		628		600		170		591		631		NM		598		244		630	
90	Dissolved oxygen (mg/L) (avg)	1.90		0.69		2.01		1.49		1.26		4.02		7.80		4.86		1.19		NM		0		3.12		0.44	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120																										NA	
121																											

TABLE F-11
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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			R		R		R		R		R		R		R		R		R		R		R		R		R	
4			S177N		T176K		U235Q		V208K		W391M		Y314N		Z225T		Z960Z		AH27B		AU45P		BC30C		BH96Y		BR64B	
5			4/1/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/17/99		5/17/99		9/22/99		12/7/99		2/16/00		5/23/00	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

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	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		R		R		R		R		R		R		R		R		R		R		R		R		R	
4		CB85D		CL03Q		CT55J		DE87B		DM30T		DW48F		ED23G		EM75M		ER93B		EY88B		FF88J		FL66C		FU45U	
5		8/30/00		11/8/00		2/13/01		6/5/01		8/14/01		11/29/01		2/26/02		6/25/02		08/26/02		11/11/02		2/13/03		5/9/03		8/28/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2															Dup of RW2				Dup of RW2				Dup of RW2			
3			RW2		RW2		RW2		RW2		RW2		RW2		X		RW2		X		RW2		X		RW2	
4			AH76G		AU45N		BC30E		BH96F		BR64P		CD97A		CD97B		CL03N		CL03M		CT37L		CT37M		DE87P	
5			5/20/99		9/23/99		12/7/99		2/17/00		5/25/00		9/13/00		9/13/00		11/9/00		11/9/00		2/13/01		2/13/01		6/6/01	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	**210**		**7.7**		0.25	U	**300**		**46**		**580**		**630**		**45**		**38**		**21**	J	**19**	J	0.25	U
10	4	2,4,6-Trichlorophenol	**1.9**		0.25	U	0.25	U	**3.1**		0.25	U	**2.3**		**2.5**		0.25	U	0.25	U	NA		NA		NA	
11	5	2,3,6-Trichlorophenol	**0.31**		0.25	U	0.25	U	**0.45**		0.25	U	0.48	U	0.51	U	0.25	U	0.25	U	NA		NA		NA	
12	6	2,4,5-Trichlorophenol	5.2	U	0.70	U	0.53	U	13	U	1.2	U	10	U	11	U	1.2	U	**1.1**		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**15**		**0.71**		**0.33**		**18**		**8.0**		**42**		**45**		**3.6**		**3.5**		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	**1.8**		**0.91**		0.25	U	**3.4**		**1.3**		**7.0**		**7.8**		**1.3**		**1.2**		NA		NA		NA	
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	**13**		2.0	U	2.0	U	2.0	U	**170**	J2	**150**	J2	**85**		**97**		**8.1**		**8.0**		2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**6.0**	J2	**5.3**	J2	**14**		**18**		**2.9**		**2.7**		1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	**21**		**22**		10	U	10	U	10	U
24	18	Naphthalene	**1.3**		**18**		**3.8**		**9.7**		**3.7**		**16**		**16**		**13**		**14**		**2.5**		**2.2**		1.0	U
25	19	2-Methylnaphthalene	1.0	U	**33**		**1.8**		**20**		**23**		**44**		**41**		**31**		**32**		**10**		**9.1**		**2.0**	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	**4.5**	J1	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	**25**		5.0	U	**16**	J	**14**	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**140**		**9.6**		5.0	U	**680**		**51**		**490**	J2	**440**	J2	**77**		**95**		**26**	J	**30**	J	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.5	U	**1.7**		**1.1**		**1.0**		1.0	U	1.0	U	**2.9**	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	15	U	**17**	M	5.0	U	10	U	5.0	U	**24**	M	**27**	M	**20**		**17**		14	U	13	U	5.0	U
37	31	Carbon Disulfide	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	15	U	**22**	M	5.0	U	**23**	M	5.0	U	**24**		**28**		**30**		**24**		5.0	U	5.0	U	5.0	U
39	33	Benzene	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.8**		**2.7**		**1.2**		**1.2**		1.0	U
40	34	Bromoform	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	3.0	U	**2.6**		1.0	U	1.0	U	1.0	U	**2.1**		**2.2**		2.0	U	**1.5**		1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	**25**		**45**		**13**		**22**		**3.9**		**28**		**27**		**27**		**29**		**4.8**		**4.3**		1.0	U
43	37	Styrene	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**61**		**120**		**25**		**53**		**8.2**		**78**		**76**		**78**		**81**		**10**		**9.6**		1.0	U
45	39	o-Xylene	**20**		**37**		**11**		**26**		**2.6**		**28**		**28**		**15**		**15**		**2.1**		**2.2**		1.0	U
46	40	1,3,5-Trimethylbenzene	**100**		**91**		**42**		**120**		**49**		**100**		**100**		**58**		**66**		**12**		**11**		1.0	U
47	41	1,2,4-Trimethylbenzene	**370**		**330**		**110**		**360**		**150**		**180**	M	**190**	M	**200**		**220**		**42**		**40**		**3.6**	
48	42	Isopropylbenzene	**78**		**65**		**29**		**79**		**52**		**70**		**73**		**57**		**68**		**30**		**29**		**11**	
49	43	n-Propylbenzene	**130**		**77**		**38**		**110**		**86**		**88**		**90**		**75**		**90**		**37**		**34**		**12**	
50	44	tert-Butylbenzene	**4.0**		**3.1**		1.0	U	**3.5**		**3.3**		**3.2**		**3.4**		**2.1**		**2.8**		**1.2**		**1.3**		1.0	U
51	45	sec-Butylbenzene	**18**		**17**		**5.5**		**21**		**16**		**15**		**16**		**11**		**14**		**4.9**		**4.7**		**1.6**	
52	46	4-Isopropyltoluene	**19**		**13**		**4.6**		**20**		**7.7**		**11**		**12**		**5.7**		**7.6**		1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	**20**		17.0	U	5.2	U	**24**		**15**	M	**16**	M	**17**	M	**11**		14	U	**3.5**		**3.4**		1.2	U
54	48	Naphthalene	**18**		**30**		**8.3**		**25**		**7.0**		**28**		**30**		**22**		**25**		5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**2.2**		**2.6**		**1.2**		**2.4**		**1.5**		**3.4**		**3.8**		**5.2**		**5.0**		**1.7**		**1.7**		**0.86**	
59	53	**TPH-D Motor Oil**	0.50	U	0.50	U	0.50	U	NA		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
60	54	**TPH-Gasoline**	**5.7**		**10**		**1.9**		NA		**5.1**		**7.7**		**7.7**		**4.6**		**5.0**		**1.8**		**1.7**		**0.60**	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.034**		**0.025**		**0.022**		**0.032**		**0.036**		**0.022**		**0.022**		**0.021**		**0.021**		**0.016**		**0.016**		**0.017**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
2		Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2		
3		X		RW2		W		RW2		W		RW2		W		RW2		W		RW2		W		RW2
4		DE87O		DM30I		DM30H		DW29E		DW29C		ED30D		ED30A		EN00D		EN00A		ER93G		ER93I		EZ17D
5		6/6/01		8/13/01		8/13/01		11/27/01		11/27/01		2/27/02		2/27/02		6/27/02		6/27/02		08/27/02		08/27/02		11/13/02
7	**CHLORINATED PHENOLS (µg/L)**																							
8	**EPA Method SW8040**																							
9	Pentachlorophenol	**0.68**		**5.0**		**5.0**		**1.7**		**1.8**		NA		NA		NA		NA		NA		NA		NA
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
16																								
17	**SEMIVOLATILES (µg/L)**																							
18	**EPA Method SW8270**																							
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	UJ	2.0	U	**10**		**10**		2.0	U	**5.9**	J	**15**		**13**		2.2
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3.8**	J	1.0	UJ	1.0	U	**1.1**		**1.8**		**1.5**		1.1
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1.1
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.8	U	3.3	U	3.3
23	Benzoic Acid	10	U	10	U	10	U	30	U	30	U	50	U	50	U	50	U	50	U	62	U	54	U	54
24	Naphthalene	1.0	U	**1.6**		**1.8**		**1.8**	J	**1.8**	J	**7.4**		**7.0**		**5.2**	J	**6.4**	J	**5.9**		**5.6**		**4.1**
25	2-Methylnaphthalene	**2.0**		**6.5**		**6.4**		**5.7**	J	**7.0**	J	**18**		**17**		**11**	J	**14**	J	**15**		**13**		**11**
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6.2	U	5.4	U	5.4
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6.2	U	5.4	U	5.4
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1.1
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1.1
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.1	U	1.1
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	UJ	5.0	U	**8.6**		**8.2**		**76**		**75**		**26**	J	**36**	J	**37**
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	4.0	U	4.0	U	4.0	U	4.0	U	5	U	4.3	U	4.3
33																								
34	**VOLATILES (µg/L)**																							
35	**EPA Method SW8260**																							
36	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.1	U	**5.2**		**6.4**		5
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1
38	2-Butanone	5.0	U	**5.2**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.5**		**2.5**		**2.3**		**2.2**		**3.4**		**3.3**		**3.4**
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		**1.7**		1.0	U	1.0	U	1	U	1	U	1
42	Ethylbenzene	1.0	U	**3.1**		**3.4**		**1.5**		**1.4**		**27**		**28**		**15**		**15**		**13**		**13**		**7.9**
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1
44	m,p-Xylene	1.0	U	**6.8**		**7.8**		**3.0**		**2.6**		**59**		**62**		**32**		**33**		**38**		**34**		**17**
45	o-Xylene	1.0	U	1.0	U	**1.6**		1.0	U	1.0	U	**14**		**14**		1.0	U	1.0	U	**6.5**		**5.9**		**2.3**
46	1,3,5-Trimethylbenzene	1.0	U	**6.5**		**6.7**		**3.9**		**3.7**		**44**		**44**		**21**		**23**		**27**		**24**		**9.8**
47	1,2,4-Trimethylbenzene	**3.8**		**23**		**26**		**13**		**12**		**150**		**150**		**62**		**62**		**84**		**78**		**37**
48	Isopropylbenzene	**11**		**24**		**25**		**30**		**30**		**54**		**51**		**46**		**44**		**44**		**45**		**37**
49	n-Propylbenzene	**12**		**28**		**29**		**36**		**37**		**76**		**73**		**58**		**57**		**58**		**59**		**46**
50	tert-Butylbenzene	1.0	U	**1.1**	M	**1.0**		**1.1**		**1.1**		**2.0**		**1.9**		**1.6**		**1.4**		**1.7**		**1.8**		**1.6**
51	sec-Butylbenzene	**1.7**		**3.9**		**4.1**		**4.7**		**4.7**		**9.6**		**9.5**		**8.4**		**8.2**		**8.3**		**8.4**		**6.7**
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**4.4**		**4.3**		**2.1**		**2.0**		**2.6**		**2.6**		**1.3**
53	n-Butylbenzene	1.2	U	**3.0**	M	**3.3**		**3.7**	M	**3.9**	M	**9.0**		**9.0**		6.5	U	6.1	U	7.6	U	7	U	**4.9**
54	Naphthalene	5.0	U	5.0	U	**5.0**		5.0	U	5.0	U	**15**		**16**		**8.7**		**8.5**		**10**		**9.9**		**6.3**
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																							
57	**Method OR-DEQ**																							
58	**TPH-Diesel**	**0.88**		**1.4**		**1.2**		**1.4**		**1.4**		**1.9**	J	**0.89**	J	**1.8**		**1.9**		**1.7**		**1.6**		**1.3**
59	**TPH-D Motor Oil**	0.50	U	0.50	U	0.50	U	0.50	U	NA		0.50	U	0.50	U	0.50	U	0.50	U	0.5	U	0.5	U	0.5
60	**TPH-Gasoline**	**0.66**		**1.3**		**1.3**		**1.2**		NA		**4.0**	J	**3.8**		**2.6**		**2.6**		**2.9**		**3**		**2.1**
61																								
62	**PRIORITY POLLUTANT**																							
63	**METALS (mg/L)**																							
64	Arsenic (7060)	**0.016**		**0.019**		**0.020**		**0.018**		**0.022**		**0.020**		**0.022**		**0.019**		**0.020**		**0.021**		**0.021**		0.05
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL
2			Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2	
3			W		RW2		W		RW2		W		RW2		W	
4			EZ17B		FF65I		FF65K		FL41O		FL41Q		FU31F		FU31E	
5			11/13/02		2/11/03		2/11/03		5/7/03		5/7/03		8/27/03		8/27/03	
7	**CHLORINATED PHENOLS (µg/L)**															
8	**EPA Method SW8040**															
9	Pentachlorophenol		NA		NA		NA		NA		NA		**10**		NA	
10	2,4,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA	
16																
17	**SEMIVOLATILES (µg/L)**															
18	**EPA Method SW8270**															
19	Phenol	U	2.2	U	2	U	2	U	2	U	2	U	2.1	U	2.1	U
20	4-Methylphenol	U	1.1	U	1	U	1	U	1	U	1	U	1	U	1	U
21	Isophorone	U	1.1	U	1	U	1	U	1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	U	3.3	U	3	U	3	U	3	U	3.1	U	3.1	U	3.1	U
23	Benzoic Acid	U	54	U	50	U	50	U	50	U	51	U	52	U	52	U
24	Naphthalene		**3.7**		**4.9**		**5.3**		**4.2**		**4**		**1.3**		**1.7**	
25	2-Methylnaphthalene		**9.6**		**13**		**14**		**13**		**12**		**4.8**	J	**6.2**	J
26	2,4,6-Trichlorophenol	U	5.4	U	5	U	5	U	5	U	5.1	U	5.2	U	5.2	U
27	2,4,5-Trichlorophenol	U	5.4	U	5	U	5	U	5	U	5.1	U	5.2	U	5.2	U
28	Acenaphthene	U	1.1	U	1	U	1	U	1	U	1	U	1	U	1	U
29	Dibenzofuran	U	1.1	U	1	U	1	U	1	U	1	U	1	U	1	U
30	Fluorene	U	1.1	U	1	U	1	U	1	U	1	U	1	U	1	U
31	Pentachlorophenol		**35**		**28**		**33**		**12**		**12**		**5.5**		**6.9**	
32	bis(2-Ethylhexyl)phthalate	U	4.3	U	1	U	1	U	1	U	1	U	1	U	1	U
33																
34	**VOLATILES (µg/L)**															
35	**EPA Method SW8260**															
36	Acetone	U	5	U	5	U	5	U	5	U	**6.2**	M	5	U	5	U
37	Carbon Disulfide	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
39	Benzene		**3.1**		**2.4**		**2.4**		**3.4**		**3.8**		**5.1**		**5.4**	
40	Bromoform	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene		**7.3**		**8.2**		**8.1**		**9.5**		**10**		**4.2**		**4.2**	
43	Styrene	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene		**16**		**15**		**14**		**12**		**13**		**7**		**7.4**	
45	o-Xylene		**2.2**		**2.4**		**2.2**		1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene		**9.6**		**14**		**13**		**19**		**19**		**8.6**		**8.5**	
47	1,2,4-Trimethylbenzene		**36**		**46**		**44**		**59**		**62**		**28**		**29**	
48	Isopropylbenzene		**36**		**50**		**51**		**41**		**45**		**30**		**29**	
49	n-Propylbenzene		**45**		**60**		**62**		**56**		**60**		**40**		**39**	
50	tert-Butylbenzene		**1.5**		**1.7**		**1.8**		**1.8**		**2**		**1.4**		**1.3**	
51	sec-Butylbenzene		**6.3**		**8**		**8.1**		**8.2**		**8.8**		**5.9**		**5.7**	
52	4-Isopropyltoluene		**1.2**		**1.5**		**1.4**		**1.9**		**2**		**1**		**1**	
53	n-Butylbenzene	M	**4.8**	M	**6**	M	**6**	M	**6.5**		**6.8**		**4.4**		**4.2**	
54	Naphthalene		**5.7**		**6.2**		**6.3**		**6.9**		**7.5**		5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**															
57	**Method OR-DEQ**															
58	**TPH-Diesel**		**1.3**		**1.7**		**1.8**		**1.5**		**1.5**		**1.1**		**1**	
59	**TPH-D Motor Oil**	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
60	**TPH-Gasoline**		**2.4**		**2.5**		**2.6**		**2.2**		**2.4**		**1.6**		**1.6**	
61																
62	**PRIORITY POLLUTANT**															
63	**METALS (mg/L)**															
64	Arsenic (7060)	U	0.05	U	**0.019**		**0.018**		**0.019**		**0.019**		**0.018**		**0.019**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2															Dup of RW2				Dup of RW2				Dup of RW2			
3			RW2		RW2		RW2		RW2		RW2		RW2		X		RW2		X		RW2		X		RW2	
4			AH76G		AU45N		BC30E		BH96F		BR64P		CD97A		CD97B		CL03N		CL03M		CT37L		CT37M		DE87P	
5			5/20/99		9/23/99		12/7/99		2/17/00		5/25/00		9/13/00		9/13/00		11/9/00		11/9/00		2/13/01		2/13/01		6/6/01	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.005**		**0.007**		0.002	U	**0.004**		0.002	U	0.002	U	**0.003**	
67	61	Lead (7421)	**0.001**		**0.001**		0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.016**		**0.042**		**0.025**		**0.031**		**0.016**		**0.022**	J2	**0.030**	J2	**0.116**		**0.122**		**0.022**		**0.022**		**0.058**	J
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**30.0**		NA		NA		NA		NA		NA		NA		NA		NA		**39.8**		**36.8**		**36.5**	
73	67	Magnesium (mg/L) (6010)	**9.90**		NA		NA		NA		NA		NA		NA		NA		NA		**17.1**		**15.8**		**17.2**	
74	68	Potassium (mg/L) (6010)	**2.5**		NA		NA		NA		NA		NA		NA		NA		NA		**2.4**		**2.1**		**3.1**	
75	69	Sodium (mg/L) (6010)	**7.68**		NA		NA		NA		NA		NA		NA		NA		NA		**12.6**		**11.7**		**12.6**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**140**		NA		NA		NA		NA		NA		NA		NA		NA		**220**		**220**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		1.0	U	1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**140**		NA		NA		NA		NA		NA		NA		NA		NA		**220**		**220**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**190**		**190**		**160**		**150**		**160**		**390**		**360**		**320**		**310**		**290**		**280**		**300**	J
80	74	Chloride (mg/L) (EPA 325.2)	**4.7**		**8.8**		**6.7**		**6.6**		**4.2**		**9.1**	J2	**7.4**	J2	**4.7**		**5.0**		**8.9**		**8.5**		**7.7**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.017**		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U	0.010	U	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	NA		NA		NA		NA		NA		NA		NA		NA		**0.018**		**0.016**		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.017**		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U	0.010	U	NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**9.3**		NA		NA		NA		NA		NA		NA		NA		NA		**5.2**		**4.3**		NA	
85	79																									

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
1																								
2		Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2		
3		X		RW2		W		RW2		W		RW2		W		RW2		W		RW2		W		RW2
4		DE87O		DM30I		DM30H		DW29E		DW29C		ED30D		ED30A		EN00D		EN00A		ER93G		ER93I		EZ17D
5		6/6/01		8/13/01		8/13/01		11/27/01		11/27/01		2/27/02		2/27/02		6/27/02		6/27/02		08/27/02		08/27/02		11/13/02
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.008**
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		**0.001**		0.02
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	Zinc (6010)	**0.189**	J	**0.020**	J	**0.028**	J	**0.010**		**0.013**		**0.043**	J	**0.016**	J	**0.015**	J	**0.037**	J	**0.034**	J	**0.02**	J	**0.022**
70																								
71	**MAJOR IONS AND CONVENTIONALS**																							
72	Calcium (mg/L) (6010)	**40.7**		**39.0**		**41.0**		**39.4**		**41.6**		**38.9**		**37.5**		**42.3**		**43.3**		NA		NA		NA
73	Magnesium (mg/L) (6010)	**19.1**		**17.1**		**17.8**		**16.4**		**17.5**		**16.2**		**15.3**		**17.0**		**17.5**		NA		NA		NA
74	Potassium (mg/L) (6010)	**3.0**		**2.8**		**2.8**		**2.4**		**2.4**		**2.5**		**2.2**		**2.3**		**2.3**		NA		NA		NA
75	Sodium (mg/L) (6010)	**13.6**		**12.3**		**12.9**		**11.7**		**12.4**		**11.2**		**10.9**		**12.0**		**12.3**		NA		NA		NA
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		**220**		**200**		NA		NA		NA		NA		NA
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		1.0	U	1.0	U	NA		NA		NA		NA		NA
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		**220**		**200**		NA		NA		NA		NA		NA
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**290**	J	**270**	J	**290**	J	**260**		**280**		**270**		**290**		**250**		**270**		**270**		**270**		**270**
80	Chloride (mg/L) (EPA 325.2)	**7.4**		**8.9**		**8.2**		**5.5**		**5.7**		**24**	J	**4.1**	J	**6.1**		**5.8**		**4.6**		**5.1**		**4.8**
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		**0.019**		0.010	U	NA		NA		NA		NA		NA
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		**0.014**	J	**0.038**	J	NA		NA		NA		NA		NA
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		**0.033**		**0.028**		NA		NA		NA		NA		NA
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		**6.3**	J	**9.8**	J	NA		NA		NA		NA		NA
85																								

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL
2			Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2	
3			W		RW2		W		RW2		W		RW2		W	
4			EZ17B		FF65I		FF65K		FL41O		FL41Q		FU31F		FU31E	
5			11/13/02		2/11/03		2/11/03		5/7/03		5/7/03		8/27/03		8/27/03	
66	Copper (6010)	J	0.002	UJ	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	Lead (7421)	U	0.02	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001	U
68	Nickel (6010)	U	0.01	U	**0.01**		0.01	U	**0.01**		0.01	U	0.01	U	0.01	U
69	Zinc (6010)		**0.017**		**0.013**	J	**0.016**	J	**0.067**		**0.064**		**0.013**		**0.014**	
70																
71	**MAJOR IONS AND CONVENTIONALS**															
72	Calcium (mg/L) (6010)		NA		**41.8**		**41.3**		NA		NA		NA		NA	
73	Magnesium (mg/L) (6010)		NA		**16.4**		**16.2**		NA		NA		NA		NA	
74	Potassium (mg/L) (6010)		NA		**2.5**		**2.6**		NA		NA		NA		NA	
75	Sodium (mg/L) (6010)		NA		**11.7**		**11.7**		NA		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		**240**		**240**		NA		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		1	U	1	U	NA		NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		**240**		**240**		NA		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**270**		**260**		**260**		**270**		**270**		**290**		**280**	
80	Chloride (mg/L) (EPA 325.2)		**4.6**		**4.4**		**4.4**		**4.4**		**4.4**		**4.3**		**4.2**	
81	N-Nitrate (mg-N/L) (Calculated)		NA		0.01	U	**0.015**		NA		NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		**0.041**		**0.043**		NA		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		**0.037**	J	**0.058**	J	NA		NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		**3**		2.5	U	NA		NA		NA		NA	
85																

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2															Dup of RW2				Dup of RW2				Dup of RW2			
3			RW2		RW2		RW2		RW2		RW2		RW2		X		RW2		X		RW2		X		RW2	
4			AH76G		AU45N		BC30E		BH96F		BR64P		CD97A		CD97B		CL03N		CL03M		CT37L		CT37M		DE87P	
5			5/20/99		9/23/99		12/7/99		2/17/00		5/25/00		9/13/00		9/13/00		11/9/00		11/9/00		2/13/01		2/13/01		6/6/01	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.63		6.65		6.58		6.67		6.56		6.19		6.19		5.55		5.54		6.33		6.33		6.66	
88	82	Temperature (° C) (avg)	14.2		14.7		13.1		14.4		15.0		15.6		15.6		12.7		12.7		12.6		12.7		13.6	
89	83	Conductivity (um/hos)	294		292		260		278		365		463		463		513		513		475		479		573	
90	84	Dissolved oxygen (mg/L) (avg)	1.61		1.37		2.46		0.68		0.74		11.94		11.94		0.53		0.55		0.90		0.95		0.83	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120																										
121																										

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
1																								
2		Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2		
3		X		RW2		W		RW2		W		RW2		W		RW2		W		RW2		W		RW2
4		DE87O		DM30I		DM30H		DW29E		DW29C		ED30D		ED30A		EN00D		EN00A		ER93G		ER93I		EZ17D
5		6/6/01		8/13/01		8/13/01		11/27/01		11/27/01		2/27/02		2/27/02		6/27/02		6/27/02		08/27/02		08/27/02		11/13/02
86	**FIELD PARAMETERS**																							
87	pH (avg)	6.65		6.70		6.68		6.50		6.5		6.27		6.27		6.47		6.47		6.52		6.56		6.19
88	Temperature (° C) (avg)	13.6		15.7		15.6		13.1		13.1		13.5		13.5		14.5		14.5		13.9		13.9		13.6
89	Conductivity (um/hos)	573		455		454		458		458		422		422		450		448		408		409		461
90	Dissolved oxygen (mg/L) (avg)	0.82		0.52		0.37		3.34		3.22		7.06		7.05		4.87		4.72		0.60		0.31		0.55
91																								
92	**DIOXINS AND FURANS (ng/L)**																							
93	**Method 8290**																							
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																								
120																								
121																								

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL
2			Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2	
3			W		RW2		W		RW2		W		RW2		W	
4			EZ17B		FF65I		FF65K		FL41O		FL41Q		FU31F		FU31E	
5			11/13/02		2/11/03		2/11/03		5/7/03		5/7/03		8/27/03		8/27/03	
86	**FIELD PARAMETERS**															
87	pH (avg)		6.17		6.84		6.84		6.87		6.86		6.69		6.71	
88	Temperature (° C) (avg)		13.6		13.9		13.9		13.6		13.5		15.5		15.7	
89	Conductivity (um/hos)		461		542		542		392		390		414		411	
90	Dissolved oxygen (mg/L) (avg)		0.34		2.24		2.24		3215		3318		0.98		0.82	
91																
92	**DIOXINS AND FURANS (ng/L)**															
93	**Method 8290**															
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA	
119																
120													NA		NA	
121																

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2															Dup of RW2				Dup of RW2				Dup of RW2			
3			RW2		RW2		RW2		RW2		RW2		RW2		X		RW2		X		RW2		X		RW2	
4			AH76G		AU45N		BC30E		BH96F		BR64P		CD97A		CD97B		CL03N		CL03M		CT37L		CT37M		DE87P	
5			5/20/99		9/23/99		12/7/99		2/17/00		5/25/00		9/13/00		9/13/00		11/9/00		11/9/00		2/13/01		2/13/01		6/6/01	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
131																										

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW
1																								
2		Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2		
3		X		RW2		W		RW2		W		RW2		W		RW2		W		RW2		W		RW2
4		DE87O		DM30I		DM30H		DW29E		DW29C		ED30D		ED30A		EN00D		EN00A		ER93G		ER93I		EZ17D
5		6/6/01		8/13/01		8/13/01		11/27/01		11/27/01		2/27/02		2/27/02		6/27/02		6/27/02		08/27/02		08/27/02		11/13/02
122	**PAHs (µg/L)**																							
123	**EPA Method SW8270 SIM**																							
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
131																				NA		NA		

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL
1																
2			Dup of RW2				Dup of RW2				Dup of RW2				Dup of RW2	
3			W		RW2		W		RW2		W		RW2		W	
4			EZ17B		FF65I		FF65K		FL41O		FL41Q		FU31F		FU31E	
5			11/13/02		2/11/03		2/11/03		5/7/03		5/7/03		8/27/03		8/27/03	
122	**PAHs (µg/L)**															
123	**EPA Method SW8270 SIM**															
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA	
131																

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3			J3		J3		J3		J3		J3		J3		J3	
4			S177K		T176R		U235L		V224Q		W371M		Y314K		Z225Q	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98	
7	1	**CHLORINATED PHENOLS (µg/L)**														
8	2	**EPA Method SW8040**														
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	**0.36**		0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U
16	10															
17	11	**SEMIVOLATILES (µg/L)**														
18	12	**EPA Method SW8270**														
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27															
34	28	**VOLATILES (µg/L)**														
35	29	**EPA Method SW8260**														
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	**110**		1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**														
57	51	**Method OR-DEQ**														
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA	
61	55															
62	56	**PRIORITY POLLUTANT**														
63	57	**METALS (mg/L)**														
64	58	Arsenic (7060)	**0.010**		**0.012**		0.05	U	0.05	U	**0.011**		**0.014**		**0.017**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	**0.014**		**0.018**		**0.012**	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3			J3		J3		J3		J3		J3		J3		J3	
4			S177K		T176R		U235L		V224Q		W371M		Y314K		Z225Q	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98	
66	60	Copper (6010)	0.002	U	**0.005**		0.002	U	**0.005**		**0.017**		**0.020**		**0.013**	
67	61	Lead (7421)	0.001	U	**0.002**		0.02	U	0.02	U	**0.006**		**0.007**		**0.003**	
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		**0.01**		**0.01**	
69	63	Zinc (6010)	0.004	U	**0.013**		**0.018**		**0.010**		**0.034**	J2	**0.048**		**0.036**	
70	64															
71	65	**MAJOR IONS AND CONVENTIONALS**														
72	66	Calcium (mg/L) (6010)	**94.6**		**101**		**103**		**90.2**		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**51.7**		**56.1**		**56.1**		**50.6**		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**1.8**		**1.9**		**2.0**		**1.6**		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**22.5**		**23.5**		**23.8**		**22.1**		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**470**		**460**	J2	**510**		**470**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**470**		**460**	J2	**510**		**470**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**580**	J2	**480**		**510**		**480**		**540**		**470**	
80	74	Chloride (mg/L) (EPA 325.2)	**9.9**		**9.3**		**11**		**12**		**12**		**13**		**12**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	**0.013**		**0.016**	J2	NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.012**	J	**0.012**	J2	0.010	U	0.010	UJ	NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.014**		0.010	U	**0.013**		**0.016**	J2	NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**2.8**	J	2.5	U	2.5	U	2.5	U	NA		NA		NA	
85	79															

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3			J3		J3		J3		J3		J3		J3		J3	
4			S177K		T176R		U235L		V224Q		W371M		Y314K		Z225Q	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98	
6																
86	80	**FIELD PARAMETERS**														
87	81	pH (avg)	6.78		6.80		6.85		6.70		6.53		6.46		6.43	
88	82	Temperature (° C) (avg)	13.9		16.3		13.7		13.4		13.4		14.9		11.9	
89	83	Conductivity (um/hos)	859		765		673		771		788		916		422	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		0.74		3.45		2.45	
91	85															
92	86	**DIOXINS AND FURANS (ng/L)**														
93	87	**Method 8290**														
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA	
119																
120																
121																

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1																
2																
3			J3		J3		J3		J3		J3		J3		J3	
4			S177K		T176R		U235L		V224Q		W371M		Y314K		Z225Q	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98	
122		**PAHs (µg/L)**														
123		**EPA Method SW8270 SIM**														
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2					Dup of LW-12D1								Dup of LW12D1													
3			LW12D1		LW120D1		LW12D1		LW12D1		LW12D1		Y		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1	
4			AH76C		AH76A		AU45L		BC27S		BH96M		BH96O		BR55B		CB85I		CL03K		CT67E		DE87M		DM52H	
5			5/20/99		5/20/99		9/23/99		12/9/99		2/18/00		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	**28**		**32**		**1.4**		**200**		**0.28**		**0.23**	J1	0.25	UJ	0.25	U	0.25	U	**0.62**		0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	**1.1**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	1.2	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**1.2**		**1.4**		**0.13**	J1	**6.2**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	**1.0**		**1.0**		**0.36**		**8.0**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA	
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	**2.2**	J1	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	**1.7**	J1	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**110**	J2	**81**	J2	5.0	U	**380**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	**1.0**	J1	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**		1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	**7.6**		5.0	U	**12**	M	5.0	U	5.0	U	5.0	U	5.0	U	9.5	U	**8.4**		5.0	U	5.0	U	**5.7**	
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	**11**		**9.7**		**3.6**		**1.5**		1.0	U	1.0	U	**2.4**		**3.3**		**4.8**		**4.4**		**1.9**		**1.5**	
47	41	1,2,4-Trimethylbenzene	**46**		**46**		**15**		**4.8**		**5.1**		**4.9**		**15**		**17**		**22**		**23**		**13**		**7.5**	
48	42	Isopropylbenzene	**2.6**		**2.6**		**1.7**		**1.1**		1.0	U	1.0	U	1.0	U	**1.3**		**1.4**		**1.6**		1.0	U
49	43	n-Propylbenzene	**3.9**		**3.8**		**2.4**		**1.3**		1.0	U	1.0	U	**1.5**		**1.5**		**2.2**		**2.5**		**2.0**		1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	**1.7**		**1.7**		**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		**1.6**		**1.9**		**1.3**		1.0	U
52	46	4-Isopropyltoluene	**2.0**		**2.0**		**1.3**		1.0	U	1.0	U	1.0	U	1.0	U	**1.1**		**1.6**		**1.9**		1.0	U	1.0	U
53	47	n-Butylbenzene	**1.7**		**1.7**	M	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.4	U	**1.7**	M	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**0.96**		**0.86**		**0.98**		**0.88**		**0.66**		**0.66**		**0.82**		**0.64**		**0.78**		**0.83**		**0.77**		**0.81**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		0.50	U	NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.017**		**0.017**		**0.039**		**0.034**		**0.020**		**0.020**		**0.030**		**0.033**		**0.019**		**0.022**		**0.020**		**0.017**	
65	59	Chromium (6010)	**0.007**		**0.007**		**0.035**		**0.091**		**0.017**		**0.019**		0.005	U	**0.006**		**0.010**		**0.008**		**0.012**		**0.032**	

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF
1							
2							
3		LW12D1		LW12D1		LW12D1	
4		DW48J		ED34H		EN00K	
5		11/29/01		2/28/02		6/27/02	
6							
7	**CHLORINATED PHENOLS (µg/L)**						
8	**EPA Method SW8040**						
9	Pentachlorophenol	0.25	U	0.25	U	**1.6**	
10	2,4,6-Trichlorophenol	NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA	
16							
17	**SEMIVOLATILES (µg/L)**						
18	**EPA Method SW8270**						
19	Phenol	2.0	U	2.0	U	2.0	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U
21	Isophorone	1.0	U	1.0	U	1.0	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U
23	Benzoic Acid	30	U	50	U	50	U
24	Naphthalene	1.0	U	1.0	U	1.0	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U
30	Fluorene	1.0	U	1.0	U	1.0	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	4.0	U	4.0	U
33							
34	**VOLATILES (µg/L)**						
35	**EPA Method SW8260**						
36	Acetone	5.0	U	5.0	U	5.0	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U
38	2-Butanone	**5.6**		**8.6**		5.0	U
39	Benzene	1.0	U	1.0	U	1.0	U
40	Bromoform	1.0	U	1.0	U	1.0	U
41	Toluene	1.0	U	1.0	U	1.0	U
42	Ethylbenzene	1.0	U	1.0	U	1.0	U
43	Styrene	1.0	U	1.0	U	1.0	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U
45	o-Xylene	1.0	U	1.0	U	1.0	U
46	1,3,5-Trimethylbenzene	**3.4**		**1.5**		1.0	U
47	1,2,4-Trimethylbenzene	**21**		**8.5**		**4.7**	
48	Isopropylbenzene	**1.6**		1.0	U	1.0	U
49	n-Propylbenzene	**2.8**		**1.1**		**1.3**	
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U
51	sec-Butylbenzene	**2.8**		1.0	U	**1.1**	
52	4-Isopropyltoluene	**2.2**		1.0	U	1.0	U
53	n-Butylbenzene	2.0	U	1.0	U	1.0	U
54	Naphthalene	5.0	U	5.0	U	5.0	U
55							
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**						
57	**Method OR-DEQ**						
58	**TPH-Diesel**	**0.97**		**1.2**		**1.0**	
59	**TPH-D Motor Oil**	NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA	
61							
62	**PRIORITY POLLUTANT**						
63	**METALS (mg/L)**						
64	Arsenic (7060)	**0.014**		**0.016**		**0.028**	
65	Chromium (6010)	**0.009**		**0.015**		**0.006**	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2					Dup of LW-12D1								Dup of LW12D1													
3			LW12D1		LW120D1		LW12D1		LW12D1		LW12D1		Y		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1	
4			AH76C		AH76A		AU45L		BC27S		BH96M		BH96O		BR55B		CB85I		CL03K		CT67E		DE87M		DM52H	
5			5/20/99		5/20/99		9/23/99		12/9/99		2/18/00		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01	
66	60	Copper (6010)	**0.008**		**0.008**		**0.036**		**0.122**		**0.022**		**0.024**		**0.007**		**0.007**		**0.016**		**0.012**		**0.015**		**0.038**	
67	61	Lead (7421)	**0.002**		**0.002**		**0.011**		**0.030**		**0.005**		**0.005**		**0.003**		**0.002**		**0.006**		**0.003**		**0.013**		**0.012**	
68	62	Nickel (6010)	0.01	U	0.01	U	0.03	U	**0.07**		**0.02**		**0.02**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.03**	
69	63	Zinc (6010)	**0.026**		**0.030**		**0.079**		**0.212**		**0.047**		**0.053**		**0.016**		**0.024**		**0.037**		**0.033**		**0.029**		**0.074**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**54.8**		**60.5**		**53.1**	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**26.2**		**29.5**		**29.0**	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**0.9**		**1.8**		**1.9**	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**10.9**		**12.3**		**11.5**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**320**		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**320**		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**360**		**360**		**360**		**350**		**350**		**350**		**320**		**320**		**330**		**320**		**340**	J	**320**	
80	74	Chloride (mg/L) (EPA 325.2)	**3.8**		**3.8**		**3.3**		**4.5**		**3.8**		**4.2**		**4.1**		**6.8**		**3.3**		**4.2**	J	**3.7**		**7.8**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		**5.8**		NA		NA	
85	79																									

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF
1							
2							
3		LW12D1		LW12D1		LW12D1	
4		DW48J		ED34H		EN00K	
5		11/29/01		2/28/02		6/27/02	
66	Copper (6010)	0.012	U	**0.020**		**0.007**	
67	Lead (7421)	**0.005**		**0.006**		**0.002**	
68	Nickel (6010)	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	**0.021**		**0.032**		**0.022**	
70							
71	**MAJOR IONS AND CONVENTIONALS**						
72	Calcium (mg/L) (6010)	**58.4**		**55.1**		**59.3**	
73	Magnesium (mg/L) (6010)	**29.4**		**25.4**		**28.1**	
74	Potassium (mg/L) (6010)	**1.5**		**1.5**		**1.0**	
75	Sodium (mg/L) (6010)	**12.2**		**12.5**		**12.4**	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		**260**		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		1.0	U	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		**260**		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**350**		**330**		**300**	
80	Chloride (mg/L) (EPA 325.2)	**3.7**		**5.2**		**3.8**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		**0.027**		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		0.010	U	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		**0.027**		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		**5.1**		NA	
85							

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2					Dup of LW-12D1								Dup of LW12D1													
3			LW12D1		LW120D1		LW12D1		LW12D1		LW12D1		Y		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1	
4			AH76C		AH76A		AU45L		BC27S		BH96M		BH96O		BR55B		CB85I		CL03K		CT67E		DE87M		DM52H	
5			5/20/99		5/20/99		9/23/99		12/9/99		2/18/00		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.96		6.96		7.13		6.96		6.95		6.85		6.95		6.85		5.68		6.82		7.15		7.20	
88	82	Temperature (° C) (avg)	13.2		13.0		14.7		11.9		11.7		11.7		15.0		13.0		12.2		13.1		14.0		14.4	
89	83	Conductivity (um/hos)	486		502		504		346		526		524		495		485		444		454		481		469	
90	84	Dissolved oxygen (mg/L) (avg)	1.86		1.67		1.01		2.36		1.79		1.43		1.26		1.74		0.93		0.13		2.10		1.96	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120																										
121																										

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF
1							
2							
3		LW12D1		LW12D1		LW12D1	
4		DW48J		ED34H		EN00K	
5		11/29/01		2/28/02		6/27/02	
86	**FIELD PARAMETERS**						
87	pH (avg)	6.92		6.80		7.07	
88	Temperature (° C) (avg)	13.3		13.8		14.3	
89	Conductivity (um/hos)	434		431		410	
90	Dissolved oxygen (mg/L) (avg)	4.12		7.61		4.73	
91							
92	**DIOXINS AND FURANS (ng/L)**						
93	**Method 8290**						
94	2,3,7,8-TCDF	NA		NA		NA	
95	Total TCDF	NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA	
97	Total TCDD	NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA	
100	Total PeCDF	NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA	
102	Total PeCDD	NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA	
107	Total HxCDF	NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA	
111	Total HxCDD	NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA	
114	Total HpCDF	NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA	
116	Total HpCDD	NA		NA		NA	
117	OCDF	NA		NA		NA	
118	OCDD	NA		NA		NA	
119							
120							
121							

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2					Dup of LW-12D1								Dup of LW12D1													
3			LW12D1		LW120D1		LW12D1		LW12D1		LW12D1		Y		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1		LW12D1	
4			AH76C		AH76A		AU45L		BC27S		BH96M		BH96O		BR55B		CB85I		CL03K		CT67E		DE87M		DM52H	
5			5/20/99		5/20/99		9/23/99		12/9/99		2/18/00		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF
1							
2							
3		LW12D1		LW12D1		LW12D1	
4		DW48J		ED34H		EN00K	
5		11/29/01		2/28/02		6/27/02	
122	**PAHs (µg/L)**						
123	**EPA Method SW8270 SIM**						
124	Naphthalene	NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA	
126	Acenaphthylene	NA		NA		NA	
127	Acenaphthene	NA		NA		NA	
128	Fluorene	NA		NA		NA	
129	Anthracene	NA		NA		NA	
130	Dibenzofuran	NA		NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
3			LW-12D2		LW-12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2
4			AH76B		AU45M		BC27T		BH96N		BR55A		CB85J		CL03L		CT67F		DE87R		DM52F		DW48I		ED34I		EN00L
5			5/20/99		9/23/99		12/9/99		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01		11/29/01		2/28/02		6/27/02
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	**0.91**		0.25	U	**3.7**		0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	U	**1.7**		0.25	U	0.25	U	NA		0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	**0.22**	J1	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	**0.50**		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	**2.8**	J1	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	**20**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	**5.4**
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
46	40	1,3,5-Trimethylbenzene	**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
47	41	1,2,4-Trimethylbenzene	**3.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	**0.32**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		0.25	U	NA
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		0.50	U	NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.020**		**0.021**		**0.003**		**0.019**		**0.024**		**0.022**		**0.020**		**0.022**		**0.022**		**0.024**		**0.024**		**0.020**		**0.018**
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
6		
7	**CHLORINATED PHENOLS (µg/L)**	
8	**EPA Method SW8040**	
9	Pentachlorophenol	U
10	2,4,6-Trichlorophenol	
11	2,3,6-Trichlorophenol	
12	2,4,5-Trichlorophenol	
13	2,3,4-Trichlorophenol	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	
15	2,3,4,5-Tetrachlorophenol	
16		
17	**SEMIVOLATILES (µg/L)**	
18	**EPA Method SW8270**	
19	Phenol	U
20	4-Methylphenol	U
21	Isophorone	U
22	2,4-Dimethylphenol	U
23	Benzoic Acid	U
24	Naphthalene	U
25	2-Methylnaphthalene	U
26	2,4,6-Trichlorophenol	U
27	2,4,5-Trichlorophenol	U
28	Acenaphthene	U
29	Dibenzofuran	U
30	Fluorene	U
31	Pentachlorophenol	U
32	bis(2-Ethylhexyl)phthalate	
33		
34	**VOLATILES (µg/L)**	
35	**EPA Method SW8260**	
36	Acetone	U
37	Carbon Disulfide	U
38	2-Butanone	U
39	Benzene	U
40	Bromoform	U
41	Toluene	U
42	Ethylbenzene	U
43	Styrene	U
44	m,p-Xylene	U
45	o-Xylene	U
46	1,3,5-Trimethylbenzene	U
47	1,2,4-Trimethylbenzene	U
48	Isopropylbenzene	U
49	n-Propylbenzene	U
50	tert-Butylbenzene	U
51	sec-Butylbenzene	U
52	4-Isopropyltoluene	U
53	n-Butylbenzene	U
54	Naphthalene	U
55		
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**	
57	**Method OR-DEQ**	
58	**TPH-Diesel**	
59	**TPH-D Motor Oil**	
60	**TPH-Gasoline**	
61		
62	**PRIORITY POLLUTANT**	
63	**METALS (mg/L)**	
64	Arsenic (7060)	
65	Chromium (6010)	U

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW-12D2		LW-12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2
4			AH76B		AU45M		BC27T		BH96N		BR55A		CB85J		CL03L		CT67F		DE87R		DM52F		DW48I		ED34I		EN00L
5			5/20/99		9/23/99		12/9/99		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01		11/29/01		2/28/02		6/27/02
66	60	Copper (6010)	0.002	U	0.002	U	**0.005**		0.002	U	0.002	U	0.002	U	**0.004**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002
67	61	Lead (7421)	0.001	U	0.001	U	**0.002**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	63	Zinc (6010)	**0.007**		0.004	U	**0.306**		**0.009**		0.006	U	0.006	U	0.006	U	**0.009**		0.006	U	0.006	U	0.006	U	0.006	U	0.006
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**36.1**		**38.3**		**29.4**		**31.9**		**39.1**		**52.5**
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**16.4**		**17.3**		**13.7**		**14.0**		**17.3**		**23.0**
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**2.4**		**2.4**		**2.4**		**2.2**		**2.8**		**3.1**
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**15.0**		**17.6**		**13.5**		**14.0**		**16.8**		**21.7**
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**220**		NA		NA		NA		**230**		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**220**		NA		NA		NA		**230**		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**340**		**270**		**160**		**290**		**320**		**280**		**280**		**240**		**280**	J	**210**		**210**		**330**		**330**
80	74	Chloride (mg/L) (EPA 325.2)	**3.9**		**2.7**		**4.7**		**3.9**		**3.7**		**8.2**		**3.3**		**5.6**	J	**3.2**		**7.9**		**3.1**		**24**		**4.1**
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		**0.029**	J	NA		NA		NA		**0.042**		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		**0.031**		NA		NA		NA		**0.048**		NA
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**7.3**		NA		NA		NA		**6.5**		NA
85	79																										

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TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
66	Copper (6010)	U
67	Lead (7421)	U
68	Nickel (6010)	U
69	Zinc (6010)	U
70		
71	**MAJOR IONS AND CONVENTIONALS**	
72	Calcium (mg/L) (6010)	
73	Magnesium (mg/L) (6010)	
74	Potassium (mg/L) (6010)	
75	Sodium (mg/L) (6010)	
76	Alkalinity (mg/L CaCO3) (SM 2320)	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	
80	Chloride (mg/L) (EPA 325.2)	
81	N-Nitrate (mg-N/L) (Calculated)	
82	N-Nitrite (mg-N/L) (EPA 354.1)	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	
84	Sulfate (mg/L) (EPA 375.2)	
85		

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW-12D2		LW-12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2
4			AH76B		AU45M		BC27T		BH96N		BR55A		CB85J		CL03L		CT67F		DE87R		DM52F		DW48I		ED34I		EN00L
5			5/20/99		9/23/99		12/9/99		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01		11/29/01		2/28/02		6/27/02
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.69		6.81		6.88		6.75		6.61		6.64		5.48		6.56		6.89		6.96		6.68		6.50		6.66
88	82	Temperature (° C) (avg)	13.8		14.2		11.9		13.0		13.9		13.7		13.3		13.3		13.9		14.0		13.1		13.1		14.2
89	83	Conductivity (um/hos)	514		391		250		475		468		443		442		429		473		356		375		439		528
90	84	Dissolved oxygen (mg/L) (avg)	2.40		0.42		2.80		1.42		0		0.52		0.29		0.00		0.50		0.34		3.45		7.16		4.25
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120																											
121																											

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
86	**FIELD PARAMETERS**	
87	pH (avg)	
88	Temperature (° C) (avg)	
89	Conductivity (um/hos)	
90	Dissolved oxygen (mg/L) (avg)	
91		
92	**DIOXINS AND FURANS (ng/L)**	
93	**Method 8290**	
94	2,3,7,8-TCDF	
95	Total TCDF	
96	2,3,7,8-TCDD	
97	Total TCDD	
98	1,2,3,7,8-PeCDF	
99	2,3,4,7,8-PeCDF	
100	Total PeCDF	
101	1,2,3,7,8-PeCDD	
102	Total PeCDD	
103	1,2,3,4,7,8-HxCDF	
104	1,2,3,6,7,8-HxCDF	
105	2,3,4,6,7,8-HxCDF	
106	1,2,3,7,8,9-HxCDF	
107	Total HxCDF	
108	1,2,3,4,7,8-HxCDD	
109	1,2,3,6,7,8-HxCDD	
110	1,2,3,7,8,9-HxCDD	
111	Total HxCDD	
112	1,2,3,4,6,7,8-HpCDF	
113	1,2,3,4,7,8,9-HpCDF	
114	Total HpCDF	
115	1,2,3,4,6,7,8-HpCDD	
116	Total HpCDD	
117	OCDF	
118	OCDD	
119		
120		
121		

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			LW-12D2		LW-12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2		LW12D2
4			AH76B		AU45M		BC27T		BH96N		BR55A		CB85J		CL03L		CT67F		DE87R		DM52F		DW48I		ED34I		EN00L
5			5/20/99		9/23/99		12/9/99		2/18/00		5/22/00		8/31/00		11/10/00		2/15/01		6/6/01		8/15/01		11/29/01		2/28/02		6/27/02
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
122	**PAHs (µg/L)**	
123	**EPA Method SW8270 SIM**	
124	Naphthalene	
125	2-Methylnaphthalene	
126	Acenaphthylene	
127	Acenaphthene	
128	Fluorene	
129	Anthracene	
130	Dibenzofuran	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			LW15D		LW15D	
4			BR64T		CL03T	
5			5/25/00		11/9/00	
6						
7	1	**CHLORINATED PHENOLS (µg/L)**				
8	2	**EPA Method SW8040**				
9	3	Pentachlorophenol	**0.33**		0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U
16	10					
17	11	**SEMIVOLATILES (µg/L)**				
18	12	**EPA Method SW8270**				
19	13	Phenol	NA		NA	
20	14	4-Methylphenol	NA		NA	
21	15	Isophorone	NA		NA	
22	16	2,4-Dimethylphenol	NA		NA	
23	17	Benzoic Acid	NA		NA	
24	18	Naphthalene	NA		NA	
25	19	2-Methylnaphthalene	NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA	
28	22	Acenaphthene	NA		NA	
29	23	Dibenzofuran	NA		NA	
30	24	Fluorene	NA		NA	
31	25	Pentachlorophenol	NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA	
33	27					
34	28	**VOLATILES (µg/L)**				
35	29	**EPA Method SW8260**				
36	30	Acetone	NA		NA	
37	31	Carbon Disulfide	NA		NA	
38	32	2-Butanone	NA		NA	
39	33	Benzene	NA		NA	
40	34	Bromoform	NA		NA	
41	35	Toluene	NA		NA	
42	36	Ethylbenzene	NA		NA	
43	37	Styrene	NA		NA	
44	38	m,p-Xylene	NA		NA	
45	39	o-Xylene	NA		NA	
46	40	1,3,5-Trimethylbenzene	NA		NA	
47	41	1,2,4-Trimethylbenzene	NA		NA	
48	42	Isopropylbenzene	NA		NA	
49	43	n-Propylbenzene	NA		NA	
50	44	tert-Butylbenzene	NA		NA	
51	45	sec-Butylbenzene	NA		NA	
52	46	4-Isopropyltoluene	NA		NA	
53	47	n-Butylbenzene	NA		NA	
54	48	Naphthalene	NA		NA	
55	49					
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**				
57	51	**Method OR-DEQ**				
58	52	**TPH-Diesel**	NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA	
60	54	**TPH-Gasoline**	NA		NA	
61	55					
62	56	**PRIORITY POLLUTANT**				
63	57	**METALS (mg/L)**				
64	58	Arsenic (7060)	NA		NA	
65	59	Chromium (6010)	NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			LW15D		LW15D	
4			BR64T		CL03T	
5			5/25/00		11/9/00	
66	60	Copper (6010)	NA		NA	
67	61	Lead (7421)	NA		NA	
68	62	Nickel (6010)	NA		NA	
69	63	Zinc (6010)	NA		NA	
70	64					
71	65	**MAJOR IONS AND CONVENTIONALS**				
72	66	Calcium (mg/L) (6010)	NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA	
85	79					

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			LW15D		LW15D	
4			BR64T		CL03T	
5			5/25/00		11/9/00	
86	80	**FIELD PARAMETERS**				
87	81	pH (avg)	6.69		6.12	
88	82	Temperature (° C) (avg)	14.6		12.8	
89	83	Conductivity (um/hos)	324		265	
90	84	Dissolved oxygen (mg/L) (avg)	0.67		1.25	
91	85					
92	86	**DIOXINS AND FURANS (ng/L)**				
93	87	**Method 8290**				
94	88	2,3,7,8-TCDF	NA		NA	
95	89	Total TCDF	NA		NA	
96	90	2,3,7,8-TCDD	NA		NA	
97	91	Total TCDD	NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA	
100	94	Total PeCDF	NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA	
102	96	Total PeCDD	NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA	
107	101	Total HxCDF	NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA	
111	105	Total HxCDD	NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA	
114	108	Total HpCDF	NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA	
116	110	Total HpCDD	NA		NA	
117	111	OCDF	NA		NA	
118	112	OCDD	NA		NA	
119						
120						
121						

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			LW15D		LW15D	
4			BR64T		CL03T	
5			5/25/00		11/9/00	
122		**PAHs (µg/L)**				
123		**EPA Method SW8270 SIM**				
124		Naphthalene	NA		NA	
125		2-Methylnaphthalene	NA		NA	
126		Acenaphthylene	NA		NA	
127		Acenaphthene	NA		NA	
128		Fluorene	NA		NA	
129		Anthracene	NA		NA	
130		Dibenzofuran	NA		NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			LW16D	
4			BR64U	
5			5/25/00	
6				
7	1	**CHLORINATED PHENOLS (µg/L)**		
8	2	**EPA Method SW8040**		
9	3	Pentachlorophenol	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U
16	10			
17	11	**SEMIVOLATILES (µg/L)**		
18	12	**EPA Method SW8270**		
19	13	Phenol	NA	
20	14	4-Methylphenol	NA	
21	15	Isophorone	NA	
22	16	2,4-Dimethylphenol	NA	
23	17	Benzoic Acid	NA	
24	18	Naphthalene	NA	
25	19	2-Methylnaphthalene	NA	
26	20	2,4,6-Trichlorophenol	NA	
27	21	2,4,5-Trichlorophenol	NA	
28	22	Acenaphthene	NA	
29	23	Dibenzofuran	NA	
30	24	Fluorene	NA	
31	25	Pentachlorophenol	NA	
32	26	bis(2-Ethylhexyl)phthalate	NA	
33	27			
34	28	**VOLATILES (µg/L)**		
35	29	**EPA Method SW8260**		
36	30	Acetone	NA	
37	31	Carbon Disulfide	NA	
38	32	2-Butanone	NA	
39	33	Benzene	NA	
40	34	Bromoform	NA	
41	35	Toluene	NA	
42	36	Ethylbenzene	NA	
43	37	Styrene	NA	
44	38	m,p-Xylene	NA	
45	39	o-Xylene	NA	
46	40	1,3,5-Trimethylbenzene	NA	
47	41	1,2,4-Trimethylbenzene	NA	
48	42	Isopropylbenzene	NA	
49	43	n-Propylbenzene	NA	
50	44	tert-Butylbenzene	NA	
51	45	sec-Butylbenzene	NA	
52	46	4-Isopropyltoluene	NA	
53	47	n-Butylbenzene	NA	
54	48	Naphthalene	NA	
55	49			
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	51	**Method OR-DEQ**		
58	52	**TPH-Diesel**	NA	
59	53	**TPH-D Motor Oil**	NA	
60	54	**TPH-Gasoline**	NA	
61	55			
62	56	**PRIORITY POLLUTANT**		
63	57	**METALS (mg/L)**		
64	58	Arsenic (7060)	NA	
65	59	Chromium (6010)	NA	

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			LW16D	
4			BR64U	
5			5/25/00	
66	60	Copper (6010)	NA	
67	61	Lead (7421)	NA	
68	62	Nickel (6010)	NA	
69	63	Zinc (6010)	NA	
70	64			
71	65	**MAJOR IONS AND CONVENTIONALS**		
72	66	Calcium (mg/L) (6010)	NA	
73	67	Magnesium (mg/L) (6010)	NA	
74	68	Potassium (mg/L) (6010)	NA	
75	69	Sodium (mg/L) (6010)	NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA	
85	79			

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			LW16D	
4			BR64U	
5			5/25/00	
86	80	**FIELD PARAMETERS**		
87	81	pH (avg)	6.74	
88	82	Temperature (° C) (avg)	14.3	
89	83	Conductivity (um/hos)	314	
90	84	Dissolved oxygen (mg/L) (avg)	0.71	
91	85			
92	86	**DIOXINS AND FURANS (ng/L)**		
93	87	**Method 8290**		
94	88	2,3,7,8-TCDF	NA	
95	89	Total TCDF	NA	
96	90	2,3,7,8-TCDD	NA	
97	91	Total TCDD	NA	
98	92	1,2,3,7,8-PeCDF	NA	
99	93	2,3,4,7,8-PeCDF	NA	
100	94	Total PeCDF	NA	
101	95	1,2,3,7,8-PeCDD	NA	
102	96	Total PeCDD	NA	
103	97	1,2,3,4,7,8-HxCDF	NA	
104	98	1,2,3,6,7,8-HxCDF	NA	
105	99	2,3,4,6,7,8-HxCDF	NA	
106	100	1,2,3,7,8,9-HxCDF	NA	
107	101	Total HxCDF	NA	
108	102	1,2,3,4,7,8-HxCDD	NA	
109	103	1,2,3,6,7,8-HxCDD	NA	
110	104	1,2,3,7,8,9-HxCDD	NA	
111	105	Total HxCDD	NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA	
114	108	Total HpCDF	NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA	
116	110	Total HpCDD	NA	
117	111	OCDF	NA	
118	112	OCDD	NA	
119				
120				
121				

TABLE F-11
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			LW16D	
4			BR64U	
5			5/25/00	
122		**PAHs (µg/L)**		
123		**EPA Method SW8270 SIM**		
124		Naphthalene	NA	
125		2-Methylnaphthalene	NA	
126		Acenaphthylene	NA	
127		Acenaphthene	NA	
128		Fluorene	NA	
129		Anthracene	NA	
130		Dibenzofuran	NA	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3				B1		B2		D		G1A		J1		J2		K		LW1D		LW1S		LW3D		LW4D	
4				FU50E		FU50D		FU45C		FU50F		FU31A		FU31B		FU45B		FU31D		FU31C		FU50A		FU45N	
5				8/29/03		8/29/03		8/28/03		8/29/03		8/27/03		8/27/03		8/28/03		8/27/03		8/27/03		8/29/03		8/28/03	
6																									
7		**CHLORINATED PHENOLS (µg/L)**																							
8		**EPA Method SW8040**																							
9	Pentachlorophenol	Pentachlorophenol	3	0.5	U	0.5	U	**0.86**	J	0.51	U	**1.3**		0.5	U	NA		0.6	U	0.54	U	0.55	U	**1**	J
10		2,4,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11		2,3,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12		2,4,5-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13		2,3,4-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14		2,3,5,6- and 2,3,4,6-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15		2,3,4,5-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																									
17		**SEMIVOLATILES (µg/L)**																							
18		**EPA Method SW8270**																							
19	Phenol	Phenol	13	2	U	2	U	2	U	2	U	2	U	2	U	NA		2.4	U	2.2	U	2.2	U	2	U
20	4-Methylphenol	4-Methylphenol	14	1	U	1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
21	Isophorone	Isophorone	15	1	U	1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
22	2,4-Dimethylphenol	2,4-Dimethylphenol	16	3	U	3	U	3	U	3	U	3	U	3	U	NA		3.6	U	3.3	U	3.3	U	3.1	U
23	Benzoic Acid	Benzoic Acid	17	50	U	50	U	50	U	51	U	50	U	50	U	NA		60	U	54	U	55	U	51	U
24	Naphthalene	Naphthalene	18	**2.7**		1	U	1	U	1	U	**1.5**		1	U	NA		1.2	U	1.1	U	1.1	U	1	U
25	2-Methylnaphthalene	2-Methylnaphthalene	19	**1.4**		1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
26	2,4,6-Trichlorophenol	2,4,6-Trichlorophenol	20	5	U	5	U	5	U	5.1	U	5	U	5	U	NA		6	U	5.4	U	5.5	U	5.1	U
27	2,4,5-Trichlorophenol	2,4,5-Trichlorophenol	21	5	U	5	U	5	U	5.1	U	5	U	5	U	NA		6	U	5.4	U	5.5	U	5.1	U
28	Acenaphthene	Acenaphthene	22	1	U	1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
29	Dibenzofuran	Dibenzofuran	23	1	U	1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
30	Fluorene	Fluorene	24	1	U	1	U	1	U	1	U	1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
31	Pentachlorophenol	Pentachlorophenol	25	5	U	5	U	5	U	5.1	U	5	U	5	U	NA		6	U	5.4	U	5.5	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	bis(2-Ethylhexyl)phthalate	26	1	U	**6.1**		1	U	**2.8**		1	U	1	U	NA		1.2	U	1.1	U	1.1	U	1	U
33																									
34		**VOLATILES (µg/L)**																							
35		**EPA Method SW8260**																							
36	Acetone	Acetone	30	**28**		5	U	5	U	**9.3**	M	5	U	5	U	NA		5	U	5	U	**17**		**12**	J
37	Carbon Disulfide	Carbon Disulfide	31	1	U	1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
38	2-Butanone	2-Butanone	32	5	U	5	U	5	U	**10**	M	5	U	5	U	NA		5	U	5	U	5	U	**13**	M
39	Benzene	Benzene	33	**20**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
40	Bromoform	Bromoform	34	1	U	1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
41	Toluene	Toluene	35	**22**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
42	Ethylbenzene	Ethylbenzene	36	**80**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
43	Styrene	Styrene	37	1	U	1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
44	m,p-Xylene	m,p-Xylene	38	**99**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
45	o-Xylene	o-Xylene	39	**35**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1,3,5-Trimethylbenzene	40	**9.3**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1,2,4-Trimethylbenzene	41	**28**		1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
48	Isopropylbenzene	Isopropylbenzene	42	**5.2**		1	U	**3.4**		**180**		**14**		1	U	NA		1	U	1	U	1	U	**2.6**	
49	n-Propylbenzene	n-Propylbenzene	43	**7.3**		1	U	**2.6**		**160**		**21**		1	U	NA		1	U	1	U	1	U	**1.6**	
50	tert-Butylbenzene	tert-Butylbenzene	44	1	U	1	U	1	U	**5.1**		1	U	1	U	NA		1	U	1	U	1	U	1	U
51	sec-Butylbenzene	sec-Butylbenzene	45	**1**		1	U	**1.2**		**23**		**2**		1	U	NA		1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	4-Isopropyltoluene	46	1	U	1	U	1	U	1	U	1	U	1	U	NA		1	U	1	U	1	U	1	U
53	n-Butylbenzene	n-Butylbenzene	47	**1.6**	M	1	U	1	U	**14**		**1.7**		1	U	NA		1	U	1	U	1	U	1	U
54	Naphthalene	Naphthalene	48	**7.3**		5	U	5	U	5	U	**5**		5	U	NA		5	U	5	U	5	U	5	U
55																									
56		**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																							
57		**Method OR-DEQ**																							
58	Diesel Range Hydrocarbons	**TPH-Diesel**	52	**1.6**		NA		NA		**3.7**		NA		NA		NA		NA		NA		NA		**1.8**	
59	Motor Oil	**TPH-D Motor Oil**	53	0.5	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	Gasoline Range Hydrocarbons	**TPH-Gasoline**	54	**3**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																									
62		**PRIORITY POLLUTANT**																							
63		**METALS (mg/L)**																							
64	Arsenic	Arsenic (7060)	58	**0.007**		**0.01**		**0.017**		**0.036**		**0.009**		**0.005**		**0.002**		**0.006**		**0.009**		**0.018**		**0.04**	
65	Chromium	Chromium (6010)	59	0.005	U	0.005	U	0.005	U	**0.006**		0.005	U	0.005	U	**0.006**		0.005	U	0.005	U	0.005	U	0.005	U
66	Copper	Copper (6010)	60	**0.004**		0.002	U	0.002	U	**0.004**		0.002	U	0.002	U	**0.012**		**0.002**		0.002	U	**0.003**		**0.005**	
67	Lead	Lead (7421)	61	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.005**		0.001	U	0.001	U	0.001	U	0.001	U
68	Nickel	Nickel (6010)	62	0.01	U	0.01	U	0.01	U	**0.05**		0.01	U	0.01	U	**0.04**		0.01	U	0.01	U	0.01	U	**0.02**	
69	Zinc	Zinc (6010)	63	**0.007**		0.006	U	0.006	U	**0.009**		0.006	U	**0.006**		**0.029**		**0.012**		0.006	U	**0.008**		**0.006**	
70																									
71		**MAJOR IONS AND CONVENTIONALS**																							
72		Calcium (mg/L) (6010)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73		Magnesium (mg/L) (6010)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG
1																																		
2									Dup of LW8S																									
3	LW4S		LW6D		LW7S		LW8S		X		LW9D		LW10D		LW11D		LW11S		LW13S		LW14D		LW17D		LW18D		O		OX1S		OX2S		OX3S	
4	FU45O		FU45R		FU45A		FU45I		FU45H		FU45P		FU45K		FU50B		FU45D		FU45M		FU45L		FU45S		FU45Q		FU45T		FU45F		FU45E		FU45G	
5	8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/29/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03		8/28/03	
6																																		
7																																		
8																																		
9	NA		**0.6**	J	**45**	J	**2.1**	J	**6.3**	J	**0.55**	J	**4**	J	**5.6**		NA		**1.1**	J	**2.3**	J	0.5	U	**0.58**	J	NA		**19**	J	**5800**	J	**1400**	J
10	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																																		
17																																		
18																																		
19	2	U	2.1	U	2	U	2	U	2.1	U	2.1	U	2	U	2.1	U	2.1	U	NA		NA		NA		NA		2.3	U	NA		NA		NA	
20	1	U	1	U	1	U	1	U	1.1	U	1	U	1	U	1	U	1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
21	1	U	1	U	1	U	1	U	1.1	U	1	U	1	U	1	U	1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
22	3	U	3.1	U	3.1	U	3.1	U	3.2	U	3.1	U	3.1	U	3.1	U	3.2	U	NA		NA		NA		NA		3.4	U	NA		NA		NA	
23	50	U	52	U	51	U	51	U	53	U	52	U	51	U	52	U	53	U	NA		NA		NA		NA		57	U	NA		NA		NA	
24	1	U	1	U	**4.4**		**39**		**40**		1	U	1	U	1	U	**5.6**		NA		NA		NA		NA		1.1	U	NA		NA		NA	
25	1	U	1	U	**1.3**		**31**		**34**		1	U	1	U	1	U	**3.7**		NA		NA		NA		NA		1.1	U	NA		NA		NA	
26	5	U	5.2	U	5.1	U	5.1	U	5.3	U	5.2	U	5.1	U	5.2	U	**8.3**	M	NA		NA		NA		NA		5.7	U	NA		NA		NA	
27	5	U	5.2	U	5.1	U	5.1	U	5.3	U	5.2	U	5.1	U	5.2	U	5.3	U	NA		NA		NA		NA		5.7	U	NA		NA		NA	
28	1	U	1	U	1	U	1	U	1.1	U	1	U	1	U	1	U	1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
29	1	U	1	U	1	U	1	U	1.1	U	1	U	1	U	1	U	1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
30	1	U	1	U	1	U	2	U	1.6	U	1	U	1	U	1	U	1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
31	**17**		5.2	U	5.1	U	5.1	U	5.3	U	5.2	U	5.1	U	5.2	U	**1700**		NA		NA		NA		NA		5.7	U	NA		NA		NA	
32	1	U	1	U	1	U	1	U	1.1	U	1	U	1	U	**1.9**		1.1	U	NA		NA		NA		NA		1.1	U	NA		NA		NA	
33																																		
34																																		
35																																		
36	5	U	**6.2**	J	5	U	**16**	J	5	U	5	U	5	U	**11**		**10**	MJ	NA		NA		NA		NA		**11**	J	NA		NA		NA	
37	1	U	1	U	1	U	3	U	1	U	1	U	1	U	1	U	1	U	NA		NA		NA		NA		1	U	NA		NA		NA	
38	5	U	5	U	**18**	M	15	U	5	U	5	U	5	U	5	U	**9.5**	M	NA		NA		NA		NA		5	U	NA		NA		NA	
39	1	U	1	U	1	U	**19**		**23**		1	U	1	U	1	U	**5.4**		NA		NA		NA		NA		1	U	NA		NA		NA	
40	1	U	1	U	1	U	3	U	1	U	1	U	1	U	1	U	1	U	NA		NA		NA		NA		1	U	NA		NA		NA	
41	1	U	1	U	1	U	3	U	1	U	1	U	1	U	1	U	**1.2**		NA		NA		NA		NA		**1.4**		NA		NA		NA	
42	1	U	1	U	**42**		**180**		**220**		1	U	1	U	1	U	**29**		NA		NA		NA		NA		1	U	NA		NA		NA	
43	1	U	1	U	1	U	3	U	1	U	1	U	1	U	1	U	1	U	NA		NA		NA		NA		1	U	NA		NA		NA	
44	1	U	1	U	**20**	J	**11**	J	**15**	J	1	U	1	U	1	U	**48**	J	NA		NA		NA		NA		1	U	NA		NA		NA	
45	1	U	1	U	1	U	3	U	1	U	1	U	1	U	1	U	**50**		NA		NA		NA		NA		1	U	NA		NA		NA	
46	1	U	1	U	**3.4**		**13**	J	**16**	J	1	U	1	U	1	U	**28**		NA		NA		NA		NA		1	U	NA		NA		NA	
47	**1.2**	J	1	U	**3.2**	J	**28**	J	**36**	J	1	U	1	U	1	U	**120**	J	NA		NA		NA		NA		1	U	NA		NA		NA	
48	1	U	**3.5**		**31**		**260**		**280**		**14**		1	U	1	U	**15**		NA		NA		NA		NA		**27**		NA		NA		NA	
49	1	U	1	U	**40**		**230**		**260**		**7.8**		1	U	1	U	**20**		NA		NA		NA		NA		**35**		NA		NA		NA	
50	1	U	**2.3**		1	U	**9.1**		**10**		1	U	1	U	1	U	**1.6**		NA		NA		NA		NA		1	U	NA		NA		NA	
51	1	U	**2.1**		**2.9**		**28**		**32**		**1.6**		1	U	1	U	**7.9**		NA		NA		NA		NA		**8**		NA		NA		NA	
52	1	U	1	U	**1.2**		3	U	**2**		1	U	1	U	1	U	**4.6**		NA		NA		NA		NA		1	U	NA		NA		NA	
53	1	U	1	U	**3**		**14**		**16**		1	U	1	U	1	U	**5.2**		NA		NA		NA		NA		**4.1**		NA		NA		NA	
54	5	U	5	U	**6.6**		**83**		**120**		5	U	5	U	5	U	**9.4**		NA		NA		NA		NA		5	U	NA		NA		NA	
55																																		
56																																		
57																																		
58	**0.36**		**1.9**		**0.54**		**4.3**		**4.2**		**0.34**		0.25	U	**1.1**		**4**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	NA		NA		NA		0.5	U	0.5	U	NA		NA		NA		0.5	U	NA		NA		NA		NA		NA		NA		NA		NA	
60	NA		NA		NA		**7.4**		**7.5**		NA		NA		NA		**4.8**		NA		NA		NA		NA		NA		NA		NA		NA	
61																																		
62																																		
63																																		
64	**0.002**		**0.014**		**0.013**		**0.021**		**0.024**		**0.03**		**0.026**		**0.005**		**0.005**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
65	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.007**		0.005	U	NA		NA		NA		NA		NA		NA		NA		NA	
66	**0.003**		**0.004**		**0.002**		0.002	U	**0.002**		**0.004**		**0.004**		**0.008**		**0.004**		NA		NA		NA		NA		NA		NA		NA		NA	
67	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	NA		NA		NA		NA		NA		NA		NA		NA	
68	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	NA		NA		NA		NA		NA		NA		NA		NA	
69	0.006	U	**0.007**		0.006	U	0.006	U	0.006	U	**0.008**		0.006	U	**0.025**		0.006	U	NA		NA		NA		NA		NA		NA		NA		NA	
70																																		
71																																		
72	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD
1																							
2									Dup of RW2														
3	OX4S		R		RW1		RW2		W														
4	FU45J		FU45U		FU50C		FU31F		FU31E														
5	8/28/03		8/28/03		8/29/03		8/27/03		8/27/03														
6																							
7																							
8																							
9	**2200**	J	NA		NA		**10**		NA														
10	NA		NA		NA		NA		NA														
11	NA		NA		NA		NA		NA														
12	NA		NA		NA		NA		NA														
13	NA		NA		NA		NA		NA														
14	NA		NA		NA		NA		NA														
15	NA		NA		NA		NA		NA														
16																							
17																							
18																							
19	NA		2	U	**24**		2.1	U	2.1	U													
20	NA		1	U	**5.3**		1	U	1	U													
21	NA		1	U	1	U	1	U	1	U													
22	NA		3	U	13	U	3.1	U	3.1	U													
23	NA		50	U	50	U	52	U	52	U													
24	NA		1	U	**9**		**1.3**		**1.7**														
25	NA		1	U	**2.8**		**4.8**	J	**6.2**	J													
26	NA		5	U	**13**		5.2	U	5.2	U													
27	NA		5	U	**20**		5.2	U	5.2	U													
28	NA		1	U	1	U	1	U	1	U													
29	NA		1	U	1	U	1	U	1	U													
30	NA		1	U	1	U	1	U	1	U													
31	NA		5	U	**1400**		**5.5**		**6.9**														
32	NA		1	U	1	U	1	U	1	U													
33																							
34																							
35																							
36	NA		**18**	J	**26**	MJ	5	U	5	U													
37	NA		1	U	1	U	1	U	1	U													
38	NA		5	U	5	U	5	U	5	U													
39	NA		1	U	**4.9**	J	**5.1**		**5.4**														
40	NA		1	U	1	U	1	U	1	U													
41	NA		**2.4**		**3**	J	1	U	1	U													
42	NA		**14**		**68**	J	**4.2**		**4.2**														
43	NA		1	U	1	U	1	U	1	U													
44	NA		**26**	J	**90**	J	**7**		**7.4**														
45	NA		1	U	**120**	J	1	U	1	U													
46	NA		1	U	**67**	J	**8.6**		**8.5**														
47	NA		1	U	**230**		**28**		**29**														
48	NA		**46**		**42**	J	**30**		**29**														
49	NA		**37**		**52**	J	**40**		**39**														
50	NA		1	U	**3.1**	J	**1.4**		**1.3**														
51	NA		**6.8**		**17**	J	**5.9**		**5.7**														
52	NA		1	U	**6.9**	J	**1**		**1**														
53	NA		**3.9**		**7.3**	MJ	**4.4**		**4.2**														
54	NA		5	U	**19**	J	5	U	5	U													
55																							
56																							
57																							
58	NA		NA		**8.1**		**1.1**		**1**														
59	NA		NA		0.5	U	0.5	U	0.5	U													
60	NA		NA		**8.2**		**1.6**		**1.6**														
61																							
62																							
63																							
64	NA		NA		**0.006**		**0.018**		**0.019**														
65	NA		NA		0.005	U	0.005	U	0.005	U													
66	NA		NA		**0.003**		0.002	U	0.002	U													
67	NA		NA		0.001	U	0.001	U	0.001	U													
68	NA		NA		0.01	U	0.01	U	0.01	U													
69	NA		NA		**0.009**		**0.013**		**0.014**														
70																							
71																							
72	NA		NA		NA		NA		NA														
73	NA		NA		NA		NA		NA														

	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN
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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
74		Potassium (mg/L) (6010)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75		Sodium (mg/L) (6010)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76		Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77		Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78		Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	Total Dissolved Solids	Total Dissolved Solids (mg/L) (EPA 160.1)	73	**210**		**240**		**290**		**400**		**220**		**360**		NA		**320**		**190**		**330**		**390**	
80	Chloride	Chloride (mg/L) (EPA 325.2)	74	**2.4**		**2.9**		**1.8**		**7.3**		**2.3**		**3.9**		NA		**2.2**		**3**		**2.6**		**7.8**	
81		N-Nitrate (mg-N/L) (Calculated)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82		N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83		Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84		Sulfate (mg/L) (EPA 375.2)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85																									
86		**FIELD PARAMETERS**																							
87	pH	pH (avg)	81	6.52		6.96		6.93		6.69		6.46		6.73		6.25		7.05		6.86		6.52		7	
88	Temperature	Temperature (° C) (avg)	82	16		14.9		14.9		15		15.8		15.1		15.9		16.7		16.8		15.1		17.3	
89	Conductivity	Conductivity (um/hos)	83	285		340		410		588		343		523		193		388		228		525		526	
90	Dissolved oxygen	Dissolved oxygen (mg/L) (avg)	84	1.73		1.75		1.84		1.35		2.23		1.76		2.26		1.54		2.2		1.13		1.66	
91																									
92		**DIOXINS AND FURANS (ng/L)**																							
93		**Method 8290**																							
94		2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95		Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96		2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97		Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98		1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99		2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100		Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101		1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102		Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103		1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104		1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105		2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106		1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107		Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108		1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109		1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110		1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111		Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112		1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113		1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114		Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115		1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116		Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117		OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118		OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																									
120		**ETHANOL (mg/L)**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																									
122		**PAHs (µg/L)**																							
123		**EPA Method SW8270 SIM**																							
124		Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG
74	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	**200**		**290**		**220**		**250**		**250**		**180**		**120**	J	**260**		**270**		NA		NA		NA		NA		NA		NA		NA		NA	
80	**5.8**		**1.6**		**2.5**		**2.3**		**2.2**		1	U	**1.4**		**4.6**		**3.3**		NA		NA		NA		NA		NA		NA		NA		NA	
81	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85																																		
86																																		
87	6.82		6.87		6.8		6.64		6.65		6.95		7.07		6.7		6.65		6.67		6.98		6.74		6.79		6.85		6.71		6.66		6.7	
88	16.1		16.3		15.7		16.5		16.5		16.4		15.8		14.4		14.3		15.6		16.1		17.4		18.8		17.9		14.9		14.9		15.2	
89	231		364		308		349		348		205		122		334		356		131		224		431		379		514		262		263		287	
90	1.86		2.1		2.76		1.61		1.57		1.03		2.33		2.31		1.61		3.68		1.54		1.01		0.98		0.88		2.08		1.43		2.07	
91																																		
92																																		
93																																		
94	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																																		
120	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																																		
122																																		
123																																		
124	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD
74	NA		NA		NA		NA		NA														
75	NA		NA		NA		NA		NA														
76	NA		NA		NA		NA		NA														
77	NA		NA		NA		NA		NA														
78	NA		NA		NA		NA		NA														
79	NA		NA		**320**		**290**		**280**														
80	NA		NA		**5.9**		**4.3**		**4.2**														
81	NA		NA		NA		NA		NA														
82	NA		NA		NA		NA		NA														
83	NA		NA		NA		NA		NA														
84	NA		NA		NA		NA		NA														
85																							
86																							
87	6.41		7.01		6.65		6.69		6.71														
88	18		17		15.4		15.5		15.7														
89	262		630		430		414		411														
90	2.16		0.44		1.59		0.98		0.82														
91																							
92																							
93																							
94	NA		NA		NA		NA		NA														
95	NA		NA		NA		NA		NA														
96	NA		NA		NA		NA		NA														
97	NA		NA		NA		NA		NA														
98	NA		NA		NA		NA		NA														
99	NA		NA		NA		NA		NA														
100	NA		NA		NA		NA		NA														
101	NA		NA		NA		NA		NA														
102	NA		NA		NA		NA		NA														
103	NA		NA		NA		NA		NA														
104	NA		NA		NA		NA		NA														
105	NA		NA		NA		NA		NA														
106	NA		NA		NA		NA		NA														
107	NA		NA		NA		NA		NA														
108	NA		NA		NA		NA		NA														
109	NA		NA		NA		NA		NA														
110	NA		NA		NA		NA		NA														
111	NA		NA		NA		NA		NA														
112	NA		NA		NA		NA		NA														
113	NA		NA		NA		NA		NA														
114	NA		NA		NA		NA		NA														
115	NA		NA		NA		NA		NA														
116	NA		NA		NA		NA		NA														
117	NA		NA		NA		NA		NA														
118	NA		NA		NA		NA		NA														
119																							
120	NA		NA		NA		NA		NA														
121																							
122																							
123																							
124	NA		NA		NA		NA		NA														
125	NA		NA		NA		NA		NA														
126	NA		NA		NA		NA		NA														
127	NA		NA		NA		NA		NA														
128	NA		NA		NA		NA		NA														
129	NA		NA		NA		NA		NA														
130	NA		NA		NA		NA		NA														

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3			B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1	
4			S177D		T176N		U235H		V224R		W371K		Y336A		Z225M		Z960E		AH49B		AU36A		BC30D		9912050-01A	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		12/8/1999 (d)	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	**3.1**	M	2.0	U	2.0	U	NA	
20	14	4-Methylphenol	**43**		1.0	U	1.0	U	**24**		**39**		**28**		**31**		**35**		**7.1**		1.0	U	**7.0**		NA	
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA	
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	NA	
23	17	Benzoic Acid	10	U	10	U	10	U	**10**		10	U	10	U	10	U	10	U	**27**		10	U	10	U	NA	
24	18	Naphthalene	**16**		**12**		**18**		**16**		**20**	J2	**6.8**		**4.4**		**35**		**26**		1.0	U	**12**		NA	
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	**1.5**	J2	**1.1**		1.0	U	**6.4**		**3.8**		1.0	U	**2.1**		NA	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA	
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA	
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA	
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA	
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA	
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA	
32	26	bis(2-Ethylhexyl)phthalate	2.9	U	**2.8**	J2	1.0	U	1.0	U	1.0	U	**2.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA	
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	**24**		5.0	U	**6.5**		5.0	U	**75**		5.0	U	5.0	U	36	U	230	U	25	U	25	U	NA	
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	45	U	5.0	U	5.0	U	NA	
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	**11**		**20**		5.0	U	**51**		**11**		230	U	25	U	25	U	NA	
39	33	Benzene	1.0	U	1.0	U	1.0	U	**250**		**440**		**190**		**160**		**2400**		**210**		**66**		**190**		NA	
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	45	U	5.0	U	5.0	U	NA	
41	35	Toluene	**6.4**		1.0	U	1.0	U	**4.4**		**1400**		**450**		**190**		**4000**		**3700**		**920**		**290**		NA	
42	36	Ethylbenzene	**5.4**		**5.5**		**1.1**		**1.2**		**11**		**19**		**11**		**140**		**220**		**160**		**32**		NA	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	**4.2**		**7.0**		**3.8**		**93**		**130**		5.0	U	**5.0**	U	NA	
44	38	m,p-Xylene	**1.2**		**2.5**		**1.1**		**1.7**		**22**		**50**		**33**		**450**		**730**		**390**		**100**		NA	
45	39	o-Xylene	**1.1**		**1.2**		1.0	U	1.0	U	**7.4**		**22**		**14**		**210**		**360**		**200**		**44**		NA	
46	40	1,3,5-Trimethylbenzene	**2.5**		**3.6**		**12**		**6.4**		**13**		**4.8**		**3.8**		**25**		45	U	**8.8**		**5.2**		NA	
47	41	1,2,4-Trimethylbenzene	**4.6**		**8.8**		**47**	J2	**36**		**110**		**30**		**19**		**140**		**88**		**44**		**24**		NA	
48	42	Isopropylbenzene	**7.7**		**9.5**		**34**	J2	**23**		**34**		**11**		**7.4**		**28**		45	U	**9.1**		**6.2**		NA	
49	43	n-Propylbenzene	**3.1**		**4.9**		**21**		**17**		**29**		**13**		**8.8**		**36**		45	U	**9.7**		**8.2**		NA	
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	45	U	5.0	U	5.0	U	NA	
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	45	U	5.0	U	5.0	U	NA	
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	45	U	5.0	U	5.0	U	NA	
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		1.0	U	**1.0**		45	U	5.0	U	5.0	U	NA	
54	48	Naphthalene	**25**		**20**	J2	**52**	J2	**23**		**31**		**12**		**11**		**56**		230	U	25	U	25	U	NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**0.68**		**0.75**		**1.1**		**1.2**		**1.2**		**0.51**		**1.0**		**9.5**		**2.0**		**0.37**		**0.46**		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.006**		**0.008**		0.05	U	0.05	U	**0.010**		**0.008**		**0.008**		**0.004**		**0.006**		**0.008**		**0.006**		NA	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
2																Dup of B1										Dup of B1	
3		B1		B1		B1		B1		B1		B1		B1		X		B1		B1		B1		B1		X	
4		BH96T		BR55M		CB68E		CL03B		CT67H		DE68L		DM30L		DM30K		DW37B		ED23A		EM75J		ES04G		ES04A	
5		2/16/00		5/23/00		8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		08/28/02	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	**0.14**	J1	**0.27**	J2	**0.43**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.65**		**1.0**		0.25	U	0.29	U	0.29	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	**4.6**		2.0	U	3.0	U	2.0	U	**2.6**		100	UJ	2.0	U	2.0	U	**6.2**		**15**		2.0	U	2.3	U	2.3	U
20	4-Methylphenol	**57**		**20**		**47**		**5.6**		**8.4**		**130**	J	**50**		**54**		**44**		**170**		**46**		1.2	U	**1.3**	
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	50	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.2	U
22	2,4-Dimethylphenol	**7.7**		3.0	U	3.0	U	3.0	U	3.0	U	150	UJ	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	**4.1**		**4.5**	
23	Benzoic Acid	10	U	**160**		**73**		10	U	10	U	500	UJ	10	U	10	U	50	U	50	U	50	U	58	U	58	U
24	Naphthalene	**51**		**34**		**27**		**2.0**		**5.1**		50	UJ	**13**		**14**		1.0	U	**17**		**15**		**2.8**		**3.3**	
25	2-Methylnaphthalene	**19**		**12**		**9.6**		1.0	U	1.0	U	50	UJ	**6.8**		**7.4**		1.0	U	**10**		**5.9**		1.2	U	**1.8**	
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	250	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.8	U	5.8	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	250	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.8	U	5.8	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	50	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.2	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	50	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.2	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	50	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.2	U	1.2	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	250	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.8	U	5.8	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	50	UJ	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.7	U	4.7	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	**410**		5.0	U	**1200**		**1100**		**230**		**280**		37	U	**250**		**18**		25	U	25	U
37	Carbon Disulfide	1.0	U	1.0	U	25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	1.0	U	3.0	U	5	U	5	U
38	2-Butanone	55	U	**6.1**		120	U	**28**		**260**		100	U	100	U	**160**		**13**		**54**		15	U	25	U	25	U
39	Benzene	**4700**		**990**		**1100**		**160**		**610**		**560**		**180**	J	**230**	J	**120**		**1000**		**240**		**160**		**130**	
40	Bromoform	1.0	U	1.0	U	25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	1.0	U	3.0	U	5	U	5	U
41	Toluene	**4700**		**1800**		**3600**		**1200**		**2000**		**3400**		**1400**	J	**1900**	J	**800**		**2800**		**520**		**210**		**210**	
42	Ethylbenzene	**160**		**110**		**300**		**100**		**160**		**220**		**130**		**150**		**86**		**170**		**97**		**88**		**74**	
43	Styrene	**29**		**8.3**	M	25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	**4.3**		3.0	U	5	U	5	U
44	m,p-Xylene	**1000**		**340**		**990**		**320**		**590**		**830**		**450**		**530**		**350**		**290**		**270**		**230**		**210**	
45	o-Xylene	**490**		**180**		**420**		**160**		**240**		**370**		**210**		**250**		**180**		**210**		**150**		**120**		**100**	
46	1,3,5-Trimethylbenzene	**46**		**18**		**37**		**15**		**31**		**37**		**33**		**37**		**29**		**37**		**22**		**18**		**19**	
47	1,2,4-Trimethylbenzene	**150**		**72**		**160**		**61**		**100**		**160**		**110**		**130**		**100**		**94**		**73**		**54**		**56**	
48	Isopropylbenzene	**28**		**10**		25	U	**9.0**		30	U	20	U	20	U	20	U	**11**		**12**		**11**		**7**		**8.5**	
49	n-Propylbenzene	**40**		**17**		**31**		**15**		30	U	**33**		**22**		**24**		**19**		**15**		**16**		**12**		**13**	
50	tert-Butylbenzene	1.0	U	1.0	U	25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	1.0	U	3.0	U	5	U	5	U
51	sec-Butylbenzene	**2.8**		**1.4**		25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	1.0	U	3.0	U	5	U	5	U
52	4-Isopropyltoluene	**2.7**		**1.1**		25	U	1.0	U	30	U	20	U	20	U	20	U	1.0	U	**1.0**		3.0	U	5	U	5	U
53	n-Butylbenzene	**4.5**		2.0	U	25	U	1.8	U	30	U	20	U	20	U	20	U	3.2	U	**4.0**	M	3.0	U	5	U	5	U
54	Naphthalene	**82**		**36**		120	U	**25**		150	U	100	U	100	U	100	U	**39**		**37**		**24**		25	U	25	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	**4.8**		**0.44**		**1.4**		**0.37**		**2.1**		**47**		**8.7**	J	**6.9**	J	**0.94**		**12**		**1.3**		**0.64**		**0.9**	
59	**TPH-D Motor Oil**	NA		0.50	U	0.50	U	0.50	U	0.50	U	5.0	U	5.0	U	5.0	U	0.5	U	0.50	U	0.50	U	0.5	U	0.5	U
60	**TPH-Gasoline**	NA		**17**		**36**		**8.8**		**15**		**25**		**19**		**19**		**6.8**		**16**		**7.6**		**4.8**	J	**3.4**	J
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.006**		**0.004**		**0.007**		**0.007**		**0.007**		**0.010**		**0.009**		**0.009**		**0.007**		**0.006**		**0.006**		**0.004**	J	**0.006**	J
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		B1		B1		B1		B1	
4		EY88C		FF88O		FL41H		FU50E	
5		11/11/02		2/13/03		5/7/03		8/29/03	
6									
7	**CHLORINATED PHENOLS (µg/L)**								
8	**EPA Method SW8040**								
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.5	U
10	2,4,6-Trichlorophenol	NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA	
16									
17	**SEMIVOLATILES (µg/L)**								
18	**EPA Method SW8270**								
19	Phenol	2.2	U	2	U	**3.1**	M	2	U
20	4-Methylphenol	1.1	U	**36**		**28**		1	U
21	Isophorone	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.3	U	6.7	U	3	U	3	U
23	Benzoic Acid	54	U	51	U	50	U	50	U
24	Naphthalene	1.1	U	1	U	**1.8**		**2.7**	
25	2-Methylnaphthalene	1.1	U	1	U	1	U	**1.4**	
26	2,4,6-Trichlorophenol	5.4	U	5.1	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.4	U	5.1	U	5	U	5	U
28	Acenaphthene	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.1	U	1	U	1	U	1	U
30	Fluorene	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.4	U	5.1	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	4.3	U	1	U	1	U	1	U
33									
34	**VOLATILES (µg/L)**								
35	**EPA Method SW8260**								
36	Acetone	5	U	**78**		**61**	M	**28**	
37	Carbon Disulfide	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	**8.2**	M	**8.1**	M	5	U
39	Benzene	**19**		**65**		**82**		**20**	
40	Bromoform	1	U	1	U	1	U	1	U
41	Toluene	**61**		**100**		**100**		**22**	
42	Ethylbenzene	**22**		**51**		**130**	J	**80**	
43	Styrene	1	U	1	U	1	U	1	U
44	m,p-Xylene	**71**		**130**		**110**	J	**99**	
45	o-Xylene	**26**		**75**		**86**	J	**35**	
46	1,3,5-Trimethylbenzene	**9.3**		**18**		**11**	J	**9.3**	
47	1,2,4-Trimethylbenzene	**30**		**57**		**30**	J	**28**	
48	Isopropylbenzene	**21**		**9.7**		**6.3**	J	**5.2**	
49	n-Propylbenzene	**26**		**15**		**7.6**	J	**7.3**	
50	tert-Butylbenzene	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	**2.2**		1	U	**1**	J	**1**	
52	4-Isopropyltoluene	1	U	**1.1**		1	U	1	U
53	n-Butylbenzene	**2.2**		2.8	U	**1.8**	J	**1.6**	M
54	Naphthalene	**9.1**		**13**		**5.8**		**7.3**	
55									
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**								
57	**Method OR-DEQ**								
58	**TPH-Diesel**	**0.84**		**6.8**		**2.4**		**1.6**	
59	**TPH-D Motor Oil**	0.5	U	0.5	U	0.5	U	0.5	U
60	**TPH-Gasoline**	**2.4**		**4.6**		**4.8**		**3.0**	
61									
62	**PRIORITY POLLUTANT**								
63	**METALS (mg/L)**								
64	Arsenic (7060)	0.05	U	**0.012**		**0.007**		**0.007**	
65	Chromium (6010)	**0.03**		**0.017**		**0.008**		0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1	
4			S177D		T176N		U235H		V224R		W371K		Y336A		Z225M		Z960E		AH49B		AU36A		BC30D		9912050-01A	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		12/8/1999 (d)	
66	60	Copper (6010)	**0.009**		**0.009**		**0.004**		**0.006**		**0.002**		0.002	U	0.002	U	**0.078**		**0.043**		**0.008**		0.002	U	NA	
67	61	Lead (7421)	0.001	U	**0.001**		0.02	U	0.02	U	**0.003**		0.001	U	0.001	U	**0.002**		**0.002**		0.001	U	0.001	U	NA	
68	62	Nickel (6010)	**0.02**		**0.01**		0.01	U	**0.02**		**0.02**		**0.02**		0.01	U	**0.04**		**0.03**		**0.03**		**0.01**		NA	
69	63	Zinc (6010)	0.004	U	**0.009**		**0.027**		**0.004**		**0.006**	J2	**0.011**		**0.005**		**0.017**	J	**0.006**		**0.009**		0.006	U	NA	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**42.2**		**25.7**		**16.3**		**26.7**		NA		NA		NA		**16.5**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**16.3**		**9.41**		**6.93**		**9.05**		NA		NA		NA		**3.94**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**4.2**		**3.3**		**3.2**		**3.4**		NA		NA		NA		**2.7**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**8.65**		**7.49**		**7.88**		**7.63**		NA		NA		NA		**6.29**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**190**		**140**	J2	**130**		**170**		NA		NA		NA		**43**		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**190**		**140**	J2	**130**		**170**		NA		NA		NA		**43**		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**200**	J2	**190**		**290**		**360**		**430**		**260**		**170**		**210**		**160**		**150**		NA	
80	74	Chloride (mg/L) (EPA 325.2)	**5.1**		**5.9**		**5.6**		**4.3**		**3.5**		**3.4**		**2.4**		**2.0**		**7.9**		**3.8**		**6.6**		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.014**		0.010	U	**0.023**		**0.036**	J2	NA		NA		NA		0.010	U	NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.017	J	**0.053**	J2	**0.033**		0.010	UJ	NA		NA		NA		**0.015**		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	0.031		**0.032**	J2	**0.056**		**0.036**	J2	NA		NA		NA		**0.013**		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	2.5	U	2.5	U	**5.3**		2.5	U	NA		NA		NA		**2.8**		NA		NA		NA		NA	
85	79																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																Dup of B1										Dup of B1	
3		B1		B1		B1		B1		B1		B1		B1		X		B1		B1		B1		B1		X	
4		BH96T		BR55M		CB68E		CL03B		CT67H		DE68L		DM30L		DM30K		DW37B		ED23A		EM75J		ES04G		ES04A	
5		2/16/00		5/23/00		8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		08/28/02	
66	Copper (6010)	**0.004**		**0.004**		0.002	U	**0.081**		0.002	U	0.002	U	0.002	U	0.002	U	**0.016**	J	**0.062**		**0.016**		**0.004**		0.002	U
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001	U	**0.008**		**0.004**		**0.003**		0.001	U	0.001	U
68	Nickel (6010)	**0.06**		**0.03**		**0.01**		0.01	U	0.01	U	**0.12**		0.01	U	0.01	U	0.01	U	**0.08**		**0.07**		0.01	U	0.01	U
69	Zinc (6010)	**0.020**		0.006	U	0.006	U	0.006	U	**0.006**		**0.054**		0.006	U	0.006	U	**0.015**	J	**0.033**		**0.016**		**0.007**		0.006	U
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		**23.9**		**88.1**		**15.2**		**16.4**		**19.2**	J	**35.7**		NA		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		**9.46**		**40.8**		**6.11**		**6.64**		**7.26**	J	**15.7**		NA		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		**2.6**		**5.1**		**2.1**		**2.5**		**2.4**		**4.6**		NA		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		**8.18**		**13.3**		**6.43**		**6.89**		**7.22**		**12.3**		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**160**		NA		NA		NA		NA		**140**		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		1.0	U	NA		NA		NA		NA		1.0	U	NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**160**		NA		NA		NA		NA		**140**		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**250**		**220**		**170**		**140**		**250**		**1400**		**140**		**130**		**150**		**430**		**330**		**140**		**140**	
80	Chloride (mg/L) (EPA 325.2)	**3.8**		**7.2**		**1.7**		**2.5**		**3.4**	J	**2.8**		**8.0**	J	**6.0**	J	**2.2**		**3.2**		**6.2**		**5.1**		**4**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		0.010	U	NA		NA		NA		NA		0.010	U	NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		**0.012**	J	NA		NA		NA		NA		**0.021**		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		**0.015**		NA		NA		NA		NA		**0.020**	J	NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		**2.8**		NA		NA		NA		NA		2.5	U	NA		NA		NA	
85																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		B1		B1		B1		B1	
4		EY88C		FF88O		FL41H		FU50E	
5		11/11/02		2/13/03		5/7/03		8/29/03	
66	Copper (6010)	**0.073**		**0.107**		**0.041**		**0.004**	
67	Lead (7421)	**0.03**		**0.028**		**0.009**		0.001	U
68	Nickel (6010)	**0.05**		**0.04**		**0.03**		0.01	U
69	Zinc (6010)	**0.119**		**0.085**		**0.037**	J	**0.007**	
70									
71	**MAJOR IONS AND CONVENTIONALS**								
72	Calcium (mg/L) (6010)	NA		**17.3**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		**8.66**		NA		NA	
74	Potassium (mg/L) (6010)	NA		**3.6**		NA		NA	
75	Sodium (mg/L) (6010)	NA		**7.8**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		**70**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		**70**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**150**		**170**		**140**		**210**	
80	Chloride (mg/L) (EPA 325.2)	**3**		**6.4**		**2.9**		**2.4**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		**0.029**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		**0.03**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		**0.059**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		**5.7**		NA		NA	
85									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1	
4			S177D		T176N		U235H		V224R		W371K		Y336A		Z225M		Z960E		AH49B		AU36A		BC30D		9912050-01A	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		12/8/1999 (d)	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.59		6.61		6.64		6.41		5.64		5.28		5.37		5.11		5.36		6.18		5.93		NM	
88	82	Temperature (° C) (avg)	13.5		15.3		15.7		14.5		12.6		15.5		14.2		12.8		13.4		15.4		13.0		NM	
89	83	Conductivity (um/hos)	466		359		286		457		392		605		379		363		254		263		306		NM	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		1.29		1.83		1.75		2.18		2.20		2.61		1.81		NM	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119	113																									
120	114	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**4200**	J2	**6300**	J2
121	115																									

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																Dup of B1										Dup of B1	
3		B1		B1		B1		B1		B1		B1		B1		X		B1		B1		B1		B1		X	
4		BH96T		BR55M		CB68E		CL03B		CT67H		DE68L		DM30L		DM30K		DW37B		ED23A		EM75J		ES04G		ES04A	
5		2/16/00		5/23/00		8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		08/28/02	
86	**FIELD PARAMETERS**																										
87	pH (avg)	4.81		6.02		6.13		4.89		5.53		4.70		6.43		6.49		6.14		4.97		6.50		6.50		6.50	
88	Temperature (° C) (avg)	12.3		14.9		17.7		13.4		13.1		14.0		15.1		15.2		13.0		13.1		16.4		16.7		16.8	
89	Conductivity (um/hos)	335		297		243		222		297		1883		259		248		270		501		718		432		413	
90	Dissolved oxygen (mg/L) (avg)	2.15		1.55		1.51		0.84		1.08		1.42		1.59		1.61		3.58		5.92		4.21		0.79		0.60	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120	**ETHANOL (mg/L)**	**5100**		**16**		5.0	U	5.0	U	**5.0**		NA		NA		NA		NA		NA		NA		NA		NA	
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		B1		B1		B1		B1	
4		EY88C		FF88O		FL41H		FU50E	
5		11/11/02		2/13/03		5/7/03		8/29/03	
86	**FIELD PARAMETERS**								
87	pH (avg)	6.8		6.34		6.23		6.52	
88	Temperature (° C) (avg)	15.8		14.2		14.4		16	
89	Conductivity (um/hos)	268		274		170		285	
90	Dissolved oxygen (mg/L) (avg)	1.64		0		2.54		1.73	
91									
92	**DIOXINS AND FURANS (ng/L)**								
93	**Method 8290**								
94	2,3,7,8-TCDF	NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA	
119									
120	**ETHANOL (mg/L)**	NA		NA		NA		NA	
121									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1		B1	
4			S177D		T176N		U235H		V224R		W371K		Y336A		Z225M		Z960E		AH49B		AU36A		BC30D		9912050-01A	
5			4/2/97		7/16/97		10/22/97		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99		9/21/99		12/8/99		12/8/1999 (d)	
122	116	**PAHs (µg/L)**																								
123	117	**EPA Method SW8270 SIM**																								
124	118	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	119	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	120	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	121	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	122	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	123	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	124	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																Dup of B1										Dup of B1	
3		B1		B1		B1		B1		B1		B1		B1		X		B1		B1		B1		B1		X	
4		BH96T		BR55M		CB68E		CL03B		CT67H		DE68L		DM30L		DM30K		DW37B		ED23A		EM75J		ES04G		ES04A	
5		2/16/00		5/23/00		8/29/00		11/10/00		2/15/01		6/5/01		8/14/01		8/14/01		11/28/01		2/26/02		6/25/02		08/28/02		08/28/02	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		B1		B1		B1		B1	
4		EY88C		FF88O		FL41H		FU50E	
5		11/11/02		2/13/03		5/7/03		8/29/03	
122	**PAHs (µg/L)**								
123	**EPA Method SW8270 SIM**								
124	Naphthalene	NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			D		D		D		D		D		D		D		D		D		D		D		D		D
4			S177L		T176B		U235F		V208H		W391B		Y336D		Z225I		Z960I		AH76J		AU22D		BC27N		9912050-02A		BH96B
5			4/2/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/18/99		5/19/99		9/20/99		12/8/99		12/8/1999 (d)		2/17/00
6																											
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	0.25	U	0.25	U	**0.25**		0.25	U	**0.45**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	UJ	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
21	15	Isophorone	**3.4**		**5.5**		**5.2**			R	1.0	U	1.0	U	1.0	U	**2.4**		1.0	U	1.0	U	1.0	U	NA		1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	UJ	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	NA		3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	NA		10
24	18	Naphthalene	1.0	U	1.0	U	1.0	U		R	1.0	U	1.0	U	1.0	U	**3.1**		1.0	U	1.0	U	**3.2**		NA		1.0
25	19	2-Methylnaphthalene	1.2		1.0	U	1.0	U		R	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	UJ	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U		R	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U		R	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.4**		1.0	U	NA		1.0
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3.7**		NA		1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.9**		NA		1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.6**		NA		1.0
47	41	1,2,4-Trimethylbenzene	**2.2**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		1.0	U	1.0	U	**15**		NA		**1.0**
48	42	Isopropylbenzene	**1.6**		**2.7**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.7**		1.0	U	1.0	U	**11**		NA		**2.5**
49	43	n-Propylbenzene	**1.7**		**2.5**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**5.6**		NA		**1.1**
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
51	45	sec-Butylbenzene	**1.6**		**2.1**		1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.5	U	NA		**2.0**
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
53	47	n-Butylbenzene	1.0	U	**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0
55	49																										
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	**0.82**		**0.82**		**0.55**		0.25	U	**0.34**		**0.35**		0.25	U	**0.52**		0.25	U	0.25	U	**0.56**		NA		**0.40**
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.013**		**0.013**		0.05	U	0.05	U	**0.016**		**0.014**		**0.018**		**0.021**		**0.015**		**0.016**		**0.015**		NA		**0.019**
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3			D		D		D		D		D		D		D		D		D		D		D		D		D	
4			BR55E		CB49D		CK77F		CT37F		DE68G		DM30M		DW37E		ED34G		EM85B		ER93P		EZ03C		FF76G		FL58K	
5			5/22/00		8/28/00		11/7/00		2/12/01		6/4/01		8/14/01		11/28/01		2/28/02		6/26/02		08/27/02		11/12/02		2/12/03		5/8/03	
7	**CHLORINATED PHENOLS (µg/L)**																											
8	**EPA Method SW8040**																											
9	Pentachlorophenol	U	0.25	UJ	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.55**		**0.32**		**0.38**		0.33	U	0.25	U	0.26	U	0.25	U
10	2,4,6-Trichlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																												
17	**SEMIVOLATILES (µg/L)**																											
18	**EPA Method SW8270**																											
19	Phenol	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.6	U	2.2	U	2.1	U	2	U
20	4-Methylphenol	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
21	Isophorone	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.9	U	3.3	U	3.1	U	3	U
23	Benzoic Acid	U	10	U	10	U	10	U	10	U	10	U	10	U	50	U	50	U	50	U	66	U	54	U	52	U	50	U
24	Naphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3**		1.0	U	1.3	U	1.1	U	1	U	1	U
25	2-Methylnaphthalene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6.6	U	5.4	U	5.2	U	5	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6.6	U	5.4	U	5.2	U	5	U
28	Acenaphthene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
29	Dibenzofuran	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
30	Fluorene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.3	U	1.1	U	1	U	1	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	6.6	U	5.4	U	5.2	U	5	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**12**		4.0	U	4.0	U	5.3	U	4.3	U	1	U	**150**	
33																												
34	**VOLATILES (µg/L)**																											
35	**EPA Method SW8260**																											
36	Acetone	U	5.0	U	5.0	U	5.0	U	7.1	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
38	2-Butanone	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U
39	Benzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
41	Toluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		**1.7**		1.0	U	1	U	1	U	1	U	1	U
43	Styrene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		1.0	U	1.0	U	1	U	1	U	1	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.0**		**1.9**		1.0	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**23**		**38**		**1.2**		1	U	1	U	1	U	1	U
48	Isopropylbenzene		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**6.0**		**7.7**		1.0	U	**3**		1	U	1	U	1	U
49	n-Propylbenzene		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**2.7**		**7.7**		1.0	U	**3.6**		1	U	1	U	1	U
50	tert-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**5.3**		1.0	U	**2.1**		1	U	1	U	1	U
52	4-Isopropyltoluene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.8**		1.0	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.5**		1.0	U	1	U	1	U	1	U	1	U
54	Naphthalene	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	7.5	U	5.0	U	**8.2**		5.0	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	**Method OR-DEQ**																											
58	**TPH-Diesel**		0.25	U	0.25	U	0.25	U	**0.26**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	**TPH-D Motor Oil**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																												
62	**PRIORITY POLLUTANT**																											
63	**METALS (mg/L)**																											
64	Arsenic (7060)		**0.019**		**0.016**		**0.014**		**0.016**		**0.016**		**0.018**		**0.021**		**0.014**		**0.013**		**0.017**		0.05	U	**0.016**		**0.022**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		D	
4		FU45C	
5		8/28/03	
6			
7	**CHLORINATED PHENOLS (µg/L)**		
8	**EPA Method SW8040**		
9	Pentachlorophenol	**0.86**	J
10	2,4,6-Trichlorophenol	NA	
11	2,3,6-Trichlorophenol	NA	
12	2,4,5-Trichlorophenol	NA	
13	2,3,4-Trichlorophenol	NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	2,3,4,5-Tetrachlorophenol	NA	
16			
17	**SEMIVOLATILES (µg/L)**		
18	**EPA Method SW8270**		
19	Phenol	2	U
20	4-Methylphenol	1	U
21	Isophorone	1	U
22	2,4-Dimethylphenol	3	U
23	Benzoic Acid	50	U
24	Naphthalene	1	U
25	2-Methylnaphthalene	1	U
26	2,4,6-Trichlorophenol	5	U
27	2,4,5-Trichlorophenol	5	U
28	Acenaphthene	1	U
29	Dibenzofuran	1	U
30	Fluorene	1	U
31	Pentachlorophenol	5	U
32	bis(2-Ethylhexyl)phthalate	1	U
33			
34	**VOLATILES (µg/L)**		
35	**EPA Method SW8260**		
36	Acetone	5	U
37	Carbon Disulfide	1	U
38	2-Butanone	5	U
39	Benzene	1	U
40	Bromoform	1	U
41	Toluene	1	U
42	Ethylbenzene	1	U
43	Styrene	1	U
44	m,p-Xylene	1	U
45	o-Xylene	1	U
46	1,3,5-Trimethylbenzene	1	U
47	1,2,4-Trimethylbenzene	1	U
48	Isopropylbenzene	**3.4**	
49	n-Propylbenzene	**2.6**	
50	tert-Butylbenzene	1	U
51	sec-Butylbenzene	**1.2**	
52	4-Isopropyltoluene	1	U
53	n-Butylbenzene	1	U
54	Naphthalene	5	U
55			
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	**Method OR-DEQ**		
58	**TPH-Diesel**	NA	
59	**TPH-D Motor Oil**	NA	
60	**TPH-Gasoline**	NA	
61			
62	**PRIORITY POLLUTANT**		
63	**METALS (mg/L)**		
64	Arsenic (7060)	**0.017**	
65	Chromium (6010)	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			D		D		D		D		D		D		D		D		D		D		D		D		D
4			S177L		T176B		U235F		V208H		W391B		Y336D		Z225I		Z960I		AH76J		AU22D		BC27N		9912050-02A		BH96B
5			4/2/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/18/99		5/19/99		9/20/99		12/8/99		12/8/1999 (d)		2/17/00
66	60	Copper (6010)	**0.003**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.004**		0.002	U	0.002	U	0.002	U	NA		0.002
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	**0.004**		0.001	U	0.001	U	0.001	U	NA		0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01
69	63	Zinc (6010)	0.004	U	0.004	U	0.004	U	0.004	U	**0.007**	J2	0.004	U	0.004	U	**0.020**	J	0.004	U	0.004	U	0.008	U	NA		0.006
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**45.0**		**42.8**		**52.4**		**58.0**		NA		NA		NA		**49.1**		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	**16.2**		**15.4**		**18.8**		**20.9**		NA		NA		NA		**16.9**		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	**2.3**		**2.1**		**2.6**		**2.2**		NA		NA		NA		**2.7**		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	**8.31**		**7.96**		**9.13**		**9.54**		NA		NA		NA		**9.67**		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**200**		**180**		**220**		**280**		NA		NA		NA		**210**		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**200**		**180**		**220**		**280**		NA		NA		NA		**210**		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**230**	J2	**240**		**300**		**240**		**240**		**230**		**250**		**260**		**280**		**190**		NA		**310**
80	74	Chloride (mg/L) (EPA 325.2)	**11**		**2.0**		**2.4**		**2.4**		**3.2**		**1.4**		**2.1**		**2.8**		**2.0**		**2.8**		**2.8**		NA		**3.4**
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	0.010	U	0.010	U	NA		NA		NA		**0.049**		NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.022**	J	0.010	U	0.010	U	**0.011**		NA		NA		NA		**0.015**		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.03**		0.010	U	0.010	U	**0.014**		NA		NA		NA		**0.064**		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	2.5	U	2.5	U	**4.7**		2.5	U	NA		NA		NA		**5.8**		NA		NA		NA		NA		NA
85	79																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			D		D		D		D		D		D		D		D		D		D		D		D		D	
4			BR55E		CB49D		CK77F		CT37F		DE68G		DM30M		DW37E		ED34G		EM85B		ER93P		EZ03C		FF76G		FL58K	
5			5/22/00		8/28/00		11/7/00		2/12/01		6/4/01		8/14/01		11/28/01		2/28/02		6/26/02		08/27/02		11/12/02		2/12/03		5/8/03	
66	Copper (6010)	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	**0.003**		0.002	U	0.002	U	0.002	U
67	Lead (7421)	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.02	U	0.001	U	**0.002**	
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.019**		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
70																												
71	**MAJOR IONS AND CONVENTIONALS**																											
72	Calcium (mg/L) (6010)		NA		NA		NA		**40.6**		**43.4**		**34.3**		**40.1**	J	**32.2**		NA		NA		NA		**75.2**		NA	
73	Magnesium (mg/L) (6010)		NA		NA		NA		**13.8**		**14.9**		**12.0**		**14.0**	J	**11.3**		NA		NA		NA		**26.1**		NA	
74	Potassium (mg/L) (6010)		NA		NA		NA		**1.8**		**2.2**		**1.9**		**2.2**		**2.0**		NA		NA		NA		**3**		NA	
75	Sodium (mg/L) (6010)		NA		NA		NA		**7.40**		**7.64**		**6.73**		**7.77**		**7.57**		NA		NA		NA		**10.8**		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		NA		**200**		NA		NA		NA		**140**		NA		NA		NA		**350**		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		**200**		NA		NA		NA		**140**		NA		NA		NA		**350**		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**290**		**230**		**220**		**240**		**240**		**180**		**220**		**200**		**260**		**320**		**320**		**360**		**350**	
80	Chloride (mg/L) (EPA 325.2)		**3.2**		**3.1**		**5.4**		**5.4**		**2.4**		**4.5**		**2.4**		**2.9**		**3.3**		**3**		**3.1**		**4.2**		**3.5**	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA		NA		0.010	U	NA		NA		NA		**0.020**		NA		NA		NA		**0.19**		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		0.01	U	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		NA		0.010	UJ	NA		NA		NA		**0.020**		NA		NA		NA		**0.19**		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA		NA		**6.1**		NA		NA		NA		**12**		NA		NA		NA		**4**		NA	
85																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		D	
4		FU45C	
5		8/28/03	
66	Copper (6010)	0.002	U
67	Lead (7421)	0.001	U
68	Nickel (6010)	0.01	U
69	Zinc (6010)	0.006	U
70			
71	**MAJOR IONS AND CONVENTIONALS**		
72	Calcium (mg/L) (6010)	NA	
73	Magnesium (mg/L) (6010)	NA	
74	Potassium (mg/L) (6010)	NA	
75	Sodium (mg/L) (6010)	NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**290**	
80	Chloride (mg/L) (EPA 325.2)	**1.8**	
81	N-Nitrate (mg-N/L) (Calculated)	NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA	
85			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			D		D		D		D		D		D		D		D		D		D		D		D		D
4			S177L		T176B		U235F		V208H		W391B		Y336D		Z225I		Z960I		AH76J		AU22D		BC27N		9912050-02A		BH96B
5			4/2/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/18/99		5/19/99		9/20/99		12/8/99		12/8/1999 (d)		2/17/00
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.85		6.68		6.96		6.83		6.44		6.53		6.26		6.74		6.24		6.11		6.53		NM		6.69
88	82	Temperature (° C) (avg)	13.4		14.6		14.7		14.3		14.9		15.1		13.5		12.8		13.1		15.3		13.5		NM		13.7
89	83	Conductivity (um/hos)	391		409		366		487		424		481		415		472		422		414		319		NM		531
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		2.65		1.70		1.70		1.75		2.08		1.69		2.47		NM		5.09
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		10	U	NA
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			D		D		D		D		D		D		D		D		D		D		D		D		D	
4			BR55E		CB49D		CK77F		CT37F		DE68G		DM30M		DW37E		ED34G		EM85B		ER93P		EZ03C		FF76G		FL58K	
5			5/22/00		8/28/00		11/7/00		2/12/01		6/4/01		8/14/01		11/28/01		2/28/02		6/26/02		08/27/02		11/12/02		2/12/03		5/8/03	
86	**FIELD PARAMETERS**																											
87	pH (avg)		6.77		6.47		5.41		6.52		6.65		6.94		6.62		6.58		6.42		6.77		6.63		7.06		6.82	
88	Temperature (° C) (avg)		12.1		15.4		14.3		14.2		14.4		14.5		15.0		11.9		13.8		15.7		14.6		15.6		14.5	
89	Conductivity (um/hos)		446		357		300		331		344		331		334		260		452		442		532		707		495	
90	Dissolved oxygen (mg/L) (avg)		1.99		1.56		2.04		1.29		1.29		1.54		4.01		7.74		4.39		0.69		2.16		0		2.71	
91																												
92	**DIOXINS AND FURANS (ng/L)**																											
93	**Method 8290**																											
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120	**ETHANOL (mg/L)**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		D	
4		FU45C	
5		8/28/03	
86	**FIELD PARAMETERS**		
87	pH (avg)	6.93	
88	Temperature (° C) (avg)	14.9	
89	Conductivity (um/hos)	410	
90	Dissolved oxygen (mg/L) (avg)	1.84	
91			
92	**DIOXINS AND FURANS (ng/L)**		
93	**Method 8290**		
94	2,3,7,8-TCDF	NA	
95	Total TCDF	NA	
96	2,3,7,8-TCDD	NA	
97	Total TCDD	NA	
98	1,2,3,7,8-PeCDF	NA	
99	2,3,4,7,8-PeCDF	NA	
100	Total PeCDF	NA	
101	1,2,3,7,8-PeCDD	NA	
102	Total PeCDD	NA	
103	1,2,3,4,7,8-HxCDF	NA	
104	1,2,3,6,7,8-HxCDF	NA	
105	2,3,4,6,7,8-HxCDF	NA	
106	1,2,3,7,8,9-HxCDF	NA	
107	Total HxCDF	NA	
108	1,2,3,4,7,8-HxCDD	NA	
109	1,2,3,6,7,8-HxCDD	NA	
110	1,2,3,7,8,9-HxCDD	NA	
111	Total HxCDD	NA	
112	1,2,3,4,6,7,8-HpCDF	NA	
113	1,2,3,4,7,8,9-HpCDF	NA	
114	Total HpCDF	NA	
115	1,2,3,4,6,7,8-HpCDD	NA	
116	Total HpCDD	NA	
117	OCDF	NA	
118	OCDD	NA	
119			
120	**ETHANOL (mg/L)**	NA	
121			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			D		D		D		D		D		D		D		D		D		D		D		D		D
4			S177L		T176B		U235F		V208H		W391B		Y336D		Z225I		Z960I		AH76J		AU22D		BC27N		9912050-02A		BH96B
5			4/2/97		7/15/97		10/22/97		1/28/98		5/19/98		8/18/98		11/13/98		2/18/99		5/19/99		9/20/99		12/8/99		12/8/1999 (d)		2/17/00
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			D		D		D		D		D		D		D		D		D		D		D		D		D	
4			BR55E		CB49D		CK77F		CT37F		DE68G		DM30M		DW37E		ED34G		EM85B		ER93P		EZ03C		FF76G		FL58K	
5			5/22/00		8/28/00		11/7/00		2/12/01		6/4/01		8/14/01		11/28/01		2/28/02		6/26/02		08/27/02		11/12/02		2/12/03		5/8/03	
122	**PAHs (µg/L)**																											
123	**EPA Method SW8270 SIM**																											
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		D	
4		FU45C	
5		8/28/03	
122	**PAHs (µg/L)**		
123	**EPA Method SW8270 SIM**		
124	Naphthalene	NA	
125	2-Methylnaphthalene	NA	
126	Acenaphthylene	NA	
127	Acenaphthene	NA	
128	Fluorene	NA	
129	Anthracene	NA	
130	Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			F	
4			Y314H	
5			8/18/98	
7	1	**CHLORINATED PHENOLS (µg/L)**		
8	2	**EPA Method SW8040**		
9	3	Pentachlorophenol	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U
16	10			
17	11	**SEMIVOLATILES (µg/L)**		
18	12	**EPA Method SW8270**		
19	13	Phenol	2.0	U
20	14	4-Methylphenol	1.0	U
21	15	Isophorone	1.0	U
22	16	2,4-Dimethylphenol	3.0	U
23	17	Benzoic Acid	10	U
24	18	Naphthalene	1.0	U
25	19	2-Methylnaphthalene	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U
28	22	Acenaphthene	1.0	U
29	23	Dibenzofuran	1.0	U
30	24	Fluorene	1.0	U
31	25	Pentachlorophenol	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U
33	27			
34	28	**VOLATILES (µg/L)**		
35	29	**EPA Method SW8260**		
36	30	Acetone	5.0	U
37	31	Carbon Disulfide	1.0	U
38	32	2-Butanone	5.0	U
39	33	Benzene	1.0	U
40	34	Bromoform	1.0	U
41	35	Toluene	1.0	U
42	36	Ethylbenzene	1.0	U
43	37	Styrene	1.0	U
44	38	m,p-Xylene	1.0	U
45	39	o-Xylene	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U
48	42	Isopropylbenzene	1.0	U
49	43	n-Propylbenzene	1.0	U
50	44	tert-Butylbenzene	1.0	U
51	45	sec-Butylbenzene	1.0	UJ
52	46	4-Isopropyltoluene	1.0	U
53	47	n-Butylbenzene	1.0	U
54	48	Naphthalene	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	51	**Method OR-DEQ**		
58	52	**TPH-Diesel**	0.25	U
59	53	**TPH-D Motor Oil**	NA	
60	54	**TPH-Gasoline**	NA	
61	55			
62	56	**PRIORITY POLLUTANT**		
63	57	**METALS (mg/L)**		
64	58	Arsenic (7060)	**0.034**	
65	59	Chromium (6010)	**0.042**	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			F	
4			Y314H	
5			8/18/98	
66	60	Copper (6010)	**0.016**	
67	61	Lead (7421)	**0.006**	
68	62	Nickel (6010)	**0.03**	
69	63	Zinc (6010)	**0.047**	
70	64			
71	65	**MAJOR IONS AND CONVENTIONALS**		
72	66	Calcium (mg/L) (6010)	NA	
73	67	Magnesium (mg/L) (6010)	NA	
74	68	Potassium (mg/L) (6010)	NA	
75	69	Sodium (mg/L) (6010)	NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**200**	
80	74	Chloride (mg/L) (EPA 325.2)	**1.1**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA	
85	79			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			F	
4			Y314H	
5			8/18/98	
86	80	**FIELD PARAMETERS**		
87	81	pH (avg)	6.37	
88	82	Temperature (° C) (avg)	14.2	
89	83	Conductivity (um/hos)	448	
90	84	Dissolved oxygen (mg/L) (avg)	2.30	
91	85			
92	86	**DIOXINS AND FURANS (ng/L)**		
93	87	**Method 8290**		
94	88	2,3,7,8-TCDF	NA	
95	89	Total TCDF	NA	
96	90	2,3,7,8-TCDD	NA	
97	91	Total TCDD	NA	
98	92	1,2,3,7,8-PeCDF	NA	
99	93	2,3,4,7,8-PeCDF	NA	
100	94	Total PeCDF	NA	
101	95	1,2,3,7,8-PeCDD	NA	
102	96	Total PeCDD	NA	
103	97	1,2,3,4,7,8-HxCDF	NA	
104	98	1,2,3,6,7,8-HxCDF	NA	
105	99	2,3,4,6,7,8-HxCDF	NA	
106	100	1,2,3,7,8,9-HxCDF	NA	
107	101	Total HxCDF	NA	
108	102	1,2,3,4,7,8-HxCDD	NA	
109	103	1,2,3,6,7,8-HxCDD	NA	
110	104	1,2,3,7,8,9-HxCDD	NA	
111	105	Total HxCDD	NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA	
114	108	Total HpCDF	NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA	
116	110	Total HpCDD	NA	
117	111	OCDF	NA	
118	112	OCDD	NA	
119				
120		**ETHANOL (mg/L)**	NA	
121				

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			F	
4			Y314H	
5			8/18/98	
122		**PAHs (µg/L)**		
123		**EPA Method SW8270 SIM**		
124		Naphthalene	NA	
125		2-Methylnaphthalene	NA	
126		Acenaphthylene	NA	
127		Acenaphthene	NA	
128		Fluorene	NA	
129		Anthracene	NA	
130		Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
3			H		H		H		H		H		H		H		H		H		H		H		H		H	
4			S177B		T176D		U235V		V208C		W371F		Y314A		Z225V		Z960X		AH27D		AU22A		BB82E		BH75K		BR55N	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/17/98		11/13/98		2/16/99		5/17/99		9/20/99		12/6/99		2/15/00		5/23/00	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	**0.16**	J1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.44**		0.25	U	0.25	U	**0.19**	J1	0.25	U	0.25	UJ
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	**0.013**		**0.019**		0.05	U	0.05	U	**0.013**		**0.013**		**0.015**		**0.023**		**0.023**		**0.020**		**0.012**		**0.020**		**0.019**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH
1							
2							
3		H		H		H	
4		CT37N		ED16K		FF88N	
5		2/12/01		2/25/02		2/13/03	
6							
7	**CHLORINATED PHENOLS (µg/L)**						
8	**EPA Method SW8040**						
9	Pentachlorophenol	0.25	U	0.26	U	0.25	U
10	2,4,6-Trichlorophenol	NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA	
16							
17	**SEMIVOLATILES (µg/L)**						
18	**EPA Method SW8270**						
19	Phenol	NA		NA		NA	
20	4-Methylphenol	NA		NA		NA	
21	Isophorone	NA		NA		NA	
22	2,4-Dimethylphenol	NA		NA		NA	
23	Benzoic Acid	NA		NA		NA	
24	Naphthalene	NA		NA		NA	
25	2-Methylnaphthalene	NA		NA		NA	
26	2,4,6-Trichlorophenol	NA		NA		NA	
27	2,4,5-Trichlorophenol	NA		NA		NA	
28	Acenaphthene	NA		NA		NA	
29	Dibenzofuran	NA		NA		NA	
30	Fluorene	NA		NA		NA	
31	Pentachlorophenol	NA		NA		NA	
32	bis(2-Ethylhexyl)phthalate	NA		NA		NA	
33							
34	**VOLATILES (µg/L)**						
35	**EPA Method SW8260**						
36	Acetone	NA		NA		NA	
37	Carbon Disulfide	NA		NA		NA	
38	2-Butanone	NA		NA		NA	
39	Benzene	NA		NA		NA	
40	Bromoform	NA		NA		NA	
41	Toluene	NA		NA		NA	
42	Ethylbenzene	NA		NA		NA	
43	Styrene	NA		NA		NA	
44	m,p-Xylene	NA		NA		NA	
45	o-Xylene	NA		NA		NA	
46	1,3,5-Trimethylbenzene	NA		NA		NA	
47	1,2,4-Trimethylbenzene	NA		NA		NA	
48	Isopropylbenzene	NA		NA		NA	
49	n-Propylbenzene	NA		NA		NA	
50	tert-Butylbenzene	NA		NA		NA	
51	sec-Butylbenzene	NA		NA		NA	
52	4-Isopropyltoluene	NA		NA		NA	
53	n-Butylbenzene	NA		NA		NA	
54	Naphthalene	NA		NA		NA	
55							
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**						
57	**Method OR-DEQ**						
58	**TPH-Diesel**	NA		NA		NA	
59	**TPH-D Motor Oil**	NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA	
61							
62	**PRIORITY POLLUTANT**						
63	**METALS (mg/L)**						
64	Arsenic (7060)	**0.015**		**0.021**		**0.017**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			H		H		H		H		H		H		H		H		H		H		H		H		H	
4			S177B		T176D		U235V		V208C		W371F		Y314A		Z225V		Z960X		AH27D		AU22A		BB82E		BH75K		BR55N	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/17/98		11/13/98		2/16/99		5/17/99		9/20/99		12/6/99		2/15/00		5/23/00	
66	60	Copper (6010)	**0.003**		**0.006**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.010**		**0.011**		0.002	U	0.002	U	0.002	U	**0.003**	
67	61	Lead (7421)	0.001	U	**0.001**		0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.004	U	**0.014**	J2	**0.010**		**0.005**		**0.004**	J2	**0.006**		0.004	U	**0.012**	J	0.019	U	**0.006**		0.006	U	0.006	U	0.006	U
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	**22.4**		**27.7**		**25.4**		**24.9**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**7.80**		**9.86**		**8.80**		**8.27**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**2.3**		**2.2**		**2.4**		**2.3**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**5.41**		**6.27**		**5.92**		**5.70**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**100**		**110**		**110**		**120**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**100**		**110**		**110**		**120**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**160**	J2	**140**		**150**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	**1.5**		**2.0**		**2.7**		**1.6**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.016**		0.010	U	**0.011**		0.010	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	0.010	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.016**		0.010	U	**0.011**		0.010	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**4.8**	J	2.5	U	**3.6**		**6.3**		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85	79																											

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH
1							
2							
3		H		H		H	
4		CT37N		ED16K		FF88N	
5		2/12/01		2/25/02		2/13/03	
66	Copper (6010)	**0.004**		**0.007**		**0.004**	
67	Lead (7421)	0.001	U	**0.001**		0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	**0.008**		**0.01**	
70							
71	**MAJOR IONS AND CONVENTIONALS**						
72	Calcium (mg/L) (6010)	NA		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA	
80	Chloride (mg/L) (EPA 325.2)	NA		NA		NA	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA	
85							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			H		H		H		H		H		H		H		H		H		H		H		H		H	
4			S177B		T176D		U235V		V208C		W371F		Y314A		Z225V		Z960X		AH27D		AU22A		BB82E		BH75K		BR55N	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/17/98		11/13/98		2/16/99		5/17/99		9/20/99		12/6/99		2/15/00		5/23/00	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.77		6.85		7.02		6.85		6.37		6.56		6.41		7.07		7.07		7.07		6.26		6.64		6.58	
88	82	Temperature (° C) (avg)	13.7		15.1		15.1		14.4		15.0		14.8		14.4		14.3		14.3		14.3		14.5		13.5		14.2	
89	83	Conductivity (um/hos)	212		283		225		243		186		251		100		193		193		193		258		223		191	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		1.40		1.69		1.60		1.60		1.60		2.34		2.18		2.00	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH
1							
2							
3		H		H		H	
4		CT37N		ED16K		FF88N	
5		2/12/01		2/25/02		2/13/03	
86	**FIELD PARAMETERS**						
87	pH (avg)	6.54		6.29		7.01	
88	Temperature (° C) (avg)	13.3		13.4		14.9	
89	Conductivity (um/hos)	230		292		369	
90	Dissolved oxygen (mg/L) (avg)	3.06		4.89		0	
91							
92	**DIOXINS AND FURANS (ng/L)**						
93	**Method 8290**						
94	2,3,7,8-TCDF	NA		NA		NA	
95	Total TCDF	NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA	
97	Total TCDD	NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA	
100	Total PeCDF	NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA	
102	Total PeCDD	NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA	
107	Total HxCDF	NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA	
111	Total HxCDD	NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA	
114	Total HpCDF	NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA	
116	Total HpCDD	NA		NA		NA	
117	OCDF	NA		NA		NA	
118	OCDD	NA		NA		NA	
119							
120	**ETHANOL (mg/L)**	NA		NA		NA	
121							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			H		H		H		H		H		H		H		H		H		H		H		H		H	
4			S177B		T176D		U235V		V208C		W371F		Y314A		Z225V		Z960X		AH27D		AU22A		BB82E		BH75K		BR55N	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/17/98		11/13/98		2/16/99		5/17/99		9/20/99		12/6/99		2/15/00		5/23/00	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH
1							
2							
3		H		H		H	
4		CT37N		ED16K		FF88N	
5		2/12/01		2/25/02		2/13/03	
122	**PAHs (µg/L)**						
123	**EPA Method SW8270 SIM**						
124	Naphthalene	NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA	
126	Acenaphthylene	NA		NA		NA	
127	Acenaphthene	NA		NA		NA	
128	Fluorene	NA		NA		NA	
129	Anthracene	NA		NA		NA	
130	Dibenzofuran	NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of J1								Dup of J1											
3			J1		J1D		J1		J1		J1		J4		J1		J1		J1		J1		J1	
4			S177H		S177I		T176P		U235J		V224O		V224K		W371N		Y314I		Z225O		Z960C		AH49C	
5			4/2/97		4/2/97		7/16/97		10/22/97		1/29/98		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99	
7	1	**CHLORINATED PHENOLS (µg/L)**																						
8	2	**EPA Method SW8040**																						
9	3	Pentachlorophenol	**32**		**33**		**24**		**7.8**		**7.3**		**8.4**		**7.5**		**5.8**		**2.0**		**8.3**		**4.6**	
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.4	U	0.25	U	0.27	U	0.67	U	**0.29**		**0.22**	J1	**0.25**		0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**3.4**		**3.4**		**3.0**		**1.8**		**0.98**		**1.1**		**0.51**		**0.33**		0.25	U	**0.43**		0.17	J1
15	9	2,3,4,5-Tetrachlorophenol	**0.94**		**0.70**		**0.5**		**0.28**		**0.23**	J1	**0.20**	J1	**0.16**	J1	**0.23**	J1	0.25	U	0.25	U	0.25	U
16	10																							
17	11	**SEMIVOLATILES (µg/L)**																						
18	12	**EPA Method SW8270**																						
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	**1.1**		**1.9**		**2.5**		**2.4**		**2.8**	J2	**1.4**		1.0	U	**3.6**		**2.4**	
25	19	2-Methylnaphthalene	1.0	U	1.0	U	**1.1**		**1.8**		**2.6**		**2.4**		**2.9**	J2	**1.3**		1.0	U	**3.5**		**2.2**	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**44**		**52**		**20**		**11**		**11**		**8.8**		**10**		**6.5**		5.0	U	**12**		**4.4**	J1
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																							
34	28	**VOLATILES (µg/L)**																						
35	29	**EPA Method SW8260**																						
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	9.9	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	**6.5**		**5.9**		**12**		**7.5**		**4.0**		**3.3**		**8.4**		**5.5**		**2.5**		**6.2**		**1.9**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**4.4**		**4.0**		**6.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	**4.9**		**4.1**		**6.1**		**3.8**		**4.0**	J2	**2.4**	J2	**5.2**		**2.7**		**2.1**		**4.4**		1.0	U
47	41	1,2,4-Trimethylbenzene	**41**		**36**		**47**		**37**	J2	**26**	J2	**19**	J2	**46**		**29**		**16**		**44**		**8.8**	
48	42	Isopropylbenzene	**5.0**		**4.2**		**7.9**		**6.9**	J2	**4.2**	J2	**2.7**	J2	**7.7**		**6.6**		**4.8**		**7.6**		**2.1**	
49	43	n-Propylbenzene	**8.7**		**7.2**		**14**		**14**		**8.0**	J2	**5.0**	J2	**14**		**11**		**7.5**		**12**		**3.4**	
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	**1.6**		**1.4**		**2.2**		**1.8**	J2	**1.3**		1.0	U	**2.0**		**1.6**	J2	1.0	U	**2.6**		1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	**1.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	**1.3**		**1.1**		**1.9**		**1.7**	J2	**1.1**		1.0	U	**2.0**		**1.3**		1.0	U	**1.2**		1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**5.4**		5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	51	**Method OR-DEQ**																						
58	52	**TPH-Diesel**	**0.30**		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.52**		0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																							
62	56	**PRIORITY POLLUTANT**																						
63	57	**METALS (mg/L)**																						
64	58	Arsenic (7060)	**0.007**		**0.006**		**0.006**		0.05	U	0.05	U	0.05	U	**0.008**		**0.007**		**0.008**		**0.007**		**0.006**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
3		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1	
4		AU22H		BC27K		9912050-03A		BH96R		BR64D		CB49G		CL03H		CT55F		DE68I		DM52B		DW48C		ED23C		EM85D	
5		9/20/99		12/8/99		12/8/1999 (d)		2/16/00		5/24/00		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	**1.7**		**0.94**		NA		**0.81**		**1.7**		0.25	U	0.25	U	**0.50**		**0.36**		0.25	U	**0.25**		NA		**4.4**	
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	NA		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	4-Methylphenol	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	Isophorone	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	NA		3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	Benzoic Acid	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U
24	Naphthalene	**1.1**		**0.7**	J1	NA		**1.4**		**3.6**		1.0	U	1.0	U	**2.9**		**1.3**		1.0	U	1.0	U	1.0	U	**1.4**	
25	2-Methylnaphthalene	**1.2**		**0.5**	J1	NA		**1.2**		**3.3**		1.0	U	1.0	U	**3.0**		**1.5**		1.0	U	1.0	U	1.0	U	1.0	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	Acenaphthene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	Dibenzofuran	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	Fluorene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	Pentachlorophenol	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**280**		5.0	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	**0.6**	J1	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**25**		1.0	U	1.0	U	4.0	U	4.0	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	12	U	5.0	U	5.0	U	5.0	U	**10**	M
37	Carbon Disulfide	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	2-Butanone	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	Benzene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	Bromoform	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	Toluene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	Ethylbenzene	**1.5**		1.0	U	NA		1.0	U	**3.4**		1.0	U	1.0	U	**1.2**		**1.2**		1.0	U	1.0	U	1.0	U	**1.1**	
43	Styrene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	m,p-Xylene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.5**		1.0	U
45	o-Xylene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3.0**		1.0	U
46	1,3,5-Trimethylbenzene	**1.4**		1.0	U	NA		1.0	U	**3.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**6.4**		1.0	U
47	1,2,4-Trimethylbenzene	**6.4**		**2.4**		NA		**2.4**		**7.4**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**50**		1.0	U
48	Isopropylbenzene	**2.4**		**1.2**		NA		**1.3**		**8.2**		**1.5**		**2.5**		**3.3**		**4.7**		1.0	U	**1.3**		**3.5**		**8.4**	
49	n-Propylbenzene	**4.4**		**1.9**		NA		**2.0**		**13**		**3.3**		**3.8**		**5.7**		**8.3**		**1.1**		**2.2**		**4.0**		**12**	
50	tert-Butylbenzene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	sec-Butylbenzene	1.0	U	1.0	U	NA		1.0	U	**1.6**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.0**	
52	4-Isopropyltoluene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.2**		1.0	U
53	n-Butylbenzene	1.0	U	1.0	U	NA		1.0	U	**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
54	Naphthalene	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	0.25	U	0.25	U	NA		0.25	U	0.25	(a)	0.25	U	0.25	U	**0.30**	(d)	NA		NA		NA		**2.1**		NA	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		0.50	U	NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.015**		**0.015**		NA		**0.013**		**0.011**		**0.010**		**0.012**		**0.010**		**0.011**		**0.014**		**0.013**		**0.012**		**0.014**	
65	Chromium (6010)	0.005	U	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
1											
2											
3		J1		J1		J1		J1		J1	
4		ES04F		EZ03K		FF76J		FL58I		FU31A	
5		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
6											
7	**CHLORINATED PHENOLS (µg/L)**										
8	**EPA Method SW8040**										
9	Pentachlorophenol	**3.1**		**0.57**		**0.35**		**0.73**		**1.3**	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA	
16											
17	**SEMIVOLATILES (µg/L)**										
18	**EPA Method SW8270**										
19	Phenol	2.3	U	2	U	2.1	U	2	U	2	U
20	4-Methylphenol	1.2	U	1	U	1	U	1	U	1	U
21	Isophorone	1.2	U	1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.5	U	3	U	3.1	U	3	U	3	U
23	Benzoic Acid	58	U	50	U	52	U	50	U	50	U
24	Naphthalene	1.2	U	**1**		1	U	1	U	**1.5**	
25	2-Methylnaphthalene	1.2	U	1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.8	U	5	U	5.2	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.8	U	5	U	5.2	U	5	U	5	U
28	Acenaphthene	1.2	U	1	U	1	U	1	U	1	U
29	Dibenzofuran	1.2	U	1	U	1	U	1	U	1	U
30	Fluorene	1.2	U	1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.8	U	5	U	5.2	U	5	U	5	U
32	bis(2-Ethylhexyl)phthalate	4.7	U	4	U	1	U	1	U	1	U
33											
34	**VOLATILES (µg/L)**										
35	**EPA Method SW8260**										
36	Acetone	5	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	5	U	5	U	5	U
39	Benzene	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1	U	1	U	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1	U	1	U	1	U	1	U	1	U
43	Styrene	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1	U	1	U	**4.5**		1	U	1	U
48	Isopropylbenzene	**5.2**		**3.5**		**5.4**		**1.1**		**14**	
49	n-Propylbenzene	**7.8**		**4.9**		**7.9**		**1.5**		**21**	
50	tert-Butylbenzene	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1	U	1	U	**1.6**		1	U	**2**	
52	4-Isopropyltoluene	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1	U	1	U	1	U	1	U	**1.7**	
54	Naphthalene	5	U	5	U	5	U	5	U	**5**	
55											
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	**Method OR-DEQ**										
58	**TPH-Diesel**	NA		NA		**0.4**		NA		NA	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61											
62	**PRIORITY POLLUTANT**										
63	**METALS (mg/L)**										
64	Arsenic (7060)	**0.01**		0.05	U	**0.014**		**0.014**		**0.009**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of J1								Dup of J1											
3			J1		J1D		J1		J1		J1		J4		J1		J1		J1		J1		J1	
4			S177H		S177I		T176P		U235J		V224O		V224K		W371N		Y314I		Z225O		Z960C		AH49C	
5			4/2/97		4/2/97		7/16/97		10/22/97		1/29/98		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.001	U	0.02	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.004	U	0.004	U	0.004	U	0.004	U	**0.005**		**0.006**		0.004	U	**0.004**		0.004	U	**0.008**	J	**0.007**	
70	64																							
71	65	**MAJOR IONS AND CONVENTIONALS**																						
72	66	Calcium (mg/L) (6010)	**26.4**		**26.7**		**26.1**		**27.5**		**30.8**		**30.5**		NA		NA		NA		**20.2**		NA	
73	67	Magnesium (mg/L) (6010)	**10.1**		**10.2**		**9.96**		**10.1**		**10.9**		**10.8**		NA		NA		NA		**6.67**		NA	
74	68	Potassium (mg/L) (6010)	**3.1**		**2.8**		**3.2**		**3.4**		**3.5**		**3.4**		NA		NA		NA		**3.1**		NA	
75	69	Sodium (mg/L) (6010)	**7.40**		**7.47**		**8.13**		**8.29**		**8.49**		**8.46**		NA		NA		NA		**8.05**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**120**		**120**		**100**	**J2**	**130**		**140**		**140**		NA		NA		NA		**74**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**120**		**120**		**100**	J2	**130**		**140**		**140**		NA		NA		NA		**74**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		NT		**160**	J2	**180**		**170**		**170**		180		170		140		**140**		**150**	
80	74	Chloride (mg/L) (EPA 325.2)	**4.3**		**5.4**		**3.4**		**2.5**		**2.3**		**2.2**		3.7		1.0	U	1.8		**3.7**		**3.7**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.057**		**0.011**		0.010	U	**0.025**		**1.8**	J2	**1.4**	J2	NA		NA		NA		**1.8**		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	**0.01**	J	**0.016**	J2	0.010	U	0.010	UJ	0.010	UJ	NA		NA		NA		0.010	U	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.057**		**0.021**		**0.015**	J2	**0.025**		**1.8**	J2	**1.4**	J2	NA		NA		NA		**1.8**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**7.0**	J	**26**	J	**10**		**8.6**		**9.0**		**12**		NA		NA		NA		**15**		NA	
85	79																							

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
1																											
2																											
3		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1	
4		AU22H		BC27K		9912050-03A		BH96R		BR64D		CB49G		CL03H		CT55F		DE68I		DM52B		DW48C		ED23C		EM85D	
5		9/20/99		12/8/99		12/8/1999 (d)		2/16/00		5/24/00		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02	
66	Copper (6010)	0.002	U	0.002	U	NA		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.003**		0.002	U
67	Lead (7421)	0.001	U	**0.001**		NA		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U
69	Zinc (6010)	0.004	U	0.006	U	NA		0.006	U	**0.006**		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.007**		0.006	U
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**20.6**		**20.5**		**22.7**		**21.1**		**29.4**		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**7.21**		**7.38**		**8.65**		**7.62**		**10.1**		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**2.3**		**2.4**		**2.6**		**2.6**		**3.4**		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**6.48**		**6.15**		**6.58**		**6.56**		**8.36**		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**100**		NA		NA		NA		**130**		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**100**		NA		NA		NA		**130**		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**170**		**160**		NA		**200**		**160**		**160**		**160**		**150**		**160**		**150**		**140**		**210**		**160**	
80	Chloride (mg/L) (EPA 325.2)	**2.6**		**3.1**		NA		**4.3**		**2.5**		**2.0**		**2.3**		**3.0**		**2.6**		**6.2**		**2.6**		**8.8**		**3.6**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**2.4**		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.018**		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**2.4**	J	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**10**		NA		NA		NA		**14**		NA	
85																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
1											
2											
3		J1		J1		J1		J1		J1	
4		ES04F		EZ03K		FF76J		FL58I		FU31A	
5		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
66	Copper (6010)	**0.003**		0.002	U	**0.004**		0.002	U	0.002	U
67	Lead (7421)	0.001	U	0.02	U	**0.002**		0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	**0.007**		**0.006**		**0.007**		0.006	U	0.006	U
70											
71	**MAJOR IONS AND CONVENTIONALS**										
72	Calcium (mg/L) (6010)	NA		NA		**43.2**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**16.8**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**3.1**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**8.7**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**130**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**130**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**160**		**180**		**260**		**150**		**220**	
80	Chloride (mg/L) (EPA 325.2)	**3.2**		**3.5**		**2.9**		**3.8**		**2.3**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.039**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		**0.015**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.054**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**110**		NA		NA	
85											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of J1								Dup of J1											
3			J1		J1D		J1		J1		J1		J4		J1		J1		J1		J1		J1	
4			S177H		S177I		T176P		U235J		V224O		V224K		W371N		Y314I		Z225O		Z960C		AH49C	
5			4/2/97		4/2/97		7/16/97		10/22/97		1/29/98		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99	
86	80	**FIELD PARAMETERS**																						
87	81	pH (avg)	6.75		6.75		6.62		6.75		6.66		6.65		6.56		6.35		6.17		6.43		5.77	
88	82	Temperature (° C) (avg)	12.8		12.8		14.7		15.3		14.5		14.5		12.6		15.5		15.0		13.1		12.9	
89	83	Conductivity (um/hos)	319		319		256		239		314		315		289		330		138		207		241	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		NA		2.85		2.20		1.82		1.84		2.33	
91	85																							
92	86	**DIOXINS AND FURANS (ng/L)**																						
93	87	**Method 8290**																						
94	88	2,3,7,8-TCDF	0.0057	U	0.0017	U	0.0023	U	0.0038	U	NA		NA		0.0017	U	0.0019	U	0.0019	U	0.0035	U	0.0011	U
95	89	Total TCDF	**0.0110**		0.0012-0.0034	U	0.0010-0.0058	U	0.0018-0.0064	U	NA		NA		0.0017	U	0.0019	U	0.0019	U	**0.0024**		0.0011	U
96	90	2,3,7,8-TCDD	0.0054	U	0.0028	U	0.0029	U	0.0053	U	NA		NA		0.0022	U	0.0050	U	0.0034	U	0.0057	U	0.0044	U
97	91	Total TCDD	0.0037-0.0087	U	0.0015-0.0049	U	0.0015-0.0050	U	0.0024-0.0087	U	NA		NA		0.0022	U	0.0050	U	**0.0016**		0.0057	U	0.0044	U
98	92	1,2,3,7,8-PeCDF	0.0029	U	0.0032	U	0.0051	U	0.0031	U	NA		NA		0.0019	U	0.0035	U	0.0020	U	0.0049	U	0.0021	U
99	93	2,3,4,7,8-PeCDF	0.0035	U	0.0031	U	0.0024	U	0.0046	U	NA		NA		0.0023	U	0.0037	U	0.0027	U	0.0042	U	0.0020	U
100	94	Total PeCDF	0.0029-0.0064	U	0.0013-0.0047	U	0.0036-0.0067	U	**0.0022**		NA		NA		0.0021	U	0.0036	U	0.0024	U	0.0046	U	0.0021	U
101	95	1,2,3,7,8-PeCDD	0.0080	U	0.0088	U	0.0048	U	0.0068	U	NA		NA		0.0041	U	0.0046	U	0.0022	U	0.0095	U	0.0027	U
102	96	Total PeCDD	0.0057-0.016	U	0.0033-0.010	U	0.0027-0.010	U	0.0039-0.012	U	NA		NA		0.0041	U	0.0046	U	0.0022	U	0.0095	U	0.0027	U
103	97	1,2,3,4,7,8-HxCDF	0.0054	U	0.0025	U	0.0048	U	0.0017	U	NA		NA		**0.0018**		0.0039	U	0.0018	U	0.0059	U	0.0024	U
104	98	1,2,3,6,7,8-HxCDF	0.0042	U	0.0042	U	0.0020	U	0.0035	U	NA		NA		0.0025	U	0.0036	U	0.0180	U	0.0024	U	**0.0015**	
105	99	2,3,4,6,7,8-HxCDF	0.0052	U	0.0050	U	0.0038	U	0.0036	U	NA		NA		0.0041	U	0.0066	U	**0.0031**		0.0044	U	**0.0028**	
106	100	1,2,3,7,8,9-HxCDF	0.0044	U	0.0040	U	0.0023	U	0.0026	U	NA		NA		0.0037	U	0.0032	U	0.0025	U	0.0056	U	0.0030	U
107	101	Total HxCDF	0.0052	U	0.0022-0.0063	U	0.0018-0.0071	U	0.0036	U	NA		NA		0.0072	U	**0.0031**		**0.0047**		0.0046	U	**0.0130**	
108	102	1,2,3,4,7,8-HxCDD	0.0100	U	0.0058	U	0.0046	U	0.0072	U	NA		NA		0.0047	U	0.0032	U	0.0017	U	0.0085	U	0.0027	U
109	103	1,2,3,6,7,8-HxCDD	0.0100	U	0.0084	U	0.0068	U	0.0051	U	NA		NA		0.0039	U	0.0046	U	0.0015	U	0.0071	U	0.0031	U
110	104	1,2,3,7,8,9-HxCDD	0.0080	U	0.0073	U	0.0044	U	0.0041	U	NA		NA		0.0042	U	0.0037	U	0.0027	U	0.0041	U	0.0015	U
111	105	Total HxCDD	0.0047-0.014	U	0.0031-0.011	U	0.0025-0.011	U	0.0028-0.015	U	NA		NA		0.0043	U	0.0038	U	0.0020	U	0.0066	U	0.0024	U
112	106	1,2,3,4,6,7,8-HpCDF	0.0080	U	**0.0050**		**0.0031**		0.0021	U	NA		NA		0.0037	U	0.0180	U	0.0033	U	0.0023	U	**0.0018**	
113	107	1,2,3,4,7,8,9-HpCDF	0.0089	U	0.0190	U	0.0063	U	0.0035	U	NA		NA		0.0055	U	0.0077	U	0.0039	U	0.0039	U	0.0023	U
114	108	Total HpCDF	0.0042-0.015	U	**0.0050**		**0.0110**		0.0011-0.0052	U	NA		NA		0.0046	U	0.0129	U	**0.0055**		0.0031	U	**0.0120**	
115	109	1,2,3,4,6,7,8-HpCDD	0.0280	U	0.0250	U	**0.0089**		**0.0100**		NA		NA		0.0067	U	**0.0580**		**0.0067**		**0.0120**		**0.0070**	
116	110	Total HpCDD	**0.0410**		0.0250	U	**0.0089**		**0.0100**		NA		NA		0.0067	U	**0.0058**		**0.0150**		**0.0250**		**0.0094**	
117	111	OCDF	**0.0320**		**0.0300**		**0.0160**		0.0075	U	NA		NA		0.0110	U	**0.0074**		0.0110	U	**0.0180**		**0.0056**	
118	112	OCDD	**0.2500**		**0.2300**		**0.0840**		0.0420	U	NA		NA		0.0210	U	**0.0490**		**0.0580**		**0.1600**		0.0530	U
119	113																							
120	114	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121	115																							

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
1																											
2																											
3		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1	
4		AU22H		BC27K		9912050-03A		BH96R		BR64D		CB49G		CL03H		CT55F		DE68I		DM52B		DW48C		ED23C		EM85D	
5		9/20/99		12/8/99		12/8/1999 (d)		2/16/00		5/24/00		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.33		6.57		NM		6.59		6.38		6.58		5.27		6.17		6.64		6.85		6.60		6.42		6.52	
88	Temperature (° C) (avg)	16.6		12.4		NM		14.3		14.8		15.6		14.4		14.3		13.6		15.8		14.6		13.6		15.4	
89	Conductivity (um/hos)	222		245		NM		272		291		248		212		202		226		278		241		284		224	
90	Dissolved oxygen (mg/L) (avg)	2.24		2.78		NM		1.57		1.74		1.62		1.09		0.57		1.51		1.44		3.88		6.41		4.98	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120	**ETHANOL (mg/L)**	NA		NA		10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
1											
2											
3		J1		J1		J1		J1		J1	
4		ES04F		EZ03K		FF76J		FL58I		FU31A	
5		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
86	**FIELD PARAMETERS**										
87	pH (avg)	6.79		6.4		6.9		6.6		6.46	
88	Temperature (° C) (avg)	15.7		15.6		13.7		13.7		15.8	
89	Conductivity (um/hos)	241		232		474		223		343	
90	Dissolved oxygen (mg/L) (avg)	1.34		3.21		0		3.1		2.23	
91											
92	**DIOXINS AND FURANS (ng/L)**										
93	**Method 8290**										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA	
119											
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of J1								Dup of J1											
3			J1		J1D		J1		J1		J1		J4		J1		J1		J1		J1		J1	
4			S177H		S177I		T176P		U235J		V224O		V224K		W371N		Y314I		Z225O		Z960C		AH49C	
5			4/2/97		4/2/97		7/16/97		10/22/97		1/29/98		1/29/98		5/19/98		8/18/98		11/12/98		2/17/99		5/18/99	
122	116	**PAHs (µg/L)**																						
123	117	**EPA Method SW8270 SIM**																						
124	118	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	119	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	120	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	121	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	122	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	123	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	124	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX
1																											
2																											
3		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1		J1	
4		AU22H		BC27K		9912050-03A		BH96R		BR64D		CB49G		CL03H		CT55F		DE68I		DM52B		DW48C		ED23C		EM85D	
5		9/20/99		12/8/99		12/8/1999 (d)		2/16/00		5/24/00		8/29/00		11/10/00		2/14/01		6/5/01		8/14/01		11/29/01		2/26/02		6/26/02	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH
1											
2											
3		J1		J1		J1		J1		J1	
4		ES04F		EZ03K		FF76J		FL58I		FU31A	
5		08/28/02		11/12/02		2/12/03		5/8/03		8/27/03	
122	**PAHs (µg/L)**										
123	**EPA Method SW8270 SIM**										
124	Naphthalene	NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
2													Dup of K								Dup of K						
3			K		K		K		K		K		W		K		K		K		Z		K		K		K
4			S177A		T176U		U235X		V208E		W391J		W391K		Y314L		Z225U		Z960W		Z960V		AH27C		BB82B		BH75J
5			4/1/97		7/16/97		10/23/97		1/28/98		5/19/98		5/19/98		8/17/98		11/13/98		2/16/99		2/16/99		5/17/99		12/6/99		2/15/00
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	UJ	2.0	U	2.0	U	2.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
20	14	4-Methylphenol	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
21	15	Isophorone	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
22	16	2,4-Dimethylphenol	3.0	UJ	3.0	U	3.0	U	3.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
23	17	Benzoic Acid	10	UJ	10	U	10	U	10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
24	18	Naphthalene	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
25	19	2-Methylnaphthalene	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
26	20	2,4,6-Trichlorophenol	5.0	UJ	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
27	21	2,4,5-Trichlorophenol	5.0	UJ	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
28	22	Acenaphthene	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
29	23	Dibenzofuran	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
30	24	Fluorene	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
31	25	Pentachlorophenol	5.0	UJ	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	3.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA				NA		NA
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	0.001	U	**0.001**		0.05	U	0.05	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	**0.004**		**0.010**
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.028**		**0.117**

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			K		K		K		K		K		K		K		K		K		K		K		K		K	
4			BR55O		CB49K		CK77L		CT37O		DE68D		DM52K		DW29I		ED16H		EM75F		ER92B		EZ03J		FF88G		FL41C	
5			5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03		5/7/03	
7	**CHLORINATED PHENOLS (µg/L)**																											
8	**EPA Method SW8040**																											
9	Pentachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
10	2,4,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																												
17	**SEMIVOLATILES (µg/L)**																											
18	**EPA Method SW8270**																											
19	Phenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
20	4-Methylphenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
21	Isophorone		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
22	2,4-Dimethylphenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
23	Benzoic Acid		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
24	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
25	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
26	2,4,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
27	2,4,5-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
28	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
29	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
30	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
31	Pentachlorophenol		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
32	bis(2-Ethylhexyl)phthalate		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
33																												
34	**VOLATILES (µg/L)**																											
35	**EPA Method SW8260**																											
36	Acetone		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
37	Carbon Disulfide		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
38	2-Butanone		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
39	Benzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
40	Bromoform		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
41	Toluene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
42	Ethylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
43	Styrene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
44	m,p-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
45	o-Xylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
46	1,3,5-Trimethylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
47	1,2,4-Trimethylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
48	Isopropylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
49	n-Propylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
50	tert-Butylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
51	sec-Butylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
52	4-Isopropyltoluene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
53	n-Butylbenzene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
54	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
55																												
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																											
57	**Method OR-DEQ**																											
58	**TPH-Diesel**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
59	**TPH-D Motor Oil**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																												
62	**PRIORITY POLLUTANT**																											
63	**METALS (mg/L)**																											
64	Arsenic (7060)		0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	**0.001**		0.001	U	**0.001**		**0.002**		0.001	U	0.05	U	0.001	U	**0.001**	
65	Chromium (6010)		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.009**		0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		K	
4		FU45B	
5		8/28/03	
6			
7	**CHLORINATED PHENOLS (µg/L)**		
8	**EPA Method SW8040**		
9	Pentachlorophenol	NA	
10	2,4,6-Trichlorophenol	NA	
11	2,3,6-Trichlorophenol	NA	
12	2,4,5-Trichlorophenol	NA	
13	2,3,4-Trichlorophenol	NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	2,3,4,5-Tetrachlorophenol	NA	
16			
17	**SEMIVOLATILES (µg/L)**		
18	**EPA Method SW8270**		
19	Phenol	NA	
20	4-Methylphenol	NA	
21	Isophorone	NA	
22	2,4-Dimethylphenol	NA	
23	Benzoic Acid	NA	
24	Naphthalene	NA	
25	2-Methylnaphthalene	NA	
26	2,4,6-Trichlorophenol	NA	
27	2,4,5-Trichlorophenol	NA	
28	Acenaphthene	NA	
29	Dibenzofuran	NA	
30	Fluorene	NA	
31	Pentachlorophenol	NA	
32	bis(2-Ethylhexyl)phthalate	NA	
33			
34	**VOLATILES (µg/L)**		
35	**EPA Method SW8260**		
36	Acetone	NA	
37	Carbon Disulfide	NA	
38	2-Butanone	NA	
39	Benzene	NA	
40	Bromoform	NA	
41	Toluene	NA	
42	Ethylbenzene	NA	
43	Styrene	NA	
44	m,p-Xylene	NA	
45	o-Xylene	NA	
46	1,3,5-Trimethylbenzene	NA	
47	1,2,4-Trimethylbenzene	NA	
48	Isopropylbenzene	NA	
49	n-Propylbenzene	NA	
50	tert-Butylbenzene	NA	
51	sec-Butylbenzene	NA	
52	4-Isopropyltoluene	NA	
53	n-Butylbenzene	NA	
54	Naphthalene	NA	
55			
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	**Method OR-DEQ**		
58	**TPH-Diesel**	NA	
59	**TPH-D Motor Oil**	NA	
60	**TPH-Gasoline**	NA	
61			
62	**PRIORITY POLLUTANT**		
63	**METALS (mg/L)**		
64	Arsenic (7060)	**0.002**	
65	Chromium (6010)	**0.006**	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2													Dup of K								Dup of K						
3			K		K		K		K		K		W		K		K		K		Z		K		K		K
4			S177A		T176U		U235X		V208E		W391J		W391K		Y314L		Z225U		Z960W		Z960V		AH27C		BB82B		BH75J
5			4/1/97		7/16/97		10/23/97		1/28/98		5/19/98		5/19/98		8/17/98		11/13/98		2/16/99		2/16/99		5/17/99		12/6/99		2/15/00
66	60	Copper (6010)	**0.006**		**0.008**		0.002	U	**0.013**		**0.005**		**0.005**		**0.003**		0.002	U	**0.007**		**0.006**		**0.004**		**0.011**		**0.042**
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.007**		**0.010**
68	62	Nickel (6010)	**0.03**		**0.04**		**0.13**		**0.10**		**0.04**		0.03		**0.01**		**0.07**		**0.06**		**0.06**		**0.03**		**0.27**		**0.17**
69	63	Zinc (6010)	**0.025**		**0.042**		**0.051**		**0.128**		**0.045**	J2	**0.045**	J2	**0.008**		**0.036**		**0.052**		**0.053**		0.020	U	**0.111**		**0.155**
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	NA		NA		NA		**36.6**		NA		NA		NA		NA		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		**8.47**		NA		NA		NA		NA		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	NA		NA		NA		**5.4**		NA		NA		NA		NA		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	NA		NA		NA		**5.50**		NA		NA		NA		NA		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		**370**		NA		NA		NA		NA		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**130**	J2	**650**		**370**		NA		NA		NA		NA		NA		NA		NA		NA		NA
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
85	79																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			K		K		K		K		K		K		K		K		K		K		K		K		K	
4			BR55O		CB49K		CK77L		CT37O		DE68D		DM52K		DW29I		ED16H		EM75F		ER92B		EZ03J		FF88G		FL41C	
5			5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03		5/7/03	
66	Copper (6010)		**0.002**		**0.004**		**0.004**	J2	**0.002**		0.002	U	**0.002**		**0.003**		**0.012**		**0.010**		**0.004**		**0.006**		**0.003**		**0.007**	
67	Lead (7421)		0.001	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		**0.003**		0.001	U	0.02	U	0.001	U	0.001	U
68	Nickel (6010)		**0.01**		**0.01**		**0.03**		**0.03**		**0.02**		**0.03**		**0.05**		**0.03**		**0.08**		**0.02**		**0.05**		**0.1**		**0.04**	
69	Zinc (6010)		**0.014**		**0.006**		**0.009**		**0.009**		**0.006**		**0.007**		**0.013**		**0.029**		**0.040**		**0.009**		**0.01**		**0.059**		**0.05**	J
70																												
71	**MAJOR IONS AND CONVENTIONALS**																											
72	Calcium (mg/L) (6010)		NA		NA		NA		NA		**65.3**		**40.3**		**79.8**		NA		NA		NA		NA		NA		NA	
73	Magnesium (mg/L) (6010)		NA		NA		NA		NA		**16.0**		**13.7**		**18.2**		NA		NA		NA		NA		NA		NA	
74	Potassium (mg/L) (6010)		NA		NA		NA		NA		**6.9**		**4.4**		**7.6**		NA		NA		NA		NA		NA		NA	
75	Sodium (mg/L) (6010)		NA		NA		NA		NA		**11.2**		**8.24**		**12.2**		NA		NA		NA		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
80	Chloride (mg/L) (EPA 325.2)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
85																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		K	
4		FU45B	
5		8/28/03	
66	Copper (6010)	**0.012**	
67	Lead (7421)	**0.005**	
68	Nickel (6010)	**0.04**	
69	Zinc (6010)	**0.029**	
70			
71	**MAJOR IONS AND CONVENTIONALS**		
72	Calcium (mg/L) (6010)	NA	
73	Magnesium (mg/L) (6010)	NA	
74	Potassium (mg/L) (6010)	NA	
75	Sodium (mg/L) (6010)	NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	NA	
80	Chloride (mg/L) (EPA 325.2)	NA	
81	N-Nitrate (mg-N/L) (Calculated)	NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA	
85			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2													Dup of K								Dup of K						
3			K		K		K		K		K		W		K		K		K		Z		K		K		K
4			S177A		T176U		U235X		V208E		W391J		W391K		Y314L		Z225U		Z960W		Z960V		AH27C		BB82B		BH75J
5			4/1/97		7/16/97		10/23/97		1/28/98		5/19/98		5/19/98		8/17/98		11/13/98		2/16/99		2/16/99		5/17/99		12/6/99		2/15/00
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	5.70		5.88		5.68		5.22		5.14		5.15		5.37		5.23		4.89		4.87		4.86		4.91		5.40
88	82	Temperature (° C) (avg)	12.0		17.4		16.8		12.7		13.9		13.8		17.6		15.2		12.1		11.9		14.1		14.7		11.9
89	83	Conductivity (um/hos)	157		155		677		382		187		185		130		175		184		187		114		1790		259
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		3.50		3.50		2.23		2.20		2.79		2.79		2.38		2.90		5.01
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			K		K		K		K		K		K		K		K		K		K		K		K		K	
4			BR55O		CB49K		CK77L		CT37O		DE68D		DM52K		DW29I		ED16H		EM75F		ER92B		EZ03J		FF88G		FL41C	
5			5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03		5/7/03	
86	**FIELD PARAMETERS**																											
87	pH (avg)		5.34		5.63		5.05		6.09		6.22		6.92		5.98		5.05		5.83		5.77		6.21		6.35		6.05	
88	Temperature (° C) (avg)		14.0		16.0		15.3		13.0		13.6		15.4		14.6		11.1		15.2		15.8		16		13.9		13.3	
89	Conductivity (um/hos)		157		161		323		694		531		350		645		78		199		157		325		835		143	
90	Dissolved oxygen (mg/L) (avg)		1.99		1.78		2.36		3.15		1.80		3.01		3.35		5.92		4.91		0.91		0.66		0		4.61	
91																												
92	**DIOXINS AND FURANS (ng/L)**																											
93	**Method 8290**																											
94	2,3,7,8-TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120	**ETHANOL (mg/L)**		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		K	
4		FU45B	
5		8/28/03	
86	**FIELD PARAMETERS**		
87	pH (avg)	6.25	
88	Temperature (° C) (avg)	15.9	
89	Conductivity (um/hos)	193	
90	Dissolved oxygen (mg/L) (avg)	2.26	
91			
92	**DIOXINS AND FURANS (ng/L)**		
93	**Method 8290**		
94	2,3,7,8-TCDF	NA	
95	Total TCDF	NA	
96	2,3,7,8-TCDD	NA	
97	Total TCDD	NA	
98	1,2,3,7,8-PeCDF	NA	
99	2,3,4,7,8-PeCDF	NA	
100	Total PeCDF	NA	
101	1,2,3,7,8-PeCDD	NA	
102	Total PeCDD	NA	
103	1,2,3,4,7,8-HxCDF	NA	
104	1,2,3,6,7,8-HxCDF	NA	
105	2,3,4,6,7,8-HxCDF	NA	
106	1,2,3,7,8,9-HxCDF	NA	
107	Total HxCDF	NA	
108	1,2,3,4,7,8-HxCDD	NA	
109	1,2,3,6,7,8-HxCDD	NA	
110	1,2,3,7,8,9-HxCDD	NA	
111	Total HxCDD	NA	
112	1,2,3,4,6,7,8-HpCDF	NA	
113	1,2,3,4,7,8,9-HpCDF	NA	
114	Total HpCDF	NA	
115	1,2,3,4,6,7,8-HpCDD	NA	
116	Total HpCDD	NA	
117	OCDF	NA	
118	OCDD	NA	
119			
120	**ETHANOL (mg/L)**	NA	
121			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2													Dup of K								Dup of K						
3			K		K		K		K		K		W		K		K		K		Z		K		K		K
4			S177A		T176U		U235X		V208E		W391J		W391K		Y314L		Z225U		Z960W		Z960V		AH27C		BB82B		BH75J
5			4/1/97		7/16/97		10/23/97		1/28/98		5/19/98		5/19/98		8/17/98		11/13/98		2/16/99		2/16/99		5/17/99		12/6/99		2/15/00
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																												
2																												
3			K		K		K		K		K		K		K		K		K		K		K		K		K	
4			BR55O		CB49K		CK77L		CT37O		DE68D		DM52K		DW29I		ED16H		EM75F		ER92B		EZ03J		FF88G		FL41C	
5			5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03		5/7/03	
122	**PAHs (µg/L)**																											
123	**EPA Method SW8270 SIM**																											
124	Naphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BC	BD
1			
2			
3		K	
4		FU45B	
5		8/28/03	
122	**PAHs (µg/L)**		
123	**EPA Method SW8270 SIM**		
124	Naphthalene	NA	
125	2-Methylnaphthalene	NA	
126	Acenaphthylene	NA	
127	Acenaphthene	NA	
128	Fluorene	NA	
129	Anthracene	NA	
130	Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
3			L		L		L		L		L		L		L		L		L		L		L		L		L
4			S167H		T176A		U258B		V232H		W371E		Y336F		Z225F		Z960B		AH49E		AU22C		BC27A		BH75I		BR64H
5			4/1/97		7/15/97		10/23/97		1/30/98		5/18/98		8/18/98		11/13/98		2/16/99		5/18/99		9/20/99		12/7/99		2/15/00		5/24/00
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	**2.0**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	0.001	U	0.001	U	0.05	U	0.05	U	0.001	U	0.001	U	**0.007**		0.001	U	0.001	U	**0.003**		0.001	U	**0.001**		0.001
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.009**		0.005

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH
1								
2								
3			L		L		L	
4			CT37D		ED16E		FF88K	
5			2/12/01		2/25/02		2/13/03	
7	**CHLORINATED PHENOLS (µg/L)**							
8	**EPA Method SW8040**							
9	Pentachlorophenol	U	0.25	U	0.25	U	0.26	U
10	2,4,6-Trichlorophenol	U	NA		NA		NA	
11	2,3,6-Trichlorophenol	U	NA		NA		NA	
12	2,4,5-Trichlorophenol	U	NA		NA		NA	
13	2,3,4-Trichlorophenol	U	NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	U	NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	U	NA		NA		NA	
16								
17	**SEMIVOLATILES (µg/L)**							
18	**EPA Method SW8270**							
19	Phenol	U	2.0	U	2.0	U	2	U
20	4-Methylphenol	U	1.0	U	1.0	U	1	U
21	Isophorone	U	1.0	U	1.0	U	1	U
22	2,4-Dimethylphenol	U	3.0	U	3.0	U	3.1	U
23	Benzoic Acid	U	10	U	50	U	51	U
24	Naphthalene	U	1.0	U	1.0	U	1	U
25	2-Methylnaphthalene	U	1.0	U	1.0	U	1	U
26	2,4,6-Trichlorophenol	U	5.0	U	5.0	U	5.1	U
27	2,4,5-Trichlorophenol	U	5.0	U	5.0	U	5.1	U
28	Acenaphthene	U	1.0	U	1.0	U	1	U
29	Dibenzofuran	U	1.0	U	1.0	U	1	U
30	Fluorene	U	1.0	U	1.0	U	1	U
31	Pentachlorophenol	U	5.0	U	5.0	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	U	1.0	U	4.0	U	1	U
33								
34	**VOLATILES (µg/L)**							
35	**EPA Method SW8260**							
36	Acetone	U	6.1	U	5.0	U	5	U
37	Carbon Disulfide	U	1.0	U	1.0	U	1	U
38	2-Butanone	U	5.0	U	5.0	U	5	U
39	Benzene	U	1.0	U	1.0	U	1	U
40	Bromoform	U	1.0	U	1.0	U	1	U
41	Toluene	U	1.0	U	1.0	U	1	U
42	Ethylbenzene	U	1.0	U	1.0	U	1	U
43	Styrene	U	1.0	U	1.0	U	1	U
44	m,p-Xylene	U	1.0	U	1.0	U	1	U
45	o-Xylene	U	1.0	U	1.0	U	1	U
46	1,3,5-Trimethylbenzene	U	1.0	U	1.0	U	1	U
47	1,2,4-Trimethylbenzene	U	1.0	U	1.0	U	1	U
48	Isopropylbenzene	U	1.0	U	1.0	U	1	U
49	n-Propylbenzene	U	1.0	U	1.0	U	1	U
50	tert-Butylbenzene	U	1.0	U	1.0	U	1	U
51	sec-Butylbenzene	U	1.0	U	1.0	U	1	U
52	4-Isopropyltoluene	U	1.0	U	1.0	U	1	U
53	n-Butylbenzene	U	1.0	U	1.0	U	1	U
54	Naphthalene	U	5.0	U	5.0	U	5	U
55								
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**							
57	**Method OR-DEQ**							
58	**TPH-Diesel**	U	0.25	U	0.25	U	0.25	U
59	**TPH-D Motor Oil**		NA		NA		NA	
60	**TPH-Gasoline**		NA		NA		NA	
61								
62	**PRIORITY POLLUTANT**							
63	**METALS (mg/L)**							
64	Arsenic (7060)	U	0.001	U	0.001	U	**0.001**	
65	Chromium (6010)	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			L		L		L		L		L		L		L		L		L		L		L		L		L
4			S167H		T176A		U258B		V232H		W371E		Y336F		Z225F		Z960B		AH49E		AU22C		BC27A		BH75I		BR64H
5			4/1/97		7/15/97		10/23/97		1/30/98		5/18/98		8/18/98		11/13/98		2/16/99		5/18/99		9/20/99		12/7/99		2/15/00		5/24/00
66	60	Copper (6010)	**0.003**		**0.003**		**0.003**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.008**		**0.003**		**0.002**
67	61	Lead (7421)	**0.001**		0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01
69	63	Zinc (6010)	**0.004**		**0.004**	J2	**0.005**		**0.005**		**0.005**	J2	**0.005**		**0.004**		**0.051**		**0.004**		**0.008**		0.012	U	0.006	U	0.006
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**2.77**		**3.56**		**4.93**		**3.76**		NA		NA		NA		**3.24**		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	**0.99**		**1.56**		**1.98**		**1.35**		NA		NA		NA		**1.18**		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	**1.2**		**0.8**		**1.6**		**1.1**		NA		NA		NA		**1.0**		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	**4.58**		**5.81**		**8.14**		**3.34**		NA		NA		NA		**3.61**		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**16**		**30**		**28**		**21**		NA		NA		NA		**16**		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**16**		**30**		**28**		**21**		NA		NA		NA		**16**		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**100**	J2	**57**		**60**	J2	46		74		130		**36**		**57**		**92**		**77**		**65**		**56**
80	74	Chloride (mg/L) (EPA 325.2)	1.0	U	**3.8**		**1.9**		**1.0**		1.0		1.0	U	1.7		1.0	U	**1.5**		**1.5**		**3.4**		**2.0**		**1.8**
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.34**	J	**0.01**		**0.84**		**0.31**	J2	NA		NA		NA		**0.24**	J	NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	0.010	UJ	NA		NA		NA		0.010	UJ	NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.34**	J	**0.01**		**0.84**		**0.31**	J2	NA		NA		NA		**0.24**	J	NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	**2.7**	J	**4.8**		**4.0**		**2.8**		NA		NA		NA		**3.6**		NA		NA		NA		NA		NA
85	79																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH
1								
2								
3			L		L		L	
4			CT37D		ED16E		FF88K	
5			2/12/01		2/25/02		2/13/03	
66	Copper (6010)		0.002	U	0.002	U	**0.004**	
67	Lead (7421)	U	0.001	U	0.001	U	**0.001**	
68	Nickel (6010)	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	U	0.006	U	0.006	U	**0.009**	
70								
71	**MAJOR IONS AND CONVENTIONALS**							
72	Calcium (mg/L) (6010)		**11.5**		**3.20**		**2.61**	
73	Magnesium (mg/L) (6010)		**4.04**		**1.34**		**1.19**	
74	Potassium (mg/L) (6010)		**1.4**		**0.8**		**0.7**	
75	Sodium (mg/L) (6010)		**8.26**		**3.29**		**2.5**	
76	Alkalinity (mg/L CaCO3) (SM 2320)		**64**		**21**		**16**	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		1.0	U	1.0	U	1	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		**64**		**21**		**16**	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		**120**		**57**		**66**	
80	Chloride (mg/L) (EPA 325.2)		**1.4**		**2.4**		**1**	
81	N-Nitrate (mg-N/L) (Calculated)		**0.47**		**0.36**		**0.45**	
82	N-Nitrite (mg-N/L) (EPA 354.1)		0.010	U	0.010	U	0.01	U
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		**0.47**	J	**0.36**		**0.45**	
84	Sulfate (mg/L) (EPA 375.2)		**4.4**		**3.6**		2.5	U
85								

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			L		L		L		L		L		L		L		L		L		L		L		L		L
4			S167H		T176A		U258B		V232H		W371E		Y336F		Z225F		Z960B		AH49E		AU22C		BC27A		BH75I		BR64H
5			4/1/97		7/15/97		10/23/97		1/30/98		5/18/98		8/18/98		11/13/98		2/16/99		5/18/99		9/20/99		12/7/99		2/15/00		5/24/00
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.02		6.18		6.24		7.10		5.49		5.87		5.84		6.26		5.54		5.41		5.72		6.16		5.94
88	82	Temperature (° C) (avg)	9.8		15.5		16.4		9.6		13.1		15.7		13.8		8.9		13.1		15.5		13.0		10.8		13.1
89	83	Conductivity (um/hos)	41		68		81		55		60		95		89		39		42		101		75		50		63
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		4.51		2.60		1.87		5.67		2.93		2.16		4.48		4.25		3.14
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
121																											

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH
1								
2								
3			L		L		L	
4			CT37D		ED16E		FF88K	
5			2/12/01		2/25/02		2/13/03	
86	**FIELD PARAMETERS**							
87	pH (avg)		6.07		5.89		7.12	
88	Temperature (° C) (avg)		13.2		8.5		11.2	
89	Conductivity (um/hos)		104		37		41	
90	Dissolved oxygen (mg/L) (avg)		2.56		7.55		0	
91								
92	**DIOXINS AND FURANS (ng/L)**							
93	**Method 8290**							
94	2,3,7,8-TCDF		NA		NA		NA	
95	Total TCDF		NA		NA		NA	
96	2,3,7,8-TCDD		NA		NA		NA	
97	Total TCDD		NA		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA		NA	
100	Total PeCDF		NA		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA		NA	
102	Total PeCDD		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA		NA	
107	Total HxCDF		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA		NA	
111	Total HxCDD		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA		NA	
114	Total HpCDF		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA		NA	
116	Total HpCDD		NA		NA		NA	
117	OCDF		NA		NA		NA	
118	OCDD		NA		NA		NA	
119								
120	**ETHANOL (mg/L)**		NA		NA		NA	
121								

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											
3			L		L		L		L		L		L		L		L		L		L		L		L		L
4			S167H		T176A		U258B		V232H		W371E		Y336F		Z225F		Z960B		AH49E		AU22C		BC27A		BH75I		BR64H
5			4/1/97		7/15/97		10/23/97		1/30/98		5/18/98		8/18/98		11/13/98		2/16/99		5/18/99		9/20/99		12/7/99		2/15/00		5/24/00
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF	AG	AH
1								
2								
3			L		L		L	
4			CT37D		ED16E		FF88K	
5			2/12/01		2/25/02		2/13/03	
122	**PAHs (µg/L)**							
123	**EPA Method SW8270 SIM**							
124	Naphthalene		NA		NA		NA	
125	2-Methylnaphthalene		NA		NA		NA	
126	Acenaphthylene		NA		NA		NA	
127	Acenaphthene		NA		NA		NA	
128	Fluorene		NA		NA		NA	
129	Anthracene		NA		NA		NA	
130	Dibenzofuran		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
3			LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4			S167K		T176E		U235T		V208F		W371G		Y336I		Z225E		Z960A		AH27G		AU45J		BB82C		BH75G		BR55G	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00	
7	1	**CHLORINATED PHENOLS (µg/L)**																										
8	2	**EPA Method SW8040**																										
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	UJ
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																											
17	11	**SEMIVOLATILES (µg/L)**																										
18	12	**EPA Method SW8270**																										
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																											
34	28	**VOLATILES (µg/L)**																										
35	29	**EPA Method SW8260**																										
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	51	**Method OR-DEQ**																										
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																											
62	56	**PRIORITY POLLUTANT**																										
63	57	**METALS (mg/L)**																										
64	58	Arsenic (7060)	**0.008**		**0.008**		0.05	U	0.05	U	**0.011**		**0.011**		**0.012**		**0.010**		**0.008**		**0.014**		**0.011**		**0.013**		**0.010**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
3		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4		CB49C		CK77D		CT37B		DE68F		DM52E		DW48M		ED16J		EM75G		ER92C		EY88E		FF88M		FL41F		FU31C	
5		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.28	U	0.25	U	0.25	U	0.26	U	0.54	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.2	U	2	U	2	U	2	U	2.2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.3	U	3	U	3	U	3.1	U	3.3	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	56	U	50	U	50	U	51	U	54	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5	U	5	U	5.1	U	5.4	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5	U	5	U	5.1	U	5.4	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1	U	1	U	1	U	1.1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5	U	5	U	5.1	U	5.4	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	4.0	U	4.4	U	4	U	1	U	1	U	1.1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
48	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
49	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
51	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
53	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U	1	U	1	U
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U	5	U	5	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	NA		NA		NA		0.25	U	NA		NA		NA		0.25	U	NA		NA	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.010**		**0.011**		**0.010**		**0.009**		**0.011**		**0.012**		**0.023**		**0.010**		**0.011**		0.05	U	**0.014**		**0.007**		**0.009**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.007**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4			S167K		T176E		U235T		V208F		W371G		Y336I		Z225E		Z960A		AH27G		AU45J		BB82C		BH75G		BR55G	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.004	U	**0.005**	J2	**0.011**		0.004	U	**0.008**	J2	**0.012**		0.004	U	**0.010**	J	0.012	U	**0.005**		0.006	U	**0.007**		0.006	U
70	64																											
71	65	**MAJOR IONS AND CONVENTIONALS**																										
72	66	Calcium (mg/L) (6010)	**16.7**		**19.5**		**20.2**		**20.1**		NA		NA		NA		**18.4**		NA		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**5.95**		**6.73**		**7.53**		**7.23**		NA		NA		NA		**6.09**		NA		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**2.9**		**3.3**		**2.6**		**2.4**		NA		NA		NA		**2.8**		NA		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**7.70**		**9.08**		**7.22**		**8.08**		NA		NA		NA		**8.54**		NA		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**80**		**77**		**88**		**94**		NA		NA		NA		**87**		NA		NA		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**80**		**77**		**88**		**94**		NA		NA		NA		**87**		NA		NA		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**140**	J2	**130**		**140**		110		99		140		**120**		**130**		**140**		**150**		**140**		**130**	
80	74	Chloride (mg/L) (EPA 325.2)	**2.1**	J	**2.3**		**2.5**		**2.4**		2.3		1.0	U	1.8		**1.2**		**1.2**		**2.4**		**3.7**		**2.9**		**3.4**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.58**	J	**1.3**		**0.11**		**0.48**		NA		NA		NA		**0.12**		NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.58**	J	**1.3**		**0.11**		**0.48**		NA		NA		NA		**0.12**		NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**9.3**	J	**13**		**5.5**		**5.1**		NA		NA		NA		**7.2**		NA		NA		NA		NA		NA	
85	79																											

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4		CB49C		CK77D		CT37B		DE68F		DM52E		DW48M		ED16J		EM75G		ER92C		EY88E		FF88M		FL41F		FU31C	
5		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.009**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	Lead (7421)	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	**0.004**		0.001	U	0.001	U	0.02	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.030**		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		**25.5**		**28.4**		**25.8**		**27.3**		**30.4**		NA		NA		NA		**36.9**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA		**9.47**		**10.6**		**10.2**		**10.4**		**11.7**		NA		NA		NA		**13.6**		NA		NA	
74	Potassium (mg/L) (6010)	NA		NA		**2.0**		**2.4**		**2.2**		**2.4**		**3.4**		NA		NA		NA		**3.2**		NA		NA	
75	Sodium (mg/L) (6010)	NA		NA		**7.23**		**7.87**		**7.24**		**7.20**		**10.2**		NA		NA		NA		**9.8**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**120**		NA		NA		NA		**120**		NA		NA		NA		**150**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**120**		NA		NA		NA		**120**		NA		NA		NA		**150**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**160**		**170**		**170**		**180**		**160**		**170**		**160**		**200**		**210**		**210**		**180**		**190**		**190**	
80	Chloride (mg/L) (EPA 325.2)	**3.5**		**3.6**		**4.1**		**3.1**		**3.7**		**2.6**		**3.2**		**2.7**		**3.1**		**3**		**3.6**		**2.4**		**3**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.17**		NA		NA		NA		**0.91**		NA		NA		NA		**0.66**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.17**	J	NA		NA		NA		**0.91**		NA		NA		NA		**0.66**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**6.8**		NA		NA		NA		**5.7**		NA		NA		NA		**4.2**		NA		NA	
85																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4			S167K		T176E		U235T		V208F		W371G		Y336I		Z225E		Z960A		AH27G		AU45J		BB82C		BH75G		BR55G	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00	
86	80	**FIELD PARAMETERS**																										
87	81	pH (avg)	6.72		6.83		6.94		6.60		6.32		6.51		6.48		6.84		5.72		6.88		6.24		6.73		6.57	
88	82	Temperature (° C) (avg)	13.4		16.9		15.8		15.4		14.8		15.9		14.5		14.5		14.4		16.1		14.9		14.4		14.3	
89	83	Conductivity (um/hos)	190		203		154		213		195		193		100		174		146		197		212		206		182	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		1.73		1.84		3.04		3.91		1.22		2.53		2.34		2.17	
91	85																											
92	86	**DIOXINS AND FURANS (ng/L)**																										
93	87	**Method 8290**																										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4		CB49C		CK77D		CT37B		DE68F		DM52E		DW48M		ED16J		EM75G		ER92C		EY88E		FF88M		FL41F		FU31C	
5		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.49		5.21		6.56		6.75		6.94		6.71		6.22		6.57		6.61		6.62		6.94		6.88		6.86	
88	Temperature (° C) (avg)	16.0		15.2		14.9		14.6		15.8		15.4		14.3		16.1		16.3		16		16		14.9		16.8	
89	Conductivity (um/hos)	196		207		217		250		245		245		257		370		265		367		327		233		228	
90	Dissolved oxygen (mg/L) (avg)	1.80		1.86		1.90		1.99		1.09		3.75		4.77		5.34		0.77		3.86		0		3.28		2.2	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1																												
2																												
3			LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4			S167K		T176E		U235T		V208F		W371G		Y336I		Z225E		Z960A		AH27G		AU45J		BB82C		BH75G		BR55G	
5			4/1/97		7/15/97		10/23/97		1/28/98		5/18/98		8/19/98		11/13/98		2/17/99		5/17/99		9/23/99		12/6/99		2/15/00		5/23/00	
122		**PAHs (µg/L)**																										
123		**EPA Method SW8270 SIM**																										
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB
1																											
2																											
3		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S		LW1S	
4		CB49C		CK77D		CT37B		DE68F		DM52E		DW48M		ED16J		EM75G		ER92C		EY88E		FF88M		FL41F		FU31C	
5		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/29/01		2/25/02		6/25/02		08/26/02		11/11/02		2/13/03		5/7/03		8/27/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																									Dup of LW4S	
3			LW4S		LW4S		LW4S		LW4S		LW4S (a)		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW40S	
4			S167J		T176G		U235O		V232E		B802035-01		W391F		Y314F		Z225K		Z960L		AH49G		AU45B		AU45A	
5			4/1/97		7/15/97		10/22/97		1/30/98		1/30/98		5/20/98		8/17/98		11/14/98		2/18/99		5/18/99		9/22/99		9/22/99	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	**5.3**		**1.7**		**1.2**		**0.43**		**0.282**		**5.3**		**5.9**		**3900**		**0.42**		**6.4**		**22**		**23**	
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	**0.85**		0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	4.4	U	0.25	U	0.25	U	0.29	U	0.29	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**0.32**		**0.16**	J1	0.25	U	0.25	U	0.250	U	**0.92**		**0.73**		**170**		0.25	U	**0.83**		**3.2**		**3.2**	
15	9	2,3,4,5-Tetrachlorophenol	**0.27**		0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	**15**	J1	0.25	U	0.25	U	0.25	U	0.25	U
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	5.00	U	2.0	U	2.0	U	2.0	U	2.0	U	**170**	J2	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	5.00	U	1.0	U	1.0	U	1.0	U	1.0	U	**27**		1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	10.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	**29**		10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	**39**		1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	**55**		1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.00	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.00	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	10.0	U	**5.6**		**8.2**		**4200**		5.0	U	**2.3**	J1	**22**		**21**	
32	26	bis(2-Ethylhexyl)phthalate	**2.0**		**2.8**	J2	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**12**		**13**	
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**1.8**		1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**3.8**		1.0	U	1.0	U	**1.0**	J1	**1.4**	
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**20**		1.0	U	**8.1**		**1.4**		**1.9**	
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**5.7**		1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**77**		1.0	U	1.0	U	**10**	J2	**13**	J2
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**5.3**		1.0	U	1.0	U	1.0	U	**1.1**	
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**6.0**		1.0	U	1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	UJ	**5.9**		1.0	U	1.0	U	1.0	U	1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	**2.5**		1.0	U	1.0	U	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	**7.1**		5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		**0.44**		**0.32**		**3.6**		0.25	U	0.25	U	**0.42**		**0.56**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	0.001	U	**0.002**		0.05	U	0.05	U	NA		**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
65	59	Chromium (6010)	0.005	U	**0.015**		0.005	U	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2				Dup of LW4S																							
3		LW4S		LW40S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S	
4		BC27Q		BC27O		BH96D		BR55C		CB68C		CL03F		CT67C		DE87J		DM30C		DW29F		ED30G		EN00G		ER93K	
5		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	**5.4**		**5.4**		**2.5**		**740**	J2	**7200**		**48**		0.25	U	0.25	U	0.25	U	0.25	U	**2.0**		NA		NA	
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	**0.35**	J2	**2.2**		0.25	U	NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	**0.27**	J2	**6.1**		0.25	U	NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	**2.7**	J2	37	U	3.8	U	NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	**2.9**		0.25	U	NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**0.63**		**0.59**		**0.32**		**190**	J2	**730**		**4.1**		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	**1.6**		**130**		**5.9**		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	UJ	2.0	U	200	U	**730**		**100**		2.0	U	**3.3**		2.0	U	2.1	U	**56**		**210**	
20	4-Methylphenol	1.0	U	1.0	U	1.0	UJ	1.0	U	**3.6**	M	**120**		**210**		**1.7**		1.0	U	1.0	U	1.1	U	22	U	**50**	
21	Isophorone	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.0	U	1.2	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	UJ	3.0	U	3.0	U	9.0	U	**4.4**		**3.1**		**5.9**		3.0	U	3.2	U	3.0	U	3.8	U
23	Benzoic Acid	10	U	10	U	10	UJ	10	U	**44**		**96**		**200**		10	U	10	U	30	U	53	U	50	U	62	U
24	Naphthalene	1.0	U	1.0	U	1.0	UJ	**15**		**21**		**13**		**8.5**		**19**		**19**		1.0	U	1.1	U	**14**		**5.6**	
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	**5.7**		**3.6**		**9.5**		**12**		1.0	U	1.1	U	**7.5**		**2.1**	
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	UJ	5.0	U	5.0	U	15	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	**17**		**7.7**	
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	UJ	5.0	U	5.0	U	15	U	5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	**8.9**		6.2	U
28	Acenaphthene	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.0	U	1.2	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.0	U	1.2	U
30	Fluorene	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.0	U	1.2	U
31	Pentachlorophenol	**4.9**	J1	**4.4**	J1	5.0	UJ	**760**	J2	**9400**	J2	**120**		5.0	U	5.0	U	5.0	U	5.0	U	5.3	U	**2200**		**770**	
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.1	UJ	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**120**		4.0	U	5	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	5.0	U	**25**		**83**		**49**		**41**		5.0	U	15	U	5.0	U	5.0	U	**120**		**320**	
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	3	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	**18**		25	U	**110**		**100**		5.0	U	15	U	5.0	U	5.0	U	**58**		**27**	
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	**7.4**		**110**		**80**		**78**		1.0	U	1.0	U	**4.1**		3	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	3	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	**9.2**		**19**		**25**		**41**		**6.9**		1.0	U	1.0	U	**7.5**		**10**	
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	**9.8**		**94**		**61**		**79**		**190**		**140**		1.0	U	1.0	U	**68**		**94**	J
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	1.0	U	3	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U	**17**		**110**		**170**		**240**		**600**		**460**		1.0	U	1.0	U	**95**		**150**	
45	o-Xylene	1.0	U	1.0	U	1.0	U	**140**		**210**		**88**		**120**		**240**		**180**		1.0	U	1.0	U	**180**		**180**	
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	**3.2**		**140**		**46**		**58**		**130**		**94**		1.0	U	1.0	U	**58**		**150**	J
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	**33**		**500**		**160**		**130**		**350**		**280**		**1.5**		1.0	U	**230**		**540**	J
48	Isopropylbenzene	1.0	U	1.0	U	1.0	U	**28**		**48**		**19**		**28**		**62**		**37**		1.0	U	1.0	U	**38**		**63**	J
49	n-Propylbenzene	1.0	U	1.0	U	1.0	U	**9.8**		**79**		**27**		**36**		**79**		**48**		**1.1**		1.0	U	**43**		**94**	J
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	**3.4**		5.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	1.0	U	**3.1**		3	U
51	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	**26**		**25**		**7.7**		**7.0**		1.0	U	3.0	U	1.0	U	1.0	U	**16**		**21**	J
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	**19**		**4.8**		**4.9**		**9.9**		**6.7**		1.0	U	1.0	U	**8.8**		**16**	
53	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.6	U	13	U	6.8	U	**6.2**		10	U	7.5	U	1.0	U	1.0	U	7.9		**11**	J
54	Naphthalene	5.0	U	5.0	U	5.0	U	**26**		**31**		**19**		**18**		**48**		**27**		5.0	U	5.0	U	**21**		15	U
55																											
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	**3.6**		**15**		**19**		**3.4**		**7.9**		**4.1**		0.25	U	**0.34**		**25**		**9.9**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		5.0	U	NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	0.001	U	0.001	U	0.001	U	**0.001**		**0.004**		**0.006**		**0.009**		**0.008**		**0.010**		**0.002**		0.001	U	**0.002**		**0.006**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		LW4S		LW4S		LW4S		LW4S	
4		EZ17E		FF65F		FL58F		FU45O	
5		11/13/02		2/11/03		5/8/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**								
8	**EPA Method SW8040**								
9	Pentachlorophenol	**1.5**		0.26	U	NA		NA	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA	
16									
17	**SEMIVOLATILES (µg/L)**								
18	**EPA Method SW8270**								
19	Phenol	2.2	U	2	U	2	U	2	U
20	4-Methylphenol	1.1	U	1	U	1	U	1	U
21	Isophorone	1.1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.3	U	3.1	U	3	U	3	U
23	Benzoic Acid	54	U	51	U	50	U	50	U
24	Naphthalene	1.1	U	1	U	**4.8**		1	U
25	2-Methylnaphthalene	1.1	U	1	U	1	U	1	U
26	2,4,6-Trichlorophenol	5.4	U	5.1	U	5	U	5	U
27	2,4,5-Trichlorophenol	5.4	U	5.1	U	5	U	5	U
28	Acenaphthene	1.1	U	1	U	1	U	1	U
29	Dibenzofuran	1.1	U	1	U	1	U	1	U
30	Fluorene	1.1	U	1	U	1	U	1	U
31	Pentachlorophenol	5.4	U	5.1	U	**1400**		**17**	
32	bis(2-Ethylhexyl)phthalate	4.3	U	1	U	**1**		1	U
33									
34	**VOLATILES (µg/L)**								
35	**EPA Method SW8260**								
36	Acetone	19	U	5	U	**7.2**	M	5	U
37	Carbon Disulfide	1	U	1	U	1	U	1	U
38	2-Butanone	5	U	5	U	5	U	5	U
39	Benzene	1	U	1	U	**3.2**		1	U
40	Bromoform	1	U	1	U	1	U	1	U
41	Toluene	1	U	1	U	1	U	1	U
42	Ethylbenzene	**4.8**		1	U	**11**		1	U
43	Styrene	1	U	1	U	1	U	1	U
44	m,p-Xylene	**3.8**		1	U	**14**		1	U
45	o-Xylene	**5.9**		1	U	**59**		1	U
46	1,3,5-Trimethylbenzene	**1.7**		1	U	**18**		1	U
47	1,2,4-Trimethylbenzene	**19**		1	U	**210**		**1.2**	J
48	Isopropylbenzene	**4.5**		1	U	**24**		1	U
49	n-Propylbenzene	**5.4**		1	U	**27**		1	U
50	tert-Butylbenzene	1	U	1	U	**1.7**		1	U
51	sec-Butylbenzene	**2**		1	U	**8.3**		1	U
52	4-Isopropyltoluene	1	U	1	U	**5.7**		1	U
53	n-Butylbenzene	1	U	1	U	**5**	M	1	U
54	Naphthalene	5	U	5	U	**42**		5	U
55									
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**								
57	**Method OR-DEQ**								
58	**TPH-Diesel**	**3.2**		0.25	U	**5.3**		**0.36**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA	
61									
62	**PRIORITY POLLUTANT**								
63	**METALS (mg/L)**								
64	Arsenic (7060)	0.05	U	0.001	U	0.001	U	**0.002**	
65	Chromium (6010)	**0.07**		0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																									Dup of LW4S	
3			LW4S		LW4S		LW4S		LW4S		LW4S (a)		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW40S	
4			S167J		T176G		U235O		V232E		B802035-01		W391F		Y314F		Z225K		Z960L		AH49G		AU45B		AU45A	
5			4/1/97		7/15/97		10/22/97		1/30/98		1/30/98		5/20/98		8/17/98		11/14/98		2/18/99		5/18/99		9/22/99		9/22/99	
66	60	Copper (6010)	**0.004**		**0.015**		0.002	U	**0.004**		NA		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	0.001	U	**0.006**		0.02	U	0.02	U	NA		0.001	U	0.001	U	0.001	U	0.001	U	**0.002**		0.001	U	0.001	U
68	62	Nickel (6010)	**0.02**		**0.02**		0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U
69	63	Zinc (6010)	**0.008**		**0.035**		0.004	U	**0.009**		NA		**0.005**	J2	0.004	U	**0.005**		**0.009**	J2	**0.011**		**0.007**		0.004	U
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**20.7**		**20.4**		**16.9**		**15.1**		NA		NA		NA		NA		**10.7**		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**5.92**		**7.1**		**4.46**		**4.60**		NA		NA		NA		NA		**2.98**		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.9**		**4.5**		**4.2**		**3.5**		NA		NA		NA		NA		**2.6**		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**13.2**		**13.7**		**11.6**		**10.0**		NA		NA		NA		NA		**6.10**		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**75**		**64**		**62**		**64**		NA		NA		NA		NA		**43**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		1.0	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**75**		**64**		**62**		**64**		NA		NA		NA		NA		**43**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**140**	J2	**110**		**140**	J2	NA		160		160		180		**110**		**140**		**150**		**160**	
80	74	Chloride (mg/L) (EPA 325.2)	**4.5**	J	**3.1**		**3.5**		**2.1**		NA		4.5		4.3		13		1.0	U	**2.2**		**7.1**		**6.9**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**11**	J	**3.3**		**5.1**		**4.2**	J2	NA		NA		NA		NA		**1.8**		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	**0.021**	J2	NA		NA		NA		NA		0.010	U	NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**11**	J	**3.3**		**5.1**		**4.3**	J2	NA		NA		NA		NA		**1.8**		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**13**	J	**15**		**4.5**		**6.8**		NA		NA		NA		NA		**6.5**		NA		NA		NA	
85	79																									

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2				Dup of LW4S																							
3		LW4S		LW40S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S	
4		BC27Q		BC27O		BH96D		BR55C		CB68C		CL03F		CT67C		DE87J		DM30C		DW29F		ED30G		EN00G		ER93K	
5		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	**0.008**		**0.016**		**0.008**		0.002	U	**0.002**		0.002	U	0.002	U	0.002	U	**0.085**		**0.05**	
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**		**0.002**		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.001**	
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	**0.01**		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.03**		0.01	U
69	Zinc (6010)	0.008	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.009**		0.006	U	0.006	U	**0.007**		0.006	U	0.006	U	0.006	U	**0.011**	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		**164**		**149**		**144**		**13.9**		**25.8**		**163**		NA	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		**56.0**		**48.2**		**43.6**		**4.06**		**7.66**		**49.6**		NA	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		**5.6**		**5.9**		**6.4**		**2.5**		**3.5**		**7.9**		NA	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		**9.87**		**9.35**		**11.5**		**4.35**		**7.39**		**15.0**		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		**810**		NA		NA		NA		**80**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		**810**		NA		NA		NA		**80**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**120**		**120**		**150**		**490**		**420**		**990**		**760**		**720**	J	**580**	J	**95**		**300**		**890**		**380**	
80	Chloride (mg/L) (EPA 325.2)	**4.3**		**4.5**		**3.5**		**9.9**		**4.6**		**7.7**		**7.5**	J	**5.3**		**7.1**		**1.7**		**6.7**	J	**9.4**		**5.2**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**8.4**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		**0.013**	J	NA		NA		NA		**0.022**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**8.4**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		**8.4**		NA		NA		NA		**18**		NA		NA	
85																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		LW4S		LW4S		LW4S		LW4S	
4		EZ17E		FF65F		FL58F		FU45O	
5		11/13/02		2/11/03		5/8/03		8/28/03	
66	Copper (6010)	**0.163**		**0.002**		**0.028**		**0.003**	
67	Lead (7421)	**0.04**		0.001	U	0.001	U	0.001	U
68	Nickel (6010)	**0.11**		0.01	U	**0.01**		0.01	U
69	Zinc (6010)	**0.17**		0.006	U	0.006	U	0.006	U
70									
71	**MAJOR IONS AND CONVENTIONALS**								
72	Calcium (mg/L) (6010)	NA		**7.7**		NA		NA	
73	Magnesium (mg/L) (6010)	NA		**2.25**		NA		NA	
74	Potassium (mg/L) (6010)	NA		**1.8**		NA		NA	
75	Sodium (mg/L) (6010)	NA		**4**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		**36**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		**36**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**320**		**66**		**290**		**200**	
80	Chloride (mg/L) (EPA 325.2)	**7.3**		1	U	**9.8**		**5.8**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		**0.76**		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		**0.76**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		**6.4**		NA		NA	
85									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																									Dup of LW4S	
3			LW4S		LW4S		LW4S		LW4S		LW4S (a)		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW40S	
4			S167J		T176G		U235O		V232E		B802035-01		W391F		Y314F		Z225K		Z960L		AH49G		AU45B		AU45A	
5			4/1/97		7/15/97		10/22/97		1/30/98		1/30/98		5/20/98		8/17/98		11/14/98		2/18/99		5/18/99		9/22/99		9/22/99	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.46		6.86		6.76		6.61		6.61		6.08		6.23		6.33		6.31		5.67		6.51		6.49	
88	82	Temperature (° C) (avg)	11.3		17.0		14.9		12.1		12.1		12.6		16.6		14.3		10.0		13.3		15.4		15.4	
89	83	Conductivity (um/hos)	212		212		173		163		163		263		301		111		110		192		229		229	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		2.41		2.15		1.75		4.54		2.58		1.74		1.67	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2				Dup of LW4S																							
3		LW4S		LW40S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S	
4		BC27Q		BC27O		BH96D		BR55C		CB68C		CL03F		CT67C		DE87J		DM30C		DW29F		ED30G		EN00G		ER93K	
5		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.57		6.57		6.48		6.28		5.70		5.74		6.31		6.80		6.75		6.21		5.64		6.23		6.68	
88	Temperature (° C) (avg)	13.0		12.9		13.1		14.5		15.1		14.3		13.5		14.2		16.2		14.6		12.6		14.4		15.8	
89	Conductivity (um/hos)	177		177		209		478		433		884		809		1400		973		129		253		843		477	
90	Dissolved oxygen (mg/L) (avg)	4.58		4.75		0.93		1.91		1.36		0.62		0.00		0.00		0.84		4		7.53		5.19		0.62	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		LW4S		LW4S		LW4S		LW4S	
4		EZ17E		FF65F		FL58F		FU45O	
5		11/13/02		2/11/03		5/8/03		8/28/03	
86	**FIELD PARAMETERS**								
87	pH (avg)	6.2		6.59		6.33		6.82	
88	Temperature (° C) (avg)	16.1		10.9		13		16.1	
89	Conductivity (um/hos)	465		85		383		231	
90	Dissolved oxygen (mg/L) (avg)	2.03		0		2.4		1.86	
91									
92	**DIOXINS AND FURANS (ng/L)**								
93	**Method 8290**								
94	2,3,7,8-TCDF	NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA	
119									
120	**ETHANOL (mg/L)**	NA		NA		NA		NA	
121									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																									Dup of LW4S	
3			LW4S		LW4S		LW4S		LW4S		LW4S (a)		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW40S	
4			S167J		T176G		U235O		V232E		B802035-01		W391F		Y314F		Z225K		Z960L		AH49G		AU45B		AU45A	
5			4/1/97		7/15/97		10/22/97		1/30/98		1/30/98		5/20/98		8/17/98		11/14/98		2/18/99		5/18/99		9/22/99		9/22/99	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2				Dup of LW4S																							
3		LW4S		LW40S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S		LW4S	
4		BC27Q		BC27O		BH96D		BR55C		CB68C		CL03F		CT67C		DE87J		DM30C		DW29F		ED30G		EN00G		ER93K	
5		12/9/99		12/9/99		2/17/00		5/22/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD	BE	BF	BG	BH
1									
2									
3		LW4S		LW4S		LW4S		LW4S	
4		EZ17E		FF65F		FL58F		FU45O	
5		11/13/02		2/11/03		5/8/03		8/28/03	
122	**PAHs (µg/L)**								
123	**EPA Method SW8270 SIM**								
124	Naphthalene	NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2					Dup of LW5S																					
3			LW5S		LW5D		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S	
4			S167E		S167F		T160A		U235G		V232G		W391C		Y336E		Z225G		Z960J		AH49F		AU22E		BC27C	
5			3/31/97		3/31/97		7/14/97		10/22/97		1/30/98		5/19/98		8/18/98		11/13/98		2/18/99		5/18/99		9/20/99		12/7/99	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	**0.25**		**0.26**		**0.24**	J1	**0.25**		**0.27**		**0.18**	J1	**0.18**	J1	0.25	U	**0.25**		0.25	U	**0.13**	J1	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	UJ	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.001**		**0.002**		**0.002**		0.05	U	0.05	U	**0.003**		**0.003**		**0.003**		**0.008**		**0.003**		**0.003**		**0.002**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.028**		0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
3		LW5S		LW5S		LW5S		LW5S		LW5S	
4		BH96C		BR64F		CT37E		ED16F		FF88C	
5		2/17/00		5/24/00		2/12/01		2/25/02		2/13/03	
7	**CHLORINATED PHENOLS (µg/L)**										
8	**EPA Method SW8040**										
9	Pentachlorophenol	**0.18**	J1	0.25	U	0.25	U	0.25	U	0.25	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	NA		NA		NA	
16											
17	**SEMIVOLATILES (µg/L)**										
18	**EPA Method SW8270**										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3	U
23	Benzoic Acid	10	U	10	U	10	U	50	U	50	U
24	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
25	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	4.0	U	1	U
33											
34	**VOLATILES (µg/L)**										
35	**EPA Method SW8260**										
36	Acetone	5.0	U	5.0	U	6.6	U	5.0	U	5	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1	U
38	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	5	U
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
42	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
44	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
46	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
47	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
48	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
49	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
51	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
53	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1	U
54	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	**Method OR-DEQ**										
58	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61											
62	**PRIORITY POLLUTANT**										
63	**METALS (mg/L)**										
64	Arsenic (7060)	**0.003**		**0.003**		**0.002**		**0.003**		**0.003**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2					Dup of LW5S																					
3			LW5S		LW5D		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S	
4			S167E		S167F		T160A		U235G		V232G		W391C		Y336E		Z225G		Z960J		AH49F		AU22E		BC27C	
5			3/31/97		3/31/97		7/14/97		10/22/97		1/30/98		5/19/98		8/18/98		11/13/98		2/18/99		5/18/99		9/20/99		12/7/99	
66	60	Copper (6010)	**0.004**		**0.004**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.027**		0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	**0.004**		**0.003**		**0.002**		0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	**0.036**		0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.02**		0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.008**		**0.011**		**0.004**		**0.005**		**0.004**		**0.008**	J2	0.004	U	**0.006**		**0.081**		0.004	U	0.004	U	0.006	U
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**18.5**		**18.8**		**16**		**11.5**		**14.2**		NA		NA		NA		**22.3**		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**5.42**		**5.51**		**4.67**		**3.22**		**3.96**		NA		NA		NA		**9.38**		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.5**		**3.5**		**2.7**		**2.8**		**3.0**		NA		NA		NA		**4.8**		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**11.6**		**11.8**		**10.3**		**10.2**		**10.3**		NA		NA		NA		**13.4**		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**86**		**82**		**72**		**58**		**77**		NA		NA		NA		**78**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**86**		**82**		**72**		**58**		**77**		NA		NA		NA		**78**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		NT		**130**		**100**		**120**	J2	110		97		98		**120**		**160**		**120**		**110**	
80	74	Chloride (mg/L) (EPA 325.2)	1.0	U	**5.6**	J	**1.8**		**1.4**		**1.5**		2.5		1.0	U	1.5		**1.5**		**2.4**		**1.4**		**1.9**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.75**	J	0.010	U	**1.3**		**0.40**		**0.044**	J2	NA		NA		NA		**1.0**		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	**0.022**	J	0.010	U	0.010	U	**0.010**	J2	NA		NA		NA		**0.034**		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.75**	J	**0.016**	J	**1.3**		**0.40**		**0.054**	J2	NA		NA		NA		**1.0**		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**11**	J	**4.0**	J	**10**		**5.7**		**6.7**		NA		NA		NA		**9.5**		NA		NA		NA	
85	79																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1											
2											
3		LW5S		LW5S		LW5S		LW5S		LW5S	
4		BH96C		BR64F		CT37E		ED16F		FF88C	
5		2/17/00		5/24/00		2/12/01		2/25/02		2/13/03	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	**0.013**	
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	0.006	U	0.006	U	0.006	U	**0.013**	
70											
71	**MAJOR IONS AND CONVENTIONALS**										
72	Calcium (mg/L) (6010)	NA		NA		**16.3**		**22.4**		**20.5**	
73	Magnesium (mg/L) (6010)	NA		NA		**4.44**		**6.49**		**5.99**	
74	Potassium (mg/L) (6010)	NA		NA		**2.6**		**3.4**		**3**	
75	Sodium (mg/L) (6010)	NA		NA		**9.64**		**11.4**		**10.1**	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**81**		**100**		**88**	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1.0	U	1.0	U	1	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**81**		**100**		**88**	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**100**		**97**		**140**		**150**		**140**	
80	Chloride (mg/L) (EPA 325.2)	**1.9**		**1.6**		**6.3**		**1.1**		**2.1**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**1.2**		**1.6**		**0.73**	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.010	U	0.010	U	0.01	U
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**1.2**	J	**1.6**		**0.73**	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**9.1**		**9.0**		**10**	
85											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2					Dup of LW5S																					
3			LW5S		LW5D		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S	
4			S167E		S167F		T160A		U235G		V232G		W391C		Y336E		Z225G		Z960J		AH49F		AU22E		BC27C	
5			3/31/97		3/31/97		7/14/97		10/22/97		1/30/98		5/19/98		8/18/98		11/13/98		2/18/99		5/18/99		9/20/99		12/7/99	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.56		6.56		6.58		6.74		6.86		6.24		6.33		6.19		6.65		5.79		6.43		6.33	
88	82	Temperature (° C) (avg)	11.7		11.7		14.3		14.7		13.8		13.0		16.0		13.3		14.2		12.8		17.2		13.1	
89	83	Conductivity (um/hos)	175		175		197		125		175		177		171		80		169		200		146		133	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		3.37		1.83		1.86		5.67		2.40		2.38		2.85	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																										

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1											
2											
3		LW5S		LW5S		LW5S		LW5S		LW5S	
4		BH96C		BR64F		CT37E		ED16F		FF88C	
5		2/17/00		5/24/00		2/12/01		2/25/02		2/13/03	
86	**FIELD PARAMETERS**										
87	pH (avg)	6.49		6.42		6.17		5.91		6.79	
88	Temperature (° C) (avg)	11.8		14.6		13.7		12.4		13.3	
89	Conductivity (um/hos)	149		144		148		221		208	
90	Dissolved oxygen (mg/L) (avg)	2.51		2.85		2.08		5.42		0	
91											
92	**DIOXINS AND FURANS (ng/L)**										
93	**Method 8290**										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA	
119											
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2					Dup of LW5S																					
3			LW5S		LW5D		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S		LW5S	
4			S167E		S167F		T160A		U235G		V232G		W391C		Y336E		Z225G		Z960J		AH49F		AU22E		BC27C	
5			3/31/97		3/31/97		7/14/97		10/22/97		1/30/98		5/19/98		8/18/98		11/13/98		2/18/99		5/18/99		9/20/99		12/7/99	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ
1											
2											
3		LW5S		LW5S		LW5S		LW5S		LW5S	
4		BH96C		BR64F		CT37E		ED16F		FF88C	
5		2/17/00		5/24/00		2/12/01		2/25/02		2/13/03	
122	**PAHs (µg/L)**										
123	**EPA Method SW8270 SIM**										
124	Naphthalene	NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2							Dup of LW7S																			
3			LW7S		LW7S		LW7D		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4			S167M		T176S		T176T		U235W		V208D		W371I		Y314G		Z225R		Z960N		AH27E		AU22F		BB82A	
5			4/1/97		7/16/97		7/16/97		10/23/97		1/28/98		5/18/98		8/17/98		11/12/98		2/17/99		5/17/99		9/20/99		12/6/99	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	**23**		**43**		**42**		**13**		**13**		**19**	J2	**10**		**6.5**		**4.0**		**17**		**19**		**7.8**	
25	19	2-Methylnaphthalene	**6.9**		**16**		**15**		**7.4**		**4.1**		**5.9**	J2	**4.6**		**3.4**		**1.2**		**4.7**		**11**		**7.4**	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	**3.6**	J2	2.7	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	20	U	10	U	5.0	U	57	U	5.0	U	5.0	U	**23**		13	U	**29**		5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	**8.8**		**9.0**	J2	**12**	J2	5.0	U	**5.8**		**8.9**		**8.1**		**11**		**10**		**20**		5.0	U	5.0	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	**160**		**140**		**160**		**86**		**71**		**62**		**69**		**36**		**14**		**56**		**80**		**40**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**110**		**100**		**120**		**37**		**43**		**30**		**33**		**21**		**8.4**		**22**		**28**		**17**	
45	39	o-Xylene	**4.2**		**3.9**		**4.4**		**1.3**		**1.3**		**1.6**		**1.6**		**1.1**		1.0	U	**1.0**		**1.6**		1.0	U
46	40	1,3,5-Trimethylbenzene	**15**		**24**		**25**		**21**		**6.4**		**9.1**		**5.9**		**8.0**		**2.0**		**8.3**		**4.4**		**2.4**	
47	41	1,2,4-Trimethylbenzene	**81**		**86**		**100**		**30**	J2	**15**		**9.9**		**7.0**		**2.9**		**3.7**		**17**		**6.3**		**2.5**	
48	42	Isopropylbenzene	**22**		**45**		**42**		**60**	J2	**20**		**29**		**33**		**38**		**7.9**		**27**		**36**		**29**	
49	43	n-Propylbenzene	**31**		**64**		60		**78**		**34**		**43**		**46**		**59**		**13**		**42**		**48**		**41**	
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
51	45	sec-Butylbenzene	**2.4**		**4.9**		**4.6**		**5.7**	J2	**3.6**		**3.6**		**4.1**	J2	**4.5**		**1.8**		**3.1**		**4.0**		**3.4**	
52	46	4-Isopropyltoluene	**2.5**		**4.2**		**4.2**		**3.4**	J2	**1.6**		**2.3**		**2.4**		**2.1**		1.0	U	**2.0**		**2.2**		**1.4**	
53	47	n-Butylbenzene	**3.6**		**7.4**		**7.4**		**6.4**	J2	5.0		**4.4**		**5.2**		**5.3**		**2.5**		**3.4**		**5.2**		**4.3**	M
54	48	Naphthalene	**64**		**66**	J2	**87**	J2	**35**	J2	**37**		**28**		**32**		**22**		**9.1**		**29**		**41**		**9.6**	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	**0.48**		**0.54**		**0.48**		**0.56**		0.25	U	**0.40**		**0.28**		0.25	U	0.25	U	**0.27**		**0.54**		**0.40**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.014**		**0.017**		**0.017**		0.05	U	0.05	U	**0.015**		**0.015**		**0.017**		**0.016**		**0.010**		**0.018**		**0.016**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
3		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4		BH75E		BR55H		CB49A		CK77C		CT37A		DE68A		DM52J		DW29A		ED16G		EM75E		ER92A		EZ03M		FF88E	
5		2/15/00		5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03	
7	**CHLORINATED PHENOLS (µg/L)**																										
8	**EPA Method SW8040**																										
9	Pentachlorophenol	0.25	U	0.25	UJ	0.25	U	0.25	U	0.25	UJ	0.25	U	0.25	U	**0.25**		0.25	U	0.25	U	0.28	U	0.25	U	0.26	U
10	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																											
17	**SEMIVOLATILES (µg/L)**																										
18	**EPA Method SW8270**																										
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.2	U	2.3	U	2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.3	U	3.4	U	3.1	U
23	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U	50	U	56	U	57	U	51	U
24	Naphthalene	**1.6**		**5.7**		**12**		**5.2**		**3.7**		2.0		**1.8**		**1.3**		1.0	U	**9.0**		**5.2**		**1.8**		**2.1**	
25	2-Methylnaphthalene	1.0	U	**1.2**		**3.7**		**1.6**		**1.4**		1.0	U	1.0	U	1.0	U	1.0	U	**3.0**		**2**		1.1	U	1	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.7	U	5.1	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.7	U	5.1	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.1	U	1	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.6	U	5.7	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**4.3**		4.0	U	4.0	U	4.4	U	4.5	U	1	U
33																											
34	**VOLATILES (µg/L)**																										
35	**EPA Method SW8260**																										
36	Acetone	5.0	U	5.0	U	56	U	110	U	83	U	5.0	U	5.0	U	5.0	U	21	U	5.0	U	48	U	86	U	20	U
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	5.0	U	9.3	U	5.0	U	**8.2**		5.0	U	**7.7**		5.0	U	5.0	U	**13**		6.6	U	**21**	M	**9.3**	M
39	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
42	Ethylbenzene	**5.6**		**19**		**40**		**23**		**15**		**4.6**		**18**		**17**		**8.6**		**31**		**42**		**24**		**8.3**	
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
44	m,p-Xylene	**2.8**		**8.8**		**15**		**19**		**9.1**		**5.4**		**10**		**13**		**3.7**		**15**		**18**		**12**		**6.3**	
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
46	1,3,5-Trimethylbenzene	**2.3**		**2.1**		**3.0**		**2.8**		**1.5**		1.0	U	**1.6**		**1.4**		1.0	U	**20**		**4**		**1.4**		**1**	
47	1,2,4-Trimethylbenzene	1.1	U	**4.6**		**3.0**		**1.6**		**1.2**		1.0	U	**2.3**		1.0	U	**1.1**		**6.9**		**4.9**		**1.2**		**2.1**	
48	Isopropylbenzene	**8.1**		**11**		**18**		**22**		**16**		**1.3**		**21**		**20**		**6.1**		**20**		**26**		**26**		**14**	
49	n-Propylbenzene	**15**		**18**		**28**		**33**		**25**		**1.3**		**27**		**27**		**11**		**30**		**40**		**36**		**23**	
50	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U	1	U
51	sec-Butylbenzene	**1.7**		**1.4**		**2.3**		**2.6**		**2.3**		1.0	U	**2.2**		**2.3**		1.0	U	**2.6**		**3.3**		**3**		**2.2**	
52	4-Isopropyltoluene	1.0	U	**1.5**		**1.1**		**1.2**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**1.6**		**2.2**		**1.1**		1	U
53	n-Butylbenzene	2.4	U	1.5	U	**2.8**		**3.2**		**2.6**		1.0	U	**2.8**	M	3.1	U	**1.0**		2.6	U	3.7	U	**3.2**	M	**2.5**	M
54	Naphthalene	5.0	U	**12**		**18**		**13**		**5.7**		5.0	U	**7.0**		5.0	U	5.0	U	**14**		**12**		**5.4**		5	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																										
57	**Method OR-DEQ**																										
58	**TPH-Diesel**	0.25	U	0.25	U	**0.32**		**0.32**		**0.32**		**20**		**0.26**		**0.42**		0.25	U	**0.31**		**0.53**		**0.5**		**0.31**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.5	U	NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																											
62	**PRIORITY POLLUTANT**																										
63	**METALS (mg/L)**																										
64	Arsenic (7060)	**0.017**		**0.016**		**0.015**		**0.015**		**0.016**		**0.016**		**0.019**		**0.017**		**0.017**		**0.017**		**0.015**		0.05	U	**0.017**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD
1					
2					
3		LW7S		LW7S	
4		FL41B		FU45A	
5		5/7/03		8/28/03	
6					
7	**CHLORINATED PHENOLS (µg/L)**				
8	**EPA Method SW8040**				
9	Pentachlorophenol	0.25	U	0.50	UJ
10	2,4,6-Trichlorophenol	NA		NA	
11	2,3,6-Trichlorophenol	NA		NA	
12	2,4,5-Trichlorophenol	NA		NA	
13	2,3,4-Trichlorophenol	NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA	
16					
17	**SEMIVOLATILES (µg/L)**				
18	**EPA Method SW8270**				
19	Phenol	2	U	2	U
20	4-Methylphenol	1	U	1	U
21	Isophorone	1	U	1	U
22	2,4-Dimethylphenol	3	U	3.1	U
23	Benzoic Acid	50	U	51	U
24	Naphthalene	**1.2**		**4.4**	
25	2-Methylnaphthalene	1	U	**1.3**	
26	2,4,6-Trichlorophenol	5	U	5.1	U
27	2,4,5-Trichlorophenol	5	U	5.1	U
28	Acenaphthene	1	U	1	U
29	Dibenzofuran	1	U	1	U
30	Fluorene	1	U	1	U
31	Pentachlorophenol	5	U	5.1	U
32	bis(2-Ethylhexyl)phthalate	1	U	1	U
33					
34	**VOLATILES (µg/L)**				
35	**EPA Method SW8260**				
36	Acetone	**36**	M	5	U
37	Carbon Disulfide	1	U	1	U
38	2-Butanone	**7.6**	M	**18**	M
39	Benzene	1	U	1	U
40	Bromoform	1	U	1	U
41	Toluene	1	U	1	U
42	Ethylbenzene	**10**	J	**42**	
43	Styrene	1	U	1	U
44	m,p-Xylene	**5**	J	**20**	J
45	o-Xylene	1	U	1	U
46	1,3,5-Trimethylbenzene	1	U	**3.4**	
47	1,2,4-Trimethylbenzene	**1.1**	J	**3.2**	J
48	Isopropylbenzene	**8.7**	J	**31**	
49	n-Propylbenzene	**14**	J	**40**	
50	tert-Butylbenzene	1	U	1	U
51	sec-Butylbenzene	**1.5**	J	**2.9**	
52	4-Isopropyltoluene	1	U	**1.2**	
53	n-Butylbenzene	**1.8**	J	**3**	
54	Naphthalene	5	U	**6.6**	
55					
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**				
57	**Method OR-DEQ**				
58	**TPH-Diesel**	0.25	U	**0.54**	
59	**TPH-D Motor Oil**	NA		NA	
60	**TPH-Gasoline**	NA		NA	
61					
62	**PRIORITY POLLUTANT**				
63	**METALS (mg/L)**				
64	Arsenic (7060)	**0.015**		**0.013**	
65	Chromium (6010)	**0.016**		0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2							Dup of LW7S																			
3			LW7S		LW7S		LW7D		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4			S167M		T176S		T176T		U235W		V208D		W371I		Y314G		Z225R		Z960N		AH27E		AU22F		BB82A	
5			4/1/97		7/16/97		7/16/97		10/23/97		1/28/98		5/18/98		8/17/98		11/12/98		2/17/99		5/17/99		9/20/99		12/6/99	
66	60	Copper (6010)	**0.004**		**0.002**		**0.002**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	**0.003**		**0.005**		**0.005**		0.02	U	0.02	U	0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.001**		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.015**		**0.005**		**0.005**		0.004	U	**0.004**		**0.007**	J2	**0.008**		0.004	U	**0.007**	J	0.006	U	**0.004**		**0.007**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**24.9**		**27.9**		**26.9**		**31.4**		**30.6**		NA		NA		NA		**29.8**		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**9.15**		**10.2**		**9.94**		**11.6**		**11.0**		NA		NA		NA		**10.8**		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**2.7**		**3.0**		**2.9**		**2.9**		**2.5**		NA		NA		NA		**2.9**		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**8.93**		**9.78**		**9.84**		**9.53**		**9.52**		NA		NA		NA		**9.86**		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**120**		**93**	**J2**	**130**	**J2**	**160**		**150**		NA		NA		NA		**140**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**120**		**93**	J2	**130**	J2	**160**		**150**		NA		NA		NA		**140**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**180**	J2	**150**	J2	**170**		**180**		130		130		140		**190**		**200**		**180**		**190**	
80	74	Chloride (mg/L) (EPA 325.2)	**3.6**	J	**3.5**		**3.6**		**3.0**		**2.4**		2.8		1.0	U	1.9		**3.0**		**3.0**		**2.6**		**5.0**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.23**	J	0.010	U	0.010	U	**0.023**		**0.010**		NA		NA		NA		**0.24**		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.015**	J	**0.021**	J2	**0.048**	J2	0.010	U	0.010	U	NA		NA		NA		**0.017**		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.25**	J	**0.016**	J2	**0.027**	J2	**0.023**		**0.010**		NA		NA		NA		**0.26**		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**4.3**	J	**2.8**		**2.7**		2.5	U	2.5	U	NA		NA		NA		**7.7**		NA		NA		NA	
85	79																									

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4		BH75E		BR55H		CB49A		CK77C		CT37A		DE68A		DM52J		DW29A		ED16G		EM75E		ER92A		EZ03M		FF88E	
5		2/15/00		5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.008**	
67	Lead (7421)	0.001	U	**0.001**		0.001	U	**0.002**		0.001	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.002**		**0.002**		0.02	U	**0.005**	
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.01**	
69	Zinc (6010)	0.006	U	0.006	U	0.006	U	**0.024**		0.006	U	**0.009**		0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	**0.037**	
70																											
71	**MAJOR IONS AND CONVENTIONALS**																										
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		**29.4**		**37.4**		**41.0**		**36.2**		**35.4**		NA		NA		NA		**47.7**	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		**10.5**		**13.4**		**15.3**		**13.0**		**13.3**		NA		NA		NA		**18.9**	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		**2.5**		**3.1**		**3.2**		**3.4**		**3.5**		NA		NA		NA		**4.1**	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		**13.0**		**15.6**		**18.8**		**18.8**		**19.4**		NA		NA		NA		**17.6**	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**160**		NA		NA		NA		**180**		NA		NA		NA		**220**	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U	NA		NA		NA		1	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**160**		NA		NA		NA		**180**		NA		NA		NA		**220**	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**190**		**160**		**190**		**210**		**200**		**250**		**250**		**230**		**230**		**260**		**290**		**250**		**240**	
80	Chloride (mg/L) (EPA 325.2)	**3.6**		**3.5**		**2.9**		**4.1**		**2.8**		**3.3**		**5.3**		**2.6**		**3.6**		**3.5**		**7.4**		**4.7**		**5.1**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		**0.053**	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		0.010	U	NA		NA		NA		0.010	U	NA		NA		NA		**0.013**	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		0.010	UJ	NA		NA		NA		0.010	U	NA		NA		NA		**0.066**	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		**3.0**		NA		NA		NA		**7.9**		NA		NA		NA		2.5	U
85																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD
1					
2					
3		LW7S		LW7S	
4		FL41B		FU45A	
5		5/7/03		8/28/03	
66	Copper (6010)	**0.014**		**0.002**	
67	Lead (7421)	**0.006**		**0.001**	
68	Nickel (6010)	**0.03**		0.01	U
69	Zinc (6010)	**0.108**	J	0.006	U
70					
71	**MAJOR IONS AND CONVENTIONALS**				
72	Calcium (mg/L) (6010)	NA		NA	
73	Magnesium (mg/L) (6010)	NA		NA	
74	Potassium (mg/L) (6010)	NA		NA	
75	Sodium (mg/L) (6010)	NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**230**		**220**	
80	Chloride (mg/L) (EPA 325.2)	**2.1**		**2.5**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA	
85					

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2							Dup of LW7S																			
3			LW7S		LW7S		LW7D		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4			S167M		T176S		T176T		U235W		V208D		W371I		Y314G		Z225R		Z960N		AH27E		AU22F		BB82A	
5			4/1/97		7/16/97		7/16/97		10/23/97		1/28/98		5/18/98		8/17/98		11/12/98		2/17/99		5/17/99		9/20/99		12/6/99	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.76		6.73		6.74		6.91		6.79		6.35		6.51		6.35		6.84		5.72		6.22		6.13	
88	82	Temperature (° C) (avg)	13.7		16.2		16.0		15.4		15.2		14.4		16.6		14.1		13.7		14.5		16.3		13.6	
89	83	Conductivity (um/hos)	278		299		303		310		323		315		308		121		309		293		267		297	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		NA		1.35		1.39		2.13		2.09		1.91		2.84	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4		BH75E		BR55H		CB49A		CK77C		CT37A		DE68A		DM52J		DW29A		ED16G		EM75E		ER92A		EZ03M		FF88E	
5		2/15/00		5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03	
86	**FIELD PARAMETERS**																										
87	pH (avg)	6.73		6.52		6.36		5.18		6.46		6.70		6.93		6.60		6.21		6.56		6.66		6.6		6.99	
88	Temperature (° C) (avg)	15.5		14.5		15.5		14.9		14.2		14.1		15.2		15.1		14.1		15.1		15.5		15.6		14.7	
89	Conductivity (um/hos)	296		263		299		302		300		419		433		378		351		408		364		352		492	
90	Dissolved oxygen (mg/L) (avg)	1.20		0.87		1.66		2.02		2.78		1.37		1.06		3.24		4.55		5.27		1.46		0.41		0	
91																											
92	**DIOXINS AND FURANS (ng/L)**																										
93	**Method 8290**																										
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																											
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD
1					
2					
3		LW7S		LW7S	
4		FL41B		FU45A	
5		5/7/03		8/28/03	
86	**FIELD PARAMETERS**				
87	pH (avg)	7.1		6.8	
88	Temperature (° C) (avg)	14.4		15.7	
89	Conductivity (um/hos)	320		308	
90	Dissolved oxygen (mg/L) (avg)	5.9		2.76	
91					
92	**DIOXINS AND FURANS (ng/L)**				
93	**Method 8290**				
94	2,3,7,8-TCDF	NA		NA	
95	Total TCDF	NA		NA	
96	2,3,7,8-TCDD	NA		NA	
97	Total TCDD	NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA	
100	Total PeCDF	NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA	
102	Total PeCDD	NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA	
107	Total HxCDF	NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA	
111	Total HxCDD	NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA	
114	Total HpCDF	NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA	
116	Total HpCDD	NA		NA	
117	OCDF	NA		NA	
118	OCDD	NA		NA	
119					
120	**ETHANOL (mg/L)**	NA		NA	
121					

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2							Dup of LW7S																			
3			LW7S		LW7S		LW7D		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4			S167M		T176S		T176T		U235W		V208D		W371I		Y314G		Z225R		Z960N		AH27E		AU22F		BB82A	
5			4/1/97		7/16/97		7/16/97		10/23/97		1/28/98		5/18/98		8/17/98		11/12/98		2/17/99		5/17/99		9/20/99		12/6/99	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		**4.0**		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		**1.3**		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA		NA		NA	

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ
1																											
2																											
3		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S		LW7S	
4		BH75E		BR55H		CB49A		CK77C		CT37A		DE68A		DM52J		DW29A		ED16G		EM75E		ER92A		EZ03M		FF88E	
5		2/15/00		5/23/00		8/28/00		11/7/00		2/12/01		6/4/01		8/15/01		11/27/01		2/25/02		6/25/02		08/26/02		11/12/02		2/13/03	
122	**PAHs (µg/L)**																										
123	**EPA Method SW8270 SIM**																										
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	BA	BB	BC	BD
1					
2					
3		LW7S		LW7S	
4		FL41B		FU45A	
5		5/7/03		8/28/03	
122	**PAHs (µg/L)**				
123	**EPA Method SW8270 SIM**				
124	Naphthalene	NA		NA	
125	2-Methylnaphthalene	NA		NA	
126	Acenaphthylene	NA		NA	
127	Acenaphthene	NA		NA	
128	Fluorene	NA		NA	
129	Anthracene	NA		NA	
130	Dibenzofuran	NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2													Dup of LW8S						Dup of LW8S					
3			LW8S		LW8S		LW8S		LW8S		LW8S		Z		LW8S		LW8S		W		LW8S		LW8S	
4			AH27K		AU36D		BC30G		9912050-05A		BH96W		BH96V		BR64N		CB68F		CB68H		CL03A		CT67J	
5			5/17/99		9/21/99		12/8/99		12/8/1999 (d)		2/16/00		2/16/00		5/25/00		8/30/00		8/30/00		11/9/00		2/15/01	
7	1	**CHLORINATED PHENOLS (µg/L)**																						
8	2	**EPA Method SW8040**																						
9	3	Pentachlorophenol	0.25	U	0.25	U	**1.2**		NA		**0.13**	J1,J2	**0.27**	J2	**0.51**		0.25	U	0.25	U	0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		**0.14**	J1	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	**0.21**	J1	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	NA	
16	10																							
17	11	**SEMIVOLATILES (µg/L)**																						
18	12	**EPA Method SW8270**																						
19	13	Phenol	**2.7**		2.0	U	2.0	U	NA		**3.1**		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	**32**		1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	NA		3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	**99**		**74**		**120**		NA		**55**		**54**		**70**		**40**		**38**		**4.3**		**6.7**	
25	19	2-Methylnaphthalene	**76**		**58**		**72**		NA		**71**		**73**		**77**		**30**		**30**		**4.7**		**7.0**	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	**6.9**		5.0	U	**5.8**		5.0	U	5.0	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	**6.8**		NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
33	27																							
34	28	**VOLATILES (µg/L)**																						
35	29	**EPA Method SW8260**																						
36	30	Acetone	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	12	J2	5.0	U	5.0	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	32	2-Butanone	**11**		5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	**12**		5.0	U
39	33	Benzene	**110**		**55**		**49**		NA		**62**		**60**		**77**		**29**		**29**		**5.0**		**9.1**	
40	34	Bromoform	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
42	36	Ethylbenzene	**180**		**160**		**170**		NA		**110**		**98**		**140**		**130**		**120**		**8.5**		**22**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	38	m,p-Xylene	**290**		**320**		**260**		NA		**160**		**130**		**180**		**200**		**200**		**2.2**		**4.7**	
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
46	40	1,3,5-Trimethylbenzene	**62**		**120**		**100**		NA		**57**	J2	**45**	J2	**52**		**81**		**81**		1.0	U	**4.1**	
47	41	1,2,4-Trimethylbenzene	**280**		**180**		**180**		NA		**140**		**120**		**130**		**130**		**120**		**2.6**		**6.4**	
48	42	Isopropylbenzene	**290**		**130**		**160**		NA		**190**		**180**		**250**		**120**		**120**		**100**		**100**	
49	43	n-Propylbenzene	**190**		**110**		**140**		NA		**150**		**150**		**170**		**100**		**98**		**56**		**83**	
50	44	tert-Butylbenzene	**5.7**		**5.6**		**6.6**		NA		**8.8**		**8.7**		**7.3**		**5.5**		**5.5**		**4.9**		**5.7**	
51	45	sec-Butylbenzene	**22**		**23**		**25**		NA		**30**		**29**		**28**		**20**		20		**11**		**14**	
52	46	4-Isopropyltoluene	**5.1**		**10**		**5.4**		NA		**4.2**		**3.4**		**3.9**		1.0	U	1.0	U	1.0	U	1.0	U
53	47	n-Butylbenzene	**12**		**18**		16	U	NA		**15**		**14**		**15**		**14**		13		**4.1**		**6.8**	
54	48	Naphthalene	**150**		**120**		**160**		NA		**180**		**160**		**150**		**110**		**100**		**6.6**		**19**	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	51	**Method OR-DEQ**																						
58	52	**TPH-Diesel**	**1.9**		**2.1**		**2.0**		NA		**2.2**	J2	**3.2**	J2	**2.6**		**1.6**		**1.6**		**2.3**		**3.4**	
59	53	**TPH-D Motor Oil**	0.50	U	0.50	U	0.50	U	NA		0.50	UJ	**1.3**	J2	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
60	54	**TPH-Gasoline**	**9.8**		**9.4**		**10**		NA		**9.5**		**10**		**15**		**13**		**13**		**3.9**		**4.6**	
61	55																							
62	56	**PRIORITY POLLUTANT**																						
63	57	**METALS (mg/L)**																						
64	58	Arsenic (7060)	**0.022**		**0.025**		**0.025**		NA		**0.027**		**0.027**		**0.023**		**0.022**		**0.023**		**0.022**		**0.022**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
2		Dup of LW8S								Dup of LW8S								Dup of LW8S							
3		W		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S	
4		CT67I		DE68N		DM30J		ED23J		ED23K		EM85G		ER92E		EZ17G		EZ17A		FF65C		FL58B		FU45I	
5		2/15/01		6/4/01		8/14/01		2/26/02		2/26/02		6/26/02		08/26/02		11/13/02		11/13/02		2/11/03		5/8/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**																								
8	**EPA Method SW8040**																								
9	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.27	U	0.25	U	0.25	U	1.2	U	0.26	U	**2.1**	J
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																									
17	**SEMIVOLATILES (µg/L)**																								
18	**EPA Method SW8270**																								
19	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.2	U	2.3	U	2.3	U	2	U	2	UJ	2	U
20	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1.1	U	1	U	1	UJ	1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1.1	U	1	U	1	UJ	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.3	U	3.5	U	3.4	U	3	U	3.1	UJ	3.1	U
23	Benzoic Acid	10	U	10	U	10	U	50	U	50	U	50	U	54	U	58	U	57	U	50	U	51	UJ	51	U
24	Naphthalene	**6.4**		**22**		**2.3**		**54**		**57**		**57**		**62**		**11**		**11**		**44**		**24**	J	**39**	
25	2-Methylnaphthalene	**6.8**		**14**		**2.6**		**69**		**74**		**51**		**44**		**22**		**25**		**47**		**49**	J	**31**	
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.4	U	5.8	U	5.7	U	5	U	5.1	UJ	5.1	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.4	U	5.8	U	5.7	U	5	U	5.1	UJ	5.1	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1.1	U	1	U	1	UJ	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1.1	U	1	U	1	UJ	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	**1.3**		**1.2**		1.0	U	1.1	U	1.2	U	1.1	U	1	U	1	UJ	2	U
31	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.4	U	5.8	U	5.7	U	5	U	5.1	UJ	5.1	U
32	bis(2-Ethylhexyl)phthalate	1.0	U	**1.5**		1.0	U	**5.0**		4.0	U	4.0	U	4.3	U	4.7	U	4.5	U	1	U	1	UJ	1	U
33																									
34	**VOLATILES (µg/L)**																								
35	**EPA Method SW8260**																								
36	Acetone	5.0	U	5.0	U	8.2	U	5.0	U	5.0	U	**14**	M	15	U	**7.2**		**7.4**	M	**7.7**		**21**	M	**16**	J
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
38	2-Butanone	5.0	U	5.0	U	5.3	U	5.0	U	5.0	U	5.9	U	15	U	5	U	5	U	5	U	15	U	15	U
39	Benzene	**9.1**		**9.0**		**2.0**		**30**		**30**		**91**	J	**35**		**2.5**		**2.4**		**15**		**31**		**19**	
40	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
41	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
42	Ethylbenzene	**23**		**61**		**11**		**420**	J	**390**		**300**	J	**280**		**37**		**33**		**240**		**270**		**180**	
43	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
44	m,p-Xylene	**5.0**		**17**		1.0	U	**56**		**60**		**44**	J	**37**		**1**		1	U	**4.6**		**8.2**		**11**	J
45	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
46	1,3,5-Trimethylbenzene	**5.0**		**15**		**1.7**		**62**		**64**		**67**	J	**68**		**7.7**		**6.3**		**9.1**		**9.6**		**13**	J
47	1,2,4-Trimethylbenzene	**7.1**		**23**		**1.8**		**130**		**140**		**150**	J	**170**		**13**		**11**		**23**		**29**		**28**	J
48	Isopropylbenzene	**130**		**130**		**67**		**240**	J	**240**		**260**	J	**240**		**180**		**170**		**240**		**340**		**260**	
49	n-Propylbenzene	**100**		**110**		**40**		**210**	J	**210**		**250**	J	**220**		**160**		**150**		**200**		**260**		**230**	
50	tert-Butylbenzene	**6.2**		**6.0**		**4.7**		**10**		**10**		**12**	MJ	**8.4**		**7.6**		**7.1**		**9.4**		**12**		**9.1**	
51	sec-Butylbenzene	**15**		**16**		**8.7**		**31**		**32**		**40**	J	**24**		**24**		**23**		**29**		**33**		**28**	
52	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3	U	1	U	1	U	1	U	3	U	3	U
53	n-Butylbenzene	**7.1**		8.0	U	**3.2**	M	**18**		**18**		**20**	MJ	**16**	M	**14**	M	**13**	M	**13**	M	**14**		**14**	
54	Naphthalene	**20**		**35**		5.0	U	**180**		**100**		**140**		**150**		**19**		**17**		**76**		**51**		**83**	
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	**Method OR-DEQ**																								
58	**TPH-Diesel**	**3.2**		**4.4**		**4.0**		**7.1**		**7.6**		**4.0**		**4.5**		**4.3**		**4.2**		**11**		**7.4**		**4.3**	
59	**TPH-D Motor Oil**	0.50	U	0.50	U	2.5	U	0.50	U	0.50	U	0.50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
60	**TPH-Gasoline**	**4.9**		**4.7**		**3.9**		**12**	J	**12**		**11**		**10**		**7.8**		**8.6**		**9.8**		**9.5**	J	**7.4**	
61																									
62	**PRIORITY POLLUTANT**																								
63	**METALS (mg/L)**																								
64	Arsenic (7060)	**0.022**		**0.024**		**0.028**		**0.027**		**0.030**		**0.025**		**0.028**		0.05	U	0.05	U	**0.024**		**0.026**		**0.021**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.017**		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AW	AX
2		Dup of LW8S	
3		X	
4		FU45H	
5		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**		
8	**EPA Method SW8040**		
9	Pentachlorophenol	**6.3**	J
10	2,4,6-Trichlorophenol	NA	
11	2,3,6-Trichlorophenol	NA	
12	2,4,5-Trichlorophenol	NA	
13	2,3,4-Trichlorophenol	NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	2,3,4,5-Tetrachlorophenol	NA	
16			
17	**SEMIVOLATILES (µg/L)**		
18	**EPA Method SW8270**		
19	Phenol	2.1	U
20	4-Methylphenol	1.1	U
21	Isophorone	1.1	U
22	2,4-Dimethylphenol	3.2	U
23	Benzoic Acid	53	U
24	Naphthalene	**40**	
25	2-Methylnaphthalene	**34**	
26	2,4,6-Trichlorophenol	5.3	U
27	2,4,5-Trichlorophenol	5.3	U
28	Acenaphthene	1.1	U
29	Dibenzofuran	1.1	U
30	Fluorene	1.6	U
31	Pentachlorophenol	5.3	U
32	bis(2-Ethylhexyl)phthalate	1.1	U
33			
34	**VOLATILES (µg/L)**		
35	**EPA Method SW8260**		
36	Acetone	5	U
37	Carbon Disulfide	1	U
38	2-Butanone	5	U
39	Benzene	**23**	
40	Bromoform	1	U
41	Toluene	1	U
42	Ethylbenzene	**220**	
43	Styrene	1	U
44	m,p-Xylene	**15**	J
45	o-Xylene	1	U
46	1,3,5-Trimethylbenzene	**16**	J
47	1,2,4-Trimethylbenzene	**36**	J
48	Isopropylbenzene	**280**	
49	n-Propylbenzene	**260**	
50	tert-Butylbenzene	**10**	
51	sec-Butylbenzene	**32**	
52	4-Isopropyltoluene	**2**	
53	n-Butylbenzene	**16**	
54	Naphthalene	**120**	
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	**Method OR-DEQ**		
58	**TPH-Diesel**	**4.2**	
59	**TPH-D Motor Oil**	0.5	U
60	**TPH-Gasoline**	**7.5**	
61			
62	**PRIORITY POLLUTANT**		
63	**METALS (mg/L)**		
64	Arsenic (7060)	**0.024**	
65	Chromium (6010)	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2													Dup of LW8S						Dup of LW8S					
3			LW8S		LW8S		LW8S		LW8S		LW8S		Z		LW8S		LW8S		W		LW8S		LW8S	
4			AH27K		AU36D		BC30G		9912050-05A		BH96W		BH96V		BR64N		CB68F		CB68H		CL03A		CT67J	
5			5/17/99		9/21/99		12/8/99		12/8/1999 (d)		2/16/00		2/16/00		5/25/00		8/30/00		8/30/00		11/9/00		2/15/01	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	NA		0.002	U	0.002	U	**0.003**		0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.001	U	NA		**0.001**		0.001	U	0.001	U	0.001	U	0.001	U	**0.005**		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	0.008	U	**0.008**		**0.006**		NA		0.006	U	0.006	U	**0.007**		0.006	U	**0.007**		**0.041**		0.006	U
70	64																							
71	65	**MAJOR IONS AND CONVENTIONALS**																						
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**25.5**	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**6.81**	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**2.6**	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**7.52**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**170**	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		1.0	U
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**170**	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**220**		**200**		**210**		NA		**190**		**210**		**180**		**210**		**210**		**190**		**220**	
80	74	Chloride (mg/L) (EPA 325.2)	**5.4**		**4.1**		**4.6**		NA		**4.1**		**3.4**		**3.7**		**2.2**		**2.3**		**4.2**		**3.4**	J2
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**0.051**	J2
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**0.041**	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**2.8**	
85	79																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1																									
2		Dup of LW8S								Dup of LW8S								Dup of LW8S							
3		W		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S	
4		CT67I		DE68N		DM30J		ED23J		ED23K		EM85G		ER92E		EZ17G		EZ17A		FF65C		FL58B		FU45I	
5		2/15/01		6/4/01		8/14/01		2/26/02		2/26/02		6/26/02		08/26/02		11/13/02		11/13/02		2/11/03		5/8/03		8/28/03	
66	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.029**		0.002	U	0.002	U	**0.004**		0.002	U	0.002	U
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	**0.006**		0.02	U	0.02	U	**0.002**		0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	**0.04**		0.01	U	0.01	U	**0.01**		0.01	U	0.01	U
69	Zinc (6010)	0.006	U	**0.007**		0.006	U	0.006	U	0.006	U	0.006	U	**0.096**		**0.009**		0.006	U	**0.013**		**0.582**		0.006	U
70																									
71	**MAJOR IONS AND CONVENTIONALS**																								
72	Calcium (mg/L) (6010)	**25.6**		**31.1**		**27.5**		**41.6**		**38.6**		NA		NA		NA		NA		**33.8**		NA		NA	
73	Magnesium (mg/L) (6010)	**6.85**		**8.18**		**7.58**		**9.98**		**9.30**		NA		NA		NA		NA		**8.4**		NA		NA	
74	Potassium (mg/L) (6010)	**2.5**		**2.8**		**2.8**		**4.2**		**4.0**		NA		NA		NA		NA		**3.4**		NA		NA	
75	Sodium (mg/L) (6010)	**7.55**		**8.47**		**7.86**		**9.95**		**9.31**		NA		NA		NA		NA		**7.8**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	**160**		NA		NA		**220**		**230**		NA		NA		NA		NA		**190**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	NA		NA		1.0	U	1.0	U	NA		NA		NA		NA		1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**160**		NA		NA		**220**		**230**		NA		NA		NA		NA		**190**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**210**		**250**		**200**		**300**		**290**		**240**		**220**		**200**		**200**		**280**		**260**		**250**	
80	Chloride (mg/L) (EPA 325.2)	**4.9**	J	**2.8**		**5.3**		**4.2**		**3.6**		**4.4**		**2.7**		**2.9**		**2.9**		**3.7**		**2.3**		**2.3**	
81	N-Nitrate (mg-N/L) (Calculated)	0.010	U	NA		NA		0.010	U	**0.012**		NA		NA		NA		NA		0.01	U	NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	**0.035**	J	NA		NA		**0.059**		**0.054**		NA		NA		NA		NA		**0.072**		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.035**		NA		NA		**0.044**	J	**0.066**	J	NA		NA		NA		NA		**0.062**		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	2.5	U	NA		NA		2.5	U	**3.2**		NA		NA		NA		NA		**3.8**		NA		NA	
85																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AW	AX
1			
2		Dup of LW8S	
3		X	
4		FU45H	
5		8/28/03	
66	Copper (6010)	**0.002**	
67	Lead (7421)	0.001	U
68	Nickel (6010)	0.01	U
69	Zinc (6010)	0.006	U
70			
71	**MAJOR IONS AND CONVENTIONALS**		
72	Calcium (mg/L) (6010)	NA	
73	Magnesium (mg/L) (6010)	NA	
74	Potassium (mg/L) (6010)	NA	
75	Sodium (mg/L) (6010)	NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**250**	
80	Chloride (mg/L) (EPA 325.2)	**2.2**	
81	N-Nitrate (mg-N/L) (Calculated)	NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA	
85			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2													Dup of LW8S						Dup of LW8S					
3			LW8S		LW8S		LW8S		LW8S		LW8S		Z		LW8S		LW8S		W		LW8S		LW8S	
4			AH27K		AU36D		BC30G		9912050-05A		BH96W		BH96V		BR64N		CB68F		CB68H		CL03A		CT67J	
5			5/17/99		9/21/99		12/8/99		12/8/1999 (d)		2/16/00		2/16/00		5/25/00		8/30/00		8/30/00		11/9/00		2/15/01	
86	80	**FIELD PARAMETERS**																						
87	81	pH (avg)	5.55		6.10		6.28		NM		6.57		6.56		6.44		4.89		4.89		5.74		6.26	
88	82	Temperature (° C) (avg)	14.0		17.2		13.0		NM		13.2		13.2		13.4		15.2		15.3		14.7		13.6	
89	83	Conductivity (um/hos)	357		303		328		NM		351		351		354		330		330		352		404	
90	84	Dissolved oxygen (mg/L) (avg)	2.14		2.13		2.06		NM		0.83		0.82		1.55		1.12		1.13		0.53		0.57	
91	85																							
92	86	**DIOXINS AND FURANS (ng/L)**																						
93	87	**Method 8290**																						
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																								
120		**ETHANOL (mg/L)**	NA		NA		NA		10	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
121																								

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
2		Dup of LW8S								Dup of LW8S								Dup of LW8S							
3		W		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S	
4		CT67I		DE68N		DM30J		ED23J		ED23K		EM85G		ER92E		EZ17G		EZ17A		FF65C		FL58B		FU45I	
5		2/15/01		6/4/01		8/14/01		2/26/02		2/26/02		6/26/02		08/26/02		11/13/02		11/13/02		2/11/03		5/8/03		8/28/03	
86	**FIELD PARAMETERS**																								
87	pH (avg)	6.28		6.49		6.61		6.37		6.37		6.23		6.42		6.17		6.16		6.74		6.58		6.64	
88	Temperature (° C) (avg)	13.6		14.4		15.0		13.6		13.6		15.3		16.1		14.7		14.6		15.2		12.9		16.5	
89	Conductivity (um/hos)	403		402		467		489		490		405		330		353		351		503		397		349	
90	Dissolved oxygen (mg/L) (avg)	0.53		1.58		1.85		6.71		6.75		3.92		0.87		1.82		1.94		1.29		3.35		1.61	
91																									
92	**DIOXINS AND FURANS (ng/L)**																								
93	**Method 8290**																								
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																									
120	**ETHANOL (mg/L)**	5.0	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AW	AX
1			
2		Dup of LW8S	
3		X	
4		FU45H	
5		8/28/03	
86	**FIELD PARAMETERS**		
87	pH (avg)	6.65	
88	Temperature (° C) (avg)	16.5	
89	Conductivity (um/hos)	348	
90	Dissolved oxygen (mg/L) (avg)	1.57	
91			
92	**DIOXINS AND FURANS (ng/L)**		
93	**Method 8290**		
94	2,3,7,8-TCDF	NA	
95	Total TCDF	NA	
96	2,3,7,8-TCDD	NA	
97	Total TCDD	NA	
98	1,2,3,7,8-PeCDF	NA	
99	2,3,4,7,8-PeCDF	NA	
100	Total PeCDF	NA	
101	1,2,3,7,8-PeCDD	NA	
102	Total PeCDD	NA	
103	1,2,3,4,7,8-HxCDF	NA	
104	1,2,3,6,7,8-HxCDF	NA	
105	2,3,4,6,7,8-HxCDF	NA	
106	1,2,3,7,8,9-HxCDF	NA	
107	Total HxCDF	NA	
108	1,2,3,4,7,8-HxCDD	NA	
109	1,2,3,6,7,8-HxCDD	NA	
110	1,2,3,7,8,9-HxCDD	NA	
111	Total HxCDD	NA	
112	1,2,3,4,6,7,8-HpCDF	NA	
113	1,2,3,4,7,8,9-HpCDF	NA	
114	Total HpCDF	NA	
115	1,2,3,4,6,7,8-HpCDD	NA	
116	Total HpCDD	NA	
117	OCDF	NA	
118	OCDD	NA	
119			
120	**ETHANOL (mg/L)**	NA	
121			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2													Dup of LW8S						Dup of LW8S					
3			LW8S		LW8S		LW8S		LW8S		LW8S		Z		LW8S		LW8S		W		LW8S		LW8S	
4			AH27K		AU36D		BC30G		9912050-05A		BH96W		BH96V		BR64N		CB68F		CB68H		CL03A		CT67J	
5			5/17/99		9/21/99		12/8/99		12/8/1999 (d)		2/16/00		2/16/00		5/25/00		8/30/00		8/30/00		11/9/00		2/15/01	
122		**PAHs (µg/L)**																						
123		**EPA Method SW8270 SIM**																						
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1																									
2		Dup of LW8S								Dup of LW8S								Dup of LW8S							
3		W		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S		X		LW8S		LW8S		LW8S	
4		CT67I		DE68N		DM30J		ED23J		ED23K		EM85G		ER92E		EZ17G		EZ17A		FF65C		FL58B		FU45I	
5		2/15/01		6/4/01		8/14/01		2/26/02		2/26/02		6/26/02		08/26/02		11/13/02		11/13/02		2/11/03		5/8/03		8/28/03	
122	**PAHs (µg/L)**																								
123	**EPA Method SW8270 SIM**																								
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AW	AX
1			
2		Dup of LW8S	
3		X	
4		FU45H	
5		8/28/03	
122	**PAHs (µg/L)**		
123	**EPA Method SW8270 SIM**		
124	Naphthalene	NA	
125	2-Methylnaphthalene	NA	
126	Acenaphthylene	NA	
127	Acenaphthene	NA	
128	Fluorene	NA	
129	Anthracene	NA	
130	Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2																		
3			LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S	
4			AH76O		BC30A		BH96G		BR64K		ED30B		EN00B		FF76B		FL41M	
5			5/19/99		12/8/99		2/17/00		5/25/00		2/27/02		6/27/02		2/12/03		5/7/03	
6																		
7	1	**CHLORINATED PHENOLS (µg/L)**																
8	2	**EPA Method SW8040**																
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.33**	
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA	
16	10																	
17	11	**SEMIVOLATILES (µg/L)**																
18	12	**EPA Method SW8270**																
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2	U	2	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3	U	3	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	50	U	50	U	50	U	50	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	**22**		1.0	U	1.0	U	4.0	U	4.0	U	1	U	1	U
33	27																	
34	28	**VOLATILES (µg/L)**																
35	29	**EPA Method SW8260**																
36	30	Acetone	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
37	31	Carbon Disulfide	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
38	32	2-Butanone	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
39	33	Benzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
40	34	Bromoform	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
41	35	Toluene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
42	36	Ethylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
43	37	Styrene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
44	38	m,p-Xylene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
45	39	o-Xylene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
46	40	1,3,5-Trimethylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
47	41	1,2,4-Trimethylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
48	42	Isopropylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
49	43	n-Propylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
50	44	tert-Butylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
51	45	sec-Butylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
52	46	4-Isopropyltoluene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
53	47	n-Butylbenzene	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1	U	1	U
54	48	Naphthalene	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5	U	5	U
55	49																	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																
57	51	**Method OR-DEQ**																
58	52	**TPH-Diesel**	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA	
61	55																	
62	56	**PRIORITY POLLUTANT**																
63	57	**METALS (mg/L)**																
64	58	Arsenic (7060)	0.001	U	NA		**0.004**		**0.001**		**0.002**		**0.001**		0.001	U	0.001	U
65	59	Chromium (6010)	0.005	U	NA		0.005	U	0.005	U	0.005	U	**0.007**		0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2																		
3			LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S	
4			AH76O		BC30A		BH96G		BR64K		ED30B		EN00B		FF76B		FL41M	
5			5/19/99		12/8/99		2/17/00		5/25/00		2/27/02		6/27/02		2/12/03		5/7/03	
66	60	Copper (6010)	0.002	U	NA		**0.004**		0.002	U	0.002	U	**0.012**		**0.003**		0.002	U
67	61	Lead (7421)	0.001	U	NA		**0.003**		**0.001**		**0.001**		**0.001**		0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	NA		0.01	U	0.01	U	0.01	U	**0.02**		0.01	U	0.01	U
69	63	Zinc (6010)	**0.004**		NA		**0.016**		**0.007**		**0.008**	J	**0.043**		**0.01**		0.006	U
70	64																	
71	65	**MAJOR IONS AND CONVENTIONALS**																	
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		**11.1**		**26.2**		**9.5**		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		**3.27**		**9.50**		**2.58**		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		**2.5**		**3.9**		**2.5**		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		**5.27**		**8.31**		**6**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**34**		NA		**36**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		1.0	U	NA		1	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		**34**		NA		**36**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**84**		NA		**100**		**90**		**100**		**120**		**74**		**74**	
80	74	Chloride (mg/L) (EPA 325.2)	**1.3**		NA		**3.2**		**2.2**		**1.4**	J	**2.3**		**1.2**		**1.6**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		**3.4**		NA		**2.1**		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		**0.014**		NA		0.01	U	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		**3.4**		NA		**2.1**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		**12**		NA		**5.6**		NA	
85	79																	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2																		
3			LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S	
4			AH76O		BC30A		BH96G		BR64K		ED30B		EN00B		FF76B		FL41M	
5			5/19/99		12/8/99		2/17/00		5/25/00		2/27/02		6/27/02		2/12/03		5/7/03	
86	80	**FIELD PARAMETERS**																
87	81	pH (avg)	6.01		NM		6.66		6.45		6.09		6.44		7.19		6.78	
88	82	Temperature (° C) (avg)	13.6		NM		13.4		13.0		12.6		14.3		11.9		13	
89	83	Conductivity (um/hos)	93		NM		111		129		109		149		110		88	
90	84	Dissolved oxygen (mg/L) (avg)	5.76		NM		2.87		4.30		8.85		7.22		7.33		9.77	
91	85																	
92	86	**DIOXINS AND FURANS (ng/L)**																
93	87	**Method 8290**																
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA	
119																		
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA	
121																		

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2																		
3			LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S		LW10S	
4			AH76O		BC30A		BH96G		BR64K		ED30B		EN00B		FF76B		FL41M	
5			5/19/99		12/8/99		2/17/00		5/25/00		2/27/02		6/27/02		2/12/03		5/7/03	
122		**PAHs (µg/L)**																
123		**EPA Method SW8270 SIM**																
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
2					Dup of LW11S												Dup of LW11S							
3			LW11S		LW110S		LW11S		LW11S		LW11S		LW11S		LW11S		X		LW11S		LW11S		LW11S	
4			AH76E		AH76D		AU36F		BC27J		9912050-06A		BH96U		BR55L		BR55K		CB49J		CK77K		CT55H	
5			5/20/99		5/20/99		9/21/99		12/8/99		12/8/1999 (d)		2/17/00		5/23/00		5/23/00		8/28/00		11/8/00		2/14/01	
7	1	**CHLORINATED PHENOLS (µg/L)**																						
8	2	**EPA Method SW8040**																						
9	3	Pentachlorophenol	**15000**		**15000**		**9400**		**7200**		NA		**9700**		**7700**	J2	**7600**	J2	**3900**		NA		**320**	J
10	4	2,4,6-Trichlorophenol	**2.9**		**2.8**		**1.3**		**1.0**		NA		**1.8**		**1.4**		**1.2**		**0.68**		NA		NA	
11	5	2,3,6-Trichlorophenol	**0.13**	J1	0.25	U	0.25	U	**0.12**	J1	NA		**0.13**	J1	0.25	U	0.25	U	0.25	U	NA		NA	
12	6	2,4,5-Trichlorophenol	1.0	U	0.25	U	**0.32**		0.25	U	NA		**0.61**		**0.96**		**0.95**		0.72	U	NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.32	U	NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**750**		**750**		**450**		**360**		NA		**560**		**940**		**850**		**250**		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	**7.5**		**6.8**		**3.7**		**2.4**		NA		**6.2**		**4.2**		**4.4**		**2.5**		NA		NA	
16	10																							
17	11	**SEMIVOLATILES (µg/L)**																						
18	12	**EPA Method SW8270**																						
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0	U	2.0	U	2.0	U	2.0	U	NA		**10**	
20	14	4-Methylphenol	**3.5**	M	**2.8**	M	1.0	U	**1.4**	MJ1	NA		1.0	U	1.0	U	1.0	U	**3.5**		NA		**3.7**	
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	NA		3.0	U	3.0	U	3.0	U	3.0	U	NA		3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	NA		10	U
24	18	Naphthalene	**41**		**38**		**20**		**12**		NA		**23**		**22**		**20**		**13**		NA		**5.7**	
25	19	2-Methylnaphthalene	**14**		**13**		**8.9**		**5.7**		NA		**9.0**		**9.0**		**9.4**		**4.9**		NA		**3.9**	
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
31	25	Pentachlorophenol	**24000**		**20000**		**8000**		**5400**		NA		**11000**		**6800**	J2	**6500**	J2	**3600**		NA		**460**	J
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	1.0	U	**0.8**	J1	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
33	27																							
34	28	**VOLATILES (µg/L)**																						
35	29	**EPA Method SW8260**																						
36	30	Acetone	**18**		**21**		5.0	U	**29**		NA		11	U	9.8	U	5.0	U	**11**		NA			R
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		2.0	U
38	32	2-Butanone	**6.1**		**6.3**		**27**		5.0	U	NA		**40**	M	5.0	U	5.0	U	5.0	U	NA		10	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		2.0	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		2.0	U
41	35	Toluene	**51**		**48**		**23**		**14**		NA		**17**		**37**		**36**		**15**		NA		**2.4**	
42	36	Ethylbenzene	**160**		**150**		**86**		**54**		NA		**75**		**110**		**110**		**69**		NA		**24**	
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		2.0	U
44	38	m,p-Xylene	**360**		**350**		**160**		**96**		NA		**140**		**220**		**210**		**120**		NA		**53**	
45	39	o-Xylene	**300**		**290**		**170**		**96**		NA		**130**		**240**		**210**		**120**		NA		**40**	
46	40	1,3,5-Trimethylbenzene	**100**		**92**		**68**		**43**		NA		**62**		**88**		**89**		**53**		NA		**48**	
47	41	1,2,4-Trimethylbenzene	**410**		**430**		**180**		**130**		NA		**200**		**370**		**320**		**180**		NA		**150**	
48	42	Isopropylbenzene	**50**	J2	**40**	J2	**27**		**18**		NA		**27**		**40**		**38**		**22**		NA		**13**	
49	43	n-Propylbenzene	**66**		**56**		**40**		**26**		NA		**42**		**53**		**52**		**32**		NA		**24**	
50	44	tert-Butylbenzene	**2.8**		**2.3**		1.0	U	1.0	U	NA		**1.9**	M	2.3	U	2.2	U	**1.5**	M	NA		2.0	U
51	45	sec-Butylbenzene	**15**		**13**		**10**		**9.1**		NA		**14**		**14**		**13**		**8.8**		NA		**7.5**	
52	46	4-Isopropyltoluene	**11**		**9.9**		1.0	U	1.0	U	NA		**10**		**9.8**		**9.4**		**5.9**		NA		**7.1**	
53	47	n-Butylbenzene	**12**		**10**		**8.0**		5.3	U	NA		**11**		10	U	9.9	U	**7.0**	M	NA		**8.4**	M
54	48	Naphthalene	**46**		**38**		**19**		**15**		NA		**25**		**45**		**44**		**22**		NA		10	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	51	**Method OR-DEQ**																						
58	52	**TPH-Diesel**	**14**		**13**		**10**		**8.8**		NA		**12**		**10**		**9.6**		**5.9**		NA		**2.2**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		**1.1**		**0.50**		**0.77**		NA		NA		0.50	U
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		**11**		**24**		**20**		**14**		NA		**4.8**	
61	55																							
62	56	**PRIORITY POLLUTANT**																						
63	57	**METALS (mg/L)**																						
64	58	Arsenic (7060)	**0.007**		**0.008**		**0.006**		**0.007**		NA		**0.007**		**0.008**		**0.008**		**0.007**		NA		**0.007**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
2												Dup of LW11S						Dup of LW11S					
3		LW11S		LW11S		LW11S		LW11S		LW11S		OX005S		LW11S		LW11S		X		LW11S		LW11S	
4		DE68M		ED34D		EM66C		ES04D		EX87C		EX87A		EZ03I		FF76H		FF76L		FL58H		FU45D	
5		6/4/01		2/28/02		6/24/02		08/28/02		10/29/02		10/29/02		11/12/02		2/12/03		2/12/03		5/8/03		8/28/03	
7	**CHLORINATED PHENOLS (µg/L)**																						
8	**EPA Method SW8040**																						
9	Pentachlorophenol	NA		NA		NA		NA		**3600**		**3700**		NA		NA		NA		NA		NA	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		**1.3**		**1.3**		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		**0.4**		**0.37**		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		0.58	U	0.6	U	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		0.25	U	0.29	U	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		**380**		**380**		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		**3.2**	J	**4.2**	J	NA		NA		NA		NA		NA	
16																							
17	**SEMIVOLATILES (µg/L)**																						
18	**EPA Method SW8270**																						
19	Phenol	**2.6**		2.0	U	2.0	U	2.2	U	NA		NA		2.2	U	2	U	2	U	2	U	2.1	U
20	4-Methylphenol	**2.3**		**1.9**		**1.0**		1.1	U	NA		NA		1.1	U	**1.2**	M	**1.3**	M	**5.4**		1.1	U
21	Isophorone	1.0	U	1.0	U	1.0	U	1.1	U	NA		NA		1.1	U	1	U	1	U	1	U	1.1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.3	U	NA		NA		3.3	U	3.1	U	3.1	U	3	U	3.2	U
23	Benzoic Acid	10	U	50	U	50	U	54	U	NA		NA		56	U	51	U	51	U	50	U	53	U
24	Naphthalene	**3.1**		**5.3**		**6.7**		**4.9**		NA		NA		**4.7**		**4.9**		**5.1**		**10**		**5.6**	
25	2-Methylnaphthalene	**2.0**		**1.7**		**2.6**		**1.7**		NA		NA		**2.8**		**3.6**		**3.7**		**4.5**		**3.7**	
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.4	U	NA		NA		5.6	U	5.1	U	5.1	U	5	U	**8.3**	M
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.4	U	NA		NA		5.6	U	5.1	U	5.1	U	5	U	5.3	U
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.1	U	NA		NA		1.1	U	1	U	1	U	1	U	1.1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.1	U	NA		NA		1.1	U	1	U	1	U	1	U	1.1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.1	U	NA		NA		1.1	U	1	U	1	U	1	U	1.1	U
31	Pentachlorophenol	**560**		**4700**		**4000**		**2600**		NA		NA		**2200**		**1600**	J	**2000**	J	**3800**		**1700**	
32	bis(2-Ethylhexyl)phthalate	1.0	U	4.0	U	4.0	U	4.3	U	NA		NA		4.4	U	1	U	1	U	1	U	1.1	U
33																							
34	**VOLATILES (µg/L)**																						
35	**EPA Method SW8260**																						
36	Acetone	**17**		**28**		5.0	U	11	UJ	**99**	M	**110**		**46**	M	**18**	M	**22**	M	**23**	M	**10**	MJ
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1	UJ	1	U	1	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	5.0	U	**13**		5.0	U	**23**	J	**12**		**14**		**7.4**		5	U	5	U	5	U	**9.5**	M
39	Benzene	**1.7**		**6.6**		**12**		**9.1**		**2.9**		**2.6**		**2.7**		**11**	J	**14**	J	**18**		**5.4**	
40	Bromoform	1.0	U	1.0	U	1.0	U	1	UJ	1	U	1	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	**5.3**		**9.1**		**10**		**3.6**	J	**3**		**2.8**		**1.3**		**3.9**	J	**4.8**	J	**6.4**		**1.2**	
42	Ethylbenzene	**33**		**36**		**56**		**44**		**56**		**55**		**25**		**34**		**39**		**75**		**29**	
43	Styrene	1.0	U	1.0	U	1.0	U	1	UJ	1	U	1	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	**57**		**71**		**100**		**69**	J	**67**		**67**		**26**		**52**		**62**		**120**		**48**	J
45	o-Xylene	**50**		**77**		**94**		**68**	J	**88**		**83**		**37**		**48**		**55**		**130**		**50**	
46	1,3,5-Trimethylbenzene	**32**		**29**		**35**		**28**		**28**	J	**22**	J	**8.3**		**16**		**19**		**46**		**28**	
47	1,2,4-Trimethylbenzene	**120**		**140**		**150**		**120**		**160**		**150**		**84**		**95**		**110**		**210**		**120**	J
48	Isopropylbenzene	**12**		**14**		**16**		**16**		**22**		**18**		**10**		**12**		**14**		**27**		**15**	
49	n-Propylbenzene	**21**		**20**		**24**		**24**		**31**		**27**		**15**		**20**		**23**		**37**		**20**	
50	tert-Butylbenzene	**1.3**	M	**1.4**		**2.8**	J	**1.8**		**2**		**1.8**		**1.3**	M	**1.5**	M	**1.6**	M	**2.4**		**1.6**	
51	sec-Butylbenzene	**7.3**		**6.9**		**7.4**		**5.8**		**10**		**9.3**		**5.6**		**7.4**		**7.8**		**11**		**7.9**	
52	4-Isopropyltoluene	**6.6**		**3.9**		**6.0**		**5.8**	J	**7**		**6.4**		**3.2**		**5.2**		**5.8**		**7.4**		**4.6**	
53	n-Butylbenzene	7.6	U	**4.1**		5.0	U	**6.8**	M	**7.6**	M	**7.2**	M	**3.8**	M	**6**	M	**6.6**	M	**8.2**		**5.2**	
54	Naphthalene	**11**		**12**		**17**		**15**	J	**22**		**19**		**7.8**		**10**		**12**		**22**		**9.4**	
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	**Method OR-DEQ**																						
58	**TPH-Diesel**	**1.7**		**7.4**		**8.0**		**7.9**		NA		NA		**4.7**		**4.5**		**4.4**		**8.6**		**4**	
59	**TPH-D Motor Oil**	0.50	U	0.50	U	0.50	U	0.5	U	NA		NA		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
60	**TPH-Gasoline**	**2.9**		8.9		**9.7**		**7.3**		NA		NA		**6.1**		**7.1**		**7.7**		**8.6**	J	**4.8**	
61																							
62	**PRIORITY POLLUTANT**																						
63	**METALS (mg/L)**																						
64	Arsenic (7060)	**0.007**		**0.006**		**0.006**		**0.006**		NA		NA		0.05	U	**0.004**		**0.004**		**0.005**		**0.005**	
65	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	NA		NA		0.005	U	0.005	U	0.005	U	0.005	U	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of LW11S												Dup of LW11S							
3			LW11S		LW110S		LW11S		LW11S		LW11S		LW11S		LW11S		X		LW11S		LW11S		LW11S	
4			AH76E		AH76D		AU36F		BC27J		9912050-06A		BH96U		BR55L		BR55K		CB49J		CK77K		CT55H	
5			5/20/99		5/20/99		9/21/99		12/8/99		12/8/1999 (d)		2/17/00		5/23/00		5/23/00		8/28/00		11/8/00		2/14/01	
66	60	Copper (6010)	**0.002**		**0.003**		0.002	U	0.002	U	NA		**0.005**		0.002	U	0.002	U	0.002	U	NA		0.002	U
67	61	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	NA		**0.002**		0.001	U	0.001	U	0.001	U	NA		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01	U
69	63	Zinc (6010)	**0.010**		**0.010**		0.004	U	0.006	U	NA		**0.011**		0.006	U	0.006	U	0.006	U	NA		0.006	U
70	64																							
71	65	**MAJOR IONS AND CONVENTIONALS**																						
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**20.3**	
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**6.41**	
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**1.6**	
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**4.03**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**140**	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		1.0	U
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**140**	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**230**		**240**		**150**		**200**		NA		**160**		**160**		**170**		**220**		NA		**190**	
80	74	Chloride (mg/L) (EPA 325.2)	**2.3**		**2.2**		**3.3**		**5.3**		NA		**5.2**		**5.8**	J2	**12**	J2	**6.5**		NA		**3.1**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		0.010	U
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		**5.6**	
85	79																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																							
2												Dup of LW11S						Dup of LW11S					
3		LW11S		LW11S		LW11S		LW11S		LW11S		OX005S		LW11S		LW11S		X		LW11S		LW11S	
4		DE68M		ED34D		EM66C		ES04D		EX87C		EX87A		EZ03I		FF76H		FF76L		FL58H		FU45D	
5		6/4/01		2/28/02		6/24/02		08/28/02		10/29/02		10/29/02		11/12/02		2/12/03		2/12/03		5/8/03		8/28/03	
66	Copper (6010)	0.002	U	**0.003**		0.002	U	0.002	U	NA		NA		0.002	U	0.002	UJ	**0.007**	J	**0.002**		**0.004**	
67	Lead (7421)	0.001	U	0.001	U	0.001	U	0.001	U	NA		NA		0.02	U	0.001	U	0.001	U	0.001	U	0.001	U
68	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	NA		NA		**0.12**		0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	0.006	U	0.006	U	0.006	U	0.006	U	NA		NA		**0.019**		**0.009**		**0.011**		0.006	U	0.006	U
70																							
71	**MAJOR IONS AND CONVENTIONALS**																						
72	Calcium (mg/L) (6010)	**28.6**		**59.0**		NA		NA		NA		NA		NA		**22.5**		**23.1**		NA		NA	
73	Magnesium (mg/L) (6010)	**9.34**		**18.2**		NA		NA		NA		NA		NA		**7.52**		**7.8**		NA		NA	
74	Potassium (mg/L) (6010)	**2.7**		**4.0**		NA		NA		NA		NA		NA		**2.9**		**3**		NA		NA	
75	Sodium (mg/L) (6010)	**6.10**		**8.55**		NA		NA		NA		NA		NA		**12.5**		**12.9**		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		**230**		NA		NA		140		**140**		NA		**120**		**120**		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		1.0	U	NA		NA		1	U	1	U	NA		1	U	1	U	NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		**230**		NA		NA		140		**140**		NA		**120**		**120**		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**190**		**410**		**180**		**160**		NA		NA		**560**		**170**		**160**		**190**		**270**	
80	Chloride (mg/L) (EPA 325.2)	**3.2**		**58**		**2.7**		**3.8**		NA		NA		**4.7**		**3.1**		**3**		**4.9**		**3.3**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		0.010	U	NA		NA		NA		NA		NA		**0.042**	J	**0.031**	J	NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		**0.031**		NA		NA		NA		NA		NA		0.01	U	0.01	U	NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		**0.040**		NA		NA		NA		NA		NA		**0.042**	J	**0.031**	J	NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		**13**		NA		NA		NA		NA		NA		**24**		**26**		NA		NA	
85																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of LW11S												Dup of LW11S							
3			LW11S		LW110S		LW11S		LW11S		LW11S		LW11S		LW11S		X		LW11S		LW11S		LW11S	
4			AH76E		AH76D		AU36F		BC27J		9912050-06A		BH96U		BR55L		BR55K		CB49J		CK77K		CT55H	
5			5/20/99		5/20/99		9/21/99		12/8/99		12/8/1999 (d)		2/17/00		5/23/00		5/23/00		8/28/00		11/8/00		2/14/01	
86	80	**FIELD PARAMETERS**																						
87	81	pH (avg)	6.55		6.56		5.83		6.50		NM		6.52		6.52		6.53		6.27		NM		6.25	
88	82	Temperature (° C) (avg)	14.1		14.1		15.0		12.2		NM		15.0		14.0		14.0		15.1		NM		13.2	
89	83	Conductivity (um/hos)	285		286		226		323		NM		291		234		234		346		NM		296	
90	84	Dissolved oxygen (mg/L) (avg)	2.09		2.21		2.45		2.72		NM		0.11		2.02		2.02		1.37		NM		0.61	
91	85																							
92	86	**DIOXINS AND FURANS (ng/L)**																						
93	87	**Method 8290**																						
94	88	2,3,7,8-TCDF	NA		NA		0.0055	U	0.00130	U	NA		0.0025	U	NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		**0.018**		**0.0011**	J1	NA		**0.0064**		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		0.0056	U	0.00130	U	NA		0.0044	U	NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		0.0056	U	0.00130	U	NA		0.0044	U	NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		0.0320	UE	0.00160	U	NA		0.11	U	NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		0.0120	U	0.00130	U	NA		0.0026	U	NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		0.0220	U	0.00140	U	NA		0.0034	U	NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		0.0061	U	0.00160	U	NA		0.0044	U	NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		0.0061	U	0.00160	U	NA		0.0044	U	NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		0.0083	U	0.00120	U	NA		0.54	U	NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		0.0079	U	0.018	U	NA		0.0036	U	NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		0.0067	U	0.0032	U	NA		0.0038	U	NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		0.0130	U	0.00140	U	NA		0.0058	U	NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		**0.015**		0.0170	U	NA		**0.1600**		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		0.0076	U	0.00260	U	NA		0.0069	U	NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		**0.015**		**0.0025**	J1	NA		**0.0230**	J1	NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		0.0100	U	0.00130	U	NA		0.0078	U	NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		**0.035**		**0.0068**	J1	NA		**0.0310**		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		**0.043**		**0.0071**	J1	NA		0.14	U	NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		0.0094	U	0.00200	U	NA		0.0120	U	NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		**0.043**		**0.0320**	J1	NA		**0.3800**		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		**0.270**		**0.0500**	J1	NA		**0.6900**		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		**0.410**		**0.0780**		NA		**1.1000**		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		0.220	U	**0.0280**	J1	NA		**0.5100**		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		**1.900**		**0.2800**		NA		**5.3000**		NA		NA		NA		NA		NA	
119																								
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		10	U	**11**		5.0	U	5.0	U	5.0	U	NA		5.0	U
121																								

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																							
2												Dup of LW11S						Dup of LW11S					
3		LW11S		LW11S		LW11S		LW11S		LW11S		OX005S		LW11S		LW11S		X		LW11S		LW11S	
4		DE68M		ED34D		EM66C		ES04D		EX87C		EX87A		EZ03I		FF76H		FF76L		FL58H		FU45D	
5		6/4/01		2/28/02		6/24/02		08/28/02		10/29/02		10/29/02		11/12/02		2/12/03		2/12/03		5/8/03		8/28/03	
86	**FIELD PARAMETERS**																						
87	pH (avg)	6.50		6.29		6.14		6.44		6.47		6.48		6.21		6.9		6.92		6.6		6.65	
88	Temperature (° C) (avg)	14.1		13.6		15.6		16.4		16.4		16.4		15.5		14.6		14.7		13.7		14.3	
89	Conductivity (um/hos)	270		460		205		218		554		554		528		323		324		248		356	
90	Dissolved oxygen (mg/L) (avg)	0.96		7.46		4.17		1.31		0		0		0		0		0		2.96		1.61	
91																							
92	**DIOXINS AND FURANS (ng/L)**																						
93	**Method 8290**																						
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																							
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1																								
2					Dup of LW11S												Dup of LW11S							
3			LW11S		LW110S		LW11S		LW11S		LW11S		LW11S		LW11S		X		LW11S		LW11S		LW11S	
4			AH76E		AH76D		AU36F		BC27J		9912050-06A		BH96U		BR55L		BR55K		CB49J		CK77K		CT55H	
5			5/20/99		5/20/99		9/21/99		12/8/99		12/8/1999 (d)		2/17/00		5/23/00		5/23/00		8/28/00		11/8/00		2/14/01	
122		**PAHs (µg/L)**																						
123		**EPA Method SW8270 SIM**																						
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																							
2												Dup of LW11S						Dup of LW11S					
3		LW11S		LW11S		LW11S		LW11S		LW11S		OX005S		LW11S		LW11S		X		LW11S		LW11S	
4		DE68M		ED34D		EM66C		ES04D		EX87C		EX87A		EZ03I		FF76H		FF76L		FL58H		FU45D	
5		6/4/01		2/28/02		6/24/02		08/28/02		10/29/02		10/29/02		11/12/02		2/12/03		2/12/03		5/8/03		8/28/03	
122	**PAHs (µg/L)**																						
123	**EPA Method SW8270 SIM**																						
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											Dup of LW13S
3			LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		Y
4			BR64S		CB68A		CL03U		CT67O		DE87F		DM30R		DW29K		ED30F		EN00F		ER93H		EZ03N		FF65H		FF65J
5			5/25/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/12/02		2/11/03		2/11/03
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	**0.60**		**0.89**		**1.4**		**9.3**		**4.4**		**6.9**		0.25	U	0.26	U	0.25	U	0.26	U	**0.49**		0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
20	14	4-Methylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
21	15	Isophorone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
23	17	Benzoic Acid	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
24	18	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
28	22	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
29	23	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
30	24	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
31	25	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
37	31	Carbon Disulfide	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
38	32	2-Butanone	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
39	33	Benzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
40	34	Bromoform	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
41	35	Toluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
42	36	Ethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
43	37	Styrene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
44	38	m,p-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
45	39	o-Xylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
46	40	1,3,5-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
47	41	1,2,4-Trimethylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
48	42	Isopropylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
49	43	n-Propylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
50	44	tert-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
51	45	sec-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
52	46	4-Isopropyltoluene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
53	47	n-Butylbenzene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
54	48	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
55	49																										
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
65	59	Chromium (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF
1						
2						
3			LW13S		LW13S	
4			FL58C		FU45M	
5			5/8/03		8/28/03	
6						
7	**CHLORINATED PHENOLS (µg/L)**					
8	**EPA Method SW8040**					
9	Pentachlorophenol	U	0.25	U	**1.1**	J
10	2,4,6-Trichlorophenol		NA		NA	
11	2,3,6-Trichlorophenol		NA		NA	
12	2,4,5-Trichlorophenol		NA		NA	
13	2,3,4-Trichlorophenol		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol		NA		NA	
15	2,3,4,5-Tetrachlorophenol		NA		NA	
16						
17	**SEMIVOLATILES (µg/L)**					
18	**EPA Method SW8270**					
19	Phenol		NA		NA	
20	4-Methylphenol		NA		NA	
21	Isophorone		NA		NA	
22	2,4-Dimethylphenol		NA		NA	
23	Benzoic Acid		NA		NA	
24	Naphthalene		NA		NA	
25	2-Methylnaphthalene		NA		NA	
26	2,4,6-Trichlorophenol		NA		NA	
27	2,4,5-Trichlorophenol		NA		NA	
28	Acenaphthene		NA		NA	
29	Dibenzofuran		NA		NA	
30	Fluorene		NA		NA	
31	Pentachlorophenol		NA		NA	
32	bis(2-Ethylhexyl)phthalate		NA		NA	
33						
34	**VOLATILES (µg/L)**					
35	**EPA Method SW8260**					
36	Acetone		NA		NA	
37	Carbon Disulfide		NA		NA	
38	2-Butanone		NA		NA	
39	Benzene		NA		NA	
40	Bromoform		NA		NA	
41	Toluene		NA		NA	
42	Ethylbenzene		NA		NA	
43	Styrene		NA		NA	
44	m,p-Xylene		NA		NA	
45	o-Xylene		NA		NA	
46	1,3,5-Trimethylbenzene		NA		NA	
47	1,2,4-Trimethylbenzene		NA		NA	
48	Isopropylbenzene		NA		NA	
49	n-Propylbenzene		NA		NA	
50	tert-Butylbenzene		NA		NA	
51	sec-Butylbenzene		NA		NA	
52	4-Isopropyltoluene		NA		NA	
53	n-Butylbenzene		NA		NA	
54	Naphthalene		NA		NA	
55						
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**					
57	**Method OR-DEQ**					
58	**TPH-Diesel**		NA		NA	
59	**TPH-D Motor Oil**		NA		NA	
60	**TPH-Gasoline**		NA		NA	
61						
62	**PRIORITY POLLUTANT**					
63	**METALS (mg/L)**					
64	Arsenic (7060)		NA		NA	
65	Chromium (6010)		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											Dup of LW13S
3			LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		Y
4			BR64S		CB68A		CL03U		CT67O		DE87F		DM30R		DW29K		ED30F		EN00F		ER93H		EZ03N		FF65H		FF65J
5			5/25/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/12/02		2/11/03		2/11/03
66	60	Copper (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
67	61	Lead (7421)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
68	62	Nickel (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
69	63	Zinc (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
73	67	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
74	68	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
75	69	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
85	79																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF
1						
2						
3			LW13S		LW13S	
4			FL58C		FU45M	
5			5/8/03		8/28/03	
66	Copper (6010)		NA		NA	
67	Lead (7421)		NA		NA	
68	Nickel (6010)		NA		NA	
69	Zinc (6010)		NA		NA	
70						
71	**MAJOR IONS AND CONVENTIONALS**					
72	Calcium (mg/L) (6010)		NA		NA	
73	Magnesium (mg/L) (6010)		NA		NA	
74	Potassium (mg/L) (6010)		NA		NA	
75	Sodium (mg/L) (6010)		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)		NA		NA	
80	Chloride (mg/L) (EPA 325.2)		NA		NA	
81	N-Nitrate (mg-N/L) (Calculated)		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)		NA		NA	
85						

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											Dup of LW13S
3			LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		Y
4			BR64S		CB68A		CL03U		CT67O		DE87F		DM30R		DW29K		ED30F		EN00F		ER93H		EZ03N		FF65H		FF65J
5			5/25/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/12/02		2/11/03		2/11/03
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.22		5.57		5.62		6.34		6.54		6.82		6.56		6.35		6.43		6.32		6.43		6.77		6.76
88	82	Temperature (° C) (avg)	12.0		13.5		10.7		12.2		12.8		15.2		13.8		11.2		12.7		14.1		14.1		12.8		12.8
89	83	Conductivity (um/hos)	128		149		272		149		336		383		214		89		180		146		141		71		71
90	84	Dissolved oxygen (mg/L) (avg)	5.81		3.67		1.47		0.94		2.62		1.49		5.86		9.57		7.00		2.31		2.27		0		0
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
121																											

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF
1						
2						
3			LW13S		LW13S	
4			FL58C		FU45M	
5			5/8/03		8/28/03	
86	**FIELD PARAMETERS**					
87	pH (avg)		6.36		6.67	
88	Temperature (° C) (avg)		11.9		15.6	
89	Conductivity (um/hos)		81		131	
90	Dissolved oxygen (mg/L) (avg)		6.14		3.68	
91						
92	**DIOXINS AND FURANS (ng/L)**					
93	**Method 8290**					
94	2,3,7,8-TCDF		NA		NA	
95	Total TCDF		NA		NA	
96	2,3,7,8-TCDD		NA		NA	
97	Total TCDD		NA		NA	
98	1,2,3,7,8-PeCDF		NA		NA	
99	2,3,4,7,8-PeCDF		NA		NA	
100	Total PeCDF		NA		NA	
101	1,2,3,7,8-PeCDD		NA		NA	
102	Total PeCDD		NA		NA	
103	1,2,3,4,7,8-HxCDF		NA		NA	
104	1,2,3,6,7,8-HxCDF		NA		NA	
105	2,3,4,6,7,8-HxCDF		NA		NA	
106	1,2,3,7,8,9-HxCDF		NA		NA	
107	Total HxCDF		NA		NA	
108	1,2,3,4,7,8-HxCDD		NA		NA	
109	1,2,3,6,7,8-HxCDD		NA		NA	
110	1,2,3,7,8,9-HxCDD		NA		NA	
111	Total HxCDD		NA		NA	
112	1,2,3,4,6,7,8-HpCDF		NA		NA	
113	1,2,3,4,7,8,9-HpCDF		NA		NA	
114	Total HpCDF		NA		NA	
115	1,2,3,4,6,7,8-HpCDD		NA		NA	
116	Total HpCDD		NA		NA	
117	OCDF		NA		NA	
118	OCDD		NA		NA	
119						
120	**ETHANOL (mg/L)**		NA		NA	
121						

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																											Dup of LW13S
3			LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		LW13S		Y
4			BR64S		CB68A		CL03U		CT67O		DE87F		DM30R		DW29K		ED30F		EN00F		ER93H		EZ03N		FF65H		FF65J
5			5/25/00		8/30/00		11/9/00		2/15/01		6/6/01		8/13/01		11/27/01		2/27/02		6/27/02		08/27/02		11/12/02		2/11/03		2/11/03
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB	AC	AD	AE	AF
1						
2						
3			LW13S		LW13S	
4			FL58C		FU45M	
5			5/8/03		8/28/03	
122	**PAHs (µg/L)**					
123	**EPA Method SW8270 SIM**					
124	Naphthalene		NA		NA	
125	2-Methylnaphthalene		NA		NA	
126	Acenaphthylene		NA		NA	
127	Acenaphthene		NA		NA	
128	Fluorene		NA		NA	
129	Anthracene		NA		NA	
130	Dibenzofuran		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX1S		OX1S		OX1S		OX1S		OX1S	
4			EM65A		EX87D		FF48G		FL41I		FU45F	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**										
8	2	**EPA Method SW8040**										
9	3	Pentachlorophenol	NA		**200**		**620**		**67**		**19**	J
10	4	2,4,6-Trichlorophenol	NA		**1.1**		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	NA		**0.56**		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	NA		25	U	NA		NA		NA	
13	7	2,3,4-Trichlorophenol	NA		0.25	U	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		**70**		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	NA		**6.9**		NA		NA		NA	
16	10											
17	11	**SEMIVOLATILES (µg/L)**										
18	12	**EPA Method SW8270**										
19	13	Phenol	NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA	
33	27											
34	28	**VOLATILES (µg/L)**										
35	29	**EPA Method SW8260**										
36	30	Acetone	**19**		**56**		NA		NA		NA	
37	31	Carbon Disulfide	1.0	U	1	U	NA		NA		NA	
38	32	2-Butanone	6.8	U	**5.4**		NA		NA		NA	
39	33	Benzene	**320**		**65**		NA		NA		NA	
40	34	Bromoform	1.0	U	1	U	NA		NA		NA	
41	35	Toluene	**29**		**3.9**		NA		NA		NA	
42	36	Ethylbenzene	**180**		**43**		NA		NA		NA	
43	37	Styrene	1.0	U	1	U	NA		NA		NA	
44	38	m,p-Xylene	**740**		**110**		NA		NA		NA	
45	39	o-Xylene	**280**		**42**		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	**160**		**54**		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	**460**		**160**		NA		NA		NA	
48	42	Isopropylbenzene	**140**		**27**		NA		NA		NA	
49	43	n-Propylbenzene	1.0	U	**38**		NA		NA		NA	
50	44	tert-Butylbenzene	**100**		1	U	NA		NA		NA	
51	45	sec-Butylbenzene	1.0	U	**6.8**		NA		NA		NA	
52	46	4-Isopropyltoluene	**29**		**6.9**		NA		NA		NA	
53	47	n-Butylbenzene	28	U	**6.1**	M	NA		NA		NA	
54	48	Naphthalene	**83**		**15**		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	51	**Method OR-DEQ**										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61	55											
62	56	**PRIORITY POLLUTANT**										
63	57	**METALS (mg/L)**										
64	58	Arsenic (7060)	**0.02**		NA		NA		NA		NA	
65	59	Chromium (6010)	0.005	U	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX1S		OX1S		OX1S		OX1S		OX1S	
4			EM65A		EX87D		FF48G		FL41I		FU45F	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
66	60	Copper (6010)	0.002	U	NA		NA		NA		NA	
67	61	Lead (7421)	0.001	U	NA		NA		NA		NA	
68	62	Nickel (6010)	0.01	U	NA		NA		NA		NA	
69	63	Zinc (6010)	**0.009**		NA		NA		NA		NA	
70	64											
71	65	**MAJOR IONS AND CONVENTIONALS**										
72	66	Calcium (mg/L) (6010)	**32.4**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**8.55**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.4**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**7.45**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**160**		**190**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**160**		**190**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**240**		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA	
85	79											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX1S		OX1S		OX1S		OX1S		OX1S	
4			EM65A		EX87D		FF48G		FL41I		FU45F	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
86	80	**FIELD PARAMETERS**										
87	81	pH (avg)	5.99		6.52		6.53		6.74		6.71	
88	82	Temperature (° C) (avg)	14.3		16.4		15		13		14.9	
89	83	Conductivity (um/hos)	302		427		369		274		262	
90	84	Dissolved oxygen (mg/L) (avg)	3.97		0.7		0.79		3.39		2.08	
91	85											
92	86	**DIOXINS AND FURANS (ng/L)**										
93	87	**Method 8290**										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA	
119												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX1S		OX1S		OX1S		OX1S		OX1S	
4			EM65A		EX87D		FF48G		FL41I		FU45F	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
122		**PAHs (µg/L)**										
123		**EPA Method SW8270 SIM**										
124		Naphthalene	NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX2S		OX2S		OX2S		OX2S		OX2S	
4			EM65B		EX87B		FF48H		FL58G		FU45E	
5			6/24/02		10/29/02		2/10/03		5/8/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**										
8	2	**EPA Method SW8040**										
9	3	Pentachlorophenol	NA		**1200**		**5400**		**6700**		**5800**	J
10	4	2,4,6-Trichlorophenol	NA		0.26	U	NA		NA		NA	
11	5	2,3,6-Trichlorophenol	NA		**0.28**		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	NA		0.94	U	NA		NA		NA	
13	7	2,3,4-Trichlorophenol	NA		0.26	U	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		**110**		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	NA		**6.5**		NA		NA		NA	
16	10											
17	11	**SEMIVOLATILES (µg/L)**										
18	12	**EPA Method SW8270**										
19	13	Phenol	NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA	
33	27											
34	28	**VOLATILES (µg/L)**										
35	29	**EPA Method SW8260**										
36	30	Acetone	**16**		**22**	M	NA		NA		NA	
37	31	Carbon Disulfide	3.0	U	1	U	NA		NA		NA	
38	32	2-Butanone	15	U	5	U	NA		NA		NA	
39	33	Benzene	3.0	U	**1.1**		NA		NA		NA	
40	34	Bromoform	3.0	U	1	U	NA		NA		NA	
41	35	Toluene	**6.7**		1	U	NA		NA		NA	
42	36	Ethylbenzene	**43**		**24**		NA		NA		NA	
43	37	Styrene	3.0	U	1	U	NA		NA		NA	
44	38	m,p-Xylene	**72**		**29**		NA		NA		NA	
45	39	o-Xylene	**79**		**36**		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	**46**		**21**		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	**190**		**110**		NA		NA		NA	
48	42	Isopropylbenzene	**18**		**14**		NA		NA		NA	
49	43	n-Propylbenzene	**28**		**25**		NA		NA		NA	
50	44	tert-Butylbenzene	3.0	U	**1.8**		NA		NA		NA	
51	45	sec-Butylbenzene	3.0	U	**8.4**		NA		NA		NA	
52	46	4-Isopropyltoluene	**5.2**		**6.3**		NA		NA		NA	
53	47	n-Butylbenzene	5.8	U	**6.7**	M	NA		NA		NA	
54	48	Naphthalene	15	U	**11**		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	51	**Method OR-DEQ**										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61	55											
62	56	**PRIORITY POLLUTANT**										
63	57	**METALS (mg/L)**										
64	58	Arsenic (7060)	**0.01**		NA		NA		NA		NA	
65	59	Chromium (6010)	0.005	U	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX2S		OX2S		OX2S		OX2S		OX2S	
4			EM65B		EX87B		FF48H		FL58G		FU45E	
5			6/24/02		10/29/02		2/10/03		5/8/03		8/28/03	
66	60	Copper (6010)	0.002	U	NA		NA		NA		NA	
67	61	Lead (7421)	0.001	U	NA		NA		NA		NA	
68	62	Nickel (6010)	0.01	U	NA		NA		NA		NA	
69	63	Zinc (6010)	**0.009**		NA		NA		NA		NA	
70	64											
71	65	**MAJOR IONS AND CONVENTIONALS**										
72	66	Calcium (mg/L) (6010)	**33**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**10.7**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**2.7**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**6.06**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**120**		**200**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**120**		**200**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**220**		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA	
85	79											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX2S		OX2S		OX2S		OX2S		OX2S	
4			EM65B		EX87B		FF48H		FL58G		FU45E	
5			6/24/02		10/29/02		2/10/03		5/8/03		8/28/03	
86	80	**FIELD PARAMETERS**										
87	81	pH (avg)	6.15		6.40		6.7		6.49		6.66	
88	82	Temperature (° C) (avg)	15.5		15.9		14.2		13.6		14.9	
89	83	Conductivity (um/hos)	249		599		222		267		263	
90	84	Dissolved oxygen (mg/L) (avg)	4.10		0		1.49		2.21		1.43	
91	85											
92	86	**DIOXINS AND FURANS (ng/L)**										
93	87	**Method 8290**										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA	
119												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX2S		OX2S		OX2S		OX2S		OX2S	
4			EM65B		EX87B		FF48H		FL58G		FU45E	
5			6/24/02		10/29/02		2/10/03		5/8/03		8/28/03	
122		**PAHs (µg/L)**										
123		**EPA Method SW8270 SIM**										
124		Naphthalene	NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX3S		OX3S		OX3S		OX3S		OX3S	
4			EM65C		EX87E		FF48F		FL41J		FU45G	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**										
8	2	**EPA Method SW8040**										
9	3	Pentachlorophenol	NA		**1200**	J	**5700**		**2600**		**1400**	J
10	4	2,4,6-Trichlorophenol	NA		**2.4**	J	NA		NA		NA	
11	5	2,3,6-Trichlorophenol	NA		**1.3**	J	NA		NA		NA	
12	6	2,4,5-Trichlorophenol	NA		9.2	UJ	NA		NA		NA	
13	7	2,3,4-Trichlorophenol	NA		0.25	UJ	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		**320**	J	NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	NA		**29**	J	NA		NA		NA	
16	10											
17	11	**SEMIVOLATILES (µg/L)**										
18	12	**EPA Method SW8270**										
19	13	Phenol	NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA	
33	27											
34	28	**VOLATILES (µg/L)**										
35	29	**EPA Method SW8260**										
36	30	Acetone	120	U	**240**		NA		NA		NA	
37	31	Carbon Disulfide	25	U	1	U	NA		NA		NA	
38	32	2-Butanone	120	U	**20**		NA		NA		NA	
39	33	Benzene	**66**		**94**		NA		NA		NA	
40	34	Bromoform	25	U	1	U	NA		NA		NA	
41	35	Toluene	**63**		**31**		NA		NA		NA	
42	36	Ethylbenzene	**280**		**110**		NA		NA		NA	
43	37	Styrene	25	U	1	U	NA		NA		NA	
44	38	m,p-Xylene	**820**		**430**		NA		NA		NA	
45	39	o-Xylene	**370**		**150**		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	**160**		**120**		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	**520**		**350**		NA		NA		NA	
48	42	Isopropylbenzene	**57**		**56**		NA		NA		NA	
49	43	n-Propylbenzene	**83**		**75**		NA		NA		NA	
50	44	tert-Butylbenzene	25	U	1	U	NA		NA		NA	
51	45	sec-Butylbenzene	25	U	**13**		NA		NA		NA	
52	46	4-Isopropyltoluene	25	U	**13**		NA		NA		NA	
53	47	n-Butylbenzene	25	U	**11**	M	NA		NA		NA	
54	48	Naphthalene	120	U	**37**		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	51	**Method OR-DEQ**										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61	55											
62	56	**PRIORITY POLLUTANT**										
63	57	**METALS (mg/L)**										
64	58	Arsenic (7060)	**0.02**		NA		NA		NA		NA	
65	59	Chromium (6010)	0.005	U	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX3S		OX3S		OX3S		OX3S		OX3S	
4			EM65C		EX87E		FF48F		FL41J		FU45G	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
66	60	Copper (6010)	**0.002**		NA		NA		NA		NA	
67	61	Lead (7421)	0.001	U	NA		NA		NA		NA	
68	62	Nickel (6010)	0.01	U	NA		NA		NA		NA	
69	63	Zinc (6010)	**0.012**		NA		NA		NA		NA	
70	64											
71	65	**MAJOR IONS AND CONVENTIONALS**										
72	66	Calcium (mg/L) (6010)	**40.2**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**11**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.8**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**8.75**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**160**		**270**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**160**		**270**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**270**		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA	
85	79											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX3S		OX3S		OX3S		OX3S		OX3S	
4			EM65C		EX87E		FF48F		FL41J		FU45G	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
86	80	**FIELD PARAMETERS**										
87	81	pH (avg)	5.94		6.44		6.59		6.73		6.7	
88	82	Temperature (° C) (avg)	14.4		15.3		15.1		13.5		15.2	
89	83	Conductivity (um/hos)	342		502		381		340		287	
90	84	Dissolved oxygen (mg/L) (avg)	4.34		0		1.24		2.93		2.07	
91	85											
92	86	**DIOXINS AND FURANS (ng/L)**										
93	87	**Method 8290**										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA	
119												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX3S		OX3S		OX3S		OX3S		OX3S	
4			EM65C		EX87E		FF48F		FL41J		FU45G	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
122		**PAHs (µg/L)**										
123		**EPA Method SW8270 SIM**										
124		Naphthalene	NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX4S		OX4S		OX4S		OX4S		OX4S	
4			EM65D		EX87F		FF48I		FL41K		FU45J	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
7	1	**CHLORINATED PHENOLS (µg/L)**										
8	2	**EPA Method SW8040**										
9	3	Pentachlorophenol	NA		**1200**	J	**880**		**8300**		**2200**	J
10	4	2,4,6-Trichlorophenol	NA		**2.7**	J	NA		NA		NA	
11	5	2,3,6-Trichlorophenol	NA		**0.81**	J	NA		NA		NA	
12	6	2,4,5-Trichlorophenol	NA		11	UJ	NA		NA		NA	
13	7	2,3,4-Trichlorophenol	NA		0.25	UJ	NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		**320**	J	NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	NA		**32**	J	NA		NA		NA	
16	10											
17	11	**SEMIVOLATILES (µg/L)**										
18	12	**EPA Method SW8270**										
19	13	Phenol	NA		NA		NA		NA		NA	
20	14	4-Methylphenol	NA		NA		NA		NA		NA	
21	15	Isophorone	NA		NA		NA		NA		NA	
22	16	2,4-Dimethylphenol	NA		NA		NA		NA		NA	
23	17	Benzoic Acid	NA		NA		NA		NA		NA	
24	18	Naphthalene	NA		NA		NA		NA		NA	
25	19	2-Methylnaphthalene	NA		NA		NA		NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA	
28	22	Acenaphthene	NA		NA		NA		NA		NA	
29	23	Dibenzofuran	NA		NA		NA		NA		NA	
30	24	Fluorene	NA		NA		NA		NA		NA	
31	25	Pentachlorophenol	NA		NA		NA		NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA		NA		NA		NA	
33	27											
34	28	**VOLATILES (µg/L)**										
35	29	**EPA Method SW8260**										
36	30	Acetone	120	U	**12**	M	NA		NA		NA	
37	31	Carbon Disulfide	25	U	**1.3**		NA		NA		NA	
38	32	2-Butanone	120	U	5	U	NA		NA		NA	
39	33	Benzene	25	U	**24**		NA		NA		NA	
40	34	Bromoform	25	U	1	U	NA		NA		NA	
41	35	Toluene	**71**		**23**		NA		NA		NA	
42	36	Ethylbenzene	**440**		**330**		NA		NA		NA	
43	37	Styrene	25	U	1	U	NA		NA		NA	
44	38	m,p-Xylene	**1300**		**820**		NA		NA		NA	
45	39	o-Xylene	**500**		**430**		NA		NA		NA	
46	40	1,3,5-Trimethylbenzene	**220**		**200**		NA		NA		NA	
47	41	1,2,4-Trimethylbenzene	**590**		**580**		NA		NA		NA	
48	42	Isopropylbenzene	**86**		**120**		NA		NA		NA	
49	43	n-Propylbenzene	**110**		**120**		NA		NA		NA	
50	44	tert-Butylbenzene	25	U	1	U	NA		NA		NA	
51	45	sec-Butylbenzene	25	U	**22**		NA		NA		NA	
52	46	4-Isopropyltoluene	25	U	**24**		NA		NA		NA	
53	47	n-Butylbenzene	25	U	**25**	M	NA		NA		NA	
54	48	Naphthalene	120	U	**99**		NA		NA		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**										
57	51	**Method OR-DEQ**										
58	52	**TPH-Diesel**	NA		NA		NA		NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA	
61	55											
62	56	**PRIORITY POLLUTANT**										
63	57	**METALS (mg/L)**										
64	58	Arsenic (7060)	**0.021**		NA		NA		NA		NA	
65	59	Chromium (6010)	0.005	U	NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX4S		OX4S		OX4S		OX4S		OX4S	
4			EM65D		EX87F		FF48I		FL41K		FU45J	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
66	60	Copper (6010)	0.002	U	NA		NA		NA		NA	
67	61	Lead (7421)	0.001	U	NA		NA		NA		NA	
68	62	Nickel (6010)	0.01	U	NA		NA		NA		NA	
69	63	Zinc (6010)	**0.008**		NA		NA		NA		NA	
70	64											
71	65	**MAJOR IONS AND CONVENTIONALS**										
72	66	Calcium (mg/L) (6010)	**37.9**		NA		NA		NA		NA	
73	67	Magnesium (mg/L) (6010)	**10.4**		NA		NA		NA		NA	
74	68	Potassium (mg/L) (6010)	**3.6**		NA		NA		NA		NA	
75	69	Sodium (mg/L) (6010)	**8.42**		NA		NA		NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**160**		**240**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**160**		**240**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**250**		NA		NA		NA		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		NA		NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA	
85	79											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX4S		OX4S		OX4S		OX4S		OX4S	
4			EM65D		EX87F		FF48I		FL41K		FU45J	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
86	80	**FIELD PARAMETERS**										
87	81	pH (avg)	6.74		NM		6.39		6.09		6.41	
88	82	Temperature (° C) (avg)	14.5		NM		14.7		14		18	
89	83	Conductivity (um/hos)	326		NM		336		142		262	
90	84	Dissolved oxygen (mg/L) (avg)	4.42		NM		2.19		2.47		2.16	
91	85											
92	86	**DIOXINS AND FURANS (ng/L)**										
93	87	**Method 8290**										
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA	
119												
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA	
121												

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3			OX4S		OX4S		OX4S		OX4S		OX4S	
4			EM65D		EX87F		FF48I		FL41K		FU45J	
5			6/24/02		10/29/02		2/10/03		5/7/03		8/28/03	
122		**PAHs (µg/L)**										
123		**EPA Method SW8270 SIM**										
124		Naphthalene	NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			PZ1		PZ1	
4			EM65E		FF48K	
5			6/24/02		2/10/03	
7	1	**CHLORINATED PHENOLS (µg/L)**				
8	2	**EPA Method SW8040**				
9	3	Pentachlorophenol	NA		**700**	
10	4	2,4,6-Trichlorophenol	NA		NA	
11	5	2,3,6-Trichlorophenol	NA		NA	
12	6	2,4,5-Trichlorophenol	NA		NA	
13	7	2,3,4-Trichlorophenol	NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	NA		NA	
16	10					
17	11	**SEMIVOLATILES (µg/L)**				
18	12	**EPA Method SW8270**				
19	13	Phenol	NA		NA	
20	14	4-Methylphenol	NA		NA	
21	15	Isophorone	NA		NA	
22	16	2,4-Dimethylphenol	NA		NA	
23	17	Benzoic Acid	NA		NA	
24	18	Naphthalene	NA		NA	
25	19	2-Methylnaphthalene	NA		NA	
26	20	2,4,6-Trichlorophenol	NA		NA	
27	21	2,4,5-Trichlorophenol	NA		NA	
28	22	Acenaphthene	NA		NA	
29	23	Dibenzofuran	NA		NA	
30	24	Fluorene	NA		NA	
31	25	Pentachlorophenol	NA		NA	
32	26	bis(2-Ethylhexyl)phthalate	NA		NA	
33	27					
34	28	**VOLATILES (µg/L)**				
35	29	**EPA Method SW8260**				
36	30	Acetone	250	U	NA	
37	31	Carbon Disulfide	50	U	NA	
38	32	2-Butanone	250	U	NA	
39	33	Benzene	50	U	NA	
40	34	Bromoform	50	U	NA	
41	35	Toluene	**80**		NA	
42	36	Ethylbenzene	**470**		NA	
43	37	Styrene	50	U	NA	
44	38	m,p-Xylene	**1000**		NA	
45	39	o-Xylene	**710**		NA	
46	40	1,3,5-Trimethylbenzene	**290**		NA	
47	41	1,2,4-Trimethylbenzene	**870**		NA	
48	42	Isopropylbenzene	**120**		NA	
49	43	n-Propylbenzene	**170**		NA	
50	44	tert-Butylbenzene	50	U	NA	
51	45	sec-Butylbenzene	50	U	NA	
52	46	4-Isopropyltoluene	50	U	NA	
53	47	n-Butylbenzene	50	U	NA	
54	48	Naphthalene	250	U	NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**				
57	51	**Method OR-DEQ**				
58	52	**TPH-Diesel**	NA		NA	
59	53	**TPH-D Motor Oil**	NA		NA	
60	54	**TPH-Gasoline**	NA		NA	
61	55					
62	56	**PRIORITY POLLUTANT**				
63	57	**METALS (mg/L)**				
64	58	Arsenic (7060)	**0.005**		NA	
65	59	Chromium (6010)	**0.035**		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			PZ1		PZ1	
4			EM65E		FF48K	
5			6/24/02		2/10/03	
66	60	Copper (6010)	**0.011**		NA	
67	61	Lead (7421)	**0.001**		NA	
68	62	Nickel (6010)	**0.04**		NA	
69	63	Zinc (6010)	**0.087**		NA	
70	64					
71	65	**MAJOR IONS AND CONVENTIONALS**				
72	66	Calcium (mg/L) (6010)	**42.3**		NA	
73	67	Magnesium (mg/L) (6010)	**13.6**		NA	
74	68	Potassium (mg/L) (6010)	**3.3**		NA	
75	69	Sodium (mg/L) (6010)	**5.25**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**180**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**180**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**250**		NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA	
85	79					

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			PZ1		PZ1	
4			EM65E		FF48K	
5			6/24/02		2/10/03	
86	80	**FIELD PARAMETERS**				
87	81	pH (avg)	6.02		6.61	
88	82	Temperature (° C) (avg)	15.3		14.9	
89	83	Conductivity (um/hos)	278		376	
90	84	Dissolved oxygen (mg/L) (avg)	5.09		1.01	
91	85					
92	86	**DIOXINS AND FURANS (ng/L)**				
93	87	**Method 8290**				
94	88	2,3,7,8-TCDF	NA		NA	
95	89	Total TCDF	NA		NA	
96	90	2,3,7,8-TCDD	NA		NA	
97	91	Total TCDD	NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA	
100	94	Total PeCDF	NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA	
102	96	Total PeCDD	NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA	
107	101	Total HxCDF	NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA	
111	105	Total HxCDD	NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA	
114	108	Total HpCDF	NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA	
116	110	Total HpCDD	NA		NA	
117	111	OCDF	NA		NA	
118	112	OCDD	NA		NA	
119						
120		**ETHANOL (mg/L)**	NA		NA	
121						

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			PZ1		PZ1	
4			EM65E		FF48K	
5			6/24/02		2/10/03	
122		**PAHs (µg/L)**				
123		**EPA Method SW8270 SIM**				
124		Naphthalene	NA		NA	
125		2-Methylnaphthalene	NA		NA	
126		Acenaphthylene	NA		NA	
127		Acenaphthene	NA		NA	
128		Fluorene	NA		NA	
129		Anthracene	NA		NA	
130		Dibenzofuran	NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ2	
4			FF48J	
5			2/10/03	
7	1	**CHLORINATED PHENOLS (µg/L)**		
8	2	**EPA Method SW8040**		
9	3	Pentachlorophenol	**590**	
10	4	2,4,6-Trichlorophenol	NA	
11	5	2,3,6-Trichlorophenol	NA	
12	6	2,4,5-Trichlorophenol	NA	
13	7	2,3,4-Trichlorophenol	NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	9	2,3,4,5-Tetrachlorophenol	NA	
16	10			
17	11	**SEMIVOLATILES (µg/L)**		
18	12	**EPA Method SW8270**		
19	13	Phenol	NA	
20	14	4-Methylphenol	NA	
21	15	Isophorone	NA	
22	16	2,4-Dimethylphenol	NA	
23	17	Benzoic Acid	NA	
24	18	Naphthalene	NA	
25	19	2-Methylnaphthalene	NA	
26	20	2,4,6-Trichlorophenol	NA	
27	21	2,4,5-Trichlorophenol	NA	
28	22	Acenaphthene	NA	
29	23	Dibenzofuran	NA	
30	24	Fluorene	NA	
31	25	Pentachlorophenol	NA	
32	26	bis(2-Ethylhexyl)phthalate	NA	
33	27			
34	28	**VOLATILES (µg/L)**		
35	29	**EPA Method SW8260**		
36	30	Acetone	NA	
37	31	Carbon Disulfide	NA	
38	32	2-Butanone	NA	
39	33	Benzene	NA	
40	34	Bromoform	NA	
41	35	Toluene	NA	
42	36	Ethylbenzene	NA	
43	37	Styrene	NA	
44	38	m,p-Xylene	NA	
45	39	o-Xylene	NA	
46	40	1,3,5-Trimethylbenzene	NA	
47	41	1,2,4-Trimethylbenzene	NA	
48	42	Isopropylbenzene	NA	
49	43	n-Propylbenzene	NA	
50	44	tert-Butylbenzene	NA	
51	45	sec-Butylbenzene	NA	
52	46	4-Isopropyltoluene	NA	
53	47	n-Butylbenzene	NA	
54	48	Naphthalene	NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	51	**Method OR-DEQ**		
58	52	**TPH-Diesel**	NA	
59	53	**TPH-D Motor Oil**	NA	
60	54	**TPH-Gasoline**	NA	
61	55			
62	56	**PRIORITY POLLUTANT**		
63	57	**METALS (mg/L)**		
64	58	Arsenic (7060)	NA	
65	59	Chromium (6010)	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ2	
4			FF48J	
5			2/10/03	
66	60	Copper (6010)	NA	
67	61	Lead (7421)	NA	
68	62	Nickel (6010)	NA	
69	63	Zinc (6010)	NA	
70	64			
71	65	**MAJOR IONS AND CONVENTIONALS**		
72	66	Calcium (mg/L) (6010)	NA	
73	67	Magnesium (mg/L) (6010)	NA	
74	68	Potassium (mg/L) (6010)	NA	
75	69	Sodium (mg/L) (6010)	NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA	
85	79			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ2	
4			FF48J	
5			2/10/03	
86	80	**FIELD PARAMETERS**		
87	81	pH (avg)	6.46	
88	82	Temperature (° C) (avg)	15.2	
89	83	Conductivity (um/hos)	483	
90	84	Dissolved oxygen (mg/L) (avg)	0.89	
91	85			
92	86	**DIOXINS AND FURANS (ng/L)**		
93	87	**Method 8290**		
94	88	2,3,7,8-TCDF	NA	
95	89	Total TCDF	NA	
96	90	2,3,7,8-TCDD	NA	
97	91	Total TCDD	NA	
98	92	1,2,3,7,8-PeCDF	NA	
99	93	2,3,4,7,8-PeCDF	NA	
100	94	Total PeCDF	NA	
101	95	1,2,3,7,8-PeCDD	NA	
102	96	Total PeCDD	NA	
103	97	1,2,3,4,7,8-HxCDF	NA	
104	98	1,2,3,6,7,8-HxCDF	NA	
105	99	2,3,4,6,7,8-HxCDF	NA	
106	100	1,2,3,7,8,9-HxCDF	NA	
107	101	Total HxCDF	NA	
108	102	1,2,3,4,7,8-HxCDD	NA	
109	103	1,2,3,6,7,8-HxCDD	NA	
110	104	1,2,3,7,8,9-HxCDD	NA	
111	105	Total HxCDD	NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA	
114	108	Total HpCDF	NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA	
116	110	Total HpCDD	NA	
117	111	OCDF	NA	
118	112	OCDD	NA	
119				
120		**ETHANOL (mg/L)**	NA	
121				

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ2	
4			FF48J	
5			2/10/03	
122		**PAHs (µg/L)**		
123		**EPA Method SW8270 SIM**		
124		Naphthalene	NA	
125		2-Methylnaphthalene	NA	
126		Acenaphthylene	NA	
127		Acenaphthene	NA	
128		Fluorene	NA	
129		Anthracene	NA	
130		Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ3	
4			FF65B	
5			2/11/03	
7	1	**CHLORINATED PHENOLS (µg/L)**		
8	2	**EPA Method SW8040**		
9	3	Pentachlorophenol	1.2	U
10	4	2,4,6-Trichlorophenol	NA	
11	5	2,3,6-Trichlorophenol	NA	
12	6	2,4,5-Trichlorophenol	NA	
13	7	2,3,4-Trichlorophenol	NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	9	2,3,4,5-Tetrachlorophenol	NA	
16	10			
17	11	**SEMIVOLATILES (µg/L)**		
18	12	**EPA Method SW8270**		
19	13	Phenol	NA	
20	14	4-Methylphenol	NA	
21	15	Isophorone	NA	
22	16	2,4-Dimethylphenol	NA	
23	17	Benzoic Acid	NA	
24	18	Naphthalene	NA	
25	19	2-Methylnaphthalene	NA	
26	20	2,4,6-Trichlorophenol	NA	
27	21	2,4,5-Trichlorophenol	NA	
28	22	Acenaphthene	NA	
29	23	Dibenzofuran	NA	
30	24	Fluorene	NA	
31	25	Pentachlorophenol	NA	
32	26	bis(2-Ethylhexyl)phthalate	NA	
33	27			
34	28	**VOLATILES (µg/L)**		
35	29	**EPA Method SW8260**		
36	30	Acetone	NA	
37	31	Carbon Disulfide	NA	
38	32	2-Butanone	NA	
39	33	Benzene	NA	
40	34	Bromoform	NA	
41	35	Toluene	NA	
42	36	Ethylbenzene	NA	
43	37	Styrene	NA	
44	38	m,p-Xylene	NA	
45	39	o-Xylene	NA	
46	40	1,3,5-Trimethylbenzene	NA	
47	41	1,2,4-Trimethylbenzene	NA	
48	42	Isopropylbenzene	NA	
49	43	n-Propylbenzene	NA	
50	44	tert-Butylbenzene	NA	
51	45	sec-Butylbenzene	NA	
52	46	4-Isopropyltoluene	NA	
53	47	n-Butylbenzene	NA	
54	48	Naphthalene	NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	51	**Method OR-DEQ**		
58	52	**TPH-Diesel**	NA	
59	53	**TPH-D Motor Oil**	NA	
60	54	**TPH-Gasoline**	NA	
61	55			
62	56	**PRIORITY POLLUTANT**		
63	57	**METALS (mg/L)**		
64	58	Arsenic (7060)	NA	
65	59	Chromium (6010)	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ3	
4			FF65B	
5			2/11/03	
66	60	Copper (6010)	NA	
67	61	Lead (7421)	NA	
68	62	Nickel (6010)	NA	
69	63	Zinc (6010)	NA	
70	64			
71	65	**MAJOR IONS AND CONVENTIONALS**		
72	66	Calcium (mg/L) (6010)	NA	
73	67	Magnesium (mg/L) (6010)	NA	
74	68	Potassium (mg/L) (6010)	NA	
75	69	Sodium (mg/L) (6010)	NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NA	
80	74	Chloride (mg/L) (EPA 325.2)	NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA	
85	79			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ3	
4			FF65B	
5			2/11/03	
86	80	**FIELD PARAMETERS**		
87	81	pH (avg)	5.24	
88	82	Temperature (° C) (avg)	15.7	
89	83	Conductivity (um/hos)	62	
90	84	Dissolved oxygen (mg/L) (avg)	1.66	
91	85			
92	86	**DIOXINS AND FURANS (ng/L)**		
93	87	**Method 8290**		
94	88	2,3,7,8-TCDF	NA	
95	89	Total TCDF	NA	
96	90	2,3,7,8-TCDD	NA	
97	91	Total TCDD	NA	
98	92	1,2,3,7,8-PeCDF	NA	
99	93	2,3,4,7,8-PeCDF	NA	
100	94	Total PeCDF	NA	
101	95	1,2,3,7,8-PeCDD	NA	
102	96	Total PeCDD	NA	
103	97	1,2,3,4,7,8-HxCDF	NA	
104	98	1,2,3,6,7,8-HxCDF	NA	
105	99	2,3,4,6,7,8-HxCDF	NA	
106	100	1,2,3,7,8,9-HxCDF	NA	
107	101	Total HxCDF	NA	
108	102	1,2,3,4,7,8-HxCDD	NA	
109	103	1,2,3,6,7,8-HxCDD	NA	
110	104	1,2,3,7,8,9-HxCDD	NA	
111	105	Total HxCDD	NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA	
114	108	Total HpCDF	NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA	
116	110	Total HpCDD	NA	
117	111	OCDF	NA	
118	112	OCDD	NA	
119				
120		**ETHANOL (mg/L)**	NA	
121				

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D
1				
2				
3			PZ3	
4			FF65B	
5			2/11/03	
122		**PAHs (µg/L)**		
123		**EPA Method SW8270 SIM**		
124		Naphthalene	NA	
125		2-Methylnaphthalene	NA	
126		Acenaphthylene	NA	
127		Acenaphthene	NA	
128		Fluorene	NA	
129		Anthracene	NA	
130		Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

			RW1		RW1		RW1		RW1		RW1		RW1		RW1		Dup of RW1		RW1		RW1		Dup of RW1		RW1	
			AH76F		AU36E		BC21U		BH96X		BR64O		CB68G		CK77B		CK77A		CT67K		DE87Q		DE87M		DM30G	
			5/20/99		9/21/99		12/7/99		2/16/00		5/25/00		8/30/00		11/7/00		11/7/00		2/15/01		6/6/01		6/6/01		8/13/01	
1		**CHLORINATED PHENOLS (µg/L)**																								
2		**EPA Method SW8040**																								
3	Pentachlorophenol		**130**		**3100**		**3400**		**6400**		**11000**		**6300**		**3400**		**3400**		**11000**	J	NA		NA		NA	
4	2,4,6-Trichlorophenol		**0.22**	J1	**0.77**		**1.7**		**3.1**		**2.4**		**2.3**		**1.1**		**1.1**		NA		NA		NA		NA	
5	2,3,6-Trichlorophenol		**0.12**	J1	0.25	U	**0.33**		**0.54**		0.53	U	**0.53**		0.44	U	0.48	U	NA		NA		NA		NA	
6	2,4,5-Trichlorophenol		3.1	U	14	U	20	U	3.0	U	6.2	U	22	U	30	U	32	U	NA		NA		NA		NA	
7	2,3,4-Trichlorophenol		0.25	U	0.27	U	0.25	U	0.25	U	0.25	U	**0.79**		0.25	U	0.25	U	NA		NA		NA		NA	
8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol		**48**		**250**		**620**		**530**		**580**		**1100**		**630**		**640**		NA		NA		NA		NA	
9	2,3,4,5-Tetrachlorophenol		**1.1**		**7.3**		**9.3**		**9.3**		**21**		**24**		**16**		**16**		NA		NA		NA		NA	
10																										
11		**SEMIVOLATILES (µg/L)**																								
12		**EPA Method SW8270**																								
13	Phenol		2.0	U	**5.7**		**4.0**		**6.5**		2.0	U	**15**		**8.2**	J2	**14**	J2	**60**		**12**		**12**		**32**	
14	4-Methylphenol		1.0	U	**1.4**		2.0	U	**7.0**		1.0	U	**1.6**	M	1.0	U	1.0	U	**16**		**1.7**		**1.8**		**2.1**	
15	Isophorone		1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
16	2,4-Dimethylphenol		3.0	U	3.0	U	6.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
17	Benzoic Acid		10	U	10	U	20	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
18	Naphthalene		1.0	U	**2.5**		**4.2**		**2.8**		**12**		**12**		**7.1**		**5.8**		**13**		**9.3**		**9.8**		**2.7**	
19	2-Methylnaphthalene		1.0	U	1.0	U	2.0	U	1.0	U	**2.0**		**3.4**		**2.2**		**1.7**		**5.2**		**3.7**		**4.0**		1.0	U
20	2,4,6-Trichlorophenol		5.0	U	5.0	U	10	U	5.0	U	**6.2**		**6.8**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
21	2,4,5-Trichlorophenol		5.0	U	5.0	U	**35**		5.0	U	5.0	U	5.0	U	**40**		**31**		**17**		**13**		**13**		**6.9**	
22	Acenaphthene		1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
23	Dibenzofuran		1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
24	Fluorene		1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
25	Pentachlorophenol		**150**		**3100**		**4100**		**2800**		**7300**		**5400**		**4000**		**3900**		**1400**	J	**1900**		**2000**		**410**	
26	bis(2-Ethylhexyl)phthalate		1.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U	**1.1**		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
27																										
28		**VOLATILES (µg/L)**																								
29		**EPA Method SW8260**																								
30	Acetone		5.0	U	5.0	U	**30**		5.0	U	**39**	M	30	U	**16**		**14**		**28**		**13**		**13**		**7.2**	M
31	Carbon Disulfide		1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	6.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
32	2-Butanone		**7.9**		**29**		**47**		**80**		25	U	30	U	**7.4**	J2	**41**	J2	5.0	U	**5.7**		**6.4**		**5.6**	
33	Benzene		1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	6.0	U	**1.0**		1.0	U	**9.0**		**3.4**		**3.4**		**11**	
34	Bromoform		1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	6.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
35	Toluene		1.0	U	**6.6**		**1.8**		**1.1**		**20**		**14**		**9.1**		**8.2**		**18**		**14**		**15**		**18**	
36	Ethylbenzene		**1.3**		**51**		**34**		**31**		**130**		**120**		**96**		**86**		**80**		**71**		**72**		**82**	
37	Styrene		1.0	U	1.0	U	1.0	U	1.0	U	5.0	U	6.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	m,p-Xylene		**1.6**		**52**		**23**		**32**		**170**		**150**		**92**		**82**		**160**		**140**		**140**		**200**	
39	o-Xylene		**1.6**		**130**		**71**		**73**		**250**		**240**		**160**		**150**		**110**		**100**		**100**		**120**	
40	1,3,5-Trimethylbenzene		1.0	U	**41**		**12**		**38**		**120**		**64**		**29**		**25**		**58**		**37**		**38**		**40**	
41	1,2,4-Trimethylbenzene		**2.2**		**160**		**75**		**170**		**500**		**320**		**240**		**250**		**160**		**160**		**160**		**150**	
42	Isopropylbenzene		**3.5**		**36**		**23**		**21**		**58**		**47**		**26**		**21**		**28**		**28**		**28**		**29**	
43	n-Propylbenzene		**1.5**		**37**		**24**		**35**		**82**		**61**		**36**		**31**		**45**		**34**		**36**		**36**	
44	tert-Butylbenzene		1.0	U	**2.6**		**1.6**		**2.0**	M	5.0	U	6.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
45	sec-Butylbenzene		**3.2**		**17**		**8.6**		**14**		**21**		**16**		**11**		**10**		**10**		**7.7**		**7.8**		**6.8**	
46	4-Isopropyltoluene		1.0	U	1.0	U	**1.6**		**7.2**		**13**		**8.6**		**5.2**		**4.6**		**5.9**		**4.1**		**4.2**		**3.8**	
47	n-Butylbenzene		1.0	U	**4.7**		2.3	U	**5.8**	M	5.0	U	7.7	U	**6.0**		**6.0**		**9.2**	M	6.0	U	6.2	U	4.8	U
48	Naphthalene		5.0	U	**7.1**		**7.3**		**8.9**		25	U	30	U	**11**		**12**		**29**		**25**		**28**		**14**	
49																										
50		**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
51		**Method OR-DEQ**																								
52	**TPH-Diesel**		**1.0**		**7.5**		**5.7**		**5.1**		**12**		**13**		**6.4**		**5.7**		**4.1**		**4.9**		**4.5**		**4.3**	
53	**TPH-D Motor Oil**		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	2.5	U
54	**TPH-Gasoline**		**0.63**		**6.6**		**5.1**		**4.5**		**29**		**26**		**9.7**		**9.9**		**7.1**		**5.4**		**5.3**		**7.7**	
55																										
56		**PRIORITY POLLUTANT**																								
57		**METALS (mg/L)**																								
58	Arsenic (7060)		**0.002**		**0.005**		**0.006**		**0.004**		**0.004**		**0.006**		**0.006**		**0.006**		**0.007**		**0.007**		**0.007**		**0.008**	
59	Chromium (6010)		0.005	U	0.005	U	**0.007**		**0.011**		0.005	U	0.005	U	**0.015**		**0.010**		0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
2				Dup of RW1						Dup of RW1										Dup of RW1			
3		RW1		X		RW1		RW1		X		RW1		RW1		RW1		RW1		X		RW1	
4		DW37D		DW37A		ED34A		EM66B		EM66A		ER93J		EZ17H		FF65D		FL41L		FL41P		FU50C	
5		11/28/01		11/28/01		2/28/02		6/24/02		6/24/02		08/27/02		11/13/02		2/11/03		5/7/03		5/7/03		8/29/03	
7	**CHLORINATED PHENOLS (µg/L)**																						
8	**EPA Method SW8040**																						
9	Pentachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
10	2,4,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
16																							
17	**SEMIVOLATILES (µg/L)**																						
18	**EPA Method SW8270**																						
19	Phenol	**2.1**		2.0	U	**66**		**57**	J	**76**	J	**16**		**10**		**8.9**		2.1	U	2	U	**24**	
20	4-Methylphenol	1.0	U	1.0	U	**4.6**		**21**		**25**		**5.4**		1.2	U	**6.9**		1	U	1	U	**5.3**	
21	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1	U	1	U	1	U	1	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	**53**		3.5	U	**3.8**		3.1	U	3.1	U	13	U
23	Benzoic Acid	50	U	50	U	50	U	50	U	50	U	54	U	58	U	50	U	52	U	51	U	50	U
24	Naphthalene	**13**		**12**		**6.9**		**11**	J	**15**	J	**16**		**8.6**		**14**		**3.7**		**3.7**		**9**	
25	2-Methylnaphthalene	**3.7**		**3.3**		**2.3**		**5.1**		**6.1**		**6**		**4.4**		**6.5**		**1.6**		**1.6**		**2.8**	
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.4	U	5.8	U	5	U	5.2	U	5.1	U	**13**	
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	**5.8**	M	**20**		5.8	U	**9.2**	M	5.2	U	5.1	U	**20**	
28	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1	U	1	U	1	U	1	U
29	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1	U	1	U	1	U	1	U
30	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.1	U	1.2	U	1	U	1	U	1	U	1	U
31	Pentachlorophenol	**17**		**17**		**1200**		**880**	J	**1100**	J	**2600**		**5400**		**2800**		**1700**		**1600**		**1400**	
32	bis(2-Ethylhexyl)phthalate	4.0	U	4.0	U	4.0	U	4.0	U	4.0	U	4.3	U	4.7	U	1	U	**9.8**	J	**3.3**	J	1	U
33																							
34	**VOLATILES (µg/L)**																						
35	**EPA Method SW8260**																						
36	Acetone	**8.4**		**7.6**		**110**	J	50	U	48	U	15	U	5	U	**16**	M	**20**		**24**	M	**26**	MJ
37	Carbon Disulfide	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	3	U	1	U	1	U	1	U	1	U	1	U
38	2-Butanone	**30**		**30**	M	**47**	J	15	U	**16**	J	**32**	M	5	U	5	U	5	U	5	U	5	U
39	Benzene	**24**		**23**		**1.9**	J	3.0	U	3.0	U	**4.8**		**22**		**12**		**1**		**2**		**4.9**	J
40	Bromoform	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	3	U	1	U	1	U	1	U	1	U	1	U
41	Toluene	**5.7**		**5.3**		**12**	J	**16**		**14**	J	**15**		**13**		1	U	1	U	1	U	**3**	J
42	Ethylbenzene	**74**		**74**		**81**	J	**140**		**120**	J	**120**		**130**		**57**		**14**	J	**37**	J	**68**	J
43	Styrene	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U	3	U	1	U	1	U	1	U	1	U	1	U
44	m,p-Xylene	**270**		**280**		**97**	J	**310**		**250**	J	**230**		**160**		**41**		**12**	J	**34**	J	**90**	J
45	o-Xylene	**87**		**87**		**170**	J	**220**		**190**	J	**200**		**200**		**73**		**25**	J	**66**		**120**	J
46	1,3,5-Trimethylbenzene	**53**		**52**		**40**	J	**100**		**100**	J	**97**		**87**		**19**		**9.8**	J	**30**	J	**67**	J
47	1,2,4-Trimethylbenzene	**200**		**200**		**170**	J	**370**		**310**	J	**380**		**410**		**110**		**64**	J	**160**	J	**230**	
48	Isopropylbenzene	**26**		**26**		**29**	J	**42**		**47**	J	**53**		**60**		**20**		**12**	J	**24**	J	**42**	J
49	n-Propylbenzene	**32**		**31**		**34**	J	**63**		**64**	J	**72**		**80**		**29**		**14**	J	**32**	J	**52**	J
50	tert-Butylbenzene	1.0	U	1.0	U	**1.8**	J	3.0	U	3.0	U	3	U	**3**		**1**		**1.7**		**2.3**		**3.1**	J
51	sec-Butylbenzene	1.0	U	1.0	U	**8.9**	J	3.0	U	3.0	U	3	U	**16**		**5.5**		**5.7**	J	**9.3**	J	**17**	J
52	4-Isopropyltoluene	**5.5**		**5.4**		4.5	U	**9.3**		**8.8**	J	**11**		**9.5**		**2.6**		**1.2**	J	**6.2**	J	**6.9**	J
53	n-Butylbenzene	**4.7**	M	**4.7**	M	**6.8**	J	10	U	8.2	U	**14**	M	**9**		**4**	M	**2.2**	MJ	**4.5**	J	**7.3**	MJ
54	Naphthalene	**24**		**22**		**21**	J	**19**		**20**	J	**45**		**19**		**19**		5	U	**10**		**19**	J
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																						
57	**Method OR-DEQ**																						
58	**TPH-Diesel**	**4.7**		**5.0**		**4.9**		**6.8**	J	**17**	J	**9.4**		**13**		**6.8**		**5.1**		**5.4**		**8.1**	
59	**TPH-D Motor Oil**	2.0	U	0.50	U	0.50	U	0.50	U	0.50	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
60	**TPH-Gasoline**	**5.2**		**5.3**		12		**13**		**14**		**14**		**18**		**6.9**		**5.2**	J	**6.7**	J	**8.2**	
61																							
62	**PRIORITY POLLUTANT**																						
63	**METALS (mg/L)**																						
64	Arsenic (7060)	**0.009**		**0.008**		**0.008**		**0.006**		**0.006**		**0.008**		0.05	U	**0.004**		**0.005**		**0.005**		**0.006**	
65	Chromium (6010)	**0.008**	J	**0.014**	J	**0.015**		0.005	U	0.005	U	0.005	U	**0.013**		0.005	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																	Dup of RW1						Dup of RW1			
3			RW1		RW1		RW1		RW1		RW1		RW1		RW1		W		RW1		RW1		W		RW1	
4			AH76F		AU36E		BC21U		BH96X		BR64O		CB68G		CK77B		CK77A		CT67K		DE87Q		DE87M		DM30G	
5			5/20/99		9/21/99		12/7/99		2/16/00		5/25/00		8/30/00		11/7/00		11/7/00		2/15/01		6/6/01		6/6/01		8/13/01	
66	60	Copper (6010)	**0.018**		**0.003**		**0.013**		**0.024**		**0.005**		0.002	U	**0.020**	J2	**0.016**	J2	0.002	U	0.002	U	0.002	U	0.002	U
67	61	Lead (7421)	**0.003**		0.001	U	**0.004**		**0.005**		0.001	U	0.001	U	**0.006**		**0.004**		0.001	U	0.001	U	0.001	U	0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	**0.02**		0.01	U	0.01	U	**0.01**		**0.01**		0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.020**		0.004	U	**0.028**		**0.046**		0.006	U	0.006	U	**0.054**		**0.048**		**0.017**		0.006	U	0.006	U	0.006	U
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**37.3**		NA		NA		NA		NA		NA		NA		NA		**49.1**		**36.1**		**37.3**		**45.3**	
73	67	Magnesium (mg/L) (6010)	**11.7**		NA		NA		NA		NA		NA		NA		NA		**15.2**		**11.9**		**12.2**		**15.2**	
74	68	Potassium (mg/L) (6010)	**4.0**		NA		NA		NA		NA		NA		NA		NA		**4.0**		**2.8**		**3.4**		**3.5**	
75	69	Sodium (mg/L) (6010)	**6.03**		NA		NA		NA		NA		NA		NA		NA		**6.67**		**6.01**		**5.59**		**6.62**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**140**		NA		NA		NA		NA		NA		NA		NA		**230**		NA		NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**140**		NA		NA		NA		NA		NA		NA		NA		**230**		NA		NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**180**		**210**		**170**		**200**		**350**		**240**		**220**		**230**		**320**		**220**	J	**220**	J	**220**	J
80	74	Chloride (mg/L) (EPA 325.2)	**2.9**		**3.8**		**6.7**		**12**		**4.2**		**13**		**7.3**		**6.2**		**5.9**	J	**4.7**		**5.1**		**7.6**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	NA		NA		NA		NA		NA		NA		NA		**0.023**	J	NA		NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	0.010	U	NA		NA		NA		NA		NA		NA		NA		**0.030**		NA		NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	**3.8**		NA		NA		NA		NA		NA		NA		NA		**3.0**		NA		NA		NA	
85	79																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1																							
2				Dup of RW1						Dup of RW1										Dup of RW1			
3		RW1		X		RW1		RW1		X		RW1		RW1		RW1		RW1		X		RW1	
4		DW37D		DW37A		ED34A		EM66B		EM66A		ER93J		EZ17H		FF65D		FL41L		FL41P		FU50C	
5		11/28/01		11/28/01		2/28/02		6/24/02		6/24/02		08/27/02		11/13/02		2/11/03		5/7/03		5/7/03		8/29/03	
66	Copper (6010)	**0.008**	J	**0.013**	J	**0.028**		**0.005**		**0.006**		**0.004**		**0.018**		**0.006**		**0.004**		**0.005**		**0.003**	
67	Lead (7421)	**0.002**	J	**0.004**	J	**0.006**		**0.001**		0.001	U	**0.001**		0.02	U	0.001	U	0.001	U	**0.001**		0.001	U
68	Nickel (6010)	0.01	U	**0.01**		**0.02**		0.01	U	0.01	U	0.01	U	**0.02**		**0.11**		0.01	U	**0.01**		0.01	U
69	Zinc (6010)	**0.026**	J	**0.038**	J	**0.054**		**0.016**		**0.020**		0.006	U	**0.055**		**0.008**		**0.065**	J	**0.013**	J	**0.009**	
70																							
71	**MAJOR IONS AND CONVENTIONALS**																						
72	Calcium (mg/L) (6010)	**58.7**	J	**65.4**	J	**152**		NA		NA		NA		NA		**31.7**		NA		NA		NA	
73	Magnesium (mg/L) (6010)	**19.5**	J	**21.8**	J	**51.9**		NA		NA		NA		NA		**10.6**		NA		NA		NA	
74	Potassium (mg/L) (6010)	**4.2**		**5.1**		**6.7**		NA		NA		NA		NA		**3.6**		NA		NA		NA	
75	Sodium (mg/L) (6010)	**8.18**		**9.48**		**12.0**		NA		NA		NA		NA		**7.9**		NA		NA		NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**480**		NA		NA		NA		NA		**130**		NA		NA		NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1.0	U	NA		NA		NA		NA		1	U	NA		NA		NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**480**		NA		NA		NA		NA		**130**		NA		NA		NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**290**		**280**		**1100**		**1900**		**2000**		**230**		**260**		**230**		**240**		**240**		**320**	
80	Chloride (mg/L) (EPA 325.2)	**8.4**		**8.3**		**11**		**8.8**		**8.0**		**6.4**		**7.0**		**5.4**		**6**		**6**		**5.9**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.044**		NA		NA		NA		NA		**0.043**		NA		NA		NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.010	U	NA		NA		NA		NA		**0.043**		NA		NA		NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.044**		NA		NA		NA		NA		**0.086**		NA		NA		NA	
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		**5.7**		NA		NA		NA		NA		**46**		NA		NA		NA	
85																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																	Dup of RW1						Dup of RW1			
3			RW1		RW1		RW1		RW1		RW1		RW1		RW1		W		RW1		RW1		W		RW1	
4			AH76F		AU36E		BC21U		BH96X		BR64O		CB68G		CK77B		CK77A		CT67K		DE87Q		DE87M		DM30G	
5			5/20/99		9/21/99		12/7/99		2/16/00		5/25/00		8/30/00		11/7/00		11/7/00		2/15/01		6/6/01		6/6/01		8/13/01	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.54		6.14		6.18		6.44		6.46		5.69		5.28		5.27		6.35		6.62		6.61		6.54	
88	82	Temperature (° C) (avg)	14.0		17.3		17.2		14.6		13.2		14.8		14.2		14.1		12.7		14.4		14.4		16.4	
89	83	Conductivity (um/hos)	244		271		273		211		440		314		305		303		506		377		377		389	
90	84	Dissolved oxygen (mg/L) (avg)	1.52		2.09		1.72		0.76		1.00		0.87		0.69		0.72		0.32		0.97		0.94		1.10	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120		**ETHANOL (mg/L)**	NA		NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		NA	
121																										

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1																							
2				Dup of RW1						Dup of RW1										Dup of RW1			
3		RW1		X		RW1		RW1		X		RW1		RW1		RW1		RW1		X		RW1	
4		DW37D		DW37A		ED34A		EM66B		EM66A		ER93J		EZ17H		FF65D		FL41L		FL41P		FU50C	
5		11/28/01		11/28/01		2/28/02		6/24/02		6/24/02		08/27/02		11/13/02		2/11/03		5/7/03		5/7/03		8/29/03	
86	**FIELD PARAMETERS**																						
87	pH (avg)	6.51		6.5		6.15		6.16		6.14		6.71		6.03		6.4		6.82		6.84		6.65	
88	Temperature (° C) (avg)	13.7		13.5		12.8		15.6		15.6		15.6		17.3		15.3		14.2		14.2		15.4	
89	Conductivity (um/hos)	584		583		878		803		805		291		394		366		308		308		430	
90	Dissolved oxygen (mg/L) (avg)	3.36		3.43		7.27		3.86		3.54		0.00		0.00		0		1.79		1.75		1.59	
91																							
92	**DIOXINS AND FURANS (ng/L)**																						
93	**Method 8290**																						
94	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																							
120	**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																							

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																	Dup of RW1						Dup of RW1			
3			RW1		RW1		RW1		RW1		RW1		RW1		RW1		W		RW1		RW1		W		RW1	
4			AH76F		AU36E		BC21U		BH96X		BR64O		CB68G		CK77B		CK77A		CT67K		DE87Q		DE87M		DM30G	
5			5/20/99		9/21/99		12/7/99		2/16/00		5/25/00		8/30/00		11/7/00		11/7/00		2/15/01		6/6/01		6/6/01		8/13/01	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1																							
2				Dup of RW1						Dup of RW1										Dup of RW1			
3		RW1		X		RW1		RW1		X		RW1		RW1		RW1		RW1		X		RW1	
4		DW37D		DW37A		ED34A		EM66B		EM66A		ER93J		EZ17H		FF65D		FL41L		FL41P		FU50C	
5		11/28/01		11/28/01		2/28/02		6/24/02		6/24/02		08/27/02		11/13/02		2/11/03		5/7/03		5/7/03		8/29/03	
122	**PAHs (µg/L)**																						
123	**EPA Method SW8270 SIM**																						
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			RW3		RW3	
4			BC30H		9912050-07A	
5			12/8/99		12/8/1999 (d)	
7	1	**CHLORINATED PHENOLS (µg/L)**				
8	2	**EPA Method SW8040**				
9	3	Pentachlorophenol	**590**		NA	
10	4	2,4,6-Trichlorophenol	**0.19**	J1	NA	
11	5	2,3,6-Trichlorophenol	**0.13**	J1	NA	
12	6	2,4,5-Trichlorophenol	0.25	U	NA	
13	7	2,3,4-Trichlorophenol	0.25	U	NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**110**		NA	
15	9	2,3,4,5-Tetrachlorophenol	**3.0**		NA	
16	10					
17	11	**SEMIVOLATILES (µg/L)**				
18	12	**EPA Method SW8270**				
19	13	Phenol	2.0	U	NA	
20	14	4-Methylphenol	1.0	U	NA	
21	15	Isophorone	1.0	U	NA	
22	16	2,4-Dimethylphenol	3.0	U	NA	
23	17	Benzoic Acid	10	U	NA	
24	18	Naphthalene	**14**		NA	
25	19	2-Methylnaphthalene	1.0	U	NA	
26	20	2,4,6-Trichlorophenol	5.0	U	NA	
27	21	2,4,5-Trichlorophenol	5.0	U	NA	
28	22	Acenaphthene	1.0	U	NA	
29	23	Dibenzofuran	1.0	U	NA	
30	24	Fluorene	1.0	U	NA	
31	25	Pentachlorophenol	**720**		NA	
32	26	bis(2-Ethylhexyl)phthalate	**1.4**		NA	
33	27					
34	28	**VOLATILES (µg/L)**				
35	29	**EPA Method SW8260**				
36	30	Acetone	5.0	U	NA	
37	31	Carbon Disulfide	1.0	U	NA	
38	32	2-Butanone	**9.1**		NA	
39	33	Benzene	1.0	U	NA	
40	34	Bromoform	1.0	U	NA	
41	35	Toluene	1.0	U	NA	
42	36	Ethylbenzene	**8.3**		NA	
43	37	Styrene	1.0	U	NA	
44	38	m,p-Xylene	**12**		NA	
45	39	o-Xylene	**34**		NA	
46	40	1,3,5-Trimethylbenzene	**57**		NA	
47	41	1,2,4-Trimethylbenzene	**160**		NA	
48	42	Isopropylbenzene	**10**		NA	
49	43	n-Propylbenzene	**19**		NA	
50	44	tert-Butylbenzene	1.0	U	NA	
51	45	sec-Butylbenzene	**9.2**		NA	
52	46	4-Isopropyltoluene	**9.8**		NA	
53	47	n-Butylbenzene	8.9	U	NA	
54	48	Naphthalene	**15**		NA	
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**				
57	51	**Method OR-DEQ**				
58	52	**TPH-Diesel**	**3.5**		NA	
59	53	**TPH-D Motor Oil**	0.50	U	NA	
60	54	**TPH-Gasoline**	**2.5**		NA	
61	55					
62	56	**PRIORITY POLLUTANT**				
63	57	**METALS (mg/L)**				
64	58	Arsenic (7060)	**0.014**		NA	
65	59	Chromium (6010)	0.005	U	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			RW3		RW3	
4			BC30H		9912050-07A	
5			12/8/99		12/8/1999 (d)	
66	60	Copper (6010)	0.002	U	NA	
67	61	Lead (7421)	0.001	U	NA	
68	62	Nickel (6010)	0.01	U	NA	
69	63	Zinc (6010)	0.006	U	NA	
70	64					
71	65	**MAJOR IONS AND CONVENTIONALS**				
72	66	Calcium (mg/L) (6010)	NA		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA	
74	68	Potassium (mg/L) (6010)	NA		NA	
75	69	Sodium (mg/L) (6010)	NA		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	**150**		NA	
80	74	Chloride (mg/L) (EPA 325.2)	**3.9**		NA	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA	
85	79					

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			RW3		RW3	
4			BC30H		9912050-07A	
5			12/8/99		12/8/1999 (d)	
86	80	**FIELD PARAMETERS**				
87	81	pH (avg)	6.52		NM	
88	82	Temperature (° C) (avg)	12.9		NM	
89	83	Conductivity (um/hos)	231		NM	
90	84	Dissolved oxygen (mg/L) (avg)	1.76		NM	
91	85					
92	86	**DIOXINS AND FURANS (ng/L)**				
93	87	**Method 8290**				
94	88	2,3,7,8-TCDF	NA		NA	
95	89	Total TCDF	NA		NA	
96	90	2,3,7,8-TCDD	NA		NA	
97	91	Total TCDD	NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA	
100	94	Total PeCDF	NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA	
102	96	Total PeCDD	NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA	
107	101	Total HxCDF	NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA	
111	105	Total HxCDD	NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA	
114	108	Total HpCDF	NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA	
116	110	Total HpCDD	NA		NA	
117	111	OCDF	NA		NA	
118	112	OCDD	NA		NA	
119						
120		**ETHANOL (mg/L)**	5.0	U	10	U
121						

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F
1						
2						
3			RW3		RW3	
4			BC30H		9912050-07A	
5			12/8/99		12/8/1999 (d)	
122		**PAHs (µg/L)**				
123		**EPA Method SW8270 SIM**				
124		Naphthalene	NA		NA	
125		2-Methylnaphthalene	NA		NA	
126		Acenaphthylene	NA		NA	
127		Acenaphthene	NA		NA	
128		Fluorene	NA		NA	
129		Anthracene	NA		NA	
130		Dibenzofuran	NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1																						
2									Dup of LW2S													
3			LW2S		LW2S		LW2S		LW2D		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4			S177G		T176C		U235M		U235E		V224N		W391A		Y336G		Z225A		Z960Q		AH27F	
5			4/2/97		7/15/97		10/22/97		10/22/97		1/29/98		5/19/98		8/19/98		11/13/98		2/18/99		5/17/99	
6																						
7	1	**CHLORINATED PHENOLS (µg/L)**																				
8	2	**EPA Method SW8040**																				
9	3	Pentachlorophenol	**2600**		**2900**		**4400**		**4800**		**7600**		**8500**		**5000**		**3800**		**6000**		**560**	
10	4	2,4,6-Trichlorophenol	**0.46**		0.43	U	0.34	U	0.38	U	**0.56**		**0.57**		**0.34**		**0.34**		0.46		0.25	U
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U
12	6	2,4,5-Trichlorophenol	0.86	U	0.25	U	0.49	U	0.51	U	0.25	U	**0.57**		**0.61**		0.25	U	0.60	U	0.25	U
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	0.25	U	**0.13**	J1	**0.18**	J1	0.25	U	0.25	U	0.25	U
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**150**		**150**		**190**		**190**		**290**		**370**		**180**		**130**		**300**		**20**	
15	9	2,3,4,5-Tetrachlorophenol	**2.5**		**3.4**		**4.8**		**4.7**		**4.4**		**6.6**		**8.6**		**2.8**		**3.2**		**1.1**	
16	10																					
17	11	**SEMIVOLATILES (µg/L)**																				
18	12	**EPA Method SW8270**																				
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
24	18	Naphthalene	**5.5**		**2.3**		**20**		**17**		**13**		**10**	J2	**13**		**14**		**8.4**		1.0	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	25	Pentachlorophenol	**3900**		**3000**		**6000**		**7300**		**7900**		**7300**		**4200**		**4100**		**5400**		**500**	
32	26	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	**1.9**		1.0	U	1.0	U	**12**		1.0	U	1.0	U	**1.6**		**1.3**	
33	27																					
34	28	**VOLATILES (µg/L)**																				
35	29	**EPA Method SW8260**																				
36	30	Acetone	10	U	5.0	U	6.9		45	U	5.0	U	**7.4**		5.0	U	**35**		15	U	5.0	U
37	31	Carbon Disulfide	2.0	U	1.0	U	1.0	U	9.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U
38	32	2-Butanone	10	U	5.0	U	5.0	U	45	U	5.0	U	5.0	U	5.0	U	**7.4**		15	U	**9.4**	
39	33	Benzene	2.0	U	1.0	U	1.0	U	9.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U
40	34	Bromoform	2.0	U	1.0	U	1.0	U	9.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U
41	35	Toluene	2.0	U	**2.0**		**1.1**		9.0	U	1.0	U	1.0	U	**1.4**		**1.3**		3.0	U	1.0	U
42	36	Ethylbenzene	**5.7**		**11**		**32**		**32**		**17**		**5.1**		**9.7**		**12**		**11**		**2.0**	
43	37	Styrene	2.0	U	1.0	U	1.0	U	9.0	U	1.0	U	1.0	U	1.0	U	1.0	U	3.0	U	1.0	U
44	38	m,p-Xylene	**13**		**16**		**37**		**36**		**32**		**12**		**17**		**24**		**18**		**2.6**	
45	39	o-Xylene	**23**		**35**		**91**		**92**		**63**		**23**		**39**		**61**		**42**		**6.9**	
46	40	1,3,5-Trimethylbenzene	**53**		**49**		**130**		**110**		**80**		**34**		**54**		**62**		**93**		**8.7**	
47	41	1,2,4-Trimethylbenzene	**210**		**200**		**640**	J2	**790**	J2	**490**		**160**		**180**		**280**		**330**		**44**	
48	42	Isopropylbenzene	**7.5**		**14**		**62**	J2	**49**	J2	**19**		**6.4**		**10**		**12**		**16**		**2.2**	
49	43	n-Propylbenzene	**16**		**26**		**110**		**90**		**38**		**15**		**21**		**22**		**35**		**4.8**	
50	44	tert-Butylbenzene	2.0	U	**1.8**	MJ	**5.7**		9.0	U	**2.7**		1.0	U	1.0	U	1.0	U	3.0		1.0	U
51	45	sec-Butylbenzene	**7.6**		**11**		**40**	J2	**27**	J2	**22**		**8.2**		**12**	J2	**12**		**15**		**2.9**	
52	46	4-Isopropyltoluene	**9.6**		**9.6**		**31**	J2	**22**	J2	**21**		**9.1**		**12**		**12**		**12**		**2.0**	
53	47	n-Butylbenzene	**8.5**		**8.4**	M	**29**	J2	**18**	J2	**16**		**7.7**		**10**		**10**		**12**		**1.9**	
54	48	Naphthalene	**12.0**		**14**		**75**	J2	**58**	J2	**31**		**14**		**19**		**18**		**22**		5.0	U
55	49																					
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																				
57	51	**Method OR-DEQ**																				
58	52	**TPH-Diesel**	**4.4**		**5.0**		**11**		**11**		**10**		**5.6**		**5.2**		**5.0**		**6.2**		**1.1**	
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																					
62	56	**PRIORITY POLLUTANT**																				
63	57	**METALS (mg/L)**																				
64	58	Arsenic (7060)	**0.008**		**0.012**		0.05	U	0.05	U	0.05	U	**0.011**		**0.011**		**0.017**		**0.007**		**0.005**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	**0.006**		0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
3		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4		AU22G		BC27H		9912050-04A		BH75F		BR64C		CB49I		CK77I		CT55G		DE68C		DM52I		DW48K		ED23E	
5		9/20/99		12/8/99		12/8/1999 (d)		2/15/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/26/02	
7	**CHLORINATED PHENOLS (µg/L)**																								
8	**EPA Method SW8040**																								
9	Pentachlorophenol	**1500**		**1300**		NA		**2100**		**1000**		**720**		**1100**		**650**	J	NA		NA		NA		NA	
10	2,4,6-Trichlorophenol	**0.16**	J1	**0.12**	J1	NA		**0.42**		0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA	
11	2,3,6-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA	
12	2,4,5-Trichlorophenol	0.57	U	0.33	U	NA		0.37	U	0.25	U	0.74	U	0.33	U	NA		NA		NA		NA		NA	
13	2,3,4-Trichlorophenol	0.25	U	0.25	U	NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		NA		NA		NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	**47**		**36**		NA		**84**		**28**		**28**		**47**		NA		NA		NA		NA		NA	
15	2,3,4,5-Tetrachlorophenol	**2.2**		**1.6**		NA		**2.2**		**2.1**		**1.0**		**1.5**		NA		NA		NA		NA		NA	
16																									
17	**SEMIVOLATILES (µg/L)**																								
18	**EPA Method SW8270**																								
19	Phenol	2.0	U	2.0	U	NA		2.0	U	2.0	U	2.0	U	**2.4**	J2	2.0	U	2.0	U	2.0	U	**2.8**		2.0	U
20	4-Methylphenol	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	**3.0**		1.0	U
21	Isophorone	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
22	2,4-Dimethylphenol	3.0	U	3.0	U	NA		3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
23	Benzoic Acid	10	U	10	U	NA		10	U	10	U	10	U	10	U	10	U	10	U	10	U	30	U	50	U
24	Naphthalene	**4.3**		**36**		NA		**8.2**		**5.2**		**1.4**		**9.2**		**12**		**21**		**6.8**		**14**		1.0	U
25	2-Methylnaphthalene	1.0	U	**1.2**		NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
26	2,4,6-Trichlorophenol	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
27	2,4,5-Trichlorophenol	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
28	Acenaphthene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
29	Dibenzofuran	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
30	Fluorene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
31	Pentachlorophenol	**1600**		**1800**		NA		**2100**		**1300**	J2	**200**		**1500**		**1200**	J	**1300**		**700**		**8000**		**320**	
32	bis(2-Ethylhexyl)phthalate	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	**1.4**		1.0	U	1.0	U	**1.5**		4.0	U
33																									
34	**VOLATILES (µg/L)**																								
35	**EPA Method SW8260**																								
36	Acetone	5.0	U	**29**		NA		5.0	U	5.0	U	5.0	U	**27**			R	**33**		**20**		**39**		5.0	U
37	Carbon Disulfide	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	3.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
38	2-Butanone	**28**		**6.7**	M	NA		**32**		**22**		5.0	U	15	U	10	U	34	U	**32**		5.0	U	**5.2**	
39	Benzene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	3.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
40	Bromoform	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	3.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
41	Toluene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	3.0	U	2.0	U	**1.1**		1.0	U	1.0	U	1.0	U
42	Ethylbenzene	**6.3**		**22**		NA		**11**		**5.3**		**1.6**		**11**		**9.7**		**26**		1.0	U	**15**		1.0	U
43	Styrene	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	3.0	U	2.0	U	1.0	U	1.0	U	1.0	U	1.0	U
44	m,p-Xylene	**11**		**18**		NA		**18**		**9.9**		**3.0**		**15**		**18**		**36**		**14**		**35**		**1.2**	
45	o-Xylene	**29**		**97**		NA		**45**		**25**		**8.1**		**36**		**49**		**87**		**36**		**84**		**3.0**	
46	1,3,5-Trimethylbenzene	**45**		**80**		NA		**69**		**38**		**16**		**47**		**61**		**94**		**34**		**130**		**5.7**	
47	1,2,4-Trimethylbenzene	**120**		**540**		NA		**330**		**160**		**66**		**250**		**320**		**490**		**200**		**420**		**25**	
48	Isopropylbenzene	**7.0**		**38**		NA		**23**		**7.3**		**2.2**		**9.1**		**19**		**32**		**13**		**16**		1.0	U
49	n-Propylbenzene	**15**		**60**		NA		**48**		**16**		**5.8**		**20**		**36**		**67**		**28**		**32**		**2.0**	
50	tert-Butylbenzene	1.0	U	1.0	U	NA		3.1	U	**1.2**		1.0	U	3.0	U	**3.2**		1.0	U	1.0	U	**68**		1.0	U
51	sec-Butylbenzene	**8.0**		**27**		NA		**24**		**8.2**		**3.9**		**9.3**		**20**		**30**		**15**		1.0	U	**1.4**	
52	4-Isopropyltoluene	**8.8**		**20**		NA		**15**		**7.4**		**3.8**		**8.5**		**17**		**25**		**13**		**22**		**1.5**	
53	n-Butylbenzene	**7.0**		15	U	NA		17	U	**6.5**	M	**3.7**	M	**9.5**		**15**	M	**21**		**12**	M	**18**		**1.2**	
54	Naphthalene	**16**		**54**		NA		**26**		**10**		5.0	U	**27**		**23**		**60**		**28**		**54**		5.0	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	**Method OR-DEQ**																								
58	**TPH-Diesel**	**2.3**		**9.4**		NA		**5.5**		**3.5**		**1.8**		**4.0**		**9.1**		**9.4**		**5.4**		10		**1.5**	
59	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61																									
62	**PRIORITY POLLUTANT**																								
63	**METALS (mg/L)**																								
64	Arsenic (7060)	**0.008**		**0.011**		NA		**0.011**		**0.011**		**0.011**		**0.017**		**0.013**		**0.018**		**0.019**		**0.013**		**0.015**	
65	Chromium (6010)	0.005	U	0.005	U	NA		0.005	U	0.005	U	**0.005**		0.005	U	0.005	U	0.05	U	0.005	U	0.005	U	0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AU	AV
1			
2			
3		LW2S	
4		EM85F	
5		6/26/02	
6			
7	**CHLORINATED PHENOLS (µg/L)**		
8	**EPA Method SW8040**		
9	Pentachlorophenol	NA	
10	2,4,6-Trichlorophenol	NA	
11	2,3,6-Trichlorophenol	NA	
12	2,4,5-Trichlorophenol	NA	
13	2,3,4-Trichlorophenol	NA	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	NA	
15	2,3,4,5-Tetrachlorophenol	NA	
16			
17	**SEMIVOLATILES (µg/L)**		
18	**EPA Method SW8270**		
19	Phenol	2.0	U
20	4-Methylphenol	1.0	U
21	Isophorone	1.0	U
22	2,4-Dimethylphenol	3.0	U
23	Benzoic Acid	50	U
24	Naphthalene	**6.2**	
25	2-Methylnaphthalene	1.0	U
26	2,4,6-Trichlorophenol	5.0	U
27	2,4,5-Trichlorophenol	5.0	U
28	Acenaphthene	1.0	U
29	Dibenzofuran	1.0	U
30	Fluorene	1.0	U
31	Pentachlorophenol	**950**	
32	bis(2-Ethylhexyl)phthalate	4.0	U
33			
34	**VOLATILES (µg/L)**		
35	**EPA Method SW8260**		
36	Acetone	**8.2**	
37	Carbon Disulfide	1.0	U
38	2-Butanone	**13**	
39	Benzene	1.0	U
40	Bromoform	1.0	U
41	Toluene	1.0	U
42	Ethylbenzene	**4.7**	
43	Styrene	1.0	U
44	m,p-Xylene	**7.3**	
45	o-Xylene	**18**	
46	1,3,5-Trimethylbenzene	**24**	
47	1,2,4-Trimethylbenzene	**110**	
48	Isopropylbenzene	**6.8**	
49	n-Propylbenzene	**14**	
50	tert-Butylbenzene	1.0	U
51	sec-Butylbenzene	**7.5**	
52	4-Isopropyltoluene	**6.6**	
53	n-Butylbenzene	5.7	U
54	Naphthalene	**11**	
55			
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**		
57	**Method OR-DEQ**		
58	**TPH-Diesel**	**2.8**	
59	**TPH-D Motor Oil**	NA	
60	**TPH-Gasoline**	NA	
61			
62	**PRIORITY POLLUTANT**		
63	**METALS (mg/L)**		
64	Arsenic (7060)	**0.014**	
65	Chromium (6010)	0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1																						
2									Dup of LW2S													
3			LW2S		LW2S		LW2S		LW2D		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4			S177G		T176C		U235M		U235E		V224N		W391A		Y336G		Z225A		Z960Q		AH27F	
5			4/2/97		7/15/97		10/22/97		10/22/97		1/29/98		5/19/98		8/19/98		11/13/98		2/18/99		5/17/99	
66	60	Copper (6010)	0.002	U	**0.002**		0.002	U	0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	**0.007**		0.002	U
67	61	Lead (7421)	0.001	U	**0.001**		0.02	U	0.02	U	0.02	U	0.001	U	**0.007**		0.001	U	**0.004**		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	63	Zinc (6010)	**0.004**		**0.006**	J2	**0.007**		**0.004**		**0.004**		**0.004**	J2	**0.098**		**0.006**		**0.026**		0.005	U
70	64																					
71	65	**MAJOR IONS AND CONVENTIONALS**																					
72	66	Calcium (mg/L) (6010)	NA		NA		**18.4**		**18.2**		**9.13**		NA		NA		NA		**7.23**		NA	
73	67	Magnesium (mg/L) (6010)	NA		NA		**5.15**		**5.12**		**2.30**		NA		NA		NA		**2.52**		NA	
74	68	Potassium (mg/L) (6010)	NA		NA		**2.8**		**2.8**		**1.6**		NA		NA		NA		**1.9**		NA	
75	69	Sodium (mg/L) (6010)	NA		NA		**4.77**		**4.74**		**2.54**		NA		NA		NA		**3.69**		NA	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		**62**		**61**		**52**		NA		NA		NA		**25**		NA	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		1.0	U	1.0	U	1.0	U	NA		NA		NA		1.0	U	NA	
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		**62**		**61**		**52**		NA		NA		NA		**25**		NA	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**170**	J2	**130**		**140**		**66**		160		140		220		**76**		**160**	
80	74	Chloride (mg/L) (EPA 325.2)	NA		NA		**15**		**15**		**1.9**		3.9		4.6		26		**1.9**		**1.8**	
81	75	N-Nitrate (mg-N/L) (Calculated)	NA		NA		**0.023**		**0.017**		0.010	UJ	NA		NA		NA		**0.040**		NA	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		0.010	U	0.010	U	0.010	UJ	NA		NA		NA		**0.016**		NA	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		**0.023**		**0.017**		0.010	UJ	NA		NA		NA		**0.056**		NA	
84	78	Sulfate (mg/L) (EPA 375.2)	NA		NA		**5.3**		**5.9**		**6.5**		NA		NA		NA		**9.4**		NA	
85	79																					

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																									
2																									
3		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4		AU22G		BC27H		9912050-04A		BH75F		BR64C		CB49I		CK77I		CT55G		DE68C		DM52I		DW48K		ED23E	
5		9/20/99		12/8/99		12/8/1999 (d)		2/15/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/26/02	
66	Copper (6010)	0.002	U	**0.002**		NA		**0.003**		**0.003**		**0.007**		**0.005**	J2	0.002	U	0.002	U	**0.004**		0.004	U	**0.003**	
67	Lead (7421)	0.001	U	0.001	U	NA		0.001	U	0.001	U	**0.003**		**0.003**		0.001	U	0.001	U	**0.001**		**0.004**		0.001	U
68	Nickel (6010)	0.01	U	0.01	U	NA		0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
69	Zinc (6010)	**0.008**		0.009	U	NA		**0.010**		**0.006**		**0.016**		**0.013**		**0.011**		0.006	U	**0.012**		**0.012**		**0.006**	
70																									
71	**MAJOR IONS AND CONVENTIONALS**																								
72	Calcium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**35.6**		**42.2**		**24.3**		**23.3**		**12.3**	
73	Magnesium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**9.27**		**10.1**		**7.63**		**7.65**		**3.88**	
74	Potassium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**2.7**		**3.4**		**3.1**		**2.9**		**2.0**	
75	Sodium (mg/L) (6010)	NA		NA		NA		NA		NA		NA		NA		**5.10**		**5.23**		**5.84**		**5.14**		**3.46**	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**140**		NA		NA		NA		**67**	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		1.0	U	NA		NA		NA		1.0	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA		NA		NA		NA		NA		NA		NA		**140**		NA		NA		NA		**67**	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**160**		**170**		NA		**84**		**140**		**180**		**220**		**210**		**300**		**210**		**190**		**120**	
80	Chloride (mg/L) (EPA 325.2)	**3.1**		**7.5**		NA		**1.8**		**2.5**		**2.8**		**26**		**15**		**38**		**26**		**9.7**		**4.1**	
81	N-Nitrate (mg-N/L) (Calculated)	NA		NA		NA		NA		NA		NA		NA		**0.010**		NA		NA		NA		0.010	U
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA		NA		NA		NA		NA		NA		NA		0.010	U	NA		NA		NA		**0.026**	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA		NA		NA		NA		NA		NA		NA		**0.010**		NA		NA		NA		**0.033**	J
84	Sulfate (mg/L) (EPA 375.2)	NA		NA		NA		NA		NA		NA		NA		**5.7**		NA		NA		NA		**4.3**	
85																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AU	AV
1			
2			
3		LW2S	
4		EM85F	
5		6/26/02	
66	Copper (6010)	0.002	U
67	Lead (7421)	0.001	U
68	Nickel (6010)	0.01	U
69	Zinc (6010)	**0.012**	
70			
71	**MAJOR IONS AND CONVENTIONALS**		
72	Calcium (mg/L) (6010)	NA	
73	Magnesium (mg/L) (6010)	NA	
74	Potassium (mg/L) (6010)	NA	
75	Sodium (mg/L) (6010)	NA	
76	Alkalinity (mg/L CaCO3) (SM 2320)	NA	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	NA	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	**110**	
80	Chloride (mg/L) (EPA 325.2)	**3.3**	
81	N-Nitrate (mg-N/L) (Calculated)	NA	
82	N-Nitrite (mg-N/L) (EPA 354.1)	NA	
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	NA	
84	Sulfate (mg/L) (EPA 375.2)	NA	
85			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1																						
2									Dup of LW2S													
3			LW2S		LW2S		LW2S		LW2D		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4			S177G		T176C		U235M		U235E		V224N		W391A		Y336G		Z225A		Z960Q		AH27F	
5			4/2/97		7/15/97		10/22/97		10/22/97		1/29/98		5/19/98		8/19/98		11/13/98		2/18/99		5/17/99	
86	80	**FIELD PARAMETERS**																				
87	81	pH (avg)	6.69		6.62		6.77		6.78		6.83		6.19		6.18		5.9300		6.21		5.62	
88	82	Temperature (° C) (avg)	10.0		15		15.7		15.7		10.8		12.6		14.4		14.7000		8.6		11.2	
89	83	Conductivity (um/hos)	291		258		168		167		108		244		299		148.0000		57		221	
90	84	Dissolved oxygen (mg/L) (avg)	NA		NA		NA		NA		NA		2.71		1.43		1.31		1.47		3.08	
91	85																					
92	86	**DIOXINS AND FURANS (ng/L)**																				
93	87	**Method 8290**																				
94	88	2,3,7,8-TCDF	**0.0040**		0.0045	U	**0.036**		NA		**0.0052**	(c)	**0.0045**	(c)	**0.012**	(c)	**0.0080**	(c)	**0.0079**	(c)	**0.0045**	(c)
95	89	Total TCDF	**0.0180**		0.0016-0.0048	U	**0.310**		NA		**0.0190**		**0.0280**		**0.060**		**0.0370**		**0.0079**		**0.0230**	
96	90	2,3,7,8-TCDD	0.0042	U	0.0034	U	0.049	U	NA		0.0051	U	0.0025	U	0.0062	U	0.0044	U	**0.0280**		0.0035	U
97	91	Total TCDD	0.0014-0.0042	U	0.0011-0.0036	U	**0.940**		NA		**0.0044**		0.0025	U	0.0062	U	0.0044	U	**0.3000**		**0.0025**	
98	92	1,2,3,7,8-PeCDF	0.0340	U	0.2600	U	0.075	U	NA		**0.0077**		**0.0150**		2.0000	U (b)	**0.0200**		3.00	U,E	**0.0130**	
99	93	2,3,4,7,8-PeCDF	**0.0120**		0.0190	U	**0.110**		NA		0.0160	U	**0.0110**		0.1200	U (b)	**0.0430**		**0.2600**		**0.0240**	
100	94	Total PeCDF	**0.2400**		**0.120**		**1.300**		NA		**0.2200**		**0.1900**		**0.470**		**0.3000**		**0.4200**		**0.1600**	
101	95	1,2,3,7,8-PeCDD	0.0120	U	0.0072	U	**0.360**		NA		0.0160	U	**0.0049**		**0.014**		**0.0110**		**0.2800**		0.0045	U
102	96	Total PeCDD	0.0032-0.0077	U	0.0025-0.014	U	**3.000**		NA		0.0160	U	**0.0049**		**0.014**		**0.0110**		**1.5000**		**0.0019**	
103	97	1,2,3,4,7,8-HxCDF	**0.0590**		**0.019**		1.900	U	NA		0.1300	UE	0.1100	U	**0.180**		0.8400	U	0.50	U,E	**0.0280**	
104	98	1,2,3,6,7,8-HxCDF	**0.0300**		0.0160	U	**0.260**		NA		**0.0470**		**0.0260**		**0.120**		**0.0660**		**0.0870**		0.1900	U,E
105	99	2,3,4,6,7,8-HxCDF	**0.0580**		**0.033**		**0.620**		NA		**0.0740**		**0.0610**	J2	**0.220**		**0.0840**		**0.5700**		**0.0430**	
106	100	1,2,3,7,8,9-HxCDF	**0.0280**		**0.013**		**0.260**		NA		**0.0340**		0.0220	U	**0.078**		**0.0380**		0.53	U,E	**0.0220**	
107	101	Total HxCDF	**0.8800**		**0.370**		**14.000**		NA		**0.9700**		**2.0000**	J2	**2.700**		**1.6000**		**14.0000**		**1.5000**	
108	102	1,2,3,4,7,8-HxCDD	**0.0120**		0.0110	U	**0.630**		NA		**0.0180**		**0.0170**		**0.045**		**0.0310**		**0.2600**		**0.0110**	
109	103	1,2,3,6,7,8-HxCDD	**0.3400**		**0.150**		**3.400**		NA		**0.4000**		**0.4000**	J2	**1.200**		**0.5900**		**3.0000**		**0.1800**	
110	104	1,2,3,7,8,9-HxCDD	**0.0280**		**0.012**		**0.960**		NA		**0.0410**		**0.0400**		**0.110**		**0.0540**		**0.4900**		**0.0170**	
111	105	Total HxCDD	**0.7900**		**0.350**		**14.000**		NA		**0.9500**		**1.0000**	J2	**2.800**		**1.5000**		**10.0000**		**0.4200**	
112	106	1,2,3,4,6,7,8-HpCDF	**1.5000**		**0.600**		**9.700**		NA		**1.5000**		**1.4000**		**4.500**		**2.6000**		**11.0000**		**0.4800**	
113	107	1,2,3,4,7,8,9-HpCDF	**0.0980**		**0.039**		**0.990**		NA		**0.1000**		**0.0990**		**0.340**		**0.1800**		**0.8300**		**0.0440**	
114	108	Total HpCDF	**6.7000**		**0.640**		**43.000**		NA		**4.8000**		**6.3000**		**4.800**		**13.0000**		**65.0000**		**2.8000**	
115	109	1,2,3,4,6,7,8-HpCDD	**10.0000**		**3.800**		**54.000**		NA		**9.9000**		**8.4000**		**28.000**	J2	**17.0000**		**56.0000**		**4.0000**	
116	110	Total HpCDD	**15.0000**		**5.700**		**82.000**		NA		**15.0000**		**13.0000**		**39.000**	J2	**26.0000**		**84.0000**		**5.6000**	
117	111	OCDF	**8.8000**		**2.600**		**40.000**		NA		**7.0000**		**6.9000**		**20.000**		**12.0000**		**43.0000**		**3.1000**	
118	112	OCDD	**76.0000**		**25.000**		**350.000**		NA		**65.0000**		**58.0000**	J2	**190.000**	J2	**110.0000**		**320.0000**		**25.0000**	
119																						
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																						

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																									
2																									
3		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4		AU22G		BC27H		9912050-04A		BH75F		BR64C		CB49I		CK77I		CT55G		DE68C		DM52I		DW48K		ED23E	
5		9/20/99		12/8/99		12/8/1999 (d)		2/15/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/26/02	
86	**FIELD PARAMETERS**																								
87	pH (avg)	6.06		6.25		NM		6.42		6.23		6.59		5.58		6.01		6.33		6.54		6.22		4.96	
88	Temperature (° C) (avg)	16.6		12.6		NM		10.8		12.8		15.5		15.3		11.3		12.7		15.5		14.5		11.1	
89	Conductivity (um/hos)	221		267		NM		91		267		268		302		305		427		299		321		124	
90	Dissolved oxygen (mg/L) (avg)	1.58		2.34		NM		0.95		1.22		1.73		0.98		0.59		1.32		3.04		3.76		7.98	
91																									
92	**DIOXINS AND FURANS (ng/L)**																								
93	**Method 8290**																								
94	2,3,7,8-TCDF	**0.0060**	(c)	0.00330	U	NA		0.086	U	NA		NA		NA		NA		NA		NA		NA		NA	
95	Total TCDF	**0.0510**		**0.0280**		NA		**0.0540**		NA		NA		NA		NA		NA		NA		NA		NA	
96	2,3,7,8-TCDD	0.0054	U	0.00079	U	NA		0.0047	U	NA		NA		NA		NA		NA		NA		NA		NA	
97	Total TCDD	0.0054	U	0.00079	U	NA		0.0047	U	NA		NA		NA		NA		NA		NA		NA		NA	
98	1,2,3,7,8-PeCDF	0.1800	UE	0.00170	U	NA		2.400	U	NA		NA		NA		NA		NA		NA		NA		NA	
99	2,3,4,7,8-PeCDF	**0.1100**		**0.0160**	J1	NA		**0.0260**	J1	NA		NA		NA		NA		NA		NA		NA		NA	
100	Total PeCDF	**0.6700**		**0.1000**		NA		**0.1200**		NA		NA		NA		NA		NA		NA		NA		NA	
101	1,2,3,7,8-PeCDD	**0.0130**		**0.0049**	J1	NA		**0.0068**	J1	NA		NA		NA		NA		NA		NA		NA		NA	
102	Total PeCDD	**0.0200**		**0.0074**	J1	NA		**0.0110**		NA		NA		NA		NA		NA		NA		NA		NA	
103	1,2,3,4,7,8-HxCDF	**0.1800**		**0.0690**		NA		0.860	U	NA		NA		NA		NA		NA		NA		NA		NA	
104	1,2,3,6,7,8-HxCDF	**0.1200**		0.720	U	NA		0.0460	U	NA		NA		NA		NA		NA		NA		NA		NA	
105	2,3,4,6,7,8-HxCDF	**0.1600**		**0.0330**	J1	NA		**0.0420**	J1	NA		NA		NA		NA		NA		NA		NA		NA	
106	1,2,3,7,8,9-HxCDF	**0.0950**		0.011	U	NA		0.0100	U	NA		NA		NA		NA		NA		NA		NA		NA	
107	Total HxCDF	**14.0000**		**2.1000**		NA		**2.9000**		NA		NA		NA		NA		NA		NA		NA		NA	
108	1,2,3,4,7,8-HxCDD	**0.0620**		0.020	U	NA		0.012	U	NA		NA		NA		NA		NA		NA		NA		NA	
109	1,2,3,6,7,8-HxCDD	**1.2000**		**0.4800**		NA		**0.4400**		NA		NA		NA		NA		NA		NA		NA		NA	
110	1,2,3,7,8,9-HxCDD	**0.1200**		**0.0410**	J1	NA		**0.0290**	J1	NA		NA		NA		NA		NA		NA		NA		NA	
111	Total HxCDD	**2.8000**		**1.1000**		NA		**1.2000**		NA		NA		NA		NA		NA		NA		NA		NA	
112	1,2,3,4,6,7,8-HpCDF	**4.8000**		**2.2000**		NA		**1.7000**		NA		NA		NA		NA		NA		NA		NA		NA	
113	1,2,3,4,7,8,9-HpCDF	**0.3300**		**0.1200**		NA		**0.1200**		NA		NA		NA		NA		NA		NA		NA		NA	
114	Total HpCDF	**5.1000**		**10.0000**		NA		**9.2000**		NA		NA		NA		NA		NA		NA		NA		NA	
115	1,2,3,4,6,7,8-HpCDD	**30.0000**		**14.0000**		NA		**11.0000**		NA		NA		NA		NA		NA		NA		NA		NA	
116	Total HpCDD	**45.0000**		**20.0000**		NA		**17.0000**		NA		NA		NA		NA		NA		NA		NA		NA	
117	OCDF	**29.0000**		**11.0000**		NA		**9.0000**		NA		NA		NA		NA		NA		NA		NA		NA	
118	OCDD	**210.0000**		**100.0000**	N2	NA		**76.0000**		NA		NA		NA		NA		NA		NA		NA		NA	
119																									
120	**ETHANOL (mg/L)**	NA		NA		10	U	NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AU	AV
1			
2			
3		LW2S	
4		EM85F	
5		6/26/02	
86	**FIELD PARAMETERS**		
87	pH (avg)	6.39	
88	Temperature (° C) (avg)	15.2	
89	Conductivity (um/hos)	150	
90	Dissolved oxygen (mg/L) (avg)	3.67	
91			
92	**DIOXINS AND FURANS (ng/L)**		
93	**Method 8290**		
94	2,3,7,8-TCDF	NA	
95	Total TCDF	NA	
96	2,3,7,8-TCDD	NA	
97	Total TCDD	NA	
98	1,2,3,7,8-PeCDF	NA	
99	2,3,4,7,8-PeCDF	NA	
100	Total PeCDF	NA	
101	1,2,3,7,8-PeCDD	NA	
102	Total PeCDD	NA	
103	1,2,3,4,7,8-HxCDF	NA	
104	1,2,3,6,7,8-HxCDF	NA	
105	2,3,4,6,7,8-HxCDF	NA	
106	1,2,3,7,8,9-HxCDF	NA	
107	Total HxCDF	NA	
108	1,2,3,4,7,8-HxCDD	NA	
109	1,2,3,6,7,8-HxCDD	NA	
110	1,2,3,7,8,9-HxCDD	NA	
111	Total HxCDD	NA	
112	1,2,3,4,6,7,8-HpCDF	NA	
113	1,2,3,4,7,8,9-HpCDF	NA	
114	Total HpCDF	NA	
115	1,2,3,4,6,7,8-HpCDD	NA	
116	Total HpCDD	NA	
117	OCDF	NA	
118	OCDD	NA	
119			
120	**ETHANOL (mg/L)**	NA	
121			

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1									Dup of LW2S													
2			LW2S		LW2S		LW2S		LW2D		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
3			S177G		T176C		U235M		U235E		V224N		W391A		Y336G		Z225A		Z960Q		AH27F	
4			4/2/97		7/15/97		10/22/97		10/22/97		1/29/98		5/19/98		8/19/98		11/13/98		2/18/99		5/17/99	
5																						
122		**PAHs (µg/L)**																				
123		**EPA Method SW8270 SIM**																				
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		**8.2**		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		**0.41**		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		**0.11**	M	NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		0.10	U	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT
1																									
2																									
3		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S		LW2S	
4		AU22G		BC27H		9912050-04A		BH75F		BR64C		CB49I		CK77I		CT55G		DE68C		DM52I		DW48K		ED23E	
5		9/20/99		12/8/99		12/8/1999 (d)		2/15/00		5/24/00		8/29/00		11/8/00		2/14/01		6/5/01		8/15/01		11/29/01		2/26/02	
122	**PAHs (µg/L)**																								
123	**EPA Method SW8270 SIM**																								
124	Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125	2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126	Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127	Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128	Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129	Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130	Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AU	AV
1			
2			
3		LW2S	
4		EM85F	
5		6/26/02	
122	**PAHs (µg/L)**		
123	**EPA Method SW8270 SIM**		
124	Naphthalene	NA	
125	2-Methylnaphthalene	NA	
126	Acenaphthylene	NA	
127	Acenaphthene	NA	
128	Fluorene	NA	
129	Anthracene	NA	
130	Dibenzofuran	NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3			LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S	
4			S167C		T160D		U235C		V208B		W371C		Z960T		AH76M		BH75A		CT37J		ED16C		EM75C		FF48D	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	**0.86**		0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	NA		2	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	NA		3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	NA		3	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		10	U	10	U	10	U	10	U	50	U	NA		50	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		1.0	U	1.0	U	1.0	U	1.0	U	4.0	U	NA		1	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	14	U	5.0	U	NA		5	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	**5.7**		NA		5	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.001**		**0.002**		0.05	U	0.05	U	**0.002**		0.001	U	0.001	U	0.001	U	**0.002**		**0.005**		NA		0.001	U
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005	U

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S	
4			S167C		T160D		U235C		V208B		W371C		Z960T		AH76M		BH75A		CT37J		ED16C		EM75C		FF48D	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
66	60	Copper (6010)	**0.002**		**0.002**		0.002	U	**0.003**		**0.004**		**0.002**		**0.003**		**0.003**		0.002	U	**0.008**		NA		**0.005**	
67	61	Lead (7421)	**0.001**		**0.002**		0.02	U	0.02	U	**0.002**		0.001	U	**0.001**		**0.001**		0.001	U	**0.002**		NA		**0.001**	
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01	U
69	63	Zinc (6010)	**0.006**		**0.012**		**0.004**		**0.007**		**0.012**	J2	**0.017**	J	**0.010**		**0.006**		0.006	U	**0.017**		NA		**0.011**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**12.5**		**12.8**		**12.0**		**5.13**		NA		NA		NA		NA		NA		**7.22**		NA		**2.58**	
73	67	Magnesium (mg/L) (6010)	**3.83**		**3.71**		**2.94**		**1.64**		NA		NA		NA		NA		NA		**2.44**		NA		**1.03**	
74	68	Potassium (mg/L) (6010)	**2.2**		**3.0**		**3.1**		**1.4**		NA		NA		NA		NA		NA		**1.7**		NA		**0.8**	
75	69	Sodium (mg/L) (6010)	**7.77**		**4.6**		**4.80**		**4.86**		NA		NA		NA		NA		NA		**7.44**		NA		**7**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**46**		**39**		**34**		**28**		NA		NA		NA		NA		NA		**38**		NA		**15**	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		1.0	U	NA		1	U
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**46**		**39**		**34**		**28**		NA		NA		NA		NA		NA		**38**		NA		**15**	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**110**		**94**		**61**	J2	NA		NA		**75**		**67**		**100**		**72**		NA		**84**	
80	74	Chloride (mg/L) (EPA 325.2)	**2.1**	J	**2.1**		**1.2**		**1.0**		NA		NA		**1.7**		**1.6**		**1.8**		**1.0**		NA		**1.6**	
81	75	N-Nitrate (mg-N/L) (Calculated)	**1.3**	J	**2.2**		**1.8**		**0.17**		NA		NA		NA		NA		NA		**0.098**		NA		**0.91**	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	**0.016**	J	**0.021**		0.010	U	**0.013**		NA		NA		NA		NA		NA		0.010	U	NA		**0.017**	
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**1.3**	J	**2.2**		**1.8**		**0.18**		NA		NA		NA		NA		NA		**0.098**		NA		**0.93**	
84	78	Sulfate (mg/L) (EPA 375.2)	**19**	J	**14**		**14**		**3.4**		NA		NA		NA		NA		NA		**5.2**		NA		**6.2**	
85	79																									

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z			
1																													
2																													
3			LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S				
4			S167C		T160D		U235C		V208B		W371C		Z960T		AH76M		BH75A		CT37J		ED16C		EM75C		FF48D				
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03				
86	80	**FIELD PARAMETERS**																											
87	81	pH (avg)	6.75		6.44		6.52		6.89		5.89		6.61		5.91		6.69		6.36		6.00		5.43		6.64				
88	82	Temperature (° C) (avg)	10.5		18.4		16.1		9.5		11.9		8.6		13.1		9.8		10.6		9.0		13.6		10.8				
89	83	Conductivity (um/hos)	138		147		115		0.63		93		78		64		66		133		73		174		41				
90	84	Dissolved oxygen (mg/L) (avg)									4.88		5.21		3.12		4.83		3.47		5.49		4.62		4.71				
91	85																												
92	86	**DIOXINS AND FURANS (ng/L)**																											
93	87	**Method 8290**																											
94	88	2,3,7,8-TCDF	**0.0088**		0.0025	U	0.0066	U	0.0017	U	NA		NA		NA		NA		NA		NA		NA		NA				
95	89	Total TCDF	0.0044-0.016	U	0.0011-0.0037	U	0.0025-0.0081	U	0.0017	U	NA		NA		NA		NA		NA		NA		NA		NA				
96	90	2,3,7,8-TCDD	0.0160	U	0.0023	U	0.0074	U	0.0023	U	NA		NA		NA		NA		NA		NA		NA		NA				
97	91	Total TCDD	0.0032-0.025	U	0.0012-0.0052	U	0.0018-0.0099	U	**0.0035**		NA		NA		NA		NA		NA		NA		NA		NA				
98	92	1,2,3,7,8-PeCDF	0.0083	U	0.0058	U	**0.0100**		0.0015	U	NA		NA		NA		NA		NA		NA		NA		NA				
99	93	2,3,4,7,8-PeCDF	0.0120	U	0.0021	U	0.0062	U	0.0017	U	NA		NA		NA		NA		NA		NA		NA		NA				
100	94	Total PeCDF	0.0026-0.018	U	0.0015-0.0064	U	**0.0960**		0.0016	U	NA		NA		NA		NA		NA		NA		NA		NA				
101	95	1,2,3,7,8-PeCDD	0.0260	U	0.0100	U	0.0120	U	0.0030	U	NA		NA		NA		NA		NA		NA		NA		NA				
102	96	Total PeCDD	0.010-0.034	U	0.0020-0.0100	U	0.0056-0.013	U	0.0030	U	NA		NA		NA		NA		NA		NA		NA		NA				
103	97	1,2,3,4,7,8-HxCDF	0.0044	U	0.0017	U	0.0083	U	0.0018	U	NA		NA		NA		NA		NA		NA		NA		NA				
104	98	1,2,3,6,7,8-HxCDF	0.0057	U	0.0034	U	0.0049	U	0.0021	U	NA		NA		NA		NA		NA		NA		NA		NA				
105	99	2,3,4,6,7,8-HxCDF	0.0080	U	0.0076	U	0.0064	U	0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA				
106	100	1,2,3,7,8,9-HxCDF	0.0160	U	0.0045	U	0.0068	U	0.0020	U	NA		NA		NA		NA		NA		NA		NA		NA				
107	101	Total HxCDF	0.0048-0.017	U	0.0017-0.0076	U	0.0270	U	0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA				
108	102	1,2,3,4,7,8-HxCDD	0.0250	U	0.0078	U	0.0080	U	0.0025	U	NA		NA		NA		NA		NA		NA		NA		NA				
109	103	1,2,3,6,7,8-HxCDD	0.0180	U	0.0072	U	**0.0089**		0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA				
110	104	1,2,3,7,8,9-HxCDD	0.0160	U	0.0032	U	0.0120	U	0.0030	U	NA		NA		NA		NA		NA		NA		NA		NA				
111	105	Total HxCDD	0.011-0.031	U	0.0025-0.0078	U	**0.0230**		0.0032	U	NA		NA		NA		NA		NA		NA		NA		NA				
112	106	1,2,3,4,6,7,8-HpCDF	0.0160	U	0.0046	U	**0.0240**		0.0130	U	NA		NA		NA		NA		NA		NA		NA		NA				
113	107	1,2,3,4,7,8,9-HpCDF	0.0280	U	0.0057	U	0.0039	U	0.0035	U	NA		NA		NA		NA		NA		NA		NA		NA				
114	108	Total HpCDF	0.012-0.028	U	0.0014-0.0058	U	0.0280	U	0.0083	U	NA		NA		NA		NA		NA		NA		NA		NA				
115	109	1,2,3,4,6,7,8-HpCDD	0.0230	U	0.0068	U	**0.3000**		0.0064	U	NA		NA		NA		NA		NA		NA		NA		NA				
116	110	Total HpCDD	0.013-0.038	U	0.0021-0.0080	U	**0.4400**		0.0064	U	NA		NA		NA		NA		NA		NA		NA		NA				
117	111	OCDF	0.0520	U	0.0079	U	**0.1800**		0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA				
118	112	OCDD	0.0500	U	0.0300	U	**1.2000**		0.0210	U	NA		NA		NA		NA		NA		NA		NA		NA				
119																													
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA				
121																													

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S		LW101S	
4			S167C		T160D		U235C		V208B		W371C		Z960T		AH76M		BH75A		CT37J		ED16C		EM75C		FF48D	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		0.10	U	NA		NA		NA		NA		NA		NA	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3			LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S
4			S167D		T160E		U235B		V211B		W371B		Z960S		AH76L		BH75B		CT37H		ED16B		EM75B		FF48C
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03
7	1	**CHLORINATED PHENOLS (µg/L)**																							
8	2	**EPA Method SW8040**																							
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		**0.66**		**0.31**		0.25	U	**0.28**		0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA
16	10																								
17	11	**SEMIVOLATILES (µg/L)**																							
18	12	**EPA Method SW8270**																							
19	13	Phenol	2.0	U	2.0	U	2.0	UJ	2.0	U	NA		NA		2.0	U	2.0	U	2.0	U	2.0	U	NA		2
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	**3.5**		1.0	U	NA		**6.8**
21	15	Isophorone	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	UJ	3.0	U	NA		NA		3.0	U	3.0	U	3.0	U	3.0	U	NA		3
23	17	Benzoic Acid	10	U	10	U	10	UJ	10	U	NA		NA		10	U	10	U	10	U	50	U	NA		50
24	18	Naphthalene	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	UJ	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	UJ	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5
28	22	Acenaphthene	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
30	24	Fluorene	1.0	U	1.0	U	1.0	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	UJ	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.3	UJ	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	4.0	U	NA		1
33	27																								
34	28	**VOLATILES (µg/L)**																							
35	29	**EPA Method SW8260**																							
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	160	U	**7.9**		NA		**15**
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																							
57	51	**Method OR-DEQ**																							
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		0.25
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																								
62	56	**PRIORITY POLLUTANT**																							
63	57	**METALS (mg/L)**																							
64	58	Arsenic (7060)	0.001	U	**0.002**		0.05	U	0.05	U	**0.001**		0.001	U	0.001	U	0.001	U	**0.001**		0.001	U	NA		0.001
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Z
1		
2		
3		
4		
5		
7	**CHLORINATED PHENOLS (µg/L)**	
8	**EPA Method SW8040**	
9	Pentachlorophenol	U
10	2,4,6-Trichlorophenol	
11	2,3,6-Trichlorophenol	
12	2,4,5-Trichlorophenol	
13	2,3,4-Trichlorophenol	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	
15	2,3,4,5-Tetrachlorophenol	
16		
17	**SEMIVOLATILES (µg/L)**	
18	**EPA Method SW8270**	
19	Phenol	U
20	4-Methylphenol	
21	Isophorone	U
22	2,4-Dimethylphenol	U
23	Benzoic Acid	U
24	Naphthalene	U
25	2-Methylnaphthalene	U
26	2,4,6-Trichlorophenol	U
27	2,4,5-Trichlorophenol	U
28	Acenaphthene	U
29	Dibenzofuran	U
30	Fluorene	U
31	Pentachlorophenol	U
32	bis(2-Ethylhexyl)phthalate	U
33		
34	**VOLATILES (µg/L)**	
35	**EPA Method SW8260**	
36	Acetone	
37	Carbon Disulfide	U
38	2-Butanone	U
39	Benzene	U
40	Bromoform	U
41	Toluene	U
42	Ethylbenzene	U
43	Styrene	U
44	m,p-Xylene	U
45	o-Xylene	U
46	1,3,5-Trimethylbenzene	U
47	1,2,4-Trimethylbenzene	U
48	Isopropylbenzene	U
49	n-Propylbenzene	U
50	tert-Butylbenzene	U
51	sec-Butylbenzene	U
52	4-Isopropyltoluene	U
53	n-Butylbenzene	U
54	Naphthalene	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**	
57	**Method OR-DEQ**	
58	**TPH-Diesel**	U
59	**TPH-D Motor Oil**	
60	**TPH-Gasoline**	
61		
62	**PRIORITY POLLUTANT**	
63	**METALS (mg/L)**	
64	Arsenic (7060)	U
65	Chromium (6010)	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3			LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S
4			S167D		T160E		U235B		V211B		W371B		Z960S		AH76L		BH75B		CT37H		ED16B		EM75B		FF48C
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03
66	60	Copper (6010)	**0.003**		**0.002**		0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.002**		0.002	U	0.002	U	NA		**0.005**
67	61	Lead (7421)	0.001	U	**0.002**		0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	NA		0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01
69	63	Zinc (6010)	**0.008**		**0.009**		0.004	U	0.004	U	**0.014**	J2	**0.008**	J	0.004	U	0.006	U	0.006	U	0.006	U	NA		0.006
70	64																								
71	65	**MAJOR IONS AND CONVENTIONALS**																							
72	66	Calcium (mg/L) (6010)	**14.6**		**14.1**		**12.6**		**18.5**		NA		NA		NA		NA		NA		**8.93**		NA		**9.42**
73	67	Magnesium (mg/L) (6010)	**5.39**		**5.64**		**4.87**		**6.76**		NA		NA		NA		NA		NA		**3.65**		NA		**3.85**
74	68	Potassium (mg/L) (6010)	**2.4**		**2.6**		**2.5**		**2.0**		NA		NA		NA		NA		NA		**1.6**		NA		**1.5**
75	69	Sodium (mg/L) (6010)	**6.16**		**5.94**		**6.18**		**7.92**		NA		NA		NA		NA		NA		**5.36**		NA		**5.2**
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**62**		**67**		**61**		**110**		NA		NA		NA		NA		NA		**46**		NA		**47**
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		1.0	U	NA		1
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**62**		**67**		**61**		**110**		NA		NA		NA		NA		NA		**46**		NA		**47**
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**110**		**120**		**120**		NA		NA		**83**		**72**		**120**		**80**		NA		**84**
80	74	Chloride (mg/L) (EPA 325.2)	**4.2**	J	**3.0**		**1.9**		**4.4**		NA		NA		**1.6**		**1.5**		**1.3**		**2.5**		NA		**2.2**
81	75	N-Nitrate (mg-N/L) (Calculated)	**0.12**	J	**0.083**		**0.023**		**0.78**	J2	NA		NA		NA		NA		NA		**0.21**		NA		**0.66**
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	0.010	U	0.010	U	0.010	UJ	NA		NA		NA		NA		NA		0.010	U	NA		0.01
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	**0.12**	J	**0.083**		**0.023**		**0.78**	J2	NA		NA		NA		NA		NA		**0.21**		NA		**0.66**
84	78	Sulfate (mg/L) (EPA 375.2)	**4.5**	J	**4.7**		**3.2**		**6.0**		NA		NA		NA		NA		NA		**5.1**		NA		**6.1**
85	79																								

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Z
1		
2		
3		
4		
5		
66	Copper (6010)	
67	Lead (7421)	U
68	Nickel (6010)	U
69	Zinc (6010)	U
70		
71	**MAJOR IONS AND CONVENTIONALS**	
72	Calcium (mg/L) (6010)	
73	Magnesium (mg/L) (6010)	
74	Potassium (mg/L) (6010)	
75	Sodium (mg/L) (6010)	
76	Alkalinity (mg/L CaCO3) (SM 2320)	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	
80	Chloride (mg/L) (EPA 325.2)	
81	N-Nitrate (mg-N/L) (Calculated)	
82	N-Nitrite (mg-N/L) (EPA 354.1)	U
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	
84	Sulfate (mg/L) (EPA 375.2)	
85		

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3			LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S
4			S167D		T160E		U235B		V211B		W371B		Z960S		AH76L		BH75B		CT37H		ED16B		EM75B		FF48C
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03
86	80	**FIELD PARAMETERS**																							
87	81	pH (avg)	6.63		6.60		6.76		6.60		6.06		6.71		6.04		6.59		5.63		6.13		5.24		6.74
88	82	Temperature (° C) (avg)	10.6		19.0		16.8		9.8		14.4		9.3		13.5		10.0		9.5		9.1		14.5		11
89	83	Conductivity (um/hos)	136		158		133		188		129		100		87		94		127		90		91		104
90	84	Dissolved oxygen (mg/L) (avg)									2.82		5.70		3.14		3.51		1.74		7.06		4.96		2.17
91	85																								
92	86	**DIOXINS AND FURANS (ng/L)**																							
93	87	**Method 8290**																							
94	88	2,3,7,8-TCDF	0.0026	U	0.0011	U	0.0024	U	0.0018	U	NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	0.0013-0.0048	U	0.0006-0.0058	U	0.0012-0.0052	U	0.0018	U	NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	0.0033	U	0.0023	U	0.0055	U	0.0037	U	NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	0.0023-0.0075	U	0.008-0.0068	U	0.0018-0.0090	U	0.0037	U	NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	0.0027	U	0.0045	U	0.0020	U	0.0018	U	NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	0.0025	U	0.0031	U	0.0021	U	0.0024	U	NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	0.0013-0.0078	U	0.0014-0.0088	U	0.0015-0.0068	U	0.0021	U	NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	0.0061	U	0.0077	U	0.0040	U	0.0057	U	NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	0.0030-0.011	U	0.0023-0.0093	U	0.0016-0.0092	U	0.0057	U	NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	0.0031	U	0.0034	U	0.0067	U	0.0021	U	NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	0.0043	U	0.0031	U	0.0048	U	0.0019	U	NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	0.0053	U	0.0031	U	0.0048	U	0.0036	U	NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	0.0049	U	0.0049	U	0.0020	U	0.0031	U	NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	0.0053	U	0.0020-0.0066	U	0.0048	U	0.0057	U	NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	0.0054	U	0.0030	U	0.0073	U	0.0034	U	NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	0.0068	U	0.0056	U	0.0084	U	0.0041	U	NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	0.0073	U	0.0084	U	0.0039	U	0.0019	U	NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	0.0030-0.010	U	0.0023-0.0084	U	0.0029-0.013	U	0.0031	U	NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	0.0044	U	**0.0016**		0.0047	U	0.0160	U	NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	0.0073	U	0.0063	U	0.0077	U	0.0052	U	NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	**0.0062**		**0.0043**		0.0150	U	0.0106	U	NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	0.0110	U	0.0065	U	**0.0180**		0.0070	U	NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	0.0170	U	0.0024-0.0092	U	**0.0310**		0.0070	U	NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	**0.0100**		**0.0062**		0.0170	U	**0.0074**		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	0.0710	U	0.0280	U	**0.1200**		0.0390	U	NA		NA		NA		NA		NA		NA		NA		NA
119																									
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
121																									

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Z
1		
2		
3		
4		
5		
86	**FIELD PARAMETERS**	
87	pH (avg)	
88	Temperature (° C) (avg)	
89	Conductivity (um/hos)	
90	Dissolved oxygen (mg/L) (avg)	
91		
92	**DIOXINS AND FURANS (ng/L)**	
93	**Method 8290**	
94	2,3,7,8-TCDF	
95	Total TCDF	
96	2,3,7,8-TCDD	
97	Total TCDD	
98	1,2,3,7,8-PeCDF	
99	2,3,4,7,8-PeCDF	
100	Total PeCDF	
101	1,2,3,7,8-PeCDD	
102	Total PeCDD	
103	1,2,3,4,7,8-HxCDF	
104	1,2,3,6,7,8-HxCDF	
105	2,3,4,6,7,8-HxCDF	
106	1,2,3,7,8,9-HxCDF	
107	Total HxCDF	
108	1,2,3,4,7,8-HxCDD	
109	1,2,3,6,7,8-HxCDD	
110	1,2,3,7,8,9-HxCDD	
111	Total HxCDD	
112	1,2,3,4,6,7,8-HpCDF	
113	1,2,3,4,7,8,9-HpCDF	
114	Total HpCDF	
115	1,2,3,4,6,7,8-HpCDD	
116	Total HpCDD	
117	OCDF	
118	OCDD	
119		
120	**ETHANOL (mg/L)**	
121		

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3			LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S		LW102S
4			S167D		T160E		U235B		V211B		W371B		Z960S		AH76L		BH75B		CT37H		ED16B		EM75B		FF48C
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03
122		**PAHs (µg/L)**																							
123		**EPA Method SW8270 SIM**																							
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	Z
1		
2		
3		
4		
5		
122	**PAHs (µg/L)**	
123	**EPA Method SW8270 SIM**	
124	Naphthalene	
125	2-Methylnaphthalene	
126	Acenaphthylene	
127	Acenaphthene	
128	Fluorene	
129	Anthracene	
130	Dibenzofuran	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																									Dup of LW103S		
3			LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW13D		LW103S
4			S167B		T160C		U235D		V211A		W371D		Z960U		AH76N		BH75C		CT37K		ED16D		EM75D		EM75I		FF48E
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		6/25/02		2/10/03
7	1	**CHLORINATED PHENOLS (µg/L)**																									
8	2	**EPA Method SW8040**																									
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	**0.58**		0.25	U	0.25	U	0.25
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA		NA
16	10																										
17	11	**SEMIVOLATILES (µg/L)**																									
18	12	**EPA Method SW8270**																									
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	NA		NA		2.0	U	2.0	U	2.0	U	2.0	U	NA		NA		2
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	NA		NA		3.0	U	3.0	U	3.0	U	3.0	U	NA		NA		3
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		NA		10	U	10	U	10	U	50	U	NA		NA		50
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	4.0	U	NA		NA		1
33	27																										
34	28	**VOLATILES (µg/L)**																									
35	29	**EPA Method SW8260**																									
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	9.1	U	5.0	U	NA		NA		5
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																									
57	51	**Method OR-DEQ**																									
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
61	55																										
62	56	**PRIORITY POLLUTANT**																									
63	57	**METALS (mg/L)**																									
64	58	Arsenic (7060)	**0.007**		**0.011**		0.05	U	0.05	U	**0.010**		**0.009**		**0.011**		**0.019**		**0.008**		**0.013**		NA		NA		**0.008**
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		NA		0.005

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
7	**CHLORINATED PHENOLS (µg/L)**	
8	**EPA Method SW8040**	
9	Pentachlorophenol	U
10	2,4,6-Trichlorophenol	
11	2,3,6-Trichlorophenol	
12	2,4,5-Trichlorophenol	
13	2,3,4-Trichlorophenol	
14	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	
15	2,3,4,5-Tetrachlorophenol	
16		
17	**SEMIVOLATILES (µg/L)**	
18	**EPA Method SW8270**	
19	Phenol	U
20	4-Methylphenol	U
21	Isophorone	U
22	2,4-Dimethylphenol	U
23	Benzoic Acid	U
24	Naphthalene	U
25	2-Methylnaphthalene	U
26	2,4,6-Trichlorophenol	U
27	2,4,5-Trichlorophenol	U
28	Acenaphthene	U
29	Dibenzofuran	U
30	Fluorene	U
31	Pentachlorophenol	U
32	bis(2-Ethylhexyl)phthalate	U
33		
34	**VOLATILES (µg/L)**	
35	**EPA Method SW8260**	
36	Acetone	U
37	Carbon Disulfide	U
38	2-Butanone	U
39	Benzene	U
40	Bromoform	U
41	Toluene	U
42	Ethylbenzene	U
43	Styrene	U
44	m,p-Xylene	U
45	o-Xylene	U
46	1,3,5-Trimethylbenzene	U
47	1,2,4-Trimethylbenzene	U
48	Isopropylbenzene	U
49	n-Propylbenzene	U
50	tert-Butylbenzene	U
51	sec-Butylbenzene	U
52	4-Isopropyltoluene	U
53	n-Butylbenzene	U
54	Naphthalene	U
56	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**	
57	**Method OR-DEQ**	
58	**TPH-Diesel**	U
59	**TPH-D Motor Oil**	
60	**TPH-Gasoline**	
61		
62	**PRIORITY POLLUTANT**	
63	**METALS (mg/L)**	
64	Arsenic (7060)	
65	Chromium (6010)	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																									Dup of LW103S		
3			LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW13D		LW103S
4			S167B		T160C		U235D		V211A		W371D		Z960U		AH76N		BH75C		CT37K		ED16D		EM75D		EM75I		FF48E
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		6/25/02		2/10/03
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	**0.007**		0.002	U	**0.003**		NA		NA		0.002
67	61	Lead (7421)	0.001	U	**0.001**		0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	**0.003**		0.001	U	0.001	U	NA		NA		0.001
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		NA		0.01
69	63	Zinc (6010)	**0.005**		**0.008**		**0.004**		**0.005**		**0.006**	J2	**0.007**	J	0.004	U	**0.010**		0.006	U	0.006	U	NA		NA		0.006
70	64																										
71	65	**MAJOR IONS AND CONVENTIONALS**																									
72	66	Calcium (mg/L) (6010)	**13.5**		**19**		**15.6**		**16.0**		NA		NA		NA		NA		NA		**17.0**		NA		NA		**15.4**
73	67	Magnesium (mg/L) (6010)	**5.02**		**6.95**		**5.65**		**5.89**		NA		NA		NA		NA		NA		**6.51**		NA		NA		**5.89**
74	68	Potassium (mg/L) (6010)	**1.8**		**2.0**		**2.0**		**1.3**		NA		NA		NA		NA		NA		**1.7**		NA		NA		**1.4**
75	69	Sodium (mg/L) (6010)	**4.93**		**5.35**		**5.11**		**5.99**		NA		NA		NA		NA		NA		**5.57**		NA		NA		**6.7**
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**95**		**84**		**71**		**84**		NA		NA		NA		NA		NA		**83**		NA		NA		**100**
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		1.0	U	NA		NA		1
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**95**		**84**		**71**		**84**		NA		NA		NA		NA		NA		**83**		NA		NA		**100**
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**130**		**100**		**110**		NA		NA		**110**		**97**		**130**		**110**		NA		NA		**110**
80	74	Chloride (mg/L) (EPA 325.2)	**2.2**	J	**2.5**		**1.7**		**1.3**		NA		NA		**1.7**		**2.3**		**2.5**		**2.3**		NA		NA		**2.8**
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	**0.036**		**0.057**	J2	NA		NA		NA		NA		NA		**0.093**		NA		NA		**0.2**
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	**0.017**		**0.016**		0.010	UJ	NA		NA		NA		NA		NA		0.010	U	NA		NA		0.01
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	0.010	U	0.010	U	**0.052**		**0.057**	J2	NA		NA		NA		NA		NA		**0.093**		NA		NA		**0.2**
84	78	Sulfate (mg/L) (EPA 375.2)	**5.5**	J	**4.6**		**2.6**		2.5	U	NA		NA		NA		NA		NA		**2.9**		NA		NA		**8.6**
85	79																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
66	Copper (6010)	U
67	Lead (7421)	U
68	Nickel (6010)	U
69	Zinc (6010)	U
70		
71	**MAJOR IONS AND CONVENTIONALS**	
72	Calcium (mg/L) (6010)	
73	Magnesium (mg/L) (6010)	
74	Potassium (mg/L) (6010)	
75	Sodium (mg/L) (6010)	
76	Alkalinity (mg/L CaCO3) (SM 2320)	
77	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	U
78	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	
79	Total Dissolved Solids (mg/L) (EPA 160.1)	
80	Chloride (mg/L) (EPA 325.2)	
81	N-Nitrate (mg-N/L) (Calculated)	
82	N-Nitrite (mg-N/L) (EPA 354.1)	U
83	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	
84	Sulfate (mg/L) (EPA 375.2)	
85		

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																											
2																									Dup of LW103S		
3			LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW13D		LW103S
4			S167B		T160C		U235D		V211A		W371D		Z960U		AH76N		BH75C		CT37K		ED16D		EM75D		EM75I		FF48E
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		6/25/02		2/10/03
86	80	**FIELD PARAMETERS**																									
87	81	pH (avg)	6.74		6.75		6.77		6.73		6.37		7.02		6.14		6.74		6.52		6.17		6.47		6.47		7.12
88	82	Temperature (° C) (avg)	10.9		14.6		14.7		12.2		13.2		10.8		12.4		11.0		11.5		10.7		13.5		13.5		12.2
89	83	Conductivity (um/hos)	157		222		180		198		214		128		174		135		160		170		187		188		184
90	84	Dissolved oxygen (mg/L) (avg)									1.47		2.98		2.79		2.56		3.55		5.73		5.70		5.74		1.79
91	85																										
92	86	**DIOXINS AND FURANS (ng/L)**																									
93	87	**Method 8290**																									
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
119																											
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
121																											

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
86	**FIELD PARAMETERS**	
87	pH (avg)	
88	Temperature (° C) (avg)	
89	Conductivity (um/hos)	
90	Dissolved oxygen (mg/L) (avg)	
91		
92	**DIOXINS AND FURANS (ng/L)**	
93	**Method 8290**	
94	2,3,7,8-TCDF	
95	Total TCDF	
96	2,3,7,8-TCDD	
97	Total TCDD	
98	1,2,3,7,8-PeCDF	
99	2,3,4,7,8-PeCDF	
100	Total PeCDF	
101	1,2,3,7,8-PeCDD	
102	Total PeCDD	
103	1,2,3,4,7,8-HxCDF	
104	1,2,3,6,7,8-HxCDF	
105	2,3,4,6,7,8-HxCDF	
106	1,2,3,7,8,9-HxCDF	
107	Total HxCDF	
108	1,2,3,4,7,8-HxCDD	
109	1,2,3,6,7,8-HxCDD	
110	1,2,3,7,8,9-HxCDD	
111	Total HxCDD	
112	1,2,3,4,6,7,8-HpCDF	
113	1,2,3,4,7,8,9-HpCDF	
114	Total HpCDF	
115	1,2,3,4,6,7,8-HpCDD	
116	Total HpCDD	
117	OCDF	
118	OCDD	
119		
120	**ETHANOL (mg/L)**	
121		

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1																									Dup of LW103S		
3			LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW103S		LW13D		LW103S
4			S167B		T160C		U235D		V211A		W371D		Z960U		AH76N		BH75C		CT37K		ED16D		EM75D		EM75I		FF48E
5			3/31/97		7/14/97		10/21/97		1/27/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		6/25/02		2/10/03
122		**PAHs (µg/L)**																									
123		**EPA Method SW8270 SIM**																									
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	B	AB
1		
2		
3		
4		
5		
122	**PAHs (µg/L)**	
123	**EPA Method SW8270 SIM**	
124	Naphthalene	
125	2-Methylnaphthalene	
126	Acenaphthylene	
127	Acenaphthene	
128	Fluorene	
129	Anthracene	
130	Dibenzofuran	

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

			LW104S S167A 3/31/97		LW104S T160B 7/14/97		LW104S U235A 10/21/97		LW104S V208A 1/28/98		LW104S W371A 5/18/98		LW104S Z960R 2/16/99		LW104S AH76K 5/19/99		LW104S BH75D 2/15/00		LW104S CT37G 2/13/01		LW104S ED16A 2/25/02		LW104S EM75A 6/25/02		LW104S FF48B 2/10/03	
1																										
2																										
3																										
4																										
5																										
6																										
7	1	**CHLORINATED PHENOLS (µg/L)**																								
8	2	**EPA Method SW8040**																								
9	3	Pentachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	0.25	U	**0.77**		0.25	U	0.25	U
10	4	2,4,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
11	5	2,3,6-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
12	6	2,4,5-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
13	7	2,3,4-Trichlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
14	8	2,3,5,6- and 2,3,4,6-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
15	9	2,3,4,5-Tetrachlorophenol	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	NA		NA		NA		NA	
16	10																									
17	11	**SEMIVOLATILES (µg/L)**																								
18	12	**EPA Method SW8270**																								
19	13	Phenol	2.0	U	2.0	U	2.0	U	2.0	U	NA		NA		2.0	U	2.0	U	2.0	U	2.0	U	NA		2	U
20	14	4-Methylphenol	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
21	15	Isophorone	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
22	16	2,4-Dimethylphenol	3.0	U	3.0	U	3.0	U	3.0	U	NA		NA		3.0	U	3.0	U	3.0	U	3.0	U	NA		3	U
23	17	Benzoic Acid	10	U	10	U	10	U	10	U	NA		NA		10	U	10	U	10	U	50	U	NA		50	U
24	18	Naphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
25	19	2-Methylnaphthalene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
26	20	2,4,6-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
27	21	2,4,5-Trichlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
28	22	Acenaphthene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
29	23	Dibenzofuran	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
30	24	Fluorene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
31	25	Pentachlorophenol	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
32	26	bis(2-Ethylhexyl)phthalate	1.0	UJ	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	**2.0**		**10**		NA		1	U
33	27																									
34	28	**VOLATILES (µg/L)**																								
35	29	**EPA Method SW8260**																								
36	30	Acetone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	8.9	U	5.0	U	NA		5	U
37	31	Carbon Disulfide	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
38	32	2-Butanone	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
39	33	Benzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
40	34	Bromoform	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
41	35	Toluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
42	36	Ethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
43	37	Styrene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
44	38	m,p-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
45	39	o-Xylene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
46	40	1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
47	41	1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
48	42	Isopropylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
49	43	n-Propylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
50	44	tert-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
51	45	sec-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
52	46	4-Isopropyltoluene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
53	47	n-Butylbenzene	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		1.0	U	1.0	U	1.0	U	1.0	U	NA		1	U
54	48	Naphthalene	5.0	U	5.0	U	5.0	U	5.0	U	NA		NA		5.0	U	5.0	U	5.0	U	5.0	U	NA		5	U
55	49																									
56	50	**TOTAL PETROLEUM HYDROCARBONS (mg/L)**																								
57	51	**Method OR-DEQ**																								
58	52	**TPH-Diesel**	0.25	U	0.25	U	0.25	U	0.25	U	NA		NA		0.25	U	0.25	U	**0.32**		0.25	U	NA		0.25	U
59	53	**TPH-D Motor Oil**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
60	54	**TPH-Gasoline**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
61	55																									
62	56	**PRIORITY POLLUTANT**																								
63	57	**METALS (mg/L)**																								
64	58	Arsenic (7060)	**0.002**		**0.003**		0.05	U	0.05	U	**0.002**		**0.002**		**0.001**		**0.002**		**0.002**		**0.002**		NA		**0.002**	
65	59	Chromium (6010)	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	NA		0.005	U

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S	
4			S167A		T160B		U235A		V208A		W371A		Z960R		AH76K		BH75D		CT37G		ED16A		EM75A		FF48B	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
66	60	Copper (6010)	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	NA		**0.028**	
67	61	Lead (7421)	0.001	U	0.001	U	0.02	U	0.02	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	NA		0.001	U
68	62	Nickel (6010)	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	NA		0.01	U
69	63	Zinc (6010)	0.004	U	**0.005**		0.004	U	0.004	U	0.004	U	**0.019**	J	0.004	U	**0.008**		0.006	U	0.006	U	NA		**0.018**	
70	64																									
71	65	**MAJOR IONS AND CONVENTIONALS**																								
72	66	Calcium (mg/L) (6010)	**17.6**		**16.1**		**20.9**		**13.0**		NA		NA		NA		NA		NA		**9.25**		NA		**15.7**	
73	67	Magnesium (mg/L) (6010)	**4.63**		**4.26**		**5.48**		**3.66**		NA		NA		NA		NA		NA		**2.88**		NA		**4.9**	
74	68	Potassium (mg/L) (6010)	**2.5**		**2.8**		**3.4**		**1.8**		NA		NA		NA		NA		NA		**1.8**		NA		**2.3**	
75	69	Sodium (mg/L) (6010)	**11.4**		**12.1**		**12.6**		**9.60**		NA		NA		NA		NA		NA		**7.09**		NA		**9.5**	
76	70	Alkalinity (mg/L CaCO3) (SM 2320)	**92**		**86**		**100**		**81**		NA		NA		NA		NA		NA		**53**		NA		**88**	
77	71	Carbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	1.0	U	1.0	U	1.0	U	1.0	U	NA		NA		NA		NA		NA		1.0	U	NA		1	U
78	72	Bicarbonate (Alkalinity) (mg/L CaCO3) (SM 2320)	**92**		**86**		**100**		**81**		NA		NA		NA		NA		NA		**53**		NA		**88**	
79	73	Total Dissolved Solids (mg/L) (EPA 160.1)	NT		**140**		**160**	J2	**110**		NA		NA		**110**		**83**		**160**		**99**		NA		**120**	
80	74	Chloride (mg/L) (EPA 325.2)	**3.8**	J	**2.8**		**2.5**		**2.2**		NA		NA		**2.1**		**1.9**		**1.4**		**2.8**		NA		**3.3**	
81	75	N-Nitrate (mg-N/L) (Calculated)	0.010	U	0.010	U	**0.031**		**0.011**		NA		NA		NA		NA		NA		0.010	U	NA		**0.021**	
82	76	N-Nitrite (mg-N/L) (EPA 354.1)	0.010	U	**0.019**		0.010	U	0.010	U	NA		NA		NA		NA		NA		0.010	U	NA		0.01	U
83	77	Nitrate + Nitrite (NO2+NO3) (mg-N/L) (EPA 353.2)	0.010	U	**0.011**		**0.031**		**0.011**		NA		NA		NA		NA		NA		0.010	U	NA		**0.021**	
84	78	Sulfate (mg/L) (EPA 375.2)	**4.2**	J	**5.7**		2.5	U	**8.0**		NA		NA		NA		NA		NA		**9.3**		NA		**9.3**	
85	79																									

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TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S	
4			S167A		T160B		U235A		V208A		W371A		Z960R		AH76K		BH75D		CT37G		ED16A		EM75A		FF48B	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
86	80	**FIELD PARAMETERS**																								
87	81	pH (avg)	6.75		6.80		6.77		6.85		6.39		7.19		6.32		6.88		6.05		6.15		5.43		7.28	
88	82	Temperature (° C) (avg)	9.7		15.1		15.9		11.9		12.1		10.7		12.4		10.5		11.4		11.1		13.8		12.3	
89	83	Conductivity (um/hos)	198		223		228		185		197		131		167		99		238		111		123		196	
90	84	Dissolved oxygen (mg/L) (avg)									1.75		1.45		1.45		2.00		1.48		5.18		4.26		1.67	
91	85																									
92	86	**DIOXINS AND FURANS (ng/L)**																								
93	87	**Method 8290**																								
94	88	2,3,7,8-TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
95	89	Total TCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
96	90	2,3,7,8-TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
97	91	Total TCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
98	92	1,2,3,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
99	93	2,3,4,7,8-PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
100	94	Total PeCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	95	1,2,3,7,8-PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
102	96	Total PeCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
103	97	1,2,3,4,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
104	98	1,2,3,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
105	99	2,3,4,6,7,8-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
106	100	1,2,3,7,8,9-HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
107	101	Total HxCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
108	102	1,2,3,4,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
109	103	1,2,3,6,7,8-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
110	104	1,2,3,7,8,9-HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
111	105	Total HxCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
112	106	1,2,3,4,6,7,8-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
113	107	1,2,3,4,7,8,9-HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
114	108	Total HpCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
115	109	1,2,3,4,6,7,8-HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
116	110	Total HpCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
117	111	OCDF	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
118	112	OCDD	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
119																										
120		**ETHANOL (mg/L)**	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
121																										

TABLE F-10
PHASE II REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DETECTED CONSTITUENTS
APRIL 1997 - FEBRUARY 2003
TIME OIL - NORTHWEST TERMINAL

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1																										
2																										
3			LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S		LW104S	
4			S167A		T160B		U235A		V208A		W371A		Z960R		AH76K		BH75D		CT37G		ED16A		EM75A		FF48B	
5			3/31/97		7/14/97		10/21/97		1/28/98		5/18/98		2/16/99		5/19/99		2/15/00		2/13/01		2/25/02		6/25/02		2/10/03	
122		**PAHs (µg/L)**																								
123		**EPA Method SW8270 SIM**																								
124		Naphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
125		2-Methylnaphthalene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
126		Acenaphthylene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
127		Acenaphthene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
128		Fluorene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
129		Anthracene	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
130		Dibenzofuran	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	

Third Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report Time Oil Northwest Terminal Portland, Oregon

February 6, 2004

Prepared for

Time Oil Co.
2737 W. Commodore Way
Seattle, Washington 98199

LANDAU ASSOCIATES

130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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1.0 INTRODUCTION

This report provides the results of the third quarter 2003 groundwater sampling event and the performance and status of the groundwater interim action system at the Time Oil Northwest Terminal (terminal) in Portland, Oregon. The third quarter 2003 sampling event was conducted from August 27 to August 29, 2003, as part of the Phase II remedial investigation (RI) at the terminal. This report summarizes groundwater elevation and groundwater quality data, transmits analytical laboratory data packages and the associated data validation report, and presents an evaluation of the third quarter 2003 (July 1 - September 30, 2003) data relative to compliance with performance criteria for ongoing implementation of the groundwater interim action systems in the upper and lower water-bearing zones.

The terminal is a former bulk petroleum storage and transfer facility owned by Time Oil Co. (Time Oil). Time Oil ceased operations at the terminal on October 31, 2001. The terminal is located in the industrialized Rivergate area of North Portland, Oregon (Figure 1). Quarterly groundwater monitoring has been conducted at the terminal since April 1997, in accordance with the *Phase I/II Remedial Investigation/Feasibility Study (RI/FS)* work plan (Landau Associates 1996). The groundwater monitoring locations at the terminal are shown on Figure 2.

The chemical analyses conducted during this sampling event for each groundwater sampling location are summarized in Appendix A, Table A-1. Groundwater level measurements collected at the terminal for the third quarter 2003 event and for the previous quarterly events since March 1997 are provided in Appendix A, Table A-2. Groundwater quality data for the third quarter 2003 event are provided in Tables A-3 and A-4 for the shallow and deep wells, respectively. Data validation qualifiers included in Tables A-3 and A-4 are defined in Table A-5. A summary of the third quarter 2003 groundwater interim action recovery data is provided in Appendix B. Procedures for collection of water level measurements and groundwater samples and methods for evaluation are provided in Appendix C. Modifications to the groundwater quality sampling and analysis requirements, as approved by the Oregon Department of Environmental Quality (DEQ), are documented and referenced in Appendix D. The data validation report for the third quarter 2003 data is provided in Appendix E. Laboratory data packages for these data are provided in Appendix F.

As requested by DEQ, a summary of the quarterly water quality data (detected constituents) since March 1997 for the shallow and deep wells is being provided to DEQ either electronically or on computer diskette. These tables will continue to be updated following each quarterly event.

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2.0 THIRD QUARTER 2003 GROUNDWATER SAMPLING EVENT

The third quarter 2003 groundwater sampling event was conducted from August 27 to August 29, 2003. The quarterly event included measurement of groundwater levels at existing monitoring wells and well points, recovery wells, and a river gauge established on the south side of the dock extending into the Willamette River (Figure 2); measurement of product thickness in wells, if observed; and collection of groundwater quality samples. The third quarter event included sampling of all monitoring wells routinely included in the quarterly sampling program; wells monitored as part of the groundwater interim action (LW-13S, LW-14D, LW-17D, and LW-18D); and selected monitoring wells associated with the *in situ* chemical oxidation (ISCO) pilot study (OX-1S, OX-2S, OX-3S, and OX-4S, LW-11S, and RW-1). A summary of the wells sampled for the third quarter 2003 event and the types of analyses conducted at each sample location are provided in Table A-1. This section presents a summary of the results for the groundwater level measurements and groundwater quality sampling, and provides an evaluation of groundwater flow and contaminant occurrence and trends. The performance and status of the groundwater interim action is discussed in Section 3.0.

2.1 GROUNDWATER LEVEL AND PRODUCT MEASUREMENTS

Groundwater levels were measured for the third quarter 2003 event on August 27, 2003. Each well was also checked for the presence of product. The measurement and evaluation results are provided in the following sections. The measurement and evaluation procedures are provided in Appendix C. The groundwater measurement locations are shown on Figure 2. Groundwater level measurements conducted for the quarterly groundwater sampling events since March 1997 are provided in Table A-2. Historical (pre-Phase II RI) groundwater level measurements conducted from 1993 through 1996 were provided in the Phase II RI report (Landau Associates 2000a).

2.1.1 PRODUCT MEASUREMENTS AND PRODUCT RECOVERY

During the third quarter 2003 event, no measurable product or sheen was observed at any of the monitoring wells. Since there was no product in these wells for product recovery, recovery efforts were not performed. Monitoring of all site monitoring wells for the presence of product will continue for all future quarterly monitoring events.

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2.1.2 UPPER WATER-BEARING ZONE

Groundwater elevations measured in the shallow wells were used to estimate groundwater flow conditions in the upper zone water-bearing zone (upper zone). Groundwater elevation contours for the upper zone are presented on Figure 3. The groundwater elevation contours indicate that groundwater flow in the upper zone across the terminal is generally to the west-southwest toward the Willamette River. A localized shift in groundwater flow to the south in an area southwest of the former pentachlorophenol (PCP) mixing area appears to be due to the influence of the east-west trending storm drain located about 170 ft north of the southern property boundary (Figure 2). The groundwater flow pattern observed in the upper zone does not vary significantly from the patterns seen over the previous years of monitoring. Groundwater elevation decreases in the upper zone throughout the site during this quarter can be attributed to seasonal fluctuation of the groundwater table.

2.1.3 LOWER WATER-BEARING ZONE

Groundwater elevations measured in the deep wells were used to estimate groundwater flow conditions in the lower zone water-bearing zone (lower zone). Groundwater elevation contours for the lower zone are presented on Figure 4. RW-2 pumped continuously during the third quarter 2003, except for periodic shutdowns for system maintenance. The contours indicate that pumping of recovery well RW-2 for the groundwater interim action has modified groundwater flow in the lower zone in proximity to the pumping well, such that hydraulic capture is achieved to the west near LW-18D and to the south near LW-10D. Groundwater flow outside the RW-2 capture zone is generally toward the west to the Willamette River. The groundwater flow observed during this quarterly event is consistent with the trend seen since the startup of RW-2 in October 2000.

2.2 GROUNDWATER QUALITY

Groundwater quality samples were collected for the third quarter 2003 event from August 27 to August 29, 2003. The wells sampled consisted of 15 upper zone wells and 16 lower zone wells. Monitoring wells LW-9S and LW-10S were dry and not sampled as part of this event. Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: semivolatile organic compounds [SVOCs; U.S. Environmental Protection Agency (EPA) Method 8270]; volatile organic compounds (VOCs; EPA Method 8260); PCP (EPA Method 8270 SIM); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). Additionally, groundwater from eight monitoring wells

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was analyzed for diesel-range total petroleum hydrocarbons (TPH; NWTPH-D). Samples from wells B1, LW-8S, LW-11S, RW-1, and RW-2 were also analyzed for TPH gasoline and motor oil ranges (NWTPH-G and NWTPH-Dx). Laboratory analyses were conducted by Analytical Resources, Inc. (ARI, Seattle, Washington).

Analytical results for the third quarter 2003 event are provided in Tables A-3a through A-3f for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the results is provided in the following sections. Data qualifier definitions are included in Table A-5.

2.2.1 Upper Water-Bearing Zone

The analytical results from the upper zone wells indicate that samples from 13 wells contained detectable concentrations of PCP during the third quarter 2003 event. The highest concentrations were observed in the samples from wells OX-2S and OX-4S [5,800J and 2,200J micrograms per liter (µg/L), respectively], which are located downgradient of the former PCP mixing area and well LW-11S. The detected concentrations of PCP at these wells are both less than last quarter (6,700 and 8,300 µg/L, respectively). In addition, groundwater from downgradient monitoring wells OX-1S, OX-3S, LW-4S, LW-8S, LW-11S, LW-13S, J1, and RW-1 contained PCP concentrations ranging from 1.1J to 1,700 µg/L. A PCP concentration of less than 1 µg/L was detected at well D (0.86J). This was the first PCP detection at Well LW-8S since May 2000.

Other SVOCs were detected at low concentrations and none were greater than 40 µg/L [naphthalene in the duplicate sample at well LW-8S]. The highest concentrations of VOCs (ethylbenzene; isopropylbenzene; 1,2,4-trimethylbenzene; n-propylbenzene; naphthalene, and xylenes) were detected in samples collected at wells LW-8S and RW-1. The highest detection of TPH-D was 8.1 milligrams per liter (mg/L) (at well RW-1). The highest detection of TPH-G was 8.2 mg/L (at well RW-1). The highest concentrations of metals were detected in samples collected at wells B1, LW-7S, LW-8S, and RW-1.

2.2.2 Lower Water-Bearing Zone

During this quarter, PCP was detected in the following lower zone wells: LW-4D, LW-6D, LW-9D, LW-10D, LW-11D, LW-14D, LW-18D, and RW-2. Concentrations in these wells ranged from 0.55J µg/L (in well LW-9D) to 10 µg/L (in well RW-2). This was the first PCP detection in Well LW-9D, the second consistent PCP detection in Well LW-6D, and the maximum PCP concentration (5 µg/L) detected to date at LW-10D. None of the other SVOCs detected were at concentrations greater than 6.2J µg/L (2-methylnapthalene at RW-2 -- duplicate). The highest concentrations of VOCs detected

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were in the samples collected from wells G1A and RW-2; however, none of the detected concentrations were greater than 180 µg/L (isopropylbenzene at G1A). The highest detected concentration of TPH was 3.7 mg/L (diesel-range TPH at G1A). The highest concentrations of metals were detected in samples collected from wells LW-4D (arsenic at 0.04 mg/L and nickel at 0.02 mg/L) and LW-11D (zinc at 0.025 mg/L).

2.2.3 WATER LEVEL AND CONTAMINANT TRENDS

Potential trends between water levels and detected concentrations of selected constituents were evaluated by generating time versus groundwater elevation and time versus concentration plots for the period covered by the Phase II RI quarterly sampling events (April 1997 or first available through the current quarterly event). Plots of PCP concentrations (maximum concentrations of EPA Methods 8270 and 8040 for events prior to the second quarter 2001 event) versus time for selected upper zone wells (LW-4S, LW-11S, LW-13S, and RW-1); selected lower zone wells (LW-4D, LW-11D, and RW-2); and paired wells (LW-4S and LW-4D) are provided on Figures 5 through 7. Plots of groundwater elevations and PCP concentrations for upper zone wells LW-4S and LW-11S are shown on Figures 8 and 9. Figure 10 shows groundwater elevations and PCP concentrations at lower zone well LW-4D plotted with the Willamette River stage.

As shown on Figure 5, PCP concentrations in the selected upper zone wells show variable concentration trends over time (note the logarithmic scale). The PCP concentration at RW-1 (1,400 µg/L) has continued the decreasing trend started during the fourth quarter of 2002, but the PCP concentration is greater than the historic low recorded at this well in November 2001 (17 µg/L). The PCP concentration at LW-11S decreased this quarter (1,700 µg/L) compared to the previous quarter (3,800 µg/L) bringing PCP levels back to the concentrations seen during the last half of 2002. These concentrations are greater than the historic low concentration detected at this well in the first quarter of 2001 (460 µg/L) that are considerably lower than the maximum detection observed to date (24,000 µg/L in May 1999). The recent change in PCP concentration at well LW-11S likely reflects a response to seasonal groundwater fluctuations. The PCP concentration at LW-13S has typically been reported at or near the detection limit since the fourth quarter 2001 event, but increased to 1.1 µg/L during this current sampling event. The PCP concentration at well LW-4S (17 µg/L) was considerably lower this quarter compared to the previous sampling event (1,400 µg/L). Historical trends in results from well LW-4S have shown intermittent increases in the PCP concentration over time. As illustrated again in the results from this quarter, these increases in PCP concentration appear to be related to seasonal changes in groundwater elevation and consequent changes in PCP concentrations at locations upgradient and within the source areas, and subsequent downgradient migration of PCP (Figure 8).

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As shown on Figure 6 (note the logarithmic scale), PCP concentrations in the lower zone at RW-2 have generally decreased since June 2002, but are greater than the historic low PCP concentration recorded at this well in June 2001 (0.68 µg/L). PCP concentrations at RW-2 for this current quarter have remained relatively stable with a decrease this quarter (10 µg/L) from last quarter (12 µg/L). PCP concentrations at Wells LW-11D and LW-4D increased this quarter from nondetect concentrations during the previous quarter to 5.6 and 1 µg/L, respectively.

As in previous quarters, PCP concentrations detected this quarter at selected lower zone well locations where PCP has historically been detected are generally lower than the concentrations in the upper zone wells at the same location or similar locations. The PCP concentration trends for paired wells LW-4S and LW-4D (Figure 7) indicate that contamination observed in the lower zone at this location does not appear to be related to the upper zone at the same location, except possibly between December 1999 to November 2001. Overall, PCP concentrations at lower zone well LW-4D have decreased over time, with concentrations below the detection limit mainly observed since groundwater recovery began at nearby well RW-2 in October 2000, but with a slight increase to 1 µg/L this quarter. However, at adjacent upper zone well LW-4S, intermittent increases in PCP concentration have been observed, as discussed earlier.

Fluctuations in groundwater elevations in the upper zone reflect typical seasonal variability with seasonal lows during the fall months (October-November) and seasonal highs during the winter and early spring months (January-March) since monitoring began in March 1997. The groundwater levels during the past year are similar to those observed during 2000 and 2002. Trends in PCP concentrations can be correlated with groundwater elevations at some locations. Figure 9 shows that the PCP concentration in the upper zone at well LW-11S generally follows the water level trends in that zone over time. Figure 8 shows that there appears to be a direct correlation between the water levels and PCP concentrations in the upper zone at well LW-4S since the first quarter of 2002, as discussed earlier. In the lower zone, groundwater levels show similar trends with seasonal fluctuations in the Willamette River, as shown by the plot of groundwater elevations at LW-4D with river stage on Figure 10. However, there appears to be no correlation between PCP concentrations and groundwater/river stage elevations at LW-4D.

Contaminant and groundwater level trends will continue to be evaluated and discussed for future quarterly events.

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3.0 GROUNDWATER INTERIM ACTION

This section presents a summary of the performance and status of the groundwater interim action system at the terminal for the third quarter of 2003 (July 1 through September 30, 2003). System operation data for the groundwater interim action were evaluated in accordance with the startup monitoring plan (Landau Associates 2000b) to determine compliance with performance criteria for the upper zone and the lower zone at the terminal. Specific performance criteria include: 1) groundwater recovery from an upper zone recovery well (HRW-1) when the pump is operating or when sufficient groundwater is present in the upper zone; 2) continuous pumping from a lower zone recovery well (RW-2), except for brief periods of system maintenance (or as described below); 3) groundwater flow toward HRW-1 and RW-2 from the downgradient and upgradient directions; 4) reversal of the lower zone groundwater flow direction at the leading edge of the PCP plume; 5) chemical confirmation that continued migration of PCP in groundwater downgradient of RW-2 and HRW-1 is not occurring; and 6) compliance with the requirements of the existing discharge permit. In addition to the six criteria listed above, information is also presented in this section regarding the operation of an upper zone groundwater intercept system implemented in a storm drain (SDM-1) at the site.

Specific operational information for the third quarter 2003 as it relates to the criteria identified above as follows:

- As discussed in Section 2.1, groundwater elevation data were collected from the upper zone monitoring wells on August 27, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 3.

- From approximately August 27 through September 30, 2003 extraction pump HRW-1 was not in operation due to seasonal low groundwater elevations and lack of available recoverable groundwater. However, groundwater was extracted continuously from the upper zone during the period from July 1 to approximately August 26, 2003. The groundwater extraction rate from HRW-1 during the period from July 1 to August 26, 2003 was approximately 0.46 gallons per minute (gpm) and the total groundwater recovered was 37,492 gallons. A summary of historical groundwater recovery for HRW-1 is included in Appendix B, Table B-1. It is anticipated that low groundwater conditions in the upper zone will continue through the first or second quarter of 2004, at which time groundwater extraction will resume.

- With the exception of periodic shutdowns for system maintenance or brief controller shutdowns due to excessive heat in the system control trailer, groundwater was extracted continuously from the lower zone during the period from July 1 to September 30, 2003 by operating the groundwater recovery pump in RW-2. A total of approximately 959,448 gallons of groundwater were recovered from RW-2 during the third quarter of 2003 at an estimated average rate of 7.2 gpm. The recovery pump in RW-2 operated for approximately 2,047 hours and discharged water to Tank 16804 for temporary storage until treated by the wastewater treatment system located at the terminal. A summary of the groundwater recovery for RW-2 is included in Appendix B, Table B-1.

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- As discussed in Section 2.1, groundwater elevation data were collected from the lower zone wells on August 27, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 4. Based on the groundwater elevation data collected, the groundwater flow direction was reversed locally downgradient of the leading edge of the PCP plume in the lower zone when RW-2 was in operation during this quarter.

- As previously discussed in Section 2.2, groundwater samples were collected at the site on August 27 through August 29, 2003. Historically, the extent of groundwater impact has been estimated based on the extent of dissolved-phase PCP. The extent of PCP in the upper and lower zones is depicted on Figures 11 and 12, respectively, based on data collected during the August 2003 groundwater sampling event. The extent of PCP in the upper zone is consistent with previous quarterly events; however, within the plume, the area of highest PCP concentrations appears to have decreased slightly. The third quarter lower zone analytical data indicate that monitoring well LW-10D, located approximately 100 ft downgradient from RW-2, had a detectable concentration (4J µg/L) of PCP. PCP was also detected at LW-4D, LW-09D, LW-11D, LW-14D, LW-18D (1J, 0.55J, 5.6, 2.3J, 0.58J µg/L, respectively), located between the PCP plume and the river, for the first time since February 2002.

- Between July 1 and September 30, 2003, approximately 335,832 gallons of groundwater was recorded as pumped by the groundwater intercept system at storm drain manhole SDM-1 to Tank 16804 for treatment. During operation, the pump extracted water from SDM-1 at a rate of approximately 2.2 gpm. Groundwater collected from the storm drain contained a PCP concentration of 120 µg/L on August 27, 2003 (Appendix B, Table B-1).

The industrial wastewater discharge permit (City of Portland Permit No. 400.121) for discharge of the extracted groundwater following treatment at the terminal's wastewater treatment plant includes the following discharge limitations:

Parameter	Permitted Limit
PCP	40 µg/L
Benzene	50 µg/L
BTEX (1)	750 µg/L
pH	5 to 11.5

(1) Benzene, Toluene, Ethylbenzene, Xylenes.

A sample of the treated groundwater discharge was collected on July 11, 2003 for laboratory analyses of the PCP. The analysis of the July 11, 2003 sample indicated a PCP concentration of 87.4 µg/L. This upset condition was reported to the City of Portland and modifications were made to the treatment system to more effectively deliver hydrogen peroxide to the clarifier in the treatment system. Following the system modification, and with permission granted by the City of Portland, the system was re-started and additional discharge samples were collected on July 30, August 4, 6, 11, 13, 18, 20, 25, and 27, 2003, and September 3, 5, 9, 23, and 29, 2003 for PCP analysis. None of these samples exhibited

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PCP concentrations in excess of the discharge limit (40 µg/L). The discharge sample collected on August 27, 2003 was also analyzed for BTEX with no detections reported. Two to three discharge samples per week were collected for analysis of pH and all samples were reported to be within the permitted range of 5 to 11.5. The analytical results for PCP are provided in Appendix B, Table B-1.

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4.0 FUTURE GROUNDWATER TASKS

The fourth quarter 2003 groundwater sampling event was conducted October 20 through 28, 2003. The groundwater monitoring and analytical program for the fourth quarter 2003 event included the following: 1) monitoring at routine quarterly well locations, including monitoring wells OX-1S, -2S, -3S, -4S; 2) monitoring of wells LW-13S, LW-14D, LW-17D, and LW-18D for evaluation of the groundwater interim action at RW-2; and 3) monitoring of newly installed wells OX- 5S, -6S, -7S, -8S, and 8D as part of the ongoing ISCO pilot program and the sampling of twenty-two news wells as part of the phase III RI for the terminal. The results for the fourth quarter 2003 groundwater monitoring event and the fourth quarter groundwater interim action status will be provided in the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report*

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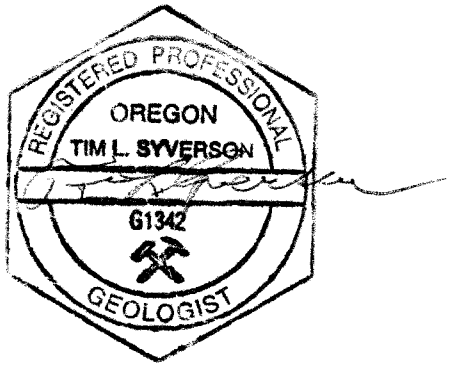
5.0 USE OF THIS REPORT

This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil Co. for specific application to the Northwest Terminal. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil Co. or others in connection with any site other than the Northwest Terminal without Landau Associates' written permission shall be at the sole risk of Time Oil Co. and without liability to Landau Associates.

This document was prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.



Timothy L. Syverson, R.G.
Senior Geologist

Christy L. Johnson
Senior Staff Engineer

TLS/CLJ/tam

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APPENDIX A

Groundwater Level Measurements And Quality Data

TABLE A-1
GROUNDWATER MONITORING POINTS AND ANALYTICAL METHODS
THIRD QUARTER EVENT, AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	SVOC (8270)	VOC (8260)	PCP (8270 SIM)	TPH-D	TPH-DX	TPH-G	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Major Ions
B1	X	X	X		X	X	X	X	X	
B2	X	X	X				X	X	X	
D	X	X	X				X	X	X	
G1A	X	X	X	X			X	X	X	
J1	X	X	X				X	X	X	
J2	X	X	X				X	X	X	
K							X			
O	X	X								
R	X	X								
LW001S	X	X	X				X	X	X	
LW001D	X	X	X				X	X	X	
LW003D	X	X	X				X	X	X	
LW004S	X	X	X	X			X	X	X	
LW004D	X	X	X	X			X	X	X	
LW006D	X	X	X	X			X	X	X	
LW007S	X	X	X	X			X	X	X	
LW008S	X	X	X		X	X	X	X	X	
LW009S (b)										
LW009D	X	X	X	X			X	X	X	
LW010S (b)										
LW010D	X	X	X	X			X	X	X	
LW011S	X	X	X		X	X	X	X	X	
LW011D	X	X	X	X			X	X	X	
LW013S			X							
LW014D			X							
LW017D			X							
LW018D			X							
RW1	X	X	X		X	X	X	X	X	
RW2	X	X	X		X	X	X	X	X	
OX001S			X							
OX002S			X							
OX003S			X							
OX004S			X							

(a) Metals analyzed include: arsenic, chromium, copper, nickel, lead, and zinc.

(b) Well dry and not sampled.

BZTO104(e)018330

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Shallow Wells:							
B	03/25/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	03/31/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	07/16/1997	08:30	29.04	11.02	18.02	----	
B	10/21/1997	16:35	29.04	13.39	15.65	----	
B	01/27/1998	12:15	29.04	11.53	17.51	----	
B	05/18/1998	17:56	29.04	12.51	16.53	----	
B	08/17/1998	11:02	29.04	14.40	14.64	----	
B	11/13/1998	10:24	29.04	14.38	14.66	----	
B	02/16/1999	13:36	29.04	9.69	19.35	----	
B	05/18/1999	15:52	29.04	11.72	17.32	----	
B	09/21/1999	12:21	29.04	15.18	13.86	----	
B	12/06/1999	14:37	29.04	13.00	16.04	----	
B	02/16/2000	10:57	29.04	11.84	17.20	----	
B	05/23/2000	17:31	29.04	13.22	15.82	----	
B	08/29/2000	14:23	29.04	15.32	13.72	----	
B	11/09/2000	13:31	29.04	15.29	13.75	----	
B	02/12/2001	15:25	29.04	13.68	15.36	----	
B	06/04/2001	12:49	29.04	14.18	14.86	----	
B	08/16/2001	11:54	29.04	15.80	13.24	----	
B	11/28/2001	12:44	29.04	13.80	15.24	----	
B	02/27/2002	14:33	29.04	12.27	16.77	----	
B	06/27/2002	15:05	29.04	13.38	15.66	----	
B	08/26/2002	16:59	29.04	14.02	15.02	----	
B	11/13/2002	09:01	29.04	13.90	15.14	----	
B	02/11/2003	10:13	29.04	12.85	16.19	----	
B	05/08/2003	08:11	29.04	12.27	16.77	----	
B	08/27/2003	15:30	29.04	14.70	14.34	----	
B1	03/25/1997	10:48	29.74	----	----	----	Couldn't remove cap
B1	03/31/1997	----	29.74	----	----	----	Couldn't remove cap
B1	07/16/1997	07:49	29.74	11.01	18.73	----	
B1	10/21/1997	16:33	29.74	13.56	16.18	----	
B1	01/27/1998	12:10	29.74	11.68	18.06	----	
B1	05/18/1998	17:55	29.74	12.76	16.98	----	
B1	08/17/1998	11:04	29.74	14.15	15.59	----	
B1	11/13/1998	10:21	29.74	15.05	14.69	----	
B1	02/16/1999	13:33	29.74	9.59	20.15	----	
B1	05/18/1999	15:51	29.74	11.79	17.95	----	
B1	09/21/1999	12:19	29.74	14.63	15.11	----	
B1	12/06/1999	14:38	29.74	14.25	15.49	----	
B1	02/16/2000	10:55	29.74	12.20	17.54	----	
B1	05/23/2000	17:32	29.74	13.25	16.49	----	
B1	08/29/2000	14:22	29.74	14.93	14.81	----	
B1	11/09/2000	13:30	29.74	15.56	14.18	----	
B1	02/12/2001	15:26	29.74	15.19	14.55	----	
B1	06/04/2001	12:50	29.74	15.06	14.68	----	
B1	08/16/2001	11:55	29.74	15.72	14.02	----	
B1	11/28/2001	12:45	29.74	15.47	14.27	----	
B1	02/27/2002	14:34	29.74	12.15	17.59	----	
B1	03/05/2002	11:06	29.74	12.28	17.46	----	
B1	04/05/2002	08:42	29.74	12.40	17.34	----	
B1	05/29/2002	00:00	29.74	13.20	16.54	----	
B1	06/27/2002	15:06	29.74	13.77	15.97	----	
B1	08/26/2002	17:00	29.74	14.79	14.95	----	
B1	11/13/2002	09:02	29.74	16.00	13.74	----	
B1	02/11/2003	10:15	29.74	12.86	16.88	----	
B1	05/08/2003	08:12	29.74	12.25	17.49	----	
B1	08/27/2003	15:31	29.74	14.79	14.95	----	
C	03/25/1997	12:32	28.89	5.56	23.33	----	
C	03/31/1997	11:38	28.89	6.16	22.73	----	
C	07/16/1997	08:47	28.89	8.28	20.61	----	
C	10/21/1997	15:15	28.89	10.00	18.89	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
C	01/27/1998	13:41	28.89	7.98	20.91	----	
C	05/18/1998	18:08	28.89	9.54	19.35	----	
C	08/17/1998	11:11	28.89	dry	----	----	
C	11/13/1998	10:36	28.89	10.36	18.53	----	
C	02/16/1999	13:58	28.89	5.91	22.98	----	
C	05/18/1999	16:04	28.89	7.90	20.99	----	
C	09/21/1999	12:44	28.89	dry	----	----	
C	12/06/1999	14:50	28.89	9.82	----	----	Water in endcap
C	02/16/2000	09:51	28.89	8.78	20.11	----	
C	05/23/2000	17:55	28.89	dry	----	----	
C	08/29/2000	14:33	28.89	dry	----	----	
C	11/09/2000	13:47	28.89	9.94	18.95	----	Dry?
C	02/12/2001	15:08	28.89	dry	----	----	
C	06/04/2001	13:25	28.89	dry	----	----	
C	08/16/2001	12:11	28.89	dry	----	----	
C	11/28/2001	13:03	28.89	dry	----	----	
C	02/27/2002	14:44	28.89	8.94	19.95	----	
C	06/27/2002	15:36	28.89	dry	----	----	
C	08/26/2002	17:31	28.89	dry	----	----	
C	11/13/2002	09:25	28.89	dry	----	----	
C	02/11/2003	10:46	28.89	dry	----	----	1" water
C	05/08/2003	08:35	28.89	8.53	20.36	----	
C	08/27/2003	15:08	28.89	dry	----	----	
D	03/25/1997	12:25	30.04	8.32	21.72	----	
D	03/31/1997	11:31	30.04	8.66	21.38	----	
D	07/16/1997	08:35	30.04	10.45	19.59	----	
D	10/21/1997	17:10	30.04	13.27	16.77	----	
D	01/27/1998	13:31	30.04	10.72	19.32	----	
D	05/18/1998	17:36	30.04	12.23	17.81	----	
D	08/17/1998	10:57	30.04	13.83	16.21	----	
D	11/13/1998	09:05	30.04	15.01	15.03	----	
D	02/16/1999	13:45	30.04	8.50	21.54	----	
D	05/18/1999	15:59	30.04	11.00	19.04	----	
D	09/21/1999	12:37	30.04	14.41	15.63	----	
D	12/06/1999	14:46	30.04	14.04	16.00	----	
D	02/16/2000	09:55	30.04	11.50	18.54	----	
D	05/23/2000	12:56	30.04	12.74	17.30	----	
D	08/29/2000	14:35	30.04	14.70	15.34	----	
D	11/09/2000	13:43	30.04	15.49	14.55	----	
D	02/12/2001	15:12	30.04	14.99	15.05	----	
D	06/04/2001	12:35	30.04	14.95	15.09	----	
D	08/16/2001	11:46	30.04	15.64	14.40	----	
D	11/28/2001	12:43	30.04	15.45	14.59	----	
D	02/27/2002	14:21	30.04	11.37	18.67	----	
D	03/05/2002	11:00	30.04	11.51	18.53	----	
D	04/05/2002	08:45	30.04	11.65	18.39	----	
D	05/29/2002	00:00	30.04	12.73	17.31	----	
D	06/27/2002	15:00	30.04	13.43	16.61	----	
D	08/26/2002	17:04	30.04	14.68	15.36	----	
D	11/13/2002	09:19	30.04	15.96	14.08	----	
D	02/11/2003	10:41	30.04	12.10	17.94	----	
D	05/08/2003	08:30	30.04	11.48	18.56	----	
D	08/27/2003	15:03	30.04	14.60	15.44	----	
F	08/18/1998	08:10	NA	14.77	NA		
F							Abandoned August 2003
G	03/25/1997	11:57	30.24	14.49	15.75	----	
G	03/31/1997	09:13	30.24	14.01	16.23	----	
G	07/16/1997	07:37	30.24	14.30	15.94	----	
G	10/21/1997	16:20	30.24	dry	----	----	
G	01/27/1998	11:49	30.24	dry	----	----	
G	05/18/1998	17:30	30.24	dry	----	----	
G	08/17/1998	11:06	30.24	dry	----	----	
G	11/13/1998	09:53	30.24	dry	----	----	
G	02/16/1999	13:14	30.24	dry	----	----	
G	05/18/1999	14:50	30.24	dry	----	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G	09/21/1999	11:30	30.24	dry	----	----	
G	12/06/1999	14:07	30.24	dry	----	----	
G	02/16/2000	10:19	30.24	dry	----	----	
G	05/23/2000	16:33	30.24	dry	----	----	
G	08/29/2000	13:18	30.24	dry	----	----	
G	11/09/2000	12:30	30.24	dry	----	----	
G	02/12/2001	16:02	30.24	dry	----	----	
G	06/04/2001	11:41	30.24	dry	----	----	
G	08/16/2001	10:50	30.24	dry	----	----	
G	11/28/2001	11:33	30.24	dry	----	----	
G	02/27/2002	13:38	30.24	dry	----	----	
G	06/27/2002	14:13	30.24	dry	----	----	
G	08/26/2002	16:05	30.24	dry	----	----	
G	11/13/2002	07:37	30.24	dry	----	----	
G	02/11/2003	08:58	30.24	dry	----	----	
G	05/08/2003	06:57	30.24	dry	----	----	
G	08/27/2003	13:38	30.24	dry	----	----	
H	03/31/1997	11:51	27.08	5.42	21.66	----	
H	07/16/1997	08:44	27.08	7.29	19.79	----	
H	10/21/1997	17:45	27.08	10.08	17.00	----	
H	01/27/1998	13:45	27.08	7.56	19.52	----	
H	05/18/1998	17:50	27.08	9.06	18.02	----	
H	08/17/1998	09:15	27.08	10.68	16.40	----	
H	11/13/1998	10:54	27.08	11.84	15.24	----	
H	02/16/1999	13:50	27.08	5.35	21.73	----	
H	05/18/1999	15:41	27.08	7.78	19.30	----	
H	09/21/1999	12:15	27.08	11.23	15.85	----	
H	12/06/1999	15:13	27.08	10.91	16.17	----	
H	02/16/2000	10:52	27.08	8.28	18.80	----	
H	05/23/2000	17:20	27.08	9.48	17.60	----	
H	08/29/2000	14:06	27.08	11.55	15.53	----	
H	11/09/2000	13:23	27.08	12.34	14.74	----	
H	02/12/2001	15:36	27.08	11.88	15.20	----	
H	06/04/2001	12:27	27.08	11.81	15.27	----	
H	08/16/2001	11:41	27.08	12.57	14.51	----	
H	11/28/2001	12:34	27.08	12.39	14.69	----	
H	02/27/2002	14:18	27.08	8.14	18.94	----	
H	03/05/2002	10:58	27.08	8.28	18.80	----	
H	04/05/2002	09:10	27.08	8.45	18.63	----	
H	05/29/2002	00:00	27.08	9.38	17.70	----	
H	06/27/2002	14:51	27.08	10.25	16.83	----	
H	08/26/2002	17:00	27.08	11.54	15.54	----	
H	11/13/2002	09:12	27.08	12.83	14.25	----	
H	02/11/2003	10:33	27.08	8.96	18.12	----	
H	05/08/2003	08:24	27.08	8.24	18.84	----	
H	08/27/2003	15:02	27.08	11.48	15.60	----	
J1	03/25/1997	12:15	29.70	8.78	20.92	----	Orange/brown algae
J1	03/31/1997	11:19	29.70	9.02	20.68	----	
J1	07/16/1997	08:22	29.70	10.49	19.21	----	
J1	10/21/1997	16:58	29.70	13.10	16.60	----	
J1	01/27/1998	13:15	29.70	11.03	18.67	----	
J1	05/18/1998	18:01	29.70	12.27	17.43	----	
J1	08/17/1998	11:00	29.70	13.78	15.92	----	
J1	11/13/1998	10:30	29.70	14.77	14.93	----	
J1	02/16/1999	13:37	29.70	8.91	20.79	----	
J1	05/18/1999	15:46	29.70	11.19	18.51	----	
J1	09/21/1999	12:28	29.70	14.36	15.34	----	
J1	12/06/1999	15:07	29.70	13.95	15.75	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J1	02/16/2000	11:05	29.70	11.67	18.03	----	
J1	05/23/2000	17:27	29.70	12.78	16.92	----	
J1	08/29/2000	14:14	29.70	14.58	15.12	----	
J1	11/09/2000	13:25	29.70	15.30	14.40	----	
J1	02/12/2001	15:22	29.70	14.87	14.83	----	
J1	06/04/2001	12:39	29.70	14.83	14.87	----	
J1	08/16/2001	11:52	29.70	15.48	14.22	----	
J1	11/28/2001	12:35	29.70	15.23	14.47	----	
J1	02/27/2002	14:30	29.70	11.62	18.08	----	
J1	03/05/2002	11:04	29.70	11.76	17.94	----	
J1	04/05/2002	08:40	29.70	11.87	17.83	----	
J1	05/29/2002	00:00	29.70	12.77	16.93	----	
J1	06/27/2002	15:02	29.70	13.40	16.30	----	
J1	08/26/2002	16:54	29.70	14.51	15.19	----	
J1	11/13/2002	09:00	29.70	15.71	13.99	----	
J1	02/11/2003	10:18	29.70	12.33	17.37	----	
J1	05/08/2003	08:14	29.70	11.65	18.05	----	
J1	08/27/2003	14:47	29.70	14.46	15.24	----	
K	03/25/1997	12:08	29.42	8.20	21.22	----	
K	03/31/1997	09:32	29.42	8.46	20.96	----	
K	07/16/1997	08:00	29.42	10.03	19.39	----	
K	10/21/1997	16:45	29.42	12.71	16.71	----	
K	01/27/1998	12:37	29.42	10.46	18.96	----	
K	05/18/1998	17:52	29.42	11.77	17.65	----	
K	08/17/1998	10:50	29.42	13.34	16.08	----	
K	11/13/1998	10:14	29.42	14.30	15.12	----	
K	02/16/1999	13:55	29.42	8.41	21.01	----	
K	05/18/1999	15:30	29.42	10.68	18.74	----	
K	09/21/1999	12:08	29.42	13.91	15.51	----	
K	12/06/1999	14:32	29.42	13.44	15.98	----	
K	02/16/2000	10:48	29.42	11.15	18.27	----	
K	05/23/2000	17:12	29.42	12.25	17.17	----	
K	08/29/2000	13:56	29.42	14.16	15.26	----	
K	11/09/2000	13:16	29.42	14.84	14.58	----	
K	02/12/2001	15:41	29.42	14.35	15.07	----	
K	06/04/2001	12:20	29.42	14.22	15.20	----	
K	08/16/2001	11:35	29.42	15.12	14.30	----	
K	11/28/2001	12:26	29.42	14.68	14.74	----	
K	02/27/2002	14:17	29.42	11.05	18.37	----	
K	03/05/2002	10:55	29.42	11.25	18.17	----	
K	04/05/2002	08:55	29.42	11.30	18.12	----	
K	05/29/2002	00:00	29.42	12.22	17.20	----	
K	06/27/2002	14:47	29.42	12.92	16.50	----	
K	08/26/2002	17:17	29.42	14.12	15.30	----	
K	11/13/2002	09:11	29.42	15.18	14.24	----	
K	02/11/2003	10:29	29.42	11.80	17.62	----	
K	05/08/2003	08:21	29.42	11.14	18.28	----	
K	08/27/2003	14:52	29.42	14.08	15.34	----	
L	03/25/1997	12:35	28.10	4.98	23.12	----	
L	03/31/1997	11:40	28.10	5.24	22.86	----	
L	07/16/1997	08:49	28.10	7.50	20.60	----	
L	10/21/1997	15:18	28.10	9.55	18.55	----	
L	01/27/1998	13:39	28.10	6.45	21.65	----	
L	05/18/1998	18:07	28.10	9.21	18.89	----	
L	08/17/1998	11:10	28.10	11.59	16.51	----	
L	11/13/1998	10:35	28.10	13.02	15.08	----	
L	02/16/1999	13:57	28.10	4.78	23.32	----	
L	05/18/1999	16:03	28.10	7.62	20.48	----	
L	09/21/1999	12:43	28.10	12.30	15.80	----	
L	12/06/1999	14:49	28.10	9.51	18.59	----	
L	02/16/2000	09:49	28.10	7.13	20.97	----	
L	05/23/2000	17:54	28.10	9.11	18.99	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
L	08/29/2000	14:32	28.10	12.66	15.44	----	
L	11/09/2000	13:46	28.10	13.56	14.54	----	
L	02/12/2001	15:07	28.10	13.04	15.06	----	
L	06/04/2001	13:24	28.10	12.78	15.32	----	
L	08/16/2001	12:10	28.10	13.66	14.44	----	
L	11/28/2001	13:02	28.10	12.34	15.76	----	
L	02/27/2002	14:42	28.10	7.16	20.94	----	
L	03/05/2002	11:12	28.10	7.39	20.71	----	
L	04/05/2002	08:39	28.10	7.63	20.47	----	
L	05/29/2002	00:00	28.10	9.09	19.01	----	
L	06/27/2002	10:38	28.10	10.11	17.99	----	
L	08/26/2002	17:30	28.10	12.56	15.54	----	
L	11/13/2002	09:26	28.10	14.00	14.10	----	
L	02/11/2003	10:47	28.10	7.17	20.93	----	
L	05/08/2003	08:34	28.10	7.01	21.09	----	
L	08/27/2003	15:09	28.10	15.20	12.90	----	
N	03/25/1997	11:48	31.40	14.05	17.35	----	
N	03/31/1997	08:59	31.40	14.26	17.14	----	Hydrocarbon odor, product
N	07/16/1997	07:20	31.40	16.03	16.33	1.20	Light brown color; thick coating on probe
N	10/21/1997	16:09	31.40	16.46	14.94	----	No product - strong petroleum odor
N	10/23/1997	17:20	31.40	16.48	14.92	----	No product - strong petroleum odor
N	01/27/1998	11:13	31.40	15.01	16.41	0.02	
N	05/18/1998	17:20	31.40	16.39	15.06	0.06	
N	08/17/1998	10:40	31.40	17.16	14.26	0.02	Thin coat of thick product
N	11/13/1998	09:48	31.40	17.83	13.58	0.01	
N	02/16/1999	12:55	31.40	14.09	17.53	0.27	Strong petroleum odor
N	05/18/1999	14:47	31.40	15.79	15.64	0.04	
N	09/21/1999	11:23	31.40	17.39	14.02	0.01	
N	12/06/1999	14:00	31.40	16.57	14.83	----	
N	02/16/2000	10:10	31.40	15.69	15.71	----	
N	05/23/2000	16:24	31.40	16.42	14.98	----	Strong petroleum odor, no product
N	08/29/2000	13:07	31.40	17.61	13.79	----	
N	11/09/2000	12:26	31.40	18.23	13.19	0.03	
N	02/12/2001	15:49	31.40	17.64	13.76	----	
N	06/04/2001	11:31	31.40	17.58	13.82	----	
N	08/16/2001	10:29	31.40	18.08	13.32	----	Trace product
N	11/28/2001	11:27	31.40	18.06	13.34	----	Trace product
N	02/27/2002	13:25	31.40	15.76	15.64	----	
N	04/05/2002	08:09	31.40	15.88	15.52	----	
N	05/29/2002	00:00	31.40	16.42	14.98	----	
N	06/27/2002	14:12	31.40	16.80	14.60	----	
N	08/26/2002	15:56	31.40	17.51	13.89	----	
N	11/13/2002	07:27	31.40	18.44	12.98	0.03	Product present
N	02/11/2003	08:49	31.40	15.33	16.07	----	
N	05/08/2003	06:51	31.40	15.71	15.69	----	
N	08/27/2003	13:33	31.40	17.54	13.86	----	
P	03/25/1997	11:45	29.96	12.88	17.08	----	
P	03/31/1997	08:55	29.96	12.94	17.02	----	Hydrocarbon odor, product
P	07/16/1997	07:15	29.96	14.02	16.08	0.17	Light coating on probe; light brown color
P	10/21/1997	16:05	29.96	15.23	14.73	----	No product - strong petroleum odor
P	10/23/1997	17:25	29.96	15.21	14.75	----	No product - strong petroleum odor
P	01/27/1998	11:09	29.96	13.87	16.09	----	
P	05/18/1998	17:18	29.96	13.08	16.88	----	Trace of product on probe
P	08/17/1998	10:37	29.96	15.82	14.15	0.01	Sheen on probe, strong petroleum odor
P	11/13/1998	09:46	29.96	16.63	13.37	0.05	Strong gasoline odor
P	02/16/1999	12:52	29.96	12.91	17.10	0.06	Strong petroleum odor
P	05/18/1999	14:43	29.96	14.68	15.38	0.13	
P	09/21/1999	11:20	29.96	16.08	13.89	0.01	
P	12/06/1999	13:55	29.96	15.41	14.55	----	
P	02/16/2000	10:08	29.96	14.51	15.45	----	
P	05/23/2000	16:21	29.96	15.15	14.81	----	Trace of product on surface
P	08/29/2000	13:04	29.96	16.26	13.71	0.01	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
P	11/09/2000	12:24	29.96	16.98	13.00	0.03	
P	02/12/2001	15:46	29.96	16.31	13.65	----	
P	06/04/2001	11:27	29.96	16.26	13.70	----	Trace product
P	08/16/2001	10:28	29.96	16.75	13.21	----	
P	11/28/2001	11:24	29.96	17.01	12.95	----	
P	02/27/2002	13:22	29.96	14.60	15.44	0.10	Strong ethanol-like odor
P	04/05/2002	08:07	29.96	14.70	15.34	0.10	
P	05/29/2002	00:00	29.96	15.00	14.96	----	Trace product
P	06/27/2002	14:11	29.96	15.49	14.47	----	
P	08/26/2002	15:54	29.96	16.15	13.81	----	
P	11/13/2002	07:25	29.96	16.99	13.00	0.04	Product present
P	02/11/2003	08:44	29.96	14.13	15.84	0.01	Product present
P	05/08/2003	06:47	29.96	15.53	14.44	0.01	Product barely present
P	08/27/2003	13:30	29.96	16.19	13.77	----	
Q	03/25/1997	11:42	30.36	13.55	16.81	----	
Q	03/31/1997	08:52	30.36	13.54	16.82	----	Hydrocarbon odor
Q	07/16/1997	07:10	30.36	14.55	15.83	0.02	Light coating on probe; light brown color
Q	10/21/1997	16:04	30.36	15.70	14.66	----	No product - strong petroleum odor
Q	10/23/1997	17:29	30.36	15.69	14.67	----	No product - strong petroleum odor
Q	01/27/1998	11:05	30.36	14.48	15.88	----	
Q	05/18/1998	17:16	30.36	15.58	14.78	----	
Q	08/17/1998	10:35	30.36	16.27	14.09	----	Slight sheen on probe; no product, strong petroleum odor
Q	11/13/1998	09:44	30.36	17.01	13.36	0.01	Strong gasoline odor
Q	02/16/1999	12:49	30.36	13.61	16.76	0.01	Strong petroleum odor
Q	05/18/1999	14:40	30.36	15.13	15.23	----	Strong odor when cap removed
Q	09/21/1999	11:17	30.36	16.51	13.85	----	
Q	12/06/1999	13:53	30.36	15.88	14.48	----	
Q	02/16/2000	10:06	30.36	15.02	15.34	----	Film of product
Q	05/23/2000	16:19	30.36	15.64	14.72	----	Strong petroleum odor, no product
Q	08/29/2000	13:01	30.36	16.69	13.67	----	
Q	11/09/2000	12:23	30.36	17.50	12.86	----	Trace of product
Q	02/12/2001	15:45	30.36	16.71	13.65	----	
Q	06/04/2001	11:25	30.36	16.66	13.70	----	
Q	08/16/2001	10:26	30.36	17.15	13.21	----	Trace product
Q	11/28/2001	11:21	30.36	17.76	12.94	0.42	
Q	02/27/2002	13:20	30.36	15.07	15.29	----	Strong petroleum odor, no product
Q	04/05/2002	08:05	30.36	15.23	15.13	----	Trace product
Q	05/29/2002	00:00	30.36	15.53	14.83	----	Trace product
Q	06/27/2002	14:10	30.36	15.95	14.41	----	Trace product
Q	08/26/2002	15:52	30.36	16.60	13.76	----	
Q	11/13/2002	07:30	30.36	17.50	12.87	0.01	Product present
Q	02/11/2003	08:47	30.36	14.67	15.69	----	
Q	05/08/2003	06:48	30.36	15.00	15.54	0.22	
Q	08/27/2003	13:28	30.36	16.60	13.76	----	
LW001S	03/31/1997	11:12	27.96	6.65	21.31		
LW001S	07/16/1997	08:15	27.96	8.34	19.62	----	
LW001S	10/21/1997	16:53	27.96	11.02	16.94	----	
LW001S	01/27/1998	13:00	27.96	8.75	19.21	----	
LW001S	05/18/1998	17:40	27.96	9.15	18.81	----	
LW001S	08/17/1998	10:54	27.96	11.67	16.29	----	
LW001S	11/13/1998	10:02	27.96	12.76	15.20	----	
LW001S	02/16/1999	13:24	27.96	6.60	21.36	----	
LW001S	05/18/1999	15:38	27.96	8.92	19.04	----	
LW001S	09/21/1999	12:10	27.96	12.20	15.76	----	
LW001S	12/06/1999	14:33	27.96	11.86	16.10	----	
LW001S	02/16/2000	10:50	27.96	9.42	18.54	----	
LW001S	05/23/2000	17:18	27.96	10.52	17.44	----	
LW001S	08/29/2000	13:58	27.96	12.51	15.45	----	
LW001S	11/09/2000	13:17	27.96	13.26	14.70	----	
LW001S	02/12/2001	15:33	27.96	12.82	15.14	----	
LW001S	06/04/2001	12:24	27.96	12.77	15.19	----	
LW001S	08/16/2001	11:37	27.96	13.45	14.51	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
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Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW001S	11/28/2001	12:28	27.96	13.25	14.71	----	
LW001S	02/27/2002	14:19	27.96	9.31	18.65	----	
LW001S	03/05/2002	10:56	27.96	9.45	18.51	----	
LW001S	04/05/2002	09:08	27.96	9.60	18.36	----	
LW001S	05/29/2002	00:00	27.96	10.49	17.47	----	
LW001S	06/27/2002	14:50	27.96	11.26	16.70	----	
LW001S	08/26/2002	17:11	27.96	12.47	15.49	----	
LW001S	11/13/2002	09:07	27.96	13.72	14.24	----	
LW001S	02/11/2003	10:25	27.96	10.11	17.85	----	
LW001S	05/08/2003	08:20	27.96	9.41	18.55	----	
LW001S	08/27/2003	14:51	27.96	12.46	15.50	----	
LW002S	03/25/1997	12:22	29.56	8.06	21.50	----	
LW002S	03/31/1997	11:27	29.56	8.34	21.22	----	
LW002S	07/16/1997	08:33	29.56	10.05	19.51	----	
LW002S	10/21/1997	17:04	29.56	12.77	16.79	----	
LW002S	01/27/1998	13:25	29.56	10.39	19.17	----	
LW002S	05/18/1998	18:02	29.56	11.78	17.78	----	
LW002S	08/17/1998	10:56	29.56	13.38	16.18	----	
LW002S	11/13/1998	10:32	29.56	14.47	15.09	----	
LW002S	02/16/1999	13:42	29.56	8.27	21.29	----	
LW002S	05/18/1999	15:45	29.56	10.63	18.93	----	
LW002S	09/21/1999	12:34	29.56	13.95	15.61	----	
LW002S	12/06/1999	15:11	29.56	13.54	16.02	----	
LW002S	02/16/2000	10:38	29.56	11.08	18.48	----	
LW002S	05/23/2000	17:24	29.56	12.29	17.27	----	
LW002S	08/29/2000	14:12	29.56	14.23	15.33	----	
LW002S	11/09/2000	13:04	29.56	15.00	14.56	----	
LW002S	02/12/2001	15:30	29.56	14.52	15.04	----	
LW002S	06/04/2001	12:34	29.56	14.46	15.10	----	
LW002S	08/16/2001	11:45	29.56	15.16	14.40	----	
LW002S	11/28/2001	12:41	29.56	14.90	14.66	----	
LW002S	02/27/2002	14:19	29.56	11.02	18.54	----	
LW002S	03/05/2002	10:59	29.56	11.17	18.39	----	
LW002S	04/05/2002	08:47	29.56	11.33	18.23	----	
LW002S	05/29/2002	00:00	29.56	12.22	17.34	----	
LW002S	06/27/2002	14:56	29.56	13.00	16.56	----	
LW004S	03/31/1997	09:20	30.26	12.77	17.49	----	
LW004S	07/16/1997	07:40	30.26	14.66	15.60	----	
LW004S	10/21/1997	16:25	30.26	16.88	13.38	----	
LW004S	01/27/1998	12:00	30.26	15.13	15.13	----	
LW004S	05/18/1998	17:32	30.26	16.08	14.18	----	
LW004S	08/17/1998	11:07	30.26	17.30	12.96	----	
LW004S	11/13/1998	09:56	30.26	17.96	12.30	----	
LW004S	02/16/1999	13:16	30.26	13.10	17.16	----	
LW004S	05/18/1999	15:03	30.26	15.43	14.83	----	
LW004S	09/21/1999	11:44	30.26	17.61	12.65	----	
LW004S	12/06/1999	14:19	30.26	17.08	13.18	----	
LW004S	02/16/2000	10:31	30.26	15.84	14.42	----	
LW004S	05/23/2000	16:55	30.26	16.71	13.55	----	
LW004S	08/29/2000	13:39	30.26	17.78	12.48	----	
LW004S	11/09/2000	12:53	30.26	18.17	12.09	----	
LW004S	02/12/2001	16:38	30.26	17.08	13.18	----	
LW004S	06/04/2001	12:08	30.26	17.81	12.45	----	
LW004S	08/16/2001	11:14	30.26	18.39	11.87	----	
LW004S	11/28/2001	12:05	30.26	17.84	12.42	----	
LW004S	02/27/2002	14:01	30.26	15.82	14.44	----	
LW004S	03/05/2002	11:35	30.26	15.95	14.31	----	
LW004S	04/05/2002	08:20	30.26	16.02	14.24	----	
LW004S	05/29/2002	00:00	30.26	16.74	13.52	----	
LW004S	06/27/2002	14:39	30.26	16.89	13.37	----	
LW004S	08/26/2002	16:31	30.26	17.68	12.58	----	
LW004S	11/13/2002	08:22	30.26	19.04	11.22	----	

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QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
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Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW004S	02/11/2003	09:31	30.26	16.03	14.23	----	
LW004S	05/08/2003	07:43	30.26	15.75	14.51	----	
LW004S	08/27/2003	13:59	30.26	17.87	12.39	----	
LW005S	03/25/1997	12:29	30.79	10.57	20.22	----	
LW005S	03/31/1997	11:35	30.79	10.84	19.95	----	
LW005S	07/16/1997	08:53	30.79	12.29	18.50	----	
LW005S	10/21/1997	15:16	30.79	15.00	15.79	----	
LW005S	01/27/1998	13:36	30.79	12.90	17.89	----	
LW005S	05/18/1998	18:05	30.79	14.19	16.60	----	
LW005S	08/17/1998	11:09	30.79	15.54	15.25	----	
LW005S	11/13/1998	10:38	30.79	16.55	14.24	----	
LW005S	02/16/1999	13:16	30.79	10.59	20.20	----	
LW005S	05/18/1999	16:01	30.79	13.12	17.67	----	
LW005S	09/21/1999	12:40	30.79	16.00	14.79	----	
LW005S	12/06/1999	14:47	30.79	15.64	15.15	----	
LW005S	02/16/2000	09:56	30.79	13.54	17.25	----	
LW005S	05/23/2000	17:51	30.79	14.80	15.99	----	
LW005S	08/29/2000	14:37	30.79	16.35	14.44	----	
LW005S	11/09/2000	13:45	30.79	16.98	13.81	----	
LW005S	02/12/2001	15:13	30.79	16.51	14.28	----	
LW005S	06/04/2001	13:23	30.79	16.43	14.36	----	
LW005S	08/16/2001	12:07	30.79	17.03	13.76	----	
LW005S	11/28/2001	13:01	30.79	16.94	13.85	----	
LW005S	02/27/2002	14:39	30.79	13.48	17.31	----	
LW005S	03/05/2002	11:13	30.79	13.62	17.17	----	
LW005S	04/05/2002	08:38	30.79	13.60	17.19	----	
LW005S	05/29/2002	00:00	30.79	14.81	15.98	----	
LW005S	06/27/2002	10:43	30.79	15.15	15.64	----	
LW005S	08/26/2002	17:08	30.79	16.12	14.67	----	
LW005S	11/13/2002	09:22	30.79	17.39	13.40	----	
LW005S	02/11/2003	10:43	30.79	13.95	16.84	----	
LW005S	05/08/2003	08:32	30.79	13.58	17.21	----	
LW005S	08/27/2003	15:07	30.79	16.11	14.68	----	
LW007S	03/31/1997	11:05	28.10	6.75	21.35	----	
LW007S	07/16/1997	08:05	28.10	8.62	19.48	----	
LW007S	10/21/1997	16:45	28.10	11.26	16.84	----	
LW007S	01/27/1998	12:47	28.10	8.85	19.25	----	
LW007S	05/18/1998	17:48	28.10	10.34	17.76	----	
LW007S	08/17/1998	10:48	28.10	11.85	16.25	----	
LW007S	11/13/1998	10:12	28.10	12.90	15.20	----	Strong gasoline odor
LW007S	02/16/1999	13:53	28.10	6.81	21.29	----	
LW007S	05/18/1999	15:23	28.10	9.14	18.96	----	
LW007S	09/21/1999	12:03	28.10	12.37	15.73	----	
LW007S	12/06/1999	14:27	28.10	12.00	16.10	----	
LW007S	02/16/2000	10:46	28.10	9.60	18.50	----	
LW007S	05/23/2000	17:09	28.10	10.70	17.40	----	
LW007S	08/29/2000	13:53	28.10	12.64	15.46	----	
LW007S	11/09/2000	13:14	28.10	13.36	14.74	----	
LW007S	02/12/2001	15:39	28.10	12.94	15.16	----	
LW007S	06/04/2001	12:17	28.10	12.87	15.23	----	
LW007S	08/16/2001	11:33	28.10	13.58	14.52	----	
LW007S	11/28/2001	12:22	28.10	13.34	14.76	----	
LW007S	02/27/2002	14:15	28.10	9.47	18.63	----	
LW007S	03/05/2002	10:52	28.10	9.62	18.48	----	
LW007S	04/05/2002	08:57	28.10	9.73	18.37	----	
LW007S	05/29/2002	00:00	28.10	10.63	17.47	----	
LW007S	06/27/2002	14:45	28.10	11.36	16.74	----	
LW007S	08/26/2002	17:18	28.10	12.69	15.41	----	
LW007S	11/13/2002	09:16	28.10	13.82	14.28	----	
LW007S	02/11/2003	10:37	28.10	10.18	17.92	----	
LW007S	05/08/2003	08:27	28.10	9.54	18.56	----	
LW007S	08/27/2003	14:58	28.10	12.62	15.48	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW008S	05/18/1999	14:55	31.28	14.84	16.44	----	
LW008S	09/21/1999	12:24	31.28	16.94	14.34	----	
LW008S	12/06/1999	14:40	31.28	16.63	14.65	----	
LW008S	02/16/2000	10:16	31.28	15.18	16.10	----	
LW008S	05/23/2000	17:42	31.28	15.88	15.40	----	
LW008S	08/29/2000	14:26	31.28	17.06	14.22	----	
LW008S	11/09/2000	13:32	31.28	17.55	13.73	----	
LW008S	02/12/2001	15:58	31.28	17.24	14.04	----	
LW008S	06/04/2001	13:05	31.28	17.14	14.14	----	
LW008S	08/16/2001	12:00	31.28	17.70	13.58	----	
LW008S	11/28/2001	12:57	31.28	17.63	13.65	0.04	
LW008S	02/27/2002	14:37	31.28	15.12	16.16	----	
LW008S	03/05/2002	11:09	31.28	15.26	16.02	----	
LW008S	04/05/2002	08:17	31.28	15.34	15.94	----	
LW008S	05/29/2002	00:00	31.28	15.91	15.37	----	
LW008S	06/27/2002	15:21	31.28	16.21	15.07	----	
LW008S	08/26/2002	16:38	31.28	16.95	14.33	----	
LW008S	11/13/2002	08:50	31.28	17.88	13.40	----	
LW008S	02/11/2003	09:48	31.28	15.57	15.71	----	
LW008S	05/08/2003	08:00	31.28	15.11	16.17	----	
LW008S	08/27/2003	14:25	31.28	16.97	14.31	----	
LW009S	05/18/1999	14:57	31.04	19.58	11.46	----	Water level appears to be more representative of lower zone
LW009S	09/21/1999	11:36	31.04	dry	----	----	
LW009S	12/06/1999	14:13	31.04	19.64	----	----	Water in endcap
LW009S	02/16/2000	10:24	31.04	19.59	----	----	Water in endcap
LW009S	05/23/2000	16:39	31.04	dry	----	----	
LW009S	08/29/2000	13:28	31.04	dry	----	----	
LW009S	11/09/2000	12:42	31.04	dry	----	----	
LW009S	02/12/2001	16:12	31.04	dry	----	----	
LW009S	06/04/2001	11:50	31.04	dry	----	----	
LW009S	08/16/2001	11:01	31.04	dry	----	----	
LW009S	11/28/2001	11:52	31.04	dry	----	----	
LW009S	02/27/2002	13:48	31.04	dry	----	----	
LW009S	03/05/2002	11:15	31.04	dry	----	----	
LW009S	04/05/2002	08:26	31.04	dry	----	----	
LW009S	05/29/2002	00:00	31.04	dry	----	----	
LW009S	06/27/2002	14:24	31.04	dry	----	----	
LW009S	08/26/2002	16:09	31.04	dry	----	----	
LW009S	11/13/2002	07:49	31.04	dry	----	----	
LW009S	02/11/2003	09:06	31.04	dry	----	----	Recorded DTW of 19.58; well most likely dry
LW009S	05/08/2003	07:11	31.04	dry	----	----	
LW009S	08/27/2003	13:48	31.04	dry	----	----	
LW010S	05/18/1999	14:59	30.75	17.24	13.51	----	
LW010S	09/21/1999	11:38	30.75	19.13	11.62	----	
LW010S	12/06/1999	14:14	30.75	18.54	12.21	----	
LW010S	02/16/2000	10:26	30.75	17.62	13.13	----	
LW010S	05/23/2000	16:41	30.75	18.25	12.50	----	
LW010S	08/29/2000	13:30	30.75	dry	----	----	
LW010S	11/09/2000	12:45	30.75	dry	----	----	
LW010S	02/12/2001	16:14	30.75	dry	----	----	
LW010S	06/04/2001	11:53	30.75	dry	----	----	
LW010S	08/16/2001	11:03	30.75	dry	----	----	
LW010S	11/28/2001	11:54	30.75	dry	----	----	
LW010S	02/27/2002	13:50	30.75	17.77	12.98	----	
LW010S	03/05/2002	11:32	30.75	17.84	12.91	----	
LW010S	04/05/2002	08:24	30.75	17.82	12.93	----	
LW010S	05/29/2002	00:00	30.75	18.22	12.53	----	
LW010S	06/27/2002	14:28	30.75	18.27	12.48	----	
LW010S	08/26/2002	16:15	30.75	dry	----	----	
LW010S	11/13/2002	08:00	30.75	dry	----	----	
LW010S	02/11/2003	09:20	30.75	17.50	13.25	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW010S	05/08/2003	07:32	30.75	17.68	13.07	----	
LW010S	08/27/2003	13:51	30.75	dry	----	----	
LW011S	05/18/1999	15:10	29.10	11.47	17.63	----	
LW011S	09/21/1999	11:51	29.10	14.23	14.87	----	
LW011S	12/06/1999	15:05	29.10	14.00	15.10	----	
LW011S	02/16/2000	11:01	29.10	11.94	17.16	----	
LW011S	05/23/2000	11:01	29.10	13.01	16.09	----	
LW011S	08/29/2000	14:55	29.10	14.51	14.59	----	
LW011S	11/09/2000	13:36	29.10	15.48	13.92	0.37	First occurrence of product in well.
LW011S	02/12/2001	15:18	29.10	14.62	14.48	----	
LW011S	06/04/2001	13:12	29.10	14.65	14.45	----	
LW011S	08/16/2001	11:24	29.10	15.46	13.86	0.28	
LW011S	11/28/2001	12:51	29.10	15.10	14.00	----	Trace product
LW011S	02/27/2002	14:59	29.10	11.86	17.24	----	
LW011S	03/05/2002	11:40	29.10	11.96	17.14	----	
LW011S	04/05/2002	08:34	29.10	12.07	17.03	----	
LW011S	05/29/2002	00:00	29.10	13.00	16.10	----	
LW011S	06/27/2002	15:09	29.10	13.40	15.70	----	
LW011S	08/26/2002	16:48	29.10	14.37	14.73	----	
LW011S	11/13/2002	08:54	29.10	15.53	13.57	----	
LW011S	02/11/2003	10:03	29.10	12.46	16.64	----	
LW011S	05/08/2003	08:07	29.10	11.91	17.19	----	
LW011S	08/27/2003	14:36	29.10	14.32	14.78	----	
LW013S	05/23/2000	16:51	30.17	17.23	12.94	----	
LW013S	08/29/2000	13:37	30.17	18.27	11.90	----	
LW013S	11/09/2000	12:51	30.17	18.75	11.42	----	
LW013S	02/12/2001	16:30	30.17	18.26	11.91	----	
LW013S	06/04/2001	12:06	30.17	18.30	11.87	----	
LW013S	08/16/2001	11:13	30.17	18.81	11.36	----	
LW013S	11/28/2001	12:03	30.17	18.37	11.80	----	
LW013S	02/27/2002	13:58	30.17	16.60	13.57	----	
LW013S	03/05/2002	11:33	30.17	16.68	13.49	----	
LW013S	04/05/2002	08:22	30.17	16.73	13.44	----	
LW013S	05/29/2002	00:00	30.17	17.30	12.87	----	
LW013S	06/27/2002	14:37	30.17	17.38	12.79	----	
LW013S	08/26/2002	16:30	30.17	18.11	12.06	----	
LW013S	11/13/2002	08:14	30.17	19.04	11.13	----	
LW013S	02/11/2003	09:30	30.17	16.57	13.60	----	
LW013S	05/08/2003	07:41	30.17	16.53	13.64	----	
LW013S	08/27/2003	13:57	30.17	18.27	11.90	----	
LW101S	03/31/1997	09:54	29.41	4.51	24.90	----	
LW101S	07/16/1997	09:01	29.41	6.81	22.60	----	
LW101S	10/21/1997	18:01	29.41	7.28	22.13	----	
LW101S	01/27/1998	14:15	29.41	4.10	25.31	----	
LW101S	05/18/1998	18:18	29.41	6.68	22.73	----	
LW101S	08/17/1998	11:21	29.41	8.14	21.27	----	
LW101S	11/13/1998	10:48	29.41	8.61	20.80	----	
LW101S	02/16/1999	14:11	29.41	3.21	26.20	----	
LW101S	05/18/1999	16:17	29.41	6.00	23.41	----	
LW101S	09/21/1999	12:54	29.41	8.60	20.81	----	
LW101S	12/06/1999	14:58	29.41	6.98	22.43	----	
LW101S	02/16/2000	09:44	29.41	4.96	24.45	----	
LW101S	05/23/2000	18:06	29.41	6.83	22.58	----	
LW101S	08/29/2000	14:47	29.41	8.67	20.74	----	
LW101S	11/09/2000	13:56	29.41	9.39	20.02	----	
LW101S	02/12/2001	15:02	29.41	8.02	21.39	----	
LW101S	06/04/2001	13:35	29.41	8.40	21.01	----	
LW101S	08/16/2001	12:20	29.41	9.44	19.97	----	
LW101S	11/28/2001	13:12	29.41	8.58	20.83	----	
LW101S	02/27/2002	14:52	29.41	5.70	23.71	----	
LW101S	06/27/2002	15:32	29.41	7.80	21.61	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW101S	08/26/2002	17:34	29.41	8.85	20.56	----	
LW101S	11/13/2002	09:35	29.41	9.92	19.49	----	
LW101S	02/11/2003	10:59	29.41	5.27	24.14	----	
LW101S	05/08/2003	08:43	29.41	5.40	24.01	----	
LW101S	08/27/2003	15:14	29.41	8.59	20.82	----	
LW102S	03/31/1997	10:01	25.77	1.86	23.91	----	
LW102S	07/16/1997	09:09	25.77	3.91	21.86	----	
LW102S	10/21/1997	17:59	25.77	4.03	21.74	----	
LW102S	01/27/1998	14:07	25.77	1.26	24.51	----	
LW102S	05/18/1998	18:15	25.77	3.57	22.20	----	
LW102S	08/17/1998	11:18	25.77	4.88	20.89	----	
LW102S	11/13/1998	10:45	25.77	5.14	20.63	----	
LW102S	02/16/1999	14:08	25.77	0.45	25.32	----	
LW102S	05/18/1999	16:12	25.77	3.24	22.53	----	
LW102S	09/21/1999	12:52	25.77	5.33	20.44	----	
LW102S	12/06/1999	14:56	25.77	3.67	22.10	----	
LW102S	02/16/2000	09:41	25.77	1.91	23.86	----	
LW102S	05/23/2000	18:03	25.77	3.72	22.05	----	
LW102S	08/29/2000	14:45	25.77	5.40	20.37	----	
LW102S	11/09/2000	13:53	25.77	5.94	19.83	----	
LW102S	02/12/2001	15:00	25.77	4.52	21.25	----	
LW102S	06/04/2001	13:32	25.77	4.93	20.84	----	
LW102S	08/16/2001	12:17	25.77	5.96	19.81	----	
LW102S	11/28/2001	13:10	25.77	5.15	20.62	----	
LW102S	02/27/2002	14:48	25.77	2.14	23.63	----	
LW102S	06/27/2002	15:30	25.77	4.50	21.27	----	
LW102S	08/26/2002	17:39	25.77	5.48	20.29	----	
LW102S	11/13/2002	09:32	25.77	6.50	19.27	----	
LW102S	02/11/2003	10:55	25.77	1.88	23.89	----	
LW102S	05/08/2003	08:40	25.77	2.22	23.55	----	
LW102S	08/27/2003	15:17	25.77	5.24	20.53	----	
LW103S	03/31/1997	09:50	29.07	5.50	23.57	----	
LW103S	07/16/1997	08:59	29.07	6.93	22.14	----	
LW103S	10/21/1997	18:03	29.07	7.08	21.99	----	
LW103S	01/27/1998	14:20	29.07	5.11	23.96	----	
LW103S	05/18/1998	18:21	29.07	6.57	22.50	----	
LW103S	08/17/1998	11:24	29.07	7.80	21.27	----	
LW103S	11/13/1998	10:51	29.07	7.91	21.16	----	
LW103S	02/16/1999	14:14	29.07	4.54	24.53	----	
LW103S	05/18/1999	16:20	29.07	6.20	22.87	----	
LW103S	09/21/1999	12:57	29.07	8.30	20.77	----	
LW103S	12/06/1999	15:00	29.07	6.60	22.47	----	
LW103S	02/16/2000	09:46	29.07	5.50	23.57	----	
LW103S	05/23/2000	18:10	29.07	6.64	22.43	----	
LW103S	08/29/2000	14:50	29.07	8.41	20.66	----	
LW103S	11/09/2000	13:58	29.07	8.78	20.29	----	
LW103S	02/12/2001	15:04	29.07	7.39	21.68	----	
LW103S	06/04/2001	13:37	29.07	7.83	21.24	----	
LW103S	08/16/2001	12:23	29.07	9.07	20.00	----	
LW103S	11/28/2001	13:16	29.07	8.02	21.05	----	
LW103S	02/27/2002	14:50	29.07	5.26	23.81	----	
LW103S	06/27/2002	15:34	29.07	7.42	21.65	----	
LW103S	08/26/2002	17:36	29.07	8.57	20.50	----	
LW103S	11/13/2002	09:37	29.07	9.48	19.59	----	
LW103S	02/11/2003	11:03	29.07	5.65	23.42	----	
LW103S	05/08/2003	08:46	29.07	5.86	23.21	----	
LW103S	08/27/2003	15:15	29.07	8.33	20.74	----	
LW104S	03/31/1997	10:06	26.57	3.55	23.02	----	
LW104S	07/16/1997	08:54	26.57	5.71	20.86	----	
LW104S	10/21/1997	16:22	26.57	5.71	20.86	----	
LW104S	01/27/1998	14:00	26.57	2.84	23.73	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW104S	05/18/1998	18:11	26.57	5.17	21.40	----	
LW104S	08/17/1998	11:15	26.57	6.64	19.93	----	
LW104S	11/13/1998	10:41	26.57	6.72	19.85	----	
LW104S	02/16/1999	14:03	26.57	2.11	24.46	----	
LW104S	05/18/1999	16:08	26.57	4.97	21.60	----	
LW104S	09/21/1999	12:48	26.57	7.18	19.39	----	
LW104S	12/06/1999	14:54	26.57	5.00	21.57	----	
LW104S	02/16/2000	09:39	26.57	3.61	22.96	----	
LW104S	05/23/2000	17:59	26.57	5.61	20.96	----	
LW104S	08/29/2000	14:43	26.57	7.08	19.49	----	
LW104S	11/09/2000	13:51	26.57	7.49	19.08	----	
LW104S	02/12/2001	14:57	26.57	6.28	20.29	----	
LW104S	06/04/2001	13:30	26.57	6.64	19.93	----	
LW104S	08/16/2001	12:15	26.57	7.56	19.01	----	
LW104S	11/28/2001	13:06	26.57	6.30	20.27	----	
LW104S	02/27/2002	14:46	26.57	4.07	22.50	----	
LW104S	06/27/2002	15:27	26.57	6.28	20.29	----	
LW104S	08/26/2002	17:41	26.57	7.13	19.44	----	
LW104S	11/13/2002	09:30	26.57	7.85	18.72	----	
LW104S	02/11/2003	10:51	26.57	3.72	22.85	----	
LW104S	05/08/2003	08:38	26.57	4.94	21.63	----	
LW104S	08/27/2003	15:19	26.57	6.87	19.70	----	
RW1	05/18/1999	15:06	31.46	15.70	15.76	----	
RW1	09/21/1999	11:46	31.46	18.02	13.44	----	
RW1	12/06/1999	14:43	31.46	17.73	13.73	----	
RW1	02/16/2000	10:33	31.46	16.14	15.32	----	
RW1	05/23/2000	17:46	31.46	17.09	14.37	----	
RW1	08/29/2000	14:28	31.46	18.29	13.17	----	
RW1	11/09/2000	12:57	31.46	18.67	12.79	----	
RW1	02/12/2001	16:44	31.46	18.30	13.16	----	
RW1	06/04/2001	13:17	31.46	18.22	13.24	----	
RW1	08/16/2001	10:55	31.46		----	----	Vapor/water recovery system test running - not measured
RW1	11/28/2001	12:02	31.46	18.55	12.91	----	
RW1	02/27/2002	14:03	31.46	16.12	15.34	----	
RW1	03/05/2002	11:38	31.46	16.33	15.13	----	
RW1	04/05/2002	08:27	31.46	16.28	15.18	----	
RW1	05/29/2002	00:00	31.46	17.00	14.46	----	
RW1	06/27/2002	15:16	31.46	17.33	14.13	----	
RW1	08/26/2002	16:40	31.46	18.00	13.46	----	
RW1	11/13/2002	08:26	31.46	18.85	12.61	----	
RW1	02/11/2003	09:34	31.46	16.50	14.96	----	
RW1	05/08/2003	07:46	31.46	16.23	15.23	----	
RW1	08/27/2003	14:04	31.46	18.09	13.37	----	
RW3	12/06/1999	15:24	29.96	14.20	15.76	----	
RW3	02/16/2000	10:37	29.96	11.88	18.08	----	
RW3	05/23/2000	17:26	29.96	13.02	16.94	----	
RW3	08/29/2000	13:42	29.96	14.88	15.08	----	
RW3	11/09/2000	13:03	29.96	15.58	14.38	----	
RW3	02/12/2001	15:28	29.96	15.13	14.83	----	
RW3	06/04/2001	12:30	29.96	15.09	14.87	----	
RW3	08/16/2001	11:44	29.96	15.74	14.22	----	
RW3	11/28/2001	12:40	29.96	15.52	14.44	----	
RW3	02/27/2002	14:26	29.96	11.80	18.16	----	
RW3	03/05/2002	11:02	29.96	11.94	18.02	----	
RW3	04/05/2002	08:44	29.96	12.06	17.90	----	
RW3	05/29/2002	00:00	29.96	13.00	16.96	----	
RW3	06/27/2002	14:59	29.96	13.64	16.32	----	
RW3							Abandoned August 2003
PZ1	05/23/2000	17:47	28.04	14.21	13.83	----	
PZ1	08/29/2000	14:30	28.04	15.33	12.71	----	
PZ1	11/09/2000	12:55	28.04	15.68	12.36	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
PZ1	02/12/2001	16:42	28.04	15.30	12.74	----	
PZ1	06/04/2001	13:20	28.04	15.29	12.75	----	
PZ1	08/16/2001	11:17	28.04	15.94	12.10	----	
PZ1	11/28/2001	12:09	28.04	15.48	12.56	----	
PZ1	02/27/2002	14:02	28.04	13.28	14.76	----	
PZ1	03/05/2002	11:34	28.04	13.40	14.64	----	
PZ1	04/05/2002	08:32	28.04	13.44	14.60	----	
PZ1	05/29/2002	00:00	28.04	14.16	13.88	----	
PZ1	06/27/2002	15:17	28.04	14.50	13.54	----	
PZ1	08/26/2002	16:33	28.04	15.17	12.87	----	
PZ1	11/13/2002	08:42	28.04	15.83	12.21	----	
PZ1	02/11/2003	09:36	28.04	13.58	14.46	----	
PZ1	05/08/2003	07:58	28.04	13.25	14.79	----	
PZ1	08/27/2003	14:20	28.04	15.32	12.72	----	
PZ2	06/27/2002	15:18	31.97	18.31	13.66	----	
PZ2	08/26/2002	16:34	31.97	18.88	13.09	----	
PZ2	11/13/2002	08:25	31.97	19.40	12.57	----	
PZ2	02/11/2003	09:44	31.97	17.46	14.51	----	
PZ2	05/08/2003	07:45	31.97	17.15	14.82	----	
PZ2	08/27/2003	14:03	31.97	19.02	12.95	----	
PZ3	06/27/2002	15:19	31.12	19.35	11.77	----	
PZ3	08/26/2002	16:35	31.12	19.74	11.38	----	
PZ3	11/13/2002	08:45	31.12	16.87	----	----	
PZ3	02/11/2003	09:40	31.12	19.05	12.07	----	
PZ3	05/08/2003	07:53	31.12	18.95	12.17	----	
PZ3	08/27/2003	14:26	31.12	19.82	11.30	----	
PZ4	06/27/2002	15:20	28.47	dry	----	----	
PZ4	08/26/2002	16:36	28.47	dry	----	----	
PZ4	11/13/2002	08:48	28.47	16.87	11.60	----	
PZ4	02/11/2003	09:41	28.47	dry	----	----	
PZ4	05/08/2003	07:52	28.47	17.78	10.69	----	
PZ4	08/27/2003	14:27	28.47	dry	----	----	
OX001S	06/27/2002	15:13	33.38	17.85	15.53	----	
OX001S	08/26/2002	16:45	33.38	18.75	14.63	----	
OX001S	11/13/2002	08:30	33.38	19.92	13.46	----	
OX001S	02/11/2003	09:59	33.38	16.96	16.42	----	
OX001S	05/08/2003	08:04	33.38	16.48	16.90	----	
OX001S	08/27/2003	14:38	33.38	18.76	14.62	----	
OX002S	06/27/2002	15:12	28.69	13.22	15.47	----	
OX002S	08/26/2002	16:44	28.69	14.26	14.43	----	
OX002S	11/13/2002	08:33	28.81	15.39	13.42	----	New reference elevation September 2002
OX002S	02/11/2003	10:06	28.81	12.39	16.42	----	
OX002S	05/08/2003	08:09	28.81	11.90	16.91	----	
OX002S	08/27/2003	14:33	28.81	14.55	14.26	----	
OX003S	06/27/2002	15:14	30.01	14.65	15.36	----	
OX003S	08/26/2002	16:42	30.01	15.50	14.51	----	
OX003S	11/13/2002	08:31	30.01	16.65	13.36	----	
OX003S	02/11/2003	09:58	30.01	13.78	16.23	----	
OX003S	05/08/2003	08:03	30.01	13.30	16.71	----	
OX003S	08/27/2003	14:40	30.01	15.52	14.49	----	
OX004S	06/27/2002	15:15	33.42	19.07	14.35	----	
OX004S	08/26/2002	16:39	33.42	19.74	13.68	----	
OX004S	11/13/2002	08:24	33.54	20.73	12.81	----	New reference elevation September 2002
OX004S	02/11/2003	09:38	33.54	18.39	15.15	----	
OX004S	05/08/2003	07:47	33.54	19.07	14.47	----	
OX004S	08/27/2003	14:07	33.54	19.95	13.59	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Deep Wells:							
B2	08/11/1993	10:02	30.31	25.44	4.87	----	Slight sheen, slight to mod solvent-like odor
B2	10/26/1993	13:32	30.31	25.25	5.06	----	
B2	11/17/1993	13:32	30.31	25.23	5.08	----	
B2	12/17/1993	12:59	30.31	23.88	6.43	----	
B2	01/17/1994	13:12	30.31	23.99	6.32	----	
B2	02/18/1994	14:20	30.31	23.73	6.58	----	
B2	03/18/1994	12:59	30.31	23.15	7.16	----	
B2	04/18/1994	14:42	30.31	24.35	5.96	----	
B2	05/18/1994	15:22	30.31	23.12	7.19	----	
B2	06/17/1994	14:54	30.31	22.90	7.41	----	
B2	07/19/1994	09:20	30.31	24.38	5.93	----	
B2	08/17/1994	07:35	30.31	25.22	5.09	----	
B2	09/16/1994	07:27	30.31	25.89	4.42	----	
B2	10/17/1994	09:03	30.31	25.43	4.88	----	
B2	11/21/1994	11:51	30.31	24.56	5.75	----	
B2	12/19/1994	11:10	30.31	21.82	8.49	----	
B2	01/18/1995	11:18	30.31	18.93	11.38	----	
B2	02/21/1995	13:23	30.31	17.12	13.19	----	
B2	03/21/1995	13:05	30.31	20.37	9.94	----	
B2	04/19/1995	12:48	30.31	21.21	9.10	----	
B2	05/19/1995	13:38	30.31	19.30	11.01	----	
B2	07/17/1995	13:55	30.31	22.72	7.59	----	
B2	08/22/1995	07:53	30.31	24.42	5.89	----	
B2	09/22/1995	08:28	30.31	25.28	5.03	----	
B2	11/20/1995	07:57	30.31	22.02	8.29	----	
B2	12/01/1995	08:29	30.31	13.63	16.68	----	
B2	12/19/1995	07:26	30.31	15.57	14.74	----	
B2	01/19/1996	08:38	30.31	16.48	13.83	----	
B2	02/20/1996	10:42	30.31	10.63	19.68	----	
B2	03/19/1996	09:23	30.31	16.61	13.70	----	
B2	04/19/1996	11:53	30.31	16.20	14.11	----	
B2	07/22/1996	14:24	30.31	22.29	8.02	----	
B2	08/20/1996	14:20	30.31	23.43	6.88	----	
B2	09/24/1996	08:11	30.31	24.30	6.01	----	
B2	10/28/1996	11:09	30.31	23.76	6.55	----	
B2	12/13/1996	10:47	30.31	16.70	13.61	----	
B2	03/25/1997	12:02	30.31	15.85	14.46	----	
B2	03/31/1997	09:27	30.31	14.91	15.40	----	
B2	07/16/1997	07:45	30.31	19.91	10.40	----	
B2	10/21/1997	16:30	30.31	23.56	6.75	----	
B2	01/27/1998	12:06	30.31	19.32	10.99	----	
B2	05/18/1998	17:54	30.31	18.80	11.51	----	
B2	08/17/1998	10:23	30.31	24.38	5.93	----	
B2	11/13/1998	10:17	30.31	25.33	4.98	----	
B2	02/16/1999	13:34	30.31	19.64	10.67	----	
B2	05/18/1999	15:50	30.31	19.04	11.27	----	
B2	09/21/1999	12:18	30.31	25.34	4.97	----	
B2	12/06/1999	14:39	30.31	20.25	10.06	----	
B2	02/16/2000	10:56	30.31	20.57	9.74	----	
B2	05/23/2000	17:33	30.31	20.99	9.32	----	
B2	08/29/2000	14:20	30.31	25.38	4.93	----	
B2	11/09/2000	13:29	30.31	25.31	5.00	----	
B2	02/12/2001	15:27	30.31	24.62	5.69	----	
B2	06/04/2001	13:04	30.31	24.84	5.47	----	
B2	08/16/2001	11:58	30.31	26.75	3.56	----	
B2	11/28/2001	12:46	30.31	24.14	6.17	----	
B2	02/27/2002	14:35	30.31	22.90	7.41	----	
B2	06/27/2002	15:07	30.31	20.16	10.15	----	
B2	08/26/2002	17:01	30.31	25.32	4.99	----	
B2	11/13/2002	09:03	30.31	25.28	5.03	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
B2	02/11/2003	10:14	30.31	23.58	6.73	----	
B2	05/08/2003	08:13	30.31	21.33	8.98	----	
B2	08/27/2003	15:32	30.31	24.25	6.06	----	
G1A	03/25/1997	11:55	29.72	14.84	14.88	----	
G1A	03/31/1997	09:11	29.72	14.28	15.44	----	
G1A	07/16/1997	07:33	29.72	18.94	10.78	----	
G1A	10/21/1997	16:18	29.72	22.44	7.28	----	
G1A	01/27/1998	11:46	29.72	18.42	11.30	----	
G1A	05/18/1998	17:31	29.72	18.05	11.67	----	
G1A	08/17/1998	10:07	29.72	23.35	6.37	----	
G1A	11/13/1998	09:54	29.72	24.59	5.13	----	
G1A	02/16/1999	13:14	29.72	18.28	11.44	----	
G1A	05/18/1999	14:51	29.72	18.42	11.30	----	
G1A	09/21/1999	11:29	29.72	24.32	5.40	----	
G1A	12/06/1999	14:05	29.72	19.82	9.90	----	
G1A	02/16/2000	10:18	29.72	19.81	9.91	----	
G1A	05/23/2000	16:31	29.72	20.08	9.64	----	Replaced lock and tubing
G1A	08/29/2000	13:13	29.72	24.36	5.36	----	
G1A	11/09/2000	12:32	29.72	24.85	4.87	----	
G1A	02/12/2001	16:01	29.72	24.08	5.64	----	
G1A	06/04/2001	11:40	29.72	24.10	5.62	----	
G1A	08/16/2001	10:52	29.72	25.51	4.21	----	
G1A	11/28/2001	11:32	29.72	23.84	5.88	----	
G1A	02/27/2002	13:39	29.72	21.96	7.76	----	
G1A	06/27/2002	14:17	29.72	19.48	10.24	----	
G1A	08/26/2002	16:06	29.72	24.36	5.36	----	
G1A	11/13/2002	07:35	29.72	24.60	5.12	----	
G1A	02/11/2003	08:59	29.72	22.32	7.40	----	
G1A	05/08/2003	06:58	29.72	20.51	9.21	----	
G1A	08/27/2003	13:36	29.72	24.16	5.56	----	
J2	03/25/1997	12:18	29.65	15.22	14.43	----	
J2	03/31/1997	11:21	29.65	14.38	15.27	----	
J2	07/16/1997	08:24	29.65	19.28	10.37	----	
J2	10/21/1997	17:00	29.65	23.02	6.63	----	
J2	01/27/1998	13:19	29.65	18.69	10.96	----	
J2	05/18/1998	18:00	29.65	18.14	11.51	----	
J2	08/17/1998	10:21	29.65	23.70	5.95	----	
J2	11/13/1998	10:28	29.65	24.64	5.01	----	
J2	02/16/1999	13:40	29.65	19.00	10.65	----	
J2	05/18/1999	15:46	29.65	18.40	11.25	----	
J2	09/21/1999	12:30	29.65	24.73	4.92	----	
J2	12/06/1999	15:08	29.65	19.53	10.12	----	
J2	02/16/2000	11:07	29.65	19.89	9.76	----	
J2	05/23/2000	17:28	29.65	20.33	9.32	----	
J2	08/29/2000	14:15	29.65	24.67	4.98	----	
J2	11/09/2000	13:26	29.65	24.66	4.99	----	
J2	02/12/2001	15:23	29.65	23.92	5.73	----	
J2	06/04/2001	13:02	29.65	24.17	5.48	----	
J2	08/16/2001	11:51	29.65	25.57	4.08	----	
J2	11/28/2001	12:36	29.65	23.45	6.20	----	
J2	02/27/2002	14:31	29.65	22.21	7.44	----	
J2	06/27/2002	15:03	29.65	19.48	10.17	----	
J2	08/26/2002	16:56	29.65	24.67	4.98	----	
J2	11/13/2002	08:59	29.65	24.60	5.05	----	
J2	02/11/2003	10:19	29.65	22.95	6.70	----	
J2	05/08/2003	08:16	29.65	20.65	9.00	----	
J2	08/27/2003	14:48	29.65	24.12	5.53	----	
J3	03/25/1997	12:20	29.58	14.70	14.88	----	
J3	03/31/1997	11:25	29.58	14.03	15.55	----	
J3	07/16/1997	08:25	29.58	18.91	10.67	----	
J3	10/21/1997	17:02	29.58	22.37	7.21	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J3	01/27/1998	13:21	29.58	18.28	11.30	----	
J3	05/18/1998	17:58	29.58	17.84	11.74	----	
J3	08/17/1998	10:22	29.58	23.12	6.46	----	
J3	11/13/1998	10:26	29.58	24.14	5.44	----	
J3	02/16/1999	13:41	29.58	18.32	11.26	----	
J3	05/18/1999	15:48	29.58	18.01	11.57	----	
J3	09/21/1999	12:31	29.58	24.12	5.46	----	
J3	12/06/1999	15:09	29.58	19.31	10.27	----	
J3	02/16/2000	10:07	29.58	19.50	10.08	----	
J3	05/23/2000	17:29	29.58	19.86	9.72	----	
J3	08/29/2000	14:17	29.58	24.05	5.53	----	
J3	11/09/2000	13:27	29.58	24.24	5.34	----	
J3	02/12/2001	15:24	29.58	23.45	6.13	----	
J3	06/04/2001	12:44	29.58	23.62	5.96	----	
J3	08/16/2001	11:50	29.58	24.98	4.60	----	
J3	11/28/2001	12:37	29.58	22.98	6.60	----	
J3	02/27/2002	14:32	29.58	21.52	8.06	----	
J3	06/27/2002	15:04	29.58	19.14	10.44	----	
J3	08/26/2002	16:57	29.58	23.99	5.59	----	
J3	11/13/2002	08:58	29.58	24.10	5.48	----	
J3	02/11/2003	10:20	29.58	22.28	7.30	----	
J3	05/08/2003	08:17	29.58	20.16	9.42	----	
J3	08/27/2003	14:49	29.58	23.60	5.98	----	
O	03/25/1997	11:40	32.03	17.01	15.02	----	
O	03/31/1997	08:48	32.03	16.39	15.64	----	
O	07/16/1997	07:05	32.03	21.93	10.10	----	
O	10/21/1997	16:01	32.03	22.23	9.80	----	
O	01/27/1998	11:03	32.03	20.51	11.52	----	
O	05/18/1998	17:14	32.03	20.25	11.78	----	
O	08/17/1998	10:13	32.03	25.42	6.61	----	
O	11/13/1998	09:31	32.03	26.49	5.54	----	
O	02/16/1999	12:45	32.03	20.25	11.78	----	
O	05/18/1999	14:36	32.03	21.23	10.80	----	
O	09/21/1999	11:09	32.03	26.22	5.81	----	
O	12/06/1999	13:48	32.03	21.90	10.13	----	
O	02/16/2000	10:04	32.03	22.21	9.82	----	
O	05/23/2000	16:15	32.03	22.18	9.85	----	
O	08/29/2000	12:56	32.03	26.49	5.54	----	
O	11/09/2000	12:18	32.03	27.01	5.02	----	
O	02/12/2001	15:52	32.03	26.12	5.91	----	
O	06/04/2001	11:22	32.03	26.08	5.95	----	
O	08/16/2001	10:22	32.03	27.58	4.45	----	
O	11/28/2001	11:18	32.03	26.15	5.88	----	
O	02/27/2002	13:15	32.03	24.08	7.95	----	
O	06/27/2002	14:09	32.03	21.29	10.74	----	
O	08/26/2002	15:47	32.03	25.91	6.12	----	
O	11/13/2002	07:21	32.03	26.56	5.47	----	
O	02/11/2003	08:38	32.03	22.81	9.22	----	
O	05/08/2003	06:44	32.03	22.70	9.33	----	
O	08/27/2003	13:23	32.03	26.43	5.60	----	
R	03/25/1997	11:36	30.47	15.56	14.91	----	
R	03/31/1997	08:43	30.47	14.85	15.62	----	
R	07/16/1997	07:00	30.47	20.37	10.10	----	
R	10/21/1997	15:56	30.47	22.54	7.93	----	
R	01/27/1998	10:57	30.47	18.98	11.49	----	
R	05/18/1998	17:15	30.47	18.73	11.74	----	
R	08/17/1998	10:12	30.47	23.93	6.54	----	
R	11/13/1998	09:35	30.47	25.17	5.30	----	
R	02/16/1999	13:05	30.47	18.79	11.68	----	
R	05/18/1999	14:37	30.47	19.64	10.83	----	
R	09/21/1999	11:15	30.47	24.53	5.94	----	
R	12/06/1999	13:46	30.47	20.33	10.14	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
R	02/16/2000	10:12	30.47	20.65	9.82	----	
R	05/23/2000	16:17	30.47	20.64	9.83	----	
R	08/29/2000	12:58	30.47	24.97	5.50	----	
R	11/09/2000	12:20	30.47	25.47	5.00	----	
R	02/12/2001	15:54	30.47	24.46	6.01	----	
R	06/04/2001	11:36	30.47	24.53	5.94	----	
R	08/16/2001	10:35	30.47	26.02	4.45	----	
R	11/28/2001	11:19	30.47	24.57	5.90	----	
R	02/27/2002	13:17	30.47	22.50	7.97	----	
R	06/27/2002	14:08	30.47	19.75	10.72	----	
R	08/26/2002	15:58	30.47	24.38	6.09	----	
R	11/13/2002	07:22	30.47	25.04	5.43	----	
R	02/11/2003	08:41	30.47	21.22	9.25	----	
R	05/08/2003	06:46	30.47	21.14	9.33	----	
R	08/27/2003	13:25	30.47	24.91	5.56	----	
LW001D	03/31/1997	11:11	28.31	12.71	15.60	----	
LW001D	07/16/1997	08:12	28.31	17.65	10.66	----	
LW001D	10/21/1997	16:55	28.31	21.29	7.02	----	
LW001D	01/27/1998	13:07	28.31	17.06	11.25	----	
LW001D	05/18/1998	17:39	28.31	16.53	11.78	----	
LW001D	08/17/1998	10:30	28.31	21.82	6.49	----	
LW001D	11/13/1998	10:01	28.31	22.77	5.54	----	
LW001D	02/16/1999	13:21	28.31	17.30	11.01	----	
LW001D	05/18/1999	15:36	28.31	16.76	11.55	----	
LW001D	09/21/1999	12:12	28.31	22.91	5.40	----	
LW001D	12/06/1999	14:34	28.31	18.00	10.31	----	
LW001D	02/16/2000	10:49	28.31	18.16	10.15	----	
LW001D	05/23/2000	17:19	28.31	18.62	9.69	----	
LW001D	08/29/2000	13:59	28.31	22.81	5.50	----	
LW001D	11/09/2000	13:20	28.31	22.98	5.33	----	
LW001D	02/12/2001	15:35	28.31	22.23	6.08	----	
LW001D	06/04/2001	12:23	28.31	22.36	5.95	----	
LW001D	08/16/2001	11:38	28.31	23.73	4.58	----	
LW001D	11/28/2001	12:29	28.31	21.73	6.58	----	
LW001D	02/27/2002	14:17	28.31	20.31	8.00	----	
LW001D	06/27/2002	14:49	28.31	17.81	10.50	----	
LW001D	08/26/2002	17:12	28.31	22.85	5.46	----	
LW001D	11/13/2002	09:08	28.31	22.91	5.40	----	
LW001D	02/11/2003	10:27	28.31	21.11	7.20	----	
LW001D	05/08/2003	08:19	28.31	18.91	9.40	----	
LW001D	08/27/2003	14:50	28.31	22.40	5.91	----	
LW003D	03/31/1997	11:45	30.80	19.38	11.42	----	Time estimated
LW003D	07/16/1997	08:38	30.80	28.09	2.71	----	
LW003D	10/21/1997	17:07	30.80	23.36	7.44	----	
LW003D	01/27/1998	13:30	30.80	21.66	9.14	----	
LW003D	05/18/1998	17:35	30.80	19.21	11.59	----	
LW003D	08/17/1998	10:24	30.80	24.62	6.18	----	
LW003D	11/13/1998	09:03	30.80	25.56	5.24	----	
LW003D	02/16/1999	13:44	30.80	20.00	10.80	----	
LW003D	05/18/1999	15:58	30.80	19.42	11.38	----	Purged dry at 11:00
LW003D	09/21/1999	10:40	30.80	25.76	5.04	----	
LW003D	12/06/1999	14:45	30.80	20.69	10.11	----	
LW003D	02/16/2000	09:54	30.80	20.98	9.82	----	
LW003D	05/23/2000	14:40	30.80	21.16	9.64	----	Purged dry at 13:10
LW003D	08/29/2000	14:36	30.80	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW003D	11/09/2000		30.80	----	----	----	Well sampled 11/8/00 - water level not representative
LW003D	02/12/2001	15:11	30.80	24.85	5.95	----	
LW003D	06/04/2001	12:35	30.80	25.09	5.71	----	
LW003D	08/16/2001	11:47	30.80	26.43	4.37	----	
LW003D	11/28/2001	12:42	30.80	24.48	6.32	----	
LW003D	02/27/2002	14:20	30.80	23.13	7.67	----	
LW003D	06/27/2002	14:59	30.80	20.55	10.25	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW003D	08/26/2002	17:03	30.80	25.63	5.17	----	
LW003D	11/13/2002	09:20	30.80	25.57	5.23	----	
LW003D	02/11/2003	10:40	30.80	24.03	6.77	----	
LW003D	05/08/2003	08:29	30.80	21.68	9.12	----	
LW003D	08/27/2003	15:04	30.80	25.10	5.70	----	
LW004D	03/31/1997	09:18	30.17	14.73	15.44	----	
LW004D	07/16/1997	07:42	30.17	19.43	10.74	----	
LW004D	10/21/1997	16:27	30.17	23.02	7.15	----	
LW004D	01/27/1998	11:56	30.17	18.84	11.33	----	
LW004D	05/18/1998	17:33	30.17	18.54	11.63	----	
LW004D	08/17/1998	10:18	30.17	23.81	6.36	----	
LW004D	11/13/1998	09:57	30.17	24.99	5.18	----	
LW004D	02/16/1999	13:17	30.17	18.79	11.38	----	
LW004D	05/18/1999	15:04	30.17	18.77	11.40	----	Completed sampling at 13:40
LW004D	09/21/1999	11:41	30.17	24.78	5.39	----	
LW004D	12/06/1999	14:18	30.17	20.21	9.96	----	
LW004D	02/16/2000	10:30	30.17	20.23	9.94	----	
LW004D	05/23/2000	16:54	30.17	20.55	9.62	----	
LW004D	08/29/2000	13:38	30.17	24.78	5.39	----	
LW004D	11/09/2000	12:52	30.17	25.19	4.98	----	
LW004D	02/12/2001	16:39	30.17	24.71	5.46	----	
LW004D	06/04/2001	12:07	30.17	24.66	5.51	----	
LW004D	08/16/2001	11:15	30.17	26.27	3.90	----	
LW004D	11/28/2001	12:04	30.17	24.41	5.76	----	
LW004D	02/27/2002	14:00	30.17	22.65	7.52	----	
LW004D	03/05/2002	11:36	30.17	22.94	7.23	----	
LW004D	04/05/2002	08:19	30.17	23.75	6.42	----	
LW004D	05/29/2002	00:00	30.17	20.48	9.69	----	
LW004D	06/27/2002	14:41	30.17	20.15	10.02	----	
LW004D	08/26/2002	16:32	30.17	25.02	5.15	----	
LW004D	11/13/2002	08:23	30.17	25.26	4.91	----	
LW004D	02/11/2003	09:32	30.17	23.08	7.09	----	
LW004D	05/08/2003	07:44	30.17	21.21	8.96	----	
LW004D	08/27/2003	14:01	30.17	24.78	5.39	----	
LW006D	03/25/1997	11:52	30.84	16.51	14.33	----	
LW006D	03/31/1997	09:05	30.84	15.53	15.31	----	Faint odor
LW006D	07/16/1997	07:30	30.84	20.74	10.10	----	
LW006D	10/21/1997	16:16	30.84	24.05	6.79	----	
LW006D	01/27/1998	11:38	30.84	19.94	10.90	----	
LW006D	05/18/1998	17:28	30.84	19.36	11.48	----	
LW006D	08/17/1998	10:05	30.84	24.92	5.92	----	
LW006D	11/13/1998	09:50	30.84	25.94	4.90	----	
LW006D	02/16/1999	13:11	30.84	20.40	10.44	----	
LW006D	05/18/1999	14:53	30.84	19.81	11.03	----	
LW006D	09/21/1999	11:32	30.84	25.92	4.92	----	
LW006D	12/06/1999	14:09	30.84	20.86	9.98	----	
LW006D	02/16/2000	10:20	30.84	21.27	9.57	----	
LW006D	05/23/2000	16:35	30.84	21.64	9.20	----	
LW006D	08/29/2000	13:20	30.84	25.93	4.91	----	
LW006D	11/09/2000	12:35	30.84	26.21	4.63	----	
LW006D	02/12/2001	16:03	30.84	25.37	5.47	----	
LW006D	06/04/2001	11:42	30.84	25.30	5.54	----	
LW006D	08/16/2001	10:54	30.84	26.72	4.12	----	
LW006D	11/28/2001	11:46	30.84	24.92	5.92	----	
LW006D	02/27/2002	13:35	30.84	23.62	7.22	----	
LW006D	06/27/2002	14:19	30.84	20.68	10.16	----	
LW006D	08/26/2002	16:04	30.84	25.79	5.05	----	
LW006D	11/13/2002	07:42	30.84	25.82	5.02	----	
LW006D	02/11/2003	09:01	30.84	24.08	6.76	----	
LW006D	05/08/2003	07:01	30.84	21.97	8.87	----	
LW006D	08/27/2003	13:40	30.84	25.37	5.47	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW009D	05/18/1999	14:56	30.98	20.02	10.96	----	
LW009D	09/21/1999	11:34	30.98	25.23	5.75	----	
LW009D	12/06/1999	14:11	30.98	21.04	9.94	----	
LW009D	02/16/2000	10:23	30.98	21.17	9.81	----	
LW009D	05/23/2000	16:39	30.98	21.15	9.83	----	
LW009D	08/29/2000	13:27	30.98	25.36	5.62	----	
LW009D	11/09/2000	12:43	30.98	25.96	5.02	----	
LW009D	02/12/2001	16:11	30.98	25.13	5.85	----	
LW009D	06/04/2001	11:49	30.98	25.15	5.83	----	
LW009D	08/16/2001	11:02	30.98	26.57	4.41	----	
LW009D	11/28/2001	11:53	30.98	25.40	5.58	----	
LW009D	02/27/2002	13:47	30.98	22.97	8.01	----	
LW009D	06/27/2002	14:25	30.98	20.38	10.60	----	
LW009D	08/26/2002	16:11	30.98	24.90	6.08	----	
LW009D	11/13/2002	07:48	30.98	25.73	5.25	----	
LW009D	02/11/2003	09:07	30.98	22.03	8.95	----	
LW009D	05/08/2003	07:12	30.98	21.65	9.33	----	
LW009D	08/27/2003	13:47	30.98	25.50	5.48	----	
LW010D	05/18/1999	15:00	31.12	19.82	11.30	----	
LW010D	09/21/1999	11:37	31.12	25.81	5.31	----	
LW010D	12/06/1999	14:15	31.12	21.18	9.94	----	
LW010D	02/16/2000	10:27	31.12	21.20	9.92	----	
LW010D	05/23/2000	16:42	31.12	21.51	9.61	----	
LW010D	08/29/2000	13:29	31.12	25.86	5.26	----	
LW010D	11/09/2000	12:46	31.12	26.26	4.86	----	
LW010D	02/12/2001	16:15	31.12	25.63	5.49	----	
LW010D	06/04/2001	11:52	31.12	25.62	5.50	----	
LW010D	08/16/2001	11:04	31.12	27.16	3.96	----	
LW010D	11/28/2001	11:55	31.12	25.46	5.66	----	
LW010D	02/27/2002	13:49	31.12	23.58	7.54	----	
LW010D	06/27/2002	14:29	31.12	21.03	10.09	----	
LW010D	08/26/2002	16:17	31.12	25.91	5.21	----	
LW010D	11/13/2002	08:01	31.12	26.17	4.95	----	
LW010D	02/11/2003	09:21	31.12	23.83	7.29	----	
LW010D	05/08/2003	07:33	31.12	22.10	9.02	----	
LW010D	08/27/2003	13:53	31.12	25.74	5.38	----	
LW011D	05/18/1999	15:09	29.04	18.59	10.45	----	
LW011D	09/21/1999	11:50	29.04	20.76	8.28	----	
LW011D	12/06/1999	15:06	29.04	21.81	7.23	----	
LW011D	02/16/2000	11:02	29.04	20.35	8.69	----	
LW011D	05/23/2000	17:37	29.04	19.50	9.54	----	
LW011D	08/29/2000	14:54	29.04	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW011D	11/09/2000		29.04	----	----	----	Well sampled 11/8/00 - water level not representative
LW011D	02/12/2001	15:16	29.04	23.14	5.90	----	
LW011D	06/04/2001	13:11	29.04	23.35	5.69	----	
LW011D	08/16/2001	11:25	29.04	26.94	2.10	----	
LW011D	11/28/2001	12:53	29.04	24.54	4.50	----	
LW011D	02/27/2002	14:57	29.04	21.80	7.24	----	
LW011D	06/27/2002	15:11	29.04	18.84	10.20	----	
LW011D	08/26/2002	16:47	29.04	22.71	6.33	----	
LW011D	11/13/2002	08:55	29.04	23.87	5.17	----	
LW011D	02/11/2003	10:04	29.04	21.79	7.25	----	
LW011D	05/08/2003	08:08	29.04	19.28	9.76	----	
LW011D	08/27/2003	14:34	29.04	23.35	5.69	----	
LW012D1	05/18/1999	15:13	30.02	18.45	11.57	----	
LW012D1	09/21/1999	11:54	30.02	24.44	5.58	----	
LW012D1	12/06/1999	14:21	30.02	19.72	10.30	----	
LW012D1	02/16/2000	10:35	30.02	19.89	10.13	----	
LW012D1	05/23/2000	17:00	30.02	20.23	9.79	----	
LW012D1	08/29/2000	13:45	30.02	24.38	5.64	----	
LW012D1	11/09/2000	13:00	30.02	24.66	5.36	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW012D1	02/12/2001	15:57	30.02	23.92	6.10	----	
LW012D1	06/04/2001	12:32	30.02	23.99	6.03	----	
LW012D1	08/16/2001	11:42	30.02	25.39	4.63	----	
LW012D1	11/28/2001	12:38	30.02	23.33	6.69	----	
LW012D1	02/27/2002	14:28	30.02	21.88	8.14	----	
LW012D1	06/27/2002	14:57	30.02	19.58	10.44	----	
LW012D1							Abandoned August 2003
LW012D2	05/18/1999	15:14	29.24	18.23	11.01	----	
LW012D2	09/21/1999	11:53	29.24	24.69	4.55	----	
LW012D2	12/06/1999	14:22	29.24	19.40	9.84	----	
LW012D2	02/16/2000	10:36	29.24	19.90	9.34	----	
LW012D2	05/23/2000	16:59	29.24	20.38	8.86	----	
LW012D2	08/29/2000	13:44	29.24	24.68	4.56	----	
LW012D2	11/09/2000	13:01	29.24	24.56	4.68	----	
LW012D2	02/12/2001	15:56	29.24	23.88	5.36	----	
LW012D2	06/04/2001	12:31	29.24	24.10	5.14	----	
LW012D2	08/16/2001	11:43	29.24	25.43	3.81	----	
LW012D2	11/28/2001	12:39	29.24	23.17	6.07	----	
LW012D2	02/27/2002	14:29	29.24	22.38	6.86	----	
LW012D2	06/27/2002	14:58	29.24	19.44	9.80	----	
LW012D2							Abandoned August 2003
LW014D	05/23/2000	16:50	30.54	21.26	9.28	----	
LW014D	08/29/2000	13:35	30.54	25.68	4.86	----	
LW014D	11/09/2000	12:49	30.54	25.90	4.64	----	
LW014D	02/12/2001	16:20	30.54	25.33	5.21	----	
LW014D	06/04/2001	12:00	30.54	25.37	5.17	----	
LW014D	08/16/2001	11:08	30.54	27.00	3.54	----	
LW014D	11/28/2001	11:56	30.54	25.03	5.51	----	
LW014D	02/27/2002	13:55	30.54	23.57	6.97	----	
LW014D	06/27/2002	14:33	30.54	20.70	9.84	----	
LW014D	08/26/2002	16:26	30.54	25.90	4.64	----	
LW014D	11/13/2002	08:07	30.54	25.76	4.78	----	
LW014D	02/11/2003	09:27	30.54	24.33	6.21	----	
LW014D	05/08/2003	07:38	30.54	21.92	8.62	----	
LW014D	08/27/2003	13:56	30.54	25.32	5.22	----	
LW015D	05/23/2000	16:49	30.85	21.26	9.59	----	
LW015D	08/29/2000	13:34	30.85	25.54	5.31	----	
LW015D	11/09/2000	12:48	30.85	25.98	4.87	----	
LW015D	02/12/2001	16:18	30.85	25.43	5.42	----	
LW015D	06/04/2001	11:59	30.85	25.41	5.44	----	
LW015D	08/16/2001	11:07	30.85	27.05	3.80	----	
LW015D	11/28/2001	11:55	30.85	25.29	5.56	----	
LW015D	02/27/2002	13:52	30.85	23.42	7.43	----	
LW015D	06/27/2002	14:32	30.85	20.91	9.94	----	
LW015D	08/26/2002	16:25	30.85	25.77	5.08	----	
LW015D	11/13/2002	08:05	30.85	26.04	4.81	----	
LW015D	02/11/2003	09:23	30.85	23.65	7.20	----	
LW015D	05/08/2003	07:37	30.85	21.95	8.90	----	
LW015D	08/27/2003	13:55	30.85	25.58	5.27	----	
LW016D	05/23/2000	16:48	28.40	18.79	9.61	----	
LW016D	08/29/2000	13:32	28.40	23.07	5.33	----	
LW016D	11/09/2000	12:47	28.40	23.59	4.81	----	
LW016D	02/12/2001	16:17	28.40	22.94	5.46	----	
LW016D	06/04/2001	11:57	28.40	23.00	5.40	----	
LW016D	08/16/2001	11:05	28.40	24.43	3.97	----	
LW016D	11/28/2001	11:57	28.40	22.87	5.53	----	
LW016D	02/27/2002	13:54	28.40	20.94	7.46	----	
LW016D	06/27/2002	14:31	28.40	18.46	9.94	----	
LW016D	08/26/2002	16:23	28.40	23.24	5.16	----	
LW016D	11/13/2002	08:08	28.40	23.45	4.95	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW016D	02/11/2003	09:25	28.40	21.14	7.26	----	
LW016D	05/08/2003	07:36	28.40	19.65	8.75	----	
LW016D	08/27/2003	13:54	28.40	23.08	5.32	----	
LW017D	08/29/2000	13:21	27.82	22.96	4.86	----	
LW017D	11/09/2000	12:36	27.82	23.17	4.65	----	
LW017D	02/12/2001	16:04	27.82	22.44	5.38	----	
LW017D	06/04/2001	11:44	27.82	22.42	5.40	----	
LW017D	08/16/2001	10:55	27.82	23.80	4.02	----	
LW017D	11/28/2001	11:50	27.82	22.00	5.82	----	
LW017D	02/27/2002	13:37	27.82	19.82	8.00	----	
LW017D	03/05/2002	11:30	27.82	20.46	7.36	----	
LW017D	04/05/2002	08:15	27.82	21.34	6.48	----	
LW017D	05/29/2002	00:00	27.82	17.90	9.92	----	
LW017D	06/27/2002	14:20	27.82	17.64	10.18	----	
LW017D	08/26/2002	16:07	27.82	22.67	5.15	----	
LW017D	11/13/2002	07:45	27.82	22.80	5.02	----	
LW017D	02/11/2003	09:03	27.82	20.79	7.03	----	
LW017D	05/08/2003	07:05	27.82	18.82	9.00	----	
LW017D	08/27/2003	13:43	27.82	22.38	5.44	----	
LW018D	08/29/2000	13:25	27.82	22.79	5.03	----	
LW018D	11/09/2000	12:40	27.82	22.91	4.91	----	
LW018D	02/12/2001	16:10	27.82	22.56	5.26	----	
LW018D	06/04/2001	11:47	27.82	22.28	5.54	----	
LW018D	08/16/2001	11:00	27.82	23.81	4.01	----	
LW018D	11/28/2001	11:51	27.82	22.00	5.82	----	
LW018D	02/27/2002	13:43	27.82	20.44	7.38	----	
LW018D	06/27/2002	14:23	27.82	17.72	10.10	----	
LW018D	08/26/2002	16:13	27.82	21.90	5.92	----	
LW018D	11/13/2002	07:51	27.82	22.71	5.11	----	
LW018D	02/11/2003	09:05	27.82	20.95	6.87	----	
LW018D	05/08/2003	07:10	27.82	18.75	9.07	----	
LW018D	08/27/2003	13:45	27.82	22.41	5.41	----	
RW2	05/18/1999	15:02	30.68	19.50	11.18	----	
RW2	09/21/1999	11:40	30.68	25.75	4.93	----	
RW2	12/06/1999	14:17	30.68	20.77	9.91	----	
RW2	02/16/2000	10:29	30.68	20.99	9.69	----	
RW2	05/23/2000	16:52	30.68	21.37	9.31	----	
RW2	08/29/2000	13:36	30.68	25.36	5.32	----	Groundwater interim action pumping began 10/5/00 in the lower zone at this well. Pump not running at time of measurement.
RW2	11/09/2000	12:50	30.68	25.83	4.85	----	
RW2	02/12/2001	16:37	30.68	26.40	4.28	----	
RW2	06/04/2001	12:05	30.68	26.26	4.42	----	
RW2	08/16/2001	11:11	30.68	28.98	1.70	----	
RW2	11/28/2001	12:02	30.68	26.86	3.82	----	
RW2	02/27/2002	13:57	30.68	26.02	4.66	----	
RW2	06/27/2002	14:35	30.68	23.68	7.00	----	
RW2	08/26/2002	16:29	30.68	28.26	2.42	----	
RW2	11/13/2002	08:20	30.68	28.50	2.18	----	
RW2	02/11/2003	09:29	30.68	26.96	3.72	----	
RW2	05/07/2003	17:30	30.68	24.80	5.88	----	Date of measurement is day of sampling
RW2	08/27/2003	13:57	30.68	27.91	2.77	----	
RIVER_GAUGE	08/11/1993	12:57	28.13	24.90	3.23	----	
RIVER_GAUGE	10/26/1993	13:17	28.13	25.27	2.86	----	
RIVER_GAUGE	11/17/1993	13:21	28.13	24.18	3.95	----	
RIVER_GAUGE	12/17/1993	12:46	28.13	22.48	5.65	----	
RIVER_GAUGE	01/17/1994	12:58	28.13	22.90	5.23	----	
RIVER_GAUGE	02/18/1994	14:10	28.13	22.30	5.83	----	
RIVER_GAUGE	03/18/1994	12:48	28.13	21.70	6.43	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	04/18/1994	14:34	28.13	23.50	4.63	----	
RIVER_GAUGE	05/18/1994	15:14	28.13	21.80	6.33	----	
RIVER_GAUGE	06/17/1994	14:45	28.13	21.32	6.81	----	
RIVER_GAUGE	07/19/1994	09:10	28.13	23.25	4.88	----	
RIVER_GAUGE	08/17/1994	07:26	28.13	24.00	4.13	----	
RIVER_GAUGE	09/16/1994	07:30	28.13	24.66	3.47	----	
RIVER_GAUGE	10/17/1994	08:58	28.13	24.10	4.03	----	
RIVER_GAUGE	11/21/1994	11:43	28.13	23.20	4.93	----	
RIVER_GAUGE	12/19/1994	10:58	28.13	19.95	8.18	----	
RIVER_GAUGE	01/18/1995	11:04	28.13	16.70	11.43	----	
RIVER_GAUGE	02/21/1995	13:14	28.13	14.65	13.48	----	
RIVER_GAUGE	03/21/1995	12:58	28.13	18.90	9.23	----	
RIVER_GAUGE	04/19/1995	12:37	28.13	19.80	8.33	----	
RIVER_GAUGE	05/19/1995	13:22	28.13	17.40	10.73	----	
RIVER_GAUGE	07/17/1995	13:48	28.13	22.00	6.13	----	
RIVER_GAUGE	08/22/1995	07:45	28.13	23.24	4.89	----	
RIVER_GAUGE	09/22/1995	08:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/20/1995	07:50	28.13	20.20	7.93	----	
RIVER_GAUGE	12/01/1995	08:23	28.13	8.45	19.68	----	
RIVER_GAUGE	12/19/1995	07:11	28.13	14.10	14.03	----	
RIVER_GAUGE	01/19/1996	08:29	28.13	14.06	14.07	----	
RIVER_GAUGE	02/20/1996	10:36	28.13	8.00	20.13	----	
RIVER_GAUGE	03/19/1996	09:15	28.13	15.95	12.18	----	
RIVER_GAUGE	04/19/1996	11:45	28.13	13.95	14.18	----	
RIVER_GAUGE	07/22/1996	14:18	28.13	22.00	6.13	----	
RIVER_GAUGE	07/22/1996	15:05	28.13	22.20	5.93	----	
RIVER_GAUGE	08/20/1996	14:09	28.13	22.80	5.33	----	
RIVER_GAUGE	08/20/1996	15:10	28.13	23.00	5.13	----	
RIVER_GAUGE	09/24/1996	07:55	28.13	23.41	4.72	----	
RIVER_GAUGE	09/24/1996	10:15	28.13	24.25	3.88	----	
RIVER_GAUGE	10/28/1996	10:53	28.13	22.95	5.18	----	
RIVER_GAUGE	10/28/1996	12:12	28.13	23.21	4.92	----	
RIVER_GAUGE	12/13/1996	12:09	28.13	14.50	13.63	----	
RIVER_GAUGE	03/25/1997	11:33	28.13	14.60	13.53	----	
RIVER_GAUGE	03/31/1997		28.13	----	----	----	Locked
RIVER_GAUGE	07/16/1997	06:55	28.13	18.73	9.40	----	
RIVER_GAUGE	07/16/1997	07:55	28.13	18.84	9.29	----	
RIVER_GAUGE	07/16/1997	09:14	28.13	18.92	9.21	----	
RIVER_GAUGE	10/21/1997	15:52	28.13	23.38	4.75	----	
RIVER_GAUGE	10/21/1997	16:11	28.13	23.44	4.69	----	
RIVER_GAUGE	10/21/1997	17:55	28.13	23.59	4.54	----	
RIVER_GAUGE	01/27/1998	10:46	28.13	18.20	9.93	----	
RIVER_GAUGE	01/27/1998	12:25	28.13	18.31	9.82	----	
RIVER_GAUGE	01/27/1998	13:56	28.13	17.89	10.24	----	
RIVER_GAUGE	05/18/1998	17:12	28.13	16.97	11.16	----	
RIVER_GAUGE	05/18/1998	17:45	28.13	17.15	10.98	----	
RIVER_GAUGE	08/17/1998	09:58	28.13	23.98	4.15	----	
RIVER_GAUGE	08/17/1998	10:34	28.13	24.15	3.98	----	
RIVER_GAUGE	11/13/1998	09:30	28.13	24.64	3.49	----	
RIVER_GAUGE	11/13/1998	10:05	28.13	24.45	3.68	----	
RIVER_GAUGE	02/16/1999	12:40	28.13	19.36	8.77	----	
RIVER_GAUGE	02/16/1999	13:27	28.13	19.43	8.70	----	
RIVER_GAUGE	05/18/1999	14:33	28.13	17.24	10.89	----	
RIVER_GAUGE	05/18/1999	15:19	28.13	17.30	10.83	----	
RIVER_GAUGE	09/21/1999	11:10	28.13	24.94	3.19	----	
RIVER_GAUGE	09/21/1999	11:59	28.13	25.03	3.10	----	
RIVER_GAUGE	12/06/1999	13:43	28.13	18.24	9.89	----	
RIVER_GAUGE	12/06/1999	14:25	28.13	18.06	10.07	----	
RIVER_GAUGE	02/16/2000	10:03	28.13	19.18	8.95	----	
RIVER_GAUGE	02/16/2000	10:41	28.13	19.07	9.06	----	
RIVER_GAUGE	05/23/2000	16:12	28.13	19.80	8.33	----	
RIVER_GAUGE	05/23/2000	17:04	28.13	19.94	8.19	----	
RIVER_GAUGE	08/29/2000	12:54	28.13	24.63	3.50	----	
RIVER_GAUGE	08/29/2000	13:49	28.13	24.91	3.22	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	11/09/2000	12:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/09/2000	13:10	28.13	23.67	4.46	----	
RIVER_GAUGE	02/12/2001	15:45	28.13	23.75	4.38	----	
RIVER_GAUGE	02/12/2001	16:43	28.13	24.00	4.13	----	
RIVER_GAUGE	06/04/2001	11:20	28.13	23.62	4.51	----	
RIVER_GAUGE	06/04/2001	12:15	28.13	23.79	4.34	----	
RIVER_GAUGE	08/16/2001	10:20	28.13	24.83	3.30	----	
RIVER_GAUGE	08/16/2001	11:29	28.13	25.23	2.90	----	
RIVER_GAUGE	11/28/2001	11:16	28.13	22.50	5.63	----	
RIVER_GAUGE	11/28/2001	12:18	28.13	23.13	5.00	----	
RIVER_GAUGE	02/27/2002	13:11	28.13	22.24	5.89	----	
RIVER_GAUGE	02/27/2002	14:12	28.13	22.27	5.86	----	
RIVER_GAUGE	03/05/2002	11:25	28.13	21.42	6.71	----	
RIVER_GAUGE	04/05/2002	08:00	28.13	23.10	5.03	----	
RIVER_GAUGE	05/29/2002	14:07	28.13	17.31	10.82	----	
RIVER_GAUGE	06/27/2002	14:07	28.13	18.31	9.82	----	
RIVER_GAUGE	06/27/2002	14:43	28.13	18.36	9.77	----	
RIVER_GAUGE	08/26/2002	15:45	28.13	24.83	3.30	----	
RIVER_GAUGE	08/26/2002	16:13	28.13	24.85	3.28	----	
RIVER_GAUGE	11/13/2002	07:19	28.13	24.10	4.03	----	
RIVER_GAUGE	11/13/2002	07:54	28.13	24.21	3.92	----	
RIVER_GAUGE	02/11/2003	08:34	28.13	23.70	4.43	----	
RIVER_GAUGE	02/11/2003	09:14	28.13	23.43	4.70	----	
RIVER_GAUGE	05/08/2003	06:40	28.13	20.02	8.11	----	
RIVER_GAUGE	05/08/2003	07:17	28.13	20.00	8.13	----	
RIVER_GAUGE	08/27/2003	13:18	28.13	23.36	4.77	----	
RIVER_GAUGE	08/27/2003	14:15	28.13	23.66	4.47	----	

Notes:
NM Not measured.
NA Not available.
-- No measurable product or odor observed.
* Well Point
(a) Reference Elevation (Ref. Elev) is the north side of the top of the 1.25-, 2- or 4-inch well casing, reference elevation surveys were conducted by Zarosinski-Tatone Engineers, Inc., Portland, Oregon. For the river gauge, the reference elevation was measured at a marked location on the south side of the dock on the Willamette River.
(b) Depth to water (DTW) measured from surveyed reference elevation [see note (1)].
(c) Where LNAPL thickness measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "*Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells* " [Lenhard and Parker 1990; Groundwater 28(1):57-67].

APPENDIX B

Groundwater Interim Action Recovery Summary

TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			
Monitoring Period	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	Comments
Fourth Quarter 2000																
October 2000	439,003			0.35									0			Mass removal calculated using 11/00 PCP concentration.
November 2000	305,601	11/9/2000	95	0.24									467,478	11/7/2000	ND (a)	
December 2000	348,720	12/20/2000	39	0.11									497,656	12/6/2000	5.89	
														12/20/2000	9.73	
Quarterly Totals	*1,093,324*			*0.70*									*965,134*			
First Quarter 2001																
January 2001	416,140	1/18/2001	38.8	0.13									239,207	1/18/2001	14.3	
February 2001	335,008	2/13/2001	30	0.08									184,192			
March 2001	332,963	3/7/2001	ND (b)	0.03									517,332	3/7/2001	ND (b)	
Quarterly Totals	*1,084,111*			*0.25*									*940,731*			
Second Quarter 2001																
April 2001	377,931			0.04									275,519			
May 2001	344,252	5/22/2001	12.3	0.04									195,522	5/22/2001	5.29	
June 2001	361,846	6/4/2001	0.68	0.04									563,853			
Quarterly Totals	*1,084,029*			*0.11*									*1,034,894*			
Third Quarter 2001																
July 2001	351,509			0.01									559,015			
August 2001	486,123	8/13/2001	5	0.02									66,876			
Quarterly Totals	*837,632*			*0.03*									*625,891*			
Fourth Quarter 2001																
October 2001	393,168	10/11/2001	ND (a)	0.01									484,158	10/11/2001	ND (a)	
November 2001	319,798			0.01									118,786	11/1 & 11/15/01	ND (a)	
December 2001	361,058	12/6/2001	ND (c)	0.01									717,769	12/6/2001	ND (c)	
Quarterly Totals	*680,856*			*0.02*									*836,555*			
First Quarter 2002																
January 2002	331,224			0.02	1,812			0.01					340,688			Recovered groundwater from HRW-1 from January 22-29. Re-initiated groundwater recovery from HRW-1 on February 28.
February 2002	282,480	2/27/2002	8.6	0.02	58			0.00					437,943			HRW-1 mass removal estimates for January and February are based on the March 12 sampling event.
March 2002	280,814			0.02	40,294	3/12/2002	786	0.26					234,816			RW-2 mass removal estimates for January and March are based on February 27 sampling event.
Quarterly Totals	*894,518*			*0.06*	*42,164*			*0.28*					*1,013,447*			
Second Quarter 2002																
April 2002	292,099			0.19	74,996	4/5/2002	94	0.06					391,263	4/5/02 4/22/02	34.4 9.33	RW-2 mass removal estimates for April and May are based on June 27 sampling event.
May 2002	310,584			0.20	23,427	5/29/2002	452	0.09					247,440			
June 2002	272,393	6/27/2002	76	0.17	25,484	6/25/2002	410	0.09					307,810			
Quarterly Totals	*875,076*			*0.56*	*123,907*			*0.23*					*946,513*			
Third Quarter 2002																
July 2002	272,771			0.08	51,111			0.18					188,300	7/24/2002	2.09	
August 2002	270,746	8/27/2002	36	0.08	7								301,613	8/20/2002	9.15	HRW-1 shut down on July 24 due to dry pumping conditions and potential biofouling of the well. HRW-1 mass removal rate estimate based on June 2002 data.
September 2002	143,662			0.04	0				110,000	9/23/2002	47.0		369,469	9/23/2002	11.8	RW-2 temporarily shut down on September 25. Water being intercepted from SDM-1 and pumped to treatment system beginning on September 16.
Quarterly Totals	*687,179*				*51,118*								*859,382*			RW-2 mass removal rates based on August 27 sampling event. Total Volume pumped from SDM-1 estimated based on throughout of WWTP and volume recovered from RW-2; Flowmeter to be installed for SDM-1 in October 2002.
Fourth Quarter 2002																
October 2002	177,937			0.06	0				Not metered				112,129	10/3/2002	8.84	
November 2002	275,033	11/13/2002	37	0.09	0				95,157				399,747			The storage tank gauge was moved to groundwater sump SDM-1 on November 1.
December 2002	418,846			0.13	0				124,894				507,766			
Quarterly Totals	*871,816*				*0*								*1,019,642*			RW-2 mass removal rates based on November 13 sampling event.

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TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			
Monitoring Period	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	Comments
First Quarter 2003																
January 2003	417,646			0.12	0				168,683			0.38	574,451	1/15/2003	11.6	
February 2003	398,299	2/11/2003	33	0.11	0				192,395	2/13/2003	290	0.43	483,579			
March 2003	458,160			0.13	0				210,400			0.47	624,807			SDM-1 mass removal rates based on February 13 sampling event.
Quarterly Totals	*1,140,149*				*51,118*				*95,157*				*1,371,258*			RW-2 mass removal rates based on February 11 sampling event.
Second Quarter 2003																
April 2003	445,275			0.04	0				55,037			0.00	481,816	4/9/2003	22.2	
May 2003	455,994	5/7/2003	12	0.05	0	Not Analyzed			0	5/7/2003	0.93	0.00	469,079			
June 2003	385,658			0.04	4,175				89,243			0.00	446,127			RW-2 mass removal rates based on April 8, 2003 sampling event.
Quarterly Totals	*1,286,927*				*4,175*				*144,280*				*1,397,022*			
Third Quarter 2003																
July 2003	330,738	7/28/2003	<5.0	0.01	30,104	7/28/2003	370	0.09	128,562	7/28/2003	409	0.44	441,023	7/11/2003	87.4	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
														7/30/2003	8.6	
August 2003	366,307	8/27/2003	10	0.03	7,388			0.02	119,831	8/27/2003	120	0.41	397,748	8/4/2003	<5.0	
														8/6/2003	<5.0	HRW-1 mass removal rates based on July 28 sampling event.
														8/11/2003	<4.76	
														8/13/2003	<4.83	SDM-1 mass removal rates based on July 28 sampling event.
														8/18/2003	<4.75	
														8/20/2003	<5.16	RW-2 mass removal rates based on August 27 sampling event.
														8/25/2003	23.8	
														8/27/2003	36.5	
September 2003	262,403			0.02	0			0.00	87,439			0.09	479,703	9/3/2003	19.3	
														9/5/2003	19.6	
														9/9/2003	7.09	
														9/23/2003	16.9	
														9/29/2003	5.96	
Quarterly Totals	*959,448*				*37,492*				*335,832*				*1,318,474*			

ND = Not Detected.

(a) PCP not detected above the detection limit of 5 µg/L; concentration-dependent calculations based on half the detection limit
(b) PCP not detected above the detection limit of 25 µg/L; concentration-dependent calculations based on half the detection limit
(c) PCP not detected above the detection limit of 5.25 µg/L; concentration-dependent calculations based on half the detection limit

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APPENDIX C

Measurement and Evaluation Procedures

APPENDIX C
MEASUREMENT AND EVALUATION PROCEDURES

This appendix discusses the procedures for conducting groundwater level and product (where observed) measurements during the quarterly groundwater events and the method used to evaluate the groundwater elevations.

MEASUREMENT PROCEDURES

Groundwater level measurements and the check for the presence of product were conducted using an electronic oil-water interface probe. Measurements were taken from the top of the PVC well casing at a marked survey point or at the north side of the casing, and recorded to the nearest 0.01 ft. Measurements in the Willamette River were taken from a surveyed PK nail with washer located on the south side of the dock. Surveyed reference elevations for each water level measurement location, obtained by a licensed land surveyor (ZTec Engineers, Inc., Portland, Oregon), are shown in Table A-2 of this report.

Water level measurements for the quarterly event were obtained over about a 2.5-hour period beginning at about 2.5 hours after a predicted mean river stage, based on predictions for the St. Johns station on the Willamette River. The timing for water level measurements was scheduled to estimate a mean water level elevation or elevation minimally influenced by river stage, and to reduce the time-dependent variation between wells screened in the same water-bearing zone. The timing of the water level measurements was based on average time lag calculations presented in the additional groundwater investigation technical memorandum (Landau Associates 1998), aquifer test report (Landau Associates 1999), and previous quarterly measurements.

GROUNDWATER LEVEL EVALUATION METHODS

For evaluation purposes, the groundwater level measurements were converted from depth-to-water readings to groundwater elevations using the survey information for each location. At locations where product was observed, the groundwater elevations were adjusted to account for the presence of product using the method defined by Lenhard and Parker (1990). Groundwater elevations for the upper and lower zones were contoured using GIS/Key or manually in conjunction with the evaluations conducted to evaluate the capture zone of the groundwater interim action for the upper and lower zones.

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GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the shallow wells using a peristaltic pump attached to dedicated polyethylene tubing immediately following purging. The deep wells were sampled with disposable bailers, with the following exceptions: the sample from RW-2 was collected from the in-line sampling port on the groundwater interim action system, and the sample from the groundwater intercept system at SDM-1 was collected from the discharge line at the output into Tank 16804. Wells were purged using a peristaltic pump or a centrifugal purge pump. Purging continued until at least 3 casing volumes of water had been removed and specific conductance and temperature had stabilized or until the well purged dry. Four replicate measurements of field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature) were collected at each well during sampling. To prevent degassing of volatile organic compounds during sampling, the pumping rate was maintained below about 100 milliliters per minute. All sampling was conducted in accordance with the Phase I/II RI/FS work plan (Landau Associates 1996) and appropriate provisions of the revised quality assurance project plan and project health and safety plan (Landau Associates 2001). A more detailed description of groundwater sampling procedures is provided in the Phase II RI report (Landau Associates 2000).

REFERENCES

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

Landau Associates. 2000. Report: *Phase II Remedial Investigation, Time Oil Co. Northwest Terminal.* Prepared for: Time Oil Co., Seattle, Washington. April 6.

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Landau Associates. 1996. *Work Plan, Phases I and II, Remedial Investigation/Feasibility Study, Time Oil Co. Northwest Terminal.* Prepared for: Time Oil Co., Seattle, Washington. May 10.

Lenhard and Parker. 1990. "Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells. *Groundwater.* 28(1):57-57.

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APPENDIX D

Summary of Modifications to Quarterly Groundwater Analysis Program

APPENDIX D
SUMMARY OF MODIFICATIONS TO QUARTERLY GROUNDWATER ANALYSIS PROGRAM

A summary of modifications to the quarterly groundwater monitoring program for the Time Oil Northwest Terminal in Portland, Oregon is presented below by the date of first implementation. A reference list for the modifications is attached.

- ***Second Quarter 1998*** (Landau Associates 1998; DEQ 1998):
  - Annual sampling of east property wells LW-101S, LW-102S, LW-103S, and LW-104S
  - Elimination of 2-chloroethylvinylether from the volatile analyte list
  - Reduction of the suite of metals analyses to include only arsenic, chromium, copper, lead, nickel, and zinc
  - Quarterly analysis of only metals in well K and only chlorinated phenols and metals in well H
  - Elimination of PCB analysis
  - Annual analysis for major ions; quarterly analysis for chloride and dissolved oxygen.
- ***First Quarter 1999*** (Landau Associates 1999; Urbanowicz, K., 12 February 1999, personal communication):
  - Analysis of polycyclic aromatic hydrocarbons (PAHs) using analytical techniques that provide lower detection limits at upper zone wells LW-2S, LW-7S and LW-101S and at lower zone wells G1A, O, and LW-4D for the first quarter 1999 event only
  - Elimination of sampling at well J3.
- ***Second Quarter 2000*** (Landau Associates 2000a; DEQ 2000):
  - Elimination of dioxin/furan analyses.
- ***Third Quarter 2000*** (Landau Associates 2000b; Roick 2000):
  - Reduction of sampling frequency of wells H, L, and LW-5S from quarterly to annually.
- ***Second Quarter 2001*** (Landau Associates 2001a, 2001b; Roick 2001):
  - Reduction of the list of chlorinated phenols being analyzed by EPA Method 8040 to pentachlorophenol (PCP) only using EPA Method 8270 SIM
  - Reduction of the frequency of total petroleum hydrocarbon (TPH) analysis from quarterly to annually at upper zone wells J1 and LW-1S; lower zone wells B2, J2, LW-1D; and deep sand unit well LW-12D2. In addition, TPH analysis was eliminated for the following wells: upper zone wells D, L, LW-5S, LW-101S through -104S, and lower zone well LW-3D.

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REFERENCES
(Modifications to Quarterly Groundwater Analysis Program)

DEQ. 2000. Letter: *Dioxin/Furans Groundwater Analysis, Time Oil Northwest Terminal.* From Thomas E. Roick, Oregon Department of Environmental Quality, to Kevin Murphy, Time Oil Co. May 18.

DEQ. 1998. Letter: *Groundwater Quality Sampling, Time Oil Co. Northwest Terminal.* From Karla Urbanowicz, Oregon Department of Environmental Quality, to Kevin Murphy, Time Oil Co. May 15.

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Landau Associates. 2001b. Letter: *Recommendation for Reduction of TPH Analyses, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. May 17.

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Landau Associates. 2000b. Letter: *Recommended Reduction of Wells for Quarterly Monitoring, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. August 9.

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Landau Associates. 1998. Letter: *Time Oil Northwest Terminal, Portland, Oregon.* To Karla Urbanowicz, Oregon Department of Environmental Quality. May 4.

Roick, T.E. 2001. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Reduction of Total Petroleum Hydrocarbon Analysis, Time Oil Co. Northwest Terminal.* May 30.

Roick, T.E. 2000. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Time Oil Groundwater Monitoring.* August 15.

Urbanowicz, K. 12 February 1999. Personal communication (telephone conversation with Rebekah Brooks, Landau Associates, Edmonds, Washington). Re: *Approval of Additional Modification to Groundwater Sampling and Analysis Program, Time Oil Northwest Terminal, Portland, Oregon.* Karla Urbanowicz, Oregon Department of Environmental Quality, Portland, Oregon.

APPENDIX E

Data Validation Report

TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Rebekah Brooks, Project Manager

cc: Tom Roick, Oregon Department of Environmental Quality (DEQ)
Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe, Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

FROM: Stacy Pischer and Terry McGourty

DATE: October 20, 2003

RE: THIRD QUARTER 2003 GROUNDWATER MONITORING
LABORATORY DATA QUALITY EVALUATION
TIME OIL NORTHWEST TERMINAL

This technical memorandum provides the results of a data quality evaluation for 36 groundwater samples and 3 trip blanks collected at the Time Oil Northwest Terminal on August 27 through 29, 2003 for the Phase II remedial investigation (RI) third quarter 2003 groundwater monitoring event. A data quality evaluation was performed for analyses of total petroleum hydrocarbons (DEQ TPH-D, TPH-D extended, and TPH-G); volatile organic compounds [VOCs; U.S. Environmental Protection Agency (EPA) Method 8260B]; pentachlorophenol [PCP; EPA Method 8270 with selected ion monitoring (SIM)]; semivolatile organic compounds (SVOCs; EPA Method 8270C); selected priority pollutant metals (EPA Method 6010/7000 series); chloride (EPA Method 325.2); and total dissolved solids (TDS; EPA Method 160.1). All of the analyses were performed by Analytical Resources, Inc. (ARI), located in Seattle, Washington. This data quality evaluation covers ARI data packages FU31, FU45, and FU50. The data quality evaluation was performed in accordance with the revised quality assurance project plan (QAPP) contained in Appendix C of the *Phase III Remedial Investigation* work plan (Landau Associates 2001), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994a,b).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
- Surrogate spike recoveries
- Matrix spike and matrix spike duplicate (MS/MSD) results
- Laboratory control sample (LCS) results
- Method blank results
- Duplicate (laboratory and field) results

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- Reporting limits
- Overall data quality and completeness.

Data validation qualifiers are added to sample results based on the evaluation of data quality. The absence of a data qualifier indicates that the datum is acceptable without qualification. Applicable data validation qualifiers are summarized in Table 1. The data quality evaluation is summarized below.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. The laboratory received all samples in good condition and all analyses requested were performed.

HOLDING TIMES

For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding times except as indicated in Table 1 and as discussed below:

- **Data Package FU45 – TDS analyses.** Sample LW010D required reanalysis due to a laboratory error during the original analysis. The sample was re-analyzed 12 days past the recommended holing time. It is recommended that the TDS result from the re-analysis for sample LW010D be reported and qualified as an estimate (J), as indicated in Table 1.
- **Data Package FU45 – PCP (SIM) analyses.** Sample LW007S required reanalysis due to a laboratory error during the original analysis (see laboratory report case narrative). The sample was re-analyzed 133 days past the recommended holding time. It is recommended that the PCP (SIM) result from the re-analysis for sample LW007S be reported and qualified as an estimate (J), as indicated in Table 1. Although the recommended holding time of 7 days between sample collection and sample extraction was grossly exceeded, rejection of the data was not determined necessary for the following reasons: 1) PCP is not a very volatile compound and the sample was stored at the proper temparture of 4 degrees celcius, therefore, loss of PCP is not expected; 2) the concentration of PCP in sample LW007S reported for the re-analysis was consistent with the concentration of PCP reported for this sample by Method 8040 and consistent with historical concentrations observed at this location.

METHOD BLANK RESULTS

Method blanks were analyzed with each batch of samples for each analysis. Bis-(2-ethylhexyl) phthalate was detected in the method blanks associated with the SVOC analyses reported in data packages FU45 and FU50. Bis-(2-ethylhexyl) phthalate was not detected in the associated project samples; therefore, no qualification of the data was necessary.

FIELD BLANK RESULTS

In accordance with the QAPP, field equipment rinsate blanks were not collected (all sampling equipment was dedicated and/or disposable, which eliminated the potential for cross contamination). Trip

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blanks were submitted for analysis of VOCs. No VOCs were detected in the trip blanks. No qualification of the data was necessary.

SURROGATE SPIKE RECOVERIES

Surrogate spikes were performed with each organic analysis. Recovery values for the surrogate spikes were within the current laboratory control limits, except as indicated below.

- Recovery of surrogate 1,2-dichlorobenzene-d4 associated with the initial non-diluted VOC analysis of sample RW-1 exceeded the upper laboratory control limit, indicating a potential high bias. Detected VOC results for this sample were qualified as estimates (J), as indicated in Table 1.

- Recovery of surrogate 2-fluorobiphenyl associated with the SVOC analysis of sample RW-2 was below the lower laboratory control limit. However, no qualifiers were assigned because, in accordance with the EPA guidelines (1994a), two or more surrogates of the same fraction must be outside the control limits two qualify SVOC results based on surrogate recoveries.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

One MS/MSD pair was performed with the VOC, SVOC, PCP, and NWTPH-Gx analyses reported in data package FU45. One MS was performed with the total metals and chloride analyses reported in data packages FU31 and FU45. No MS/MSD was performed with the TPH-D and TPH-Dx analyses. Each MS/MSD was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits. No qualifiers were assigned.

LABORATORY CONTROL SAMPLE (LCS) RESULTS

Except for the analysis of TDS, at least one LCS (or blank spike sample) was analyzed with each batch of samples for each analysis. LCS duplicates were also performed with some of the analyses. Recoveries and RPDs for the LCSs and associated duplicates were within laboratory control limits. No qualification of the data was necessary.

LABORATORY DUPLICATE RESULTS

At least one laboratory duplicate sample was performed with the metals, chloride, and TDS analyses reported in data packages FU31 and FU45. All RPDs were within the laboratory control limits. No qualification of the data was necessary.

FIELD DUPLICATE RESULTS

Two blind field duplicate pairs (RW2/W and LW008S/X) were collected during this sampling event. The project-specified criterion of at least one blind field duplicate sample per 20 samples was met.

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A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for both duplicate sample pairs submitted for analysis were within the project-specified control limits, except as indicated in Table 1 and as discussed below:

- The RPD between results for several VOCs and for PCP (by Method 8270 SIM) exceeded project-specified control limits for field duplicate pair LW008S/X. Detected concentrations of these compounds in all samples reported in the associated data package (FU45) were qualified as estimates (J), as indicated in Table 1.
- The RPD between results for 2-methylnaphthalene exceeded project-specified control limits for field duplicate pair RW-2/W. Detected concentrations of 2-methylnaphthalene in all samples reported in the associated data package (FU31) were qualified as estimates (J), as indicated in Table 1.

REPORTING LIMITS

Method and/or project-specified reporting limits were met except as discussed below:

- The reporting limits for VOCs in sample LW008S were raised slightly due to dilution.
- The reporting limits for SVOCs in sample RW-1 were raised slightly due to dilution.

No qualifiers were signed as a result of elevated reporting limits.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, field duplicates, matrix spike duplicates, and laboratory control samples duplicates. Data accuracy was evaluated through surrogate spikes, matrix spikes, and laboratory control samples. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected.

The completeness for this set of data is 100 percent, which exceeds the project-specified goal of 90 percent.

REFERENCES

EPA. 1994a. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* U.S. Environmental Protection Agency.

EPA. 1994b. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* U.S. Environmental Protection Agency.

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

TABLE 1
SUMMARY OF DATA QUALIFIERS
THIRD QUARTER 2003 EVENT GROUNDWATER SAMPLE RESULTS
ARI DATA PACKAGES FU31, FU45, and FU50

Data Package Number	Analyte	Qualifier	Sample Number	Reason
FU31	2-methylnaphthalene	J	RW-2	High field duplicate RPD
FU31	2-methylnaphthalene	J	W	High field duplicate RPD
FU45	TDS	J	LW010D	Exceeded holding time by 12 days
FU45	m,p-Xylene	J	LW007S	High field duplicate RPD
FU45	m,p-Xylene	J	LW008S	High field duplicate RPD
FU45	m,p-Xylene	J	LW011S	High field duplicate RPD
FU45	m,p-Xylene	J	R	High field duplicate RPD
FU45	m,p-Xylene	J	X	High field duplicate RPD
FU45	1,3,5-Trimethylbenzene	J	LW008S	High field duplicate RPD
FU45	1,3,5-Trimethylbenzene	J	X	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW004S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW007S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW008S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW0011S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	X	High field duplicate RPD
FU45	Acetone	J	LW004D	High field duplicate RPD
FU45	Acetone	J	LW006D	High field duplicate RPD
FU45	Acetone	J	LW008S	High field duplicate RPD
FU45	Acetone	J	LW011S	High field duplicate RPD
FU45	Acetone	J	O	High field duplicate RPD
FU45	Acetone	J	R	High field duplicate RPD
FU45	PCP (SIM)	J	LW004D	High field duplicate RPD
FU45	PCP (SIM)	J	LW006D	High field duplicate RPD
FU45	PCP (SIM)	J	LW009D	High field duplicate RPD
FU45	PCP (SIM)	J	LW010D	High field duplicate RPD
FU45	PCP (SIM)	J	LW014D	High field duplicate RPD
FU45	PCP (SIM)	J	LW018D	High field duplicate RPD
FU45	PCP (SIM)	J	LW007S	Exceeded holding time by 133 days
FU45	PCP (SIM)	J	LW008S	High field duplicate RPD
FU45	PCP (SIM)	J	LW013S	High field duplicate RPD
FU45	PCP (SIM)	J	OX001S	High field duplicate RPD
FU45	PCP (SIM)	J	OX002S	High field duplicate RPD
FU45	PCP (SIM)	J	OX003S	High field duplicate RPD
FU45	PCP (SIM)	J	OX004S	High field duplicate RPD
FU45	PCP (SIM)	J	D	High field duplicate RPD
FU45	PCP (SIM)	J	X	High field duplicate RPD
FU50	Detected VOCs	J	RW-1	High surrogate recovery

J = Indicates the analyte was positively identified; the associated numerical is the approximate concentration of the analyte in the sample.

TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Rebekah Brooks, Project Manager

cc: Tom Roick, Oregon Department of Environmental Quality (DEQ)
Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe, Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

FROM: Stacy Pischer and Terry McGourty

DATE: October 20, 2003

RE: THIRD QUARTER 2003 GROUNDWATER MONITORING
LABORATORY DATA QUALITY EVALUATION
TIME OIL NORTHWEST TERMINAL

This technical memorandum provides the results of a data quality evaluation for 36 groundwater samples and 3 trip blanks collected at the Time Oil Northwest Terminal on August 27 through 29, 2003 for the Phase II remedial investigation (RI) third quarter 2003 groundwater monitoring event. A data quality evaluation was performed for analyses of total petroleum hydrocarbons (DEQ TPH-D, TPH-D extended, and TPH-G); volatile organic compounds [VOCs; U.S. Environmental Protection Agency (EPA) Method 8260B]; pentachlorophenol [PCP; EPA Method 8270 with selected ion monitoring (SIM)]; semivolatile organic compounds (SVOCs; EPA Method 8270C); selected priority pollutant metals (EPA Method 6010/7000 series); chloride (EPA Method 325.2); and total dissolved solids (TDS; EPA Method 160.1). All of the analyses were performed by Analytical Resources, Inc. (ARI), located in Seattle, Washington. This data quality evaluation covers ARI data packages FU31, FU45, and FU50. The data quality evaluation was performed in accordance with the revised quality assurance project plan (QAPP) contained in Appendix C of the *Phase III Remedial Investigation* work plan (Landau Associates 2001), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994a,b).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
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- Laboratory control sample (LCS) results
- Method blank results
- Duplicate (laboratory and field) results

BZTO104(e)018369

- Reporting limits
- Overall data quality and completeness.

Data validation qualifiers are added to sample results based on the evaluation of data quality. The absence of a data qualifier indicates that the datum is acceptable without qualification. Applicable data validation qualifiers are summarized in Table 1. The data quality evaluation is summarized below.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. The laboratory received all samples in good condition and all analyses requested were performed.

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For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding times except as indicated in Table 1 and as discussed below:

- **Data Package FU45 – TDS analyses.** Sample LW010D required reanalysis due to a laboratory error during the original analysis. The sample was re-analyzed 12 days past the recommended holing time. It is recommended that the TDS result from the re-analysis for sample LW010D be reported and qualified as an estimate (J), as indicated in Table 1.

METHOD BLANK RESULTS

Method blanks were analyzed with each batch of samples for each analysis. Bis-(2-ethylhexyl) phthalate was detected in the method blanks associated with the SVOC analyses reported in data packages FU45 and FU50. Bis-(2-ethylhexyl) phthalate was not detected in the associated project samples; therefore, no qualification of the data was necessary.

FIELD BLANK RESULTS

In accordance with the QAPP, field equipment rinsate blanks were not collected (all sampling equipment was dedicated and/or disposable, which eliminated the potential for cross contamination). Trip blanks were submitted for analysis of VOCs. No VOCs were detected in the trip blanks. No qualification of the data was necessary.

SURROGATE SPIKE RECOVERIES

Surrogate spikes were performed with each organic analysis. Recovery values for the surrogate spikes were within the current laboratory control limits, except as indicated below.

- Recovery of surrogate 1,2-dichlorobenzene-d4 associated with the initial non-diluted VOC analysis of sample RW-1 exceeded the upper laboratory control limit, indicating a potential

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high bias. Detected VOC results for this sample were qualified as estimates (J), as indicated in Table 1.

- Recovery of surrogate 2-fluorobiphenyl associated with the SVOC analysis of sample RW-2 was below the lower laboratory control limit. However, no qualifiers were assigned because, in accordance with the EPA guidelines (1994a), two or more surrogates of the same fraction must be outside the control limits two qualify SVOC results based on surrogate recoveries.

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- The RPD between results for several VOCs and for PCP (by Method 8270 SIM) exceeded project-specified control limits for field duplicate pair LW008S/X. Detected concentrations

BZTO104(e)018371

of these compounds in all samples reported in the associated data package (FU45) were qualified as estimates (J), as indicated in Table 1.

- The RPD between results for 2-methylnaphthalene exceeded project-specified control limits for field duplicate pair RW-2/W. Detected concentrations of 2-methylnaphthalene in all samples reported in the associated data package (FU31) were qualified as estimates (J), as indicated in Table 1.

REPORTING LIMITS

Method and/or project-specified reporting limits were met except as discussed below:

- The reporting limits for VOCs in sample LW008S were raised slightly due to dilution.
- The reporting limits for SVOCs in sample RW-1 were raised slightly due to dilution.

No qualifiers were signed as a result of elevated reporting limits.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, field duplicates, matrix spike duplicates, and laboratory control samples duplicates. Data accuracy was evaluated through surrogate spikes, matrix spikes, and laboratory control samples. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected.

The completeness for this set of data is 100 percent, which exceeds the project-specified goal of 90 percent.

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Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

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FU45	m,p-Xylene	J	R	High field duplicate RPD
FU45	m,p-Xylene	J	X	High field duplicate RPD
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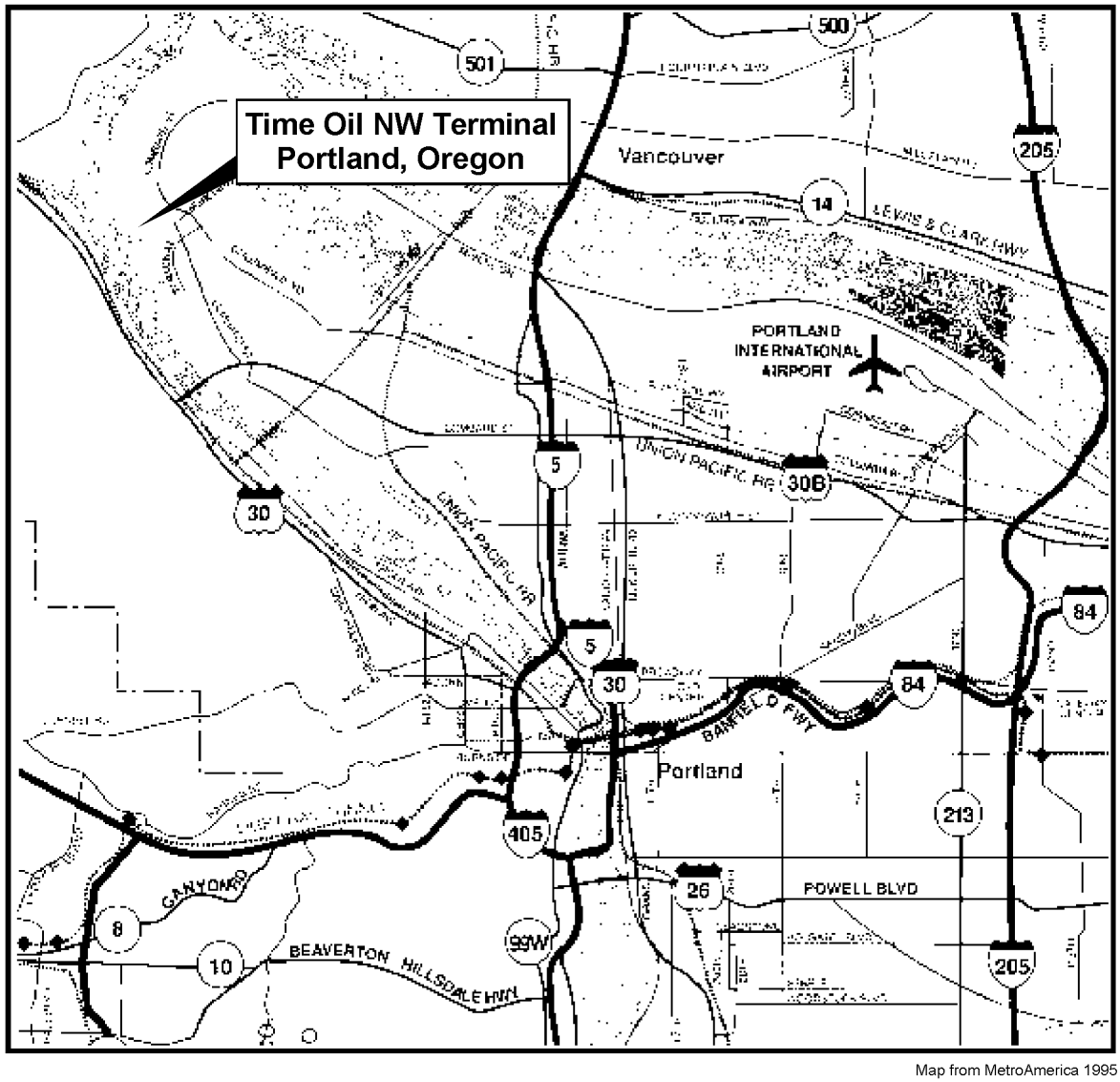
FU45	1,3,5-Trimethylbenzene	J	X	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW004S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW007S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW008S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	LW0011S	High field duplicate RPD
FU45	1,2,4-Trimethylbenzene	J	X	High field duplicate RPD
FU45	Acetone	J	LW004D	High field duplicate RPD
FU45	Acetone	J	LW006D	High field duplicate RPD
FU45	Acetone	J	LW008S	High field duplicate RPD
FU45	Acetone	J	LW011S	High field duplicate RPD
FU45	Acetone	J	O	High field duplicate RPD
FU45	Acetone	J	R	High field duplicate RPD
FU45	PCP (SIM)	J	LW004D	High field duplicate RPD
FU45	PCP (SIM)	J	LW006D	High field duplicate RPD
FU45	PCP (SIM)	J	LW009D	High field duplicate RPD
FU45	PCP (SIM)	J	LW010D	High field duplicate RPD
FU45	PCP (SIM)	J	LW014D	High field duplicate RPD
FU45	PCP (SIM)	J	LW018D	High field duplicate RPD
FU45	PCP (SIM)	J	LW007S	High field duplicate RPD
FU45	PCP (SIM)	J	LW008S	High field duplicate RPD
FU45	PCP (SIM)	J	LW013S	High field duplicate RPD
FU45	PCP (SIM)	J	OX001S	High field duplicate RPD
FU45	PCP (SIM)	J	OX002S	High field duplicate RPD
FU45	PCP (SIM)	J	OX003S	High field duplicate RPD
FU45	PCP (SIM)	J	OX004S	High field duplicate RPD
FU45	PCP (SIM)	J	D	High field duplicate RPD
FU45	PCP (SIM)	J	X	High field duplicate RPD
FU50	Detected VOCs	J	RW-1	High surrogate recovery

J = Indicates the analyte was positively identified; the associated numerical is the approximate concentration of the analyte in the sample.

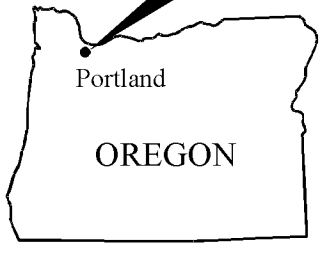
APPENDIX F

Laboratory Data



Map from MetroAmerica 1995

SITE LOCATION
(see enlarged map area above)



0 2 4
Approximate Scale in Miles

Time Oil | T:\231\001\Vicinity Map.cdr (C) 6/20/2003

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Time Oil NW Terminal Portland, Oregon	**Vicinity Map**	Figure 1

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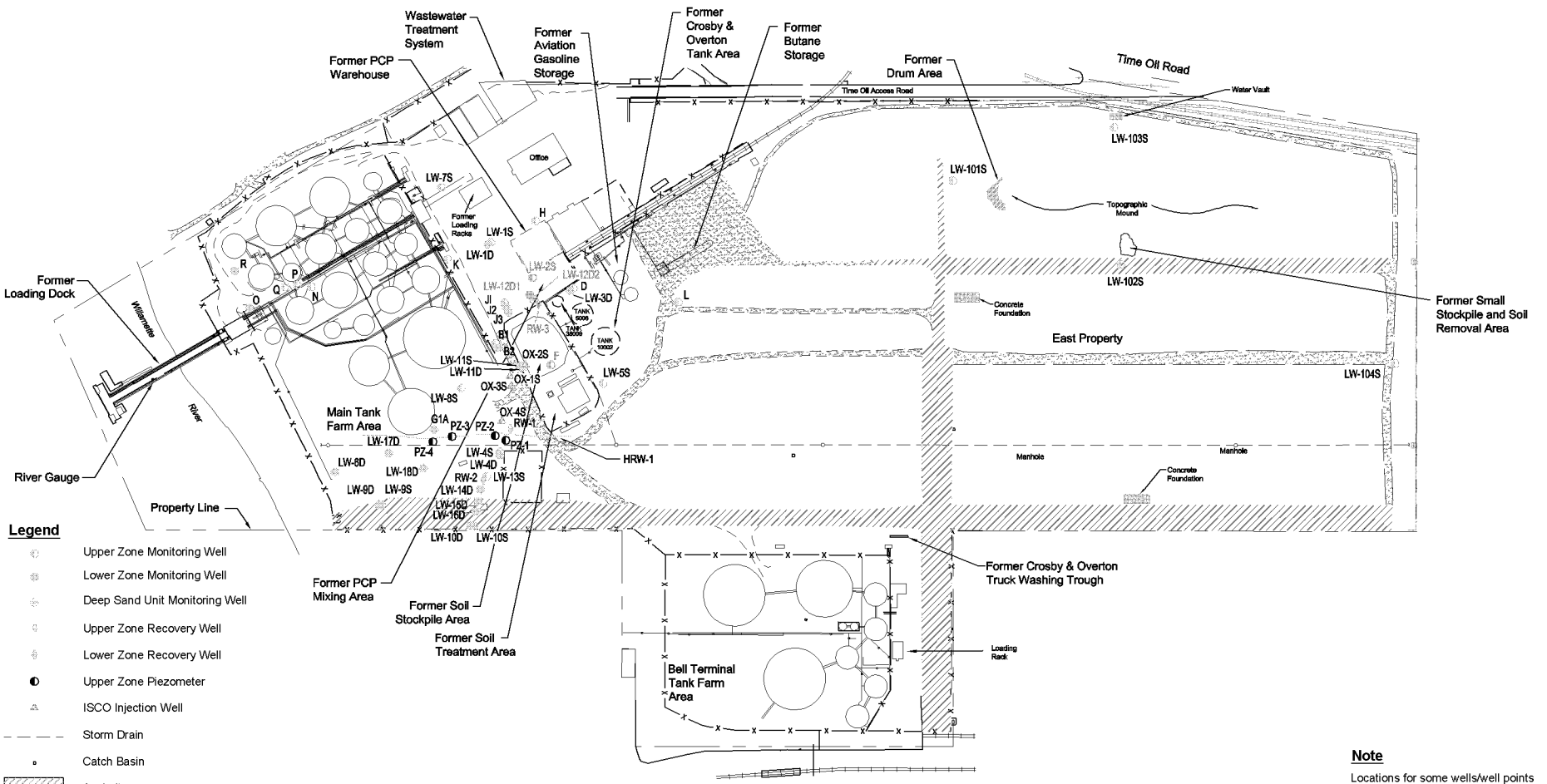

Note

Locations for some wells/well points installed pre-1996 are approximate.

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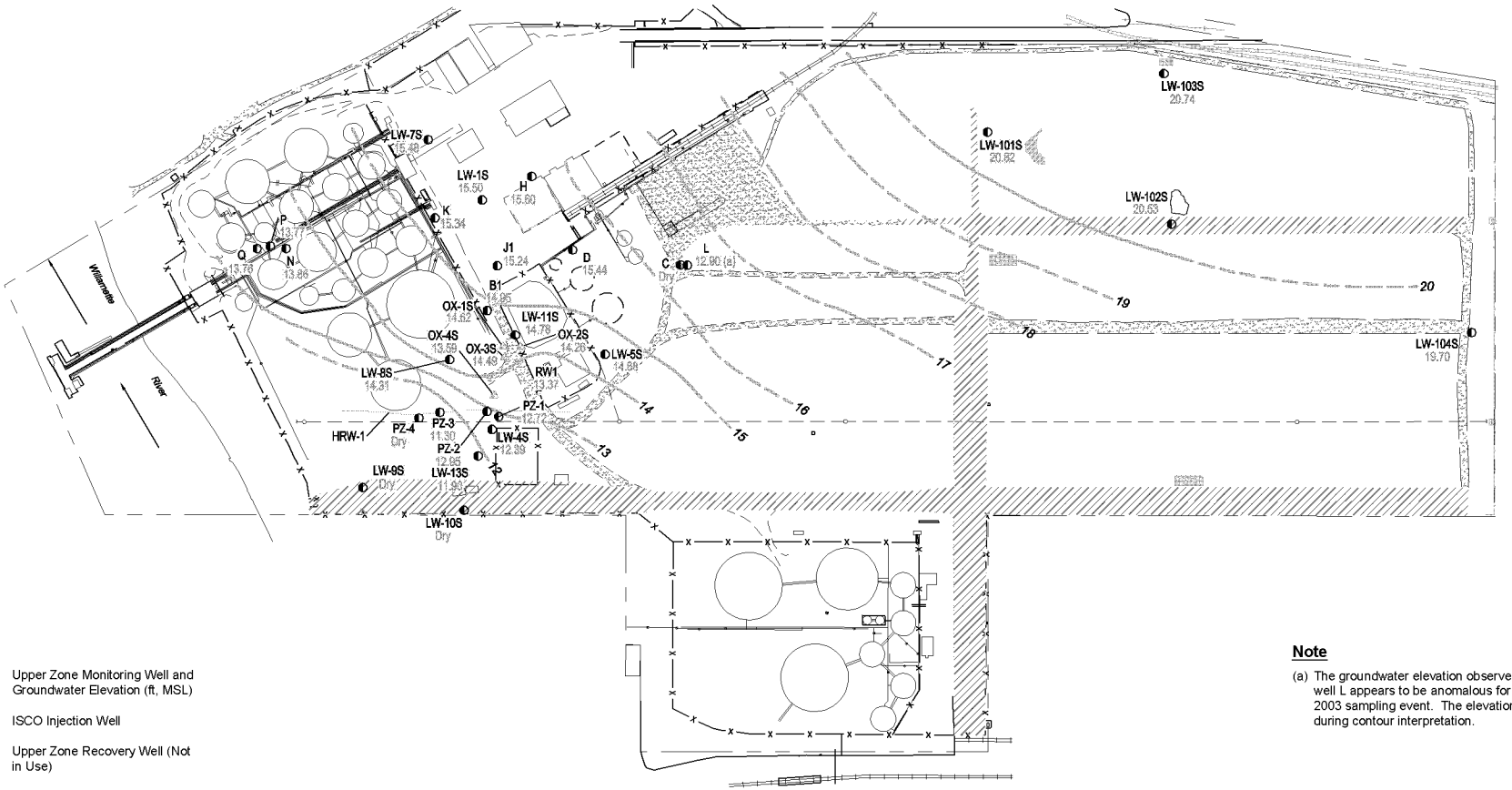
Time Oil NW Terminal Portland, Oregon	**Well Locations**	Figure 2

Time Oil/GW Quarterly Report [X:\231\00\13\13rd Qtr 2003 GW Report\Fig2.dwg (A) 'Figure 2' 2/6/2004

BZTO104(e)018376



Legend

- LW-8S 18.58 — Upper Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- ISCO Injection Well
- Upper Zone Recovery Well (Not in Use)
- HRW-1 — Horizontal Recovery Well (Dashes denote screened interval)
- 18 — Groundwater Elevation Contour (ft, MSL)

Note

(a) The groundwater elevation observed at monitoring well L appears to be anomalous for the third quarter 2003 sampling event. The elevation was not used during contour interpretation.

0 200 400
Scale in Feet

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Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Upper Zone, August 27, 2003**	Figure 3

Time Oil/GW Quarterly Report [X:\231\00\13\13rd Qtr 2003 GW Report\Fig3.dwg (A) "Figure 3" 2/6/2004

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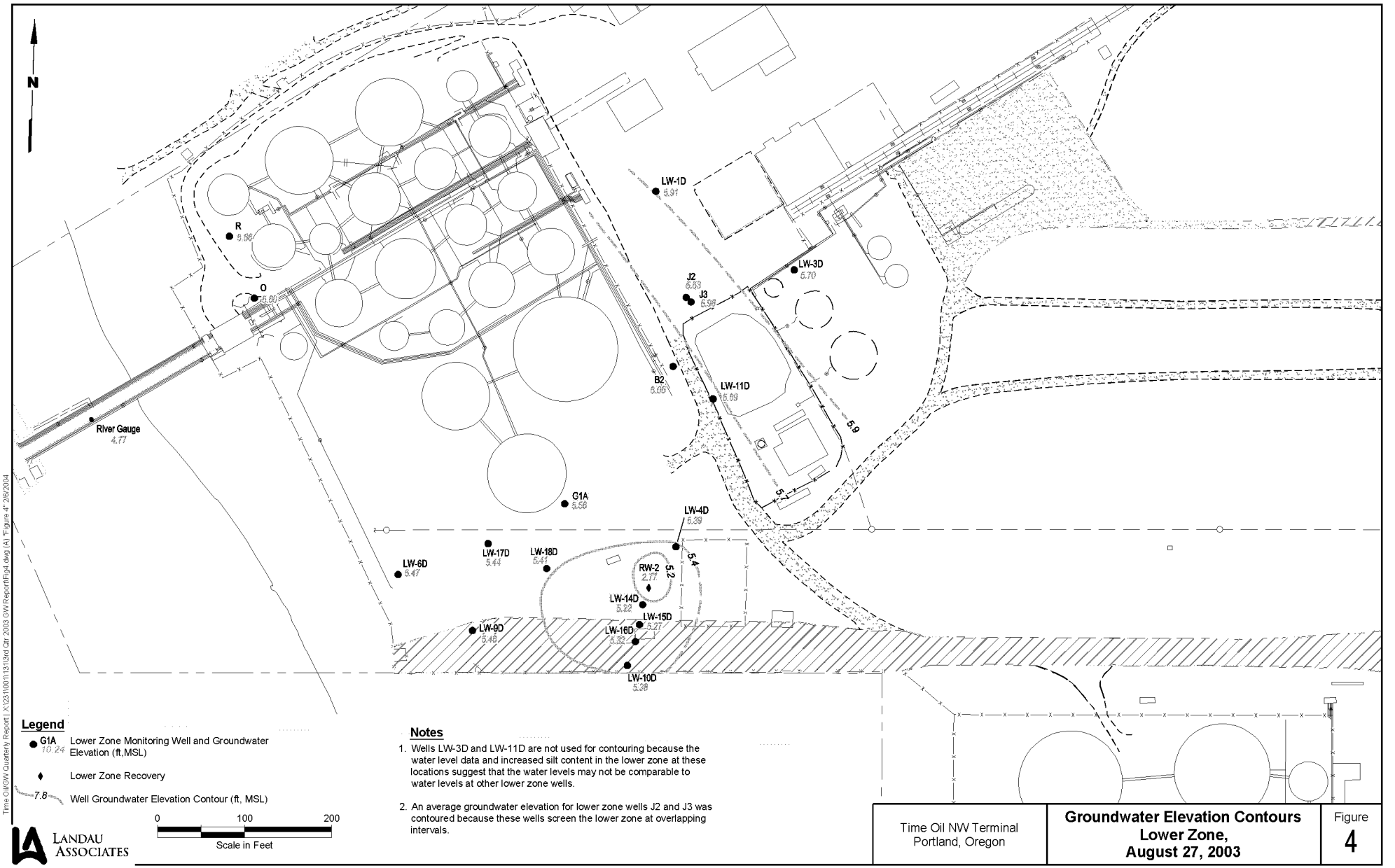
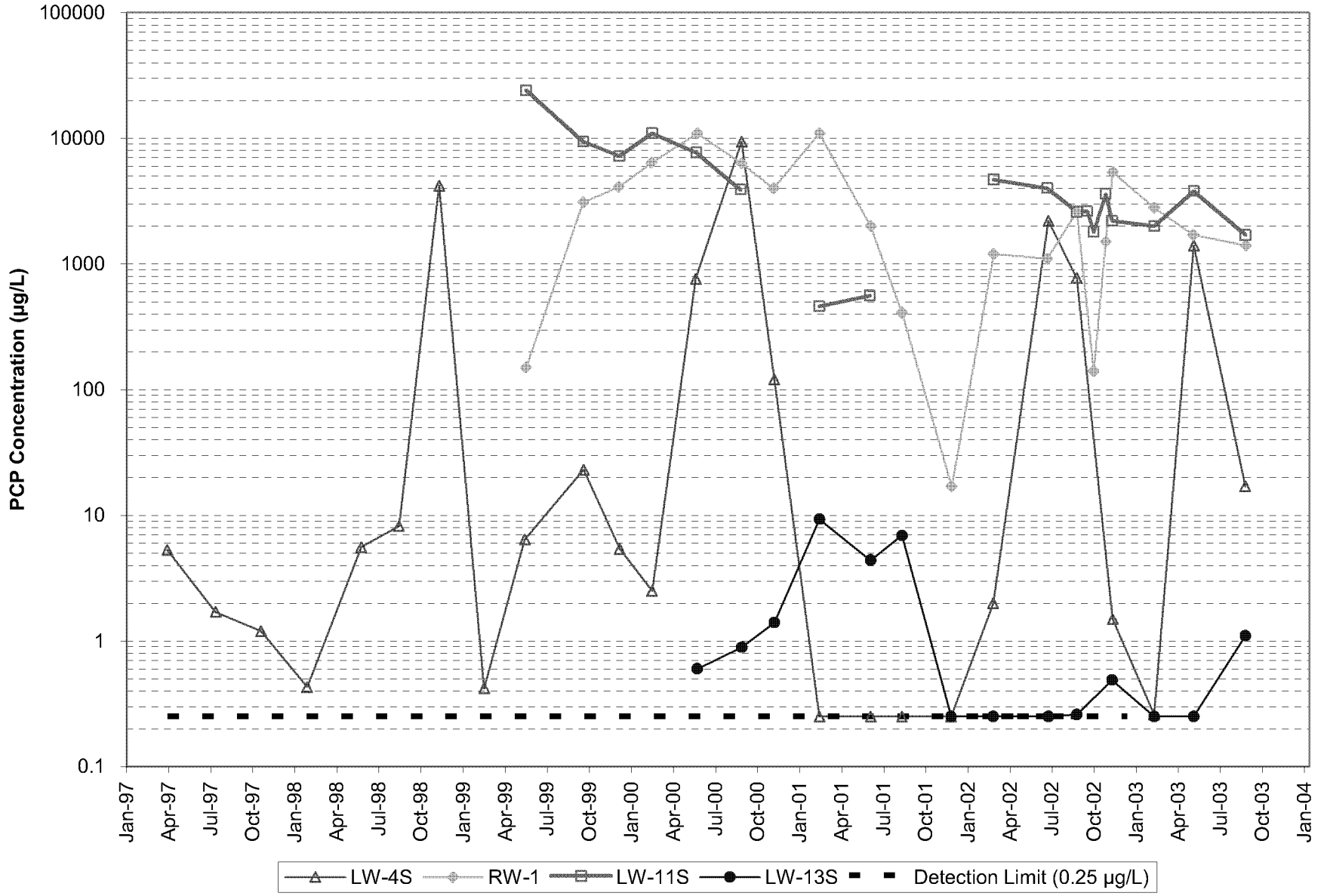


BZTO104(e)018378



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Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Upper Zone Wells
April 1997 – August 2003**

Figure
5

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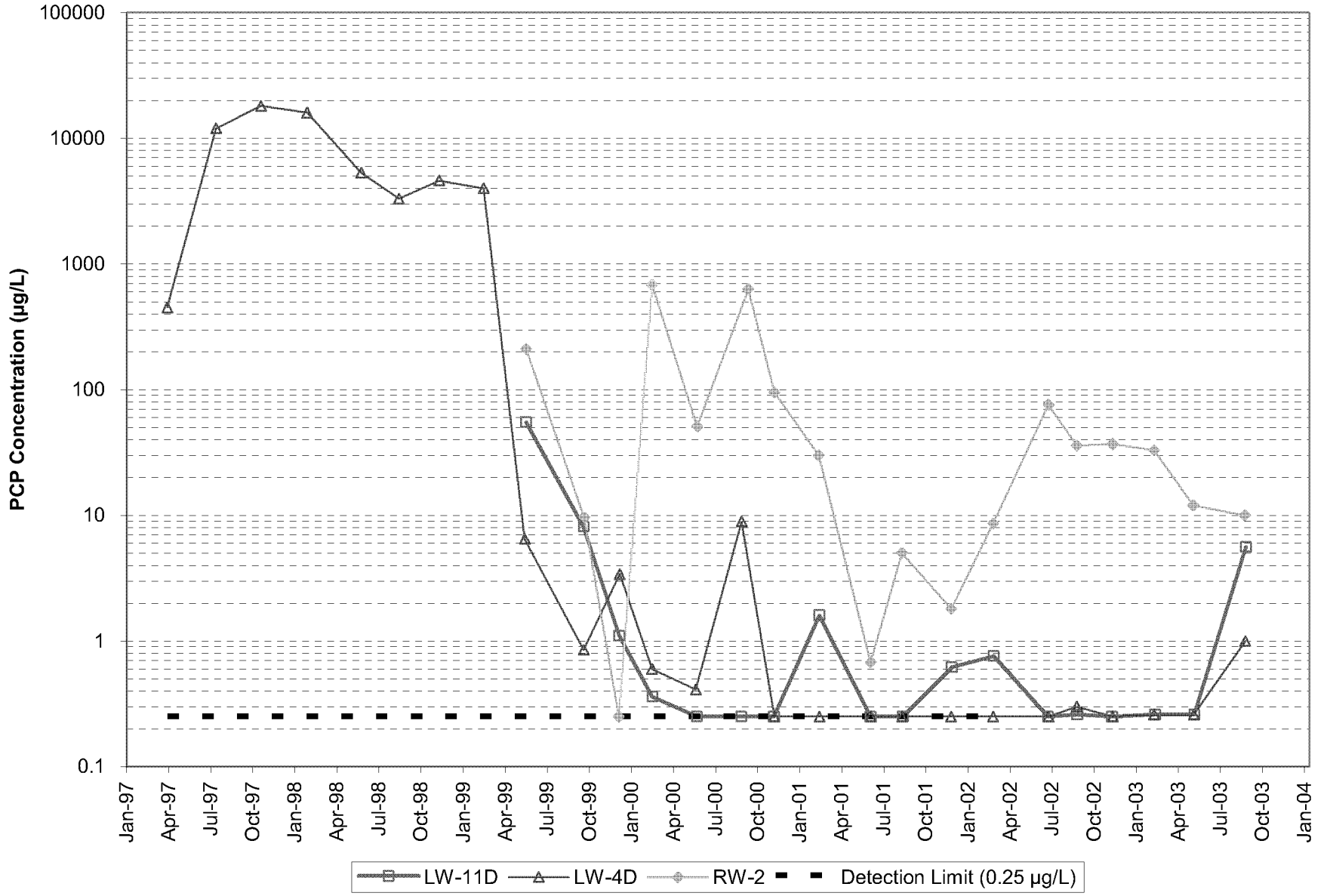

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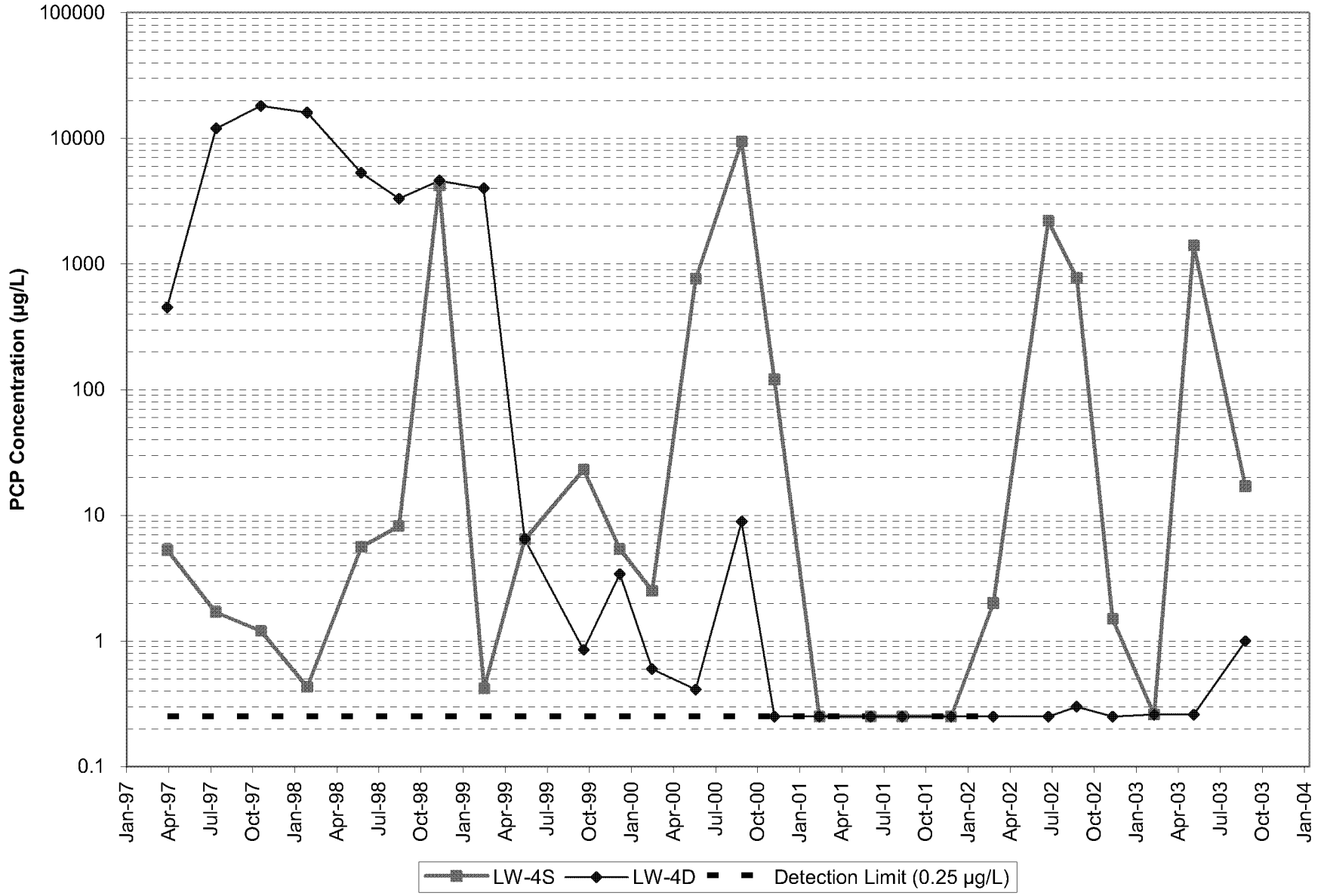
Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Lower Zone Wells
April 1997 – August 2003**

Figure
6

BZTO104(e)018380



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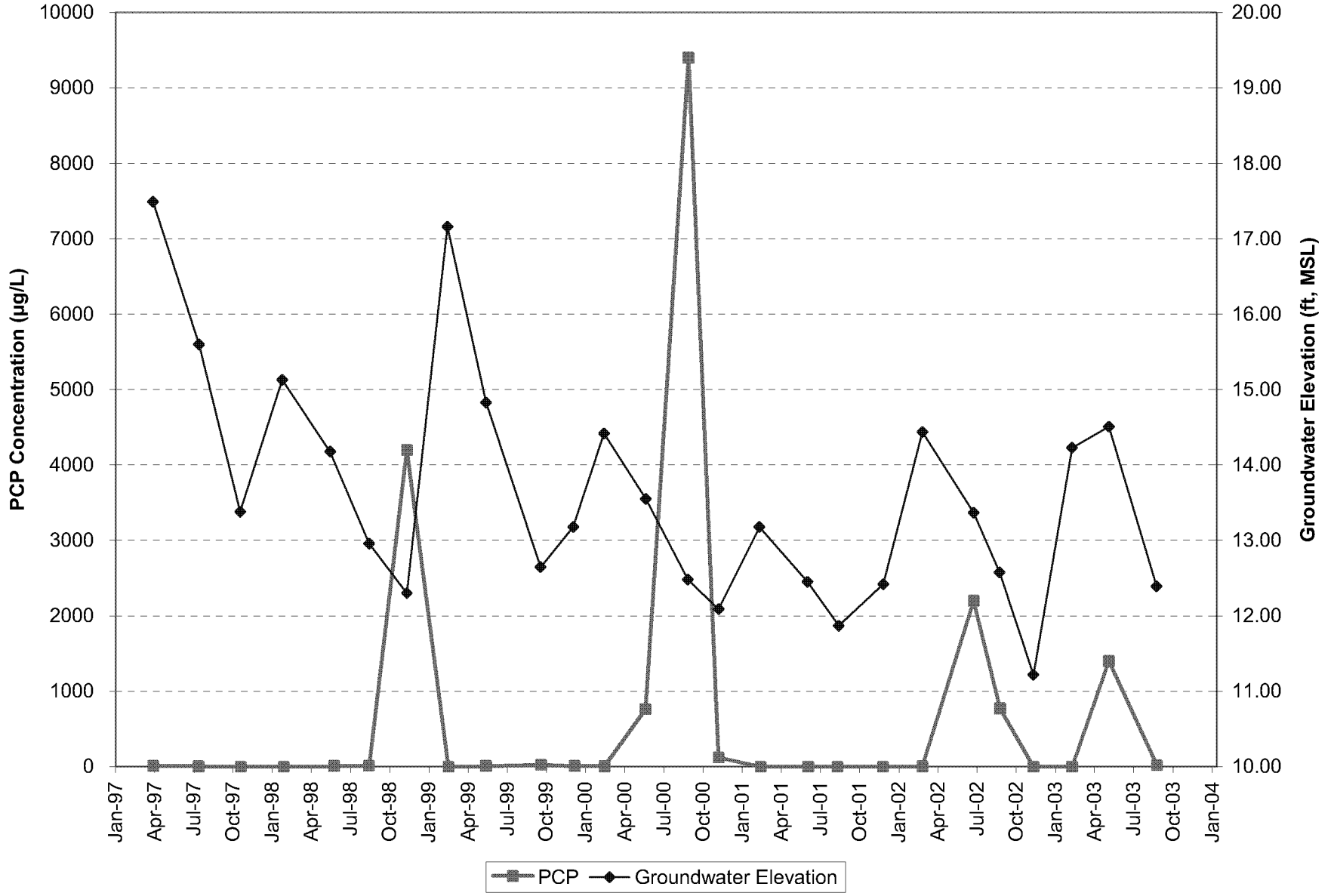
Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Wells LW-4S and LW-4D
April 1997 – August 2003**

Figure
7

BZTO104(e)018381



LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**PCP Concentrations and Groundwater Elevations, LW-4S April 1997 – August 2003**	Figure 8

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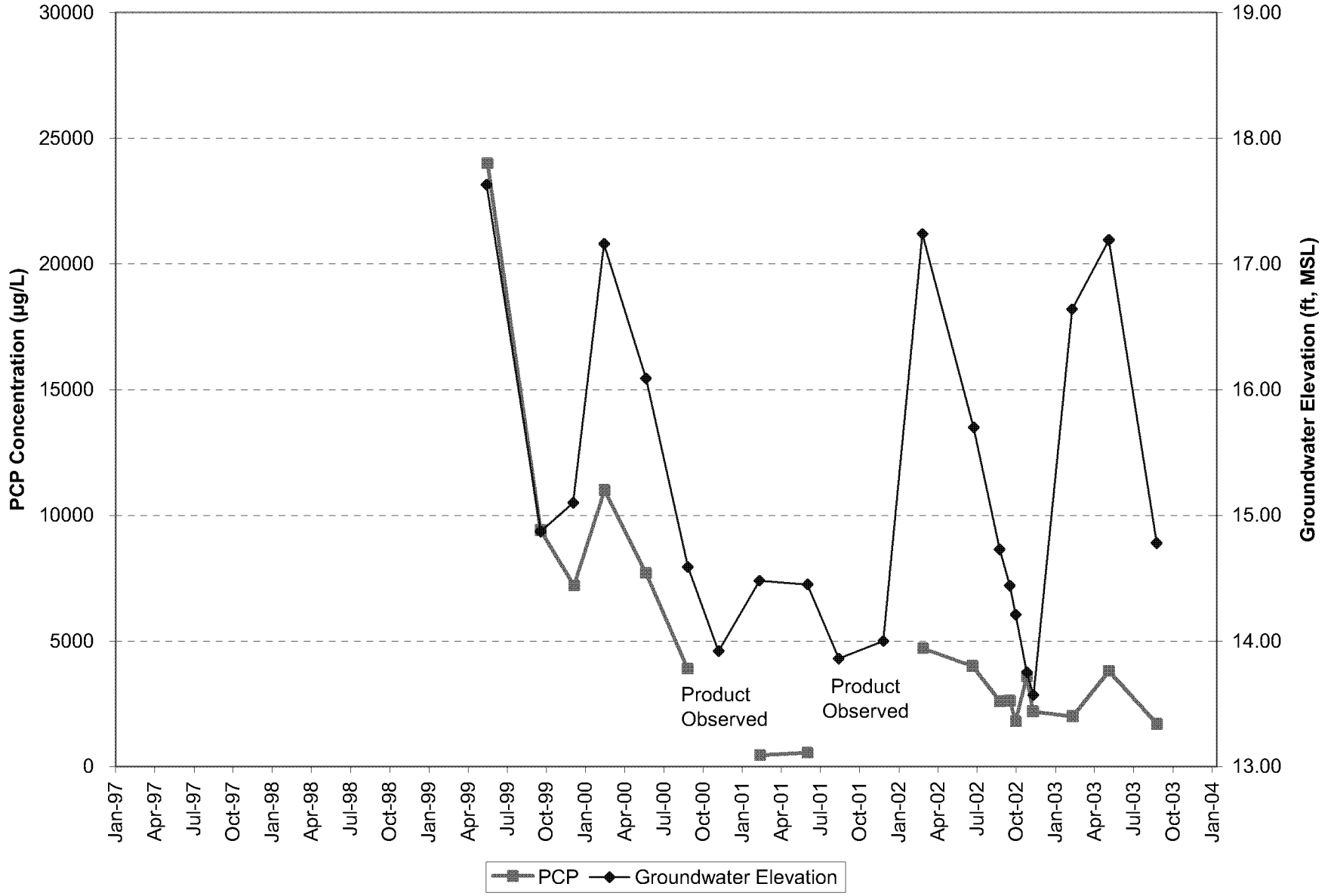

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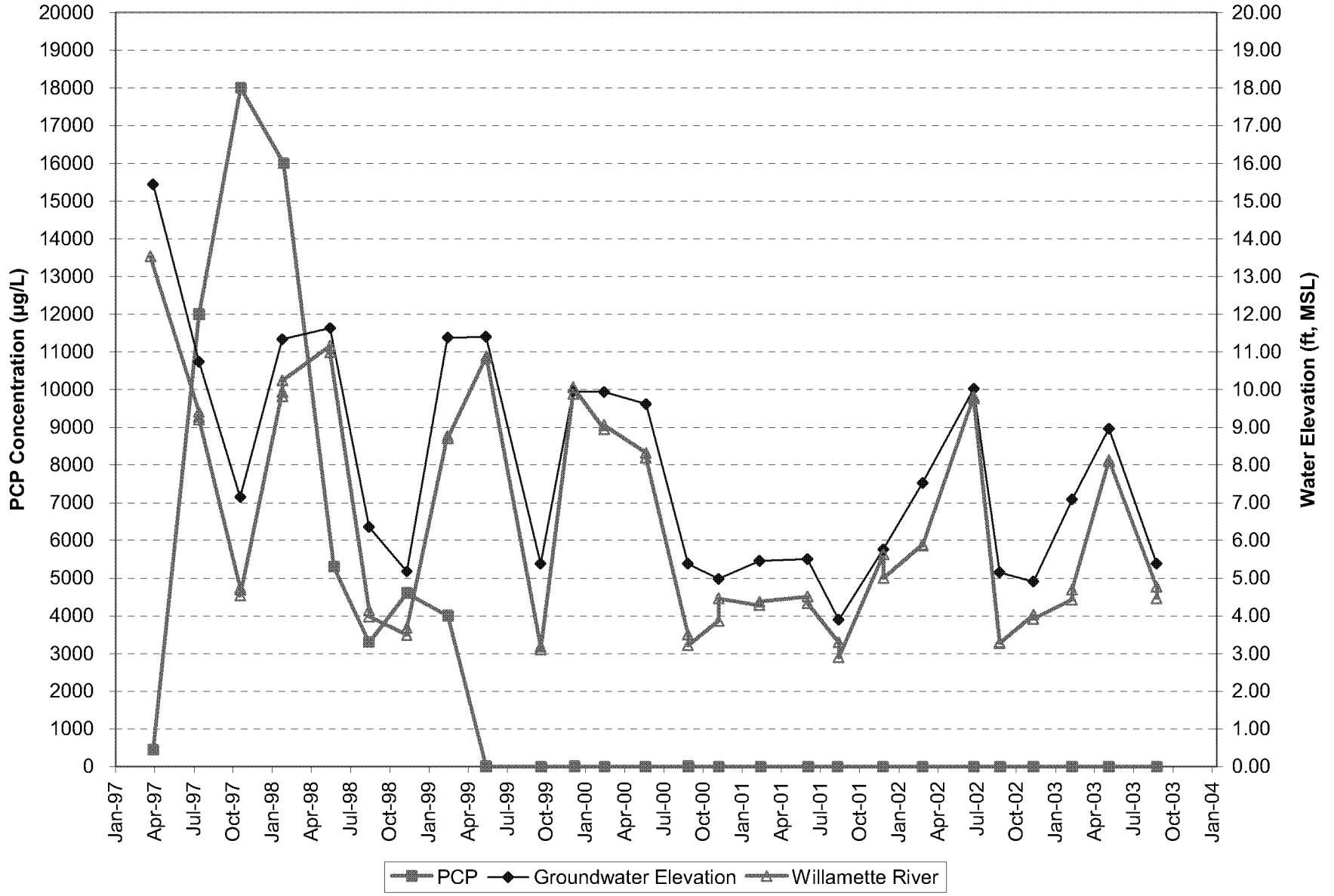
Time Oil NW Terminal Portland, Oregon	**PCP Concentrations and Groundwater Elevations, LW-11S April 1997 – August 2003**	Figure 9



LANDAU ASSOCIATES

Time Oil NW Terminal
Portland, Oregon

PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D April 1997 – August 2003

Figure
10

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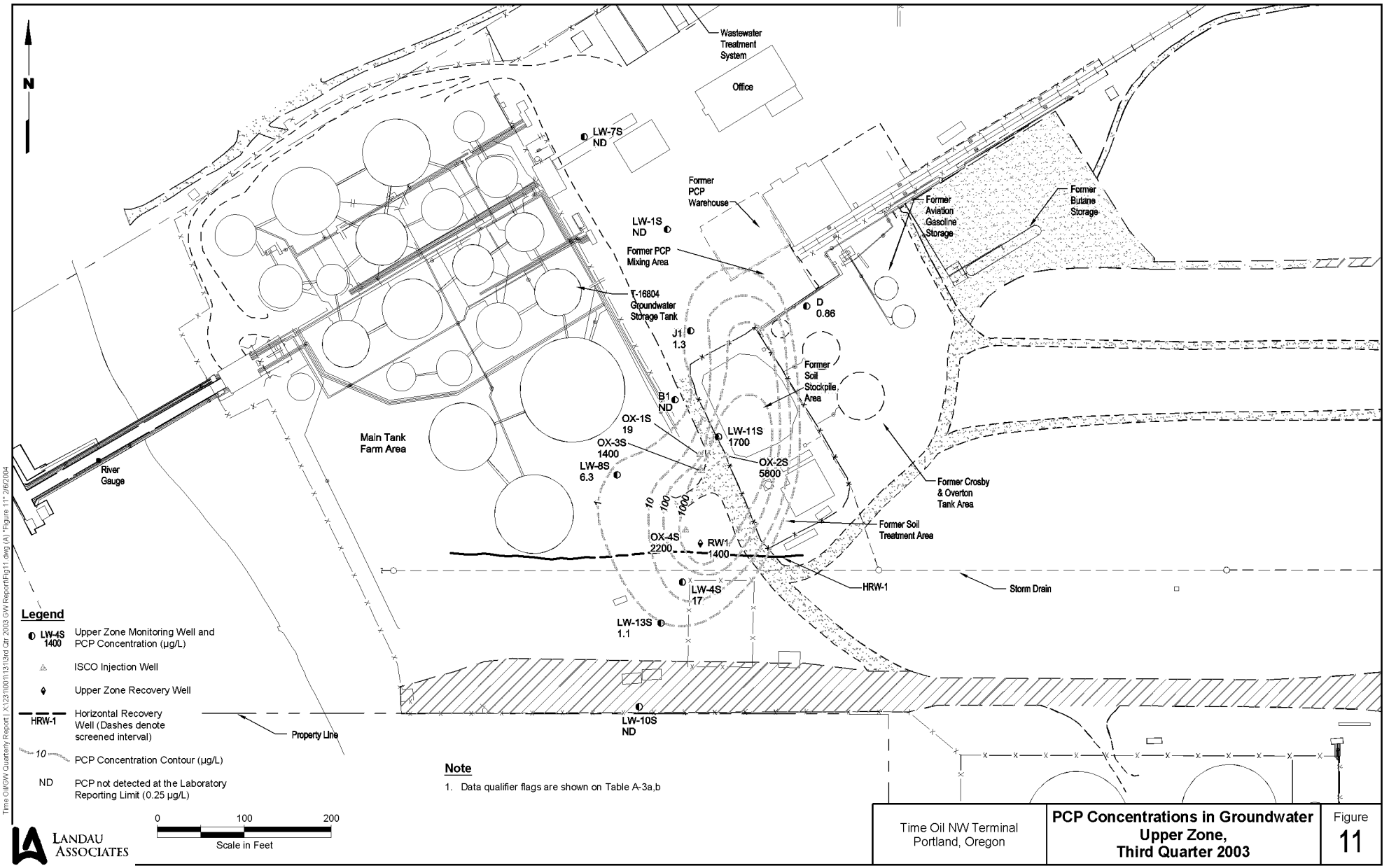

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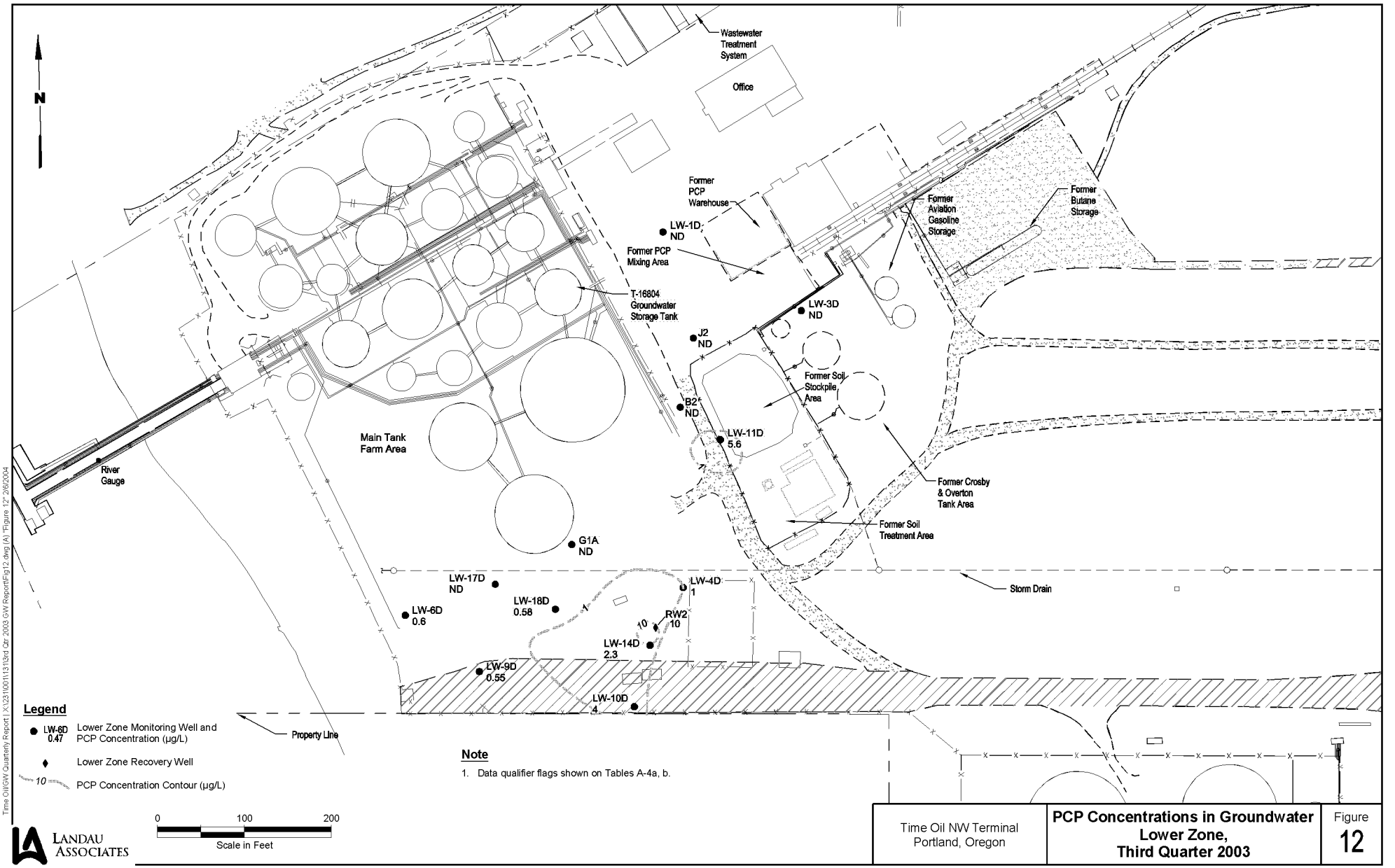

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LANDAU ASSOCIATES

RECEIVED APR 15 2004

April 9, 2004

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the January through March 2004 quarterly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

RB/tam
4/9/04 \\Edmdata\wproc\231\TRANSMIT FAX\Quarterly Rpt_Ltr.doc

Enclosure

cc: Mr. Kevin Murphy, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Ms. Cheryl Rath, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

QUARTERLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
January through March, 2004

SUMMARY OF WORK PERFORMED

- Prepared and submitted the October - December 2004 quarterly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 7.7 gpm. Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line at an average flow rate of 3.32 gpm. HRW-1 did not operate during January through March 2004 because it was dry due to low water level conditions. A total of approximately 15.8 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 1.1 million gallons treated during this quarter.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP). In addition, we continued to monitor the groundwater elevation in the upper zone to determine when groundwater recovery can be resumed at HRW-1.

- Collected effluent samples from the WWTP throughout the quarter to evaluate the treatment system efficiency.

- Modified the WWTP in March 2004 to improve the efficiency of the treatment system. As authorized by the City of Portland, the modifications included the use of a higher dose of hydrogen peroxide, implementation of a batch/mix tank prior to discharge, and aeration of the batch/mix tank to improve contact between the hydrogen peroxide and groundwater being treated.

- Submitted the *Third Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* to DEQ.

- Prepared the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Conducted the first quarter 2004 groundwater monitoring event during the weeks of February 16 and 23, 2004. To alleviate potential quality assurance issues and costs with having to ship groundwater samples from Portland to Seattle for analysis, Specialty Analytical Laboratory (Tualatin, OR) was used to perform groundwater analyses for this sampling event. An initial evaluation of the laboratory performance was conducted during project setup and during the analyses. An assessment of whether we will continue to use this lab for future events will be conducted following review of the data validation results.

- Submitted a letter to DEQ providing a recommendation for reduction of sampling frequency at certain Phase II monitoring wells. Received verbal approval from DEQ to proceed with the recommendation for first quarter 2004 sampling event; formal approval will occur after thorough review by DEQ.

- Prepared a work plan for implementation of the *in situ* chemical oxidation (ISCO) technique as an interim remedial action for upper zone soil and groundwater.

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- Replaced product socks in wells OX2S, PZ-2, and Q for passive recovery of product from these wells. Temporarily stored the spent product socks in a 55-gallon drum in a designated location at the terminal pending disposal.

- Installed passive product recovery bailers in wells LW-21S and LW-27S, where product thicknesses up to about 1 ft were observed during the first quarter 2004 groundwater monitoring event. The product is temporarily being stored in a 55-gallon drum in a designated location at the terminal pending disposal.

- Treated and disposed soil cuttings from Phase III wells located in the Main Terminal and Bell Terminal tank farms at the TPS Technologies facility in Tacoma, WA. The soil cuttings were temporarily stockpiled in lined, bermed and covered areas since well installation in fall 2003. Analytical soil sample results collected during well drilling were used for waste profile information for the disposal facility.

- Spread out soil cuttings collected from the upper 10 ft of the well borings at wells OX-5S through OX-8S and OX-8D near the well locations. The soil cuttings consisted of clean fill placed within and adjacent to the PCP mixing area following completion of the removal action. PCP was not detected in a composite soil sample from the stockpile where the soil cuttings were temporarily placed.

- Collected a sample of sediment from the weir tank used during drilling of horizontal recovery well, HRW-1. The material originated from redevelopment of HRW-1 and consisted of about 1.5 yd^3 of approximately 98% sand and silt and 2% metal scalings, with about 0.5 ft of standing water. The PCP concentration in the sediment sample was nondetect.

- Continued preparation of the *Phase III RI Report* and provided to client for review.

RESULTS COLLECTED

- Influent/effluent samples from the WWTP for January through March, 2004. One sample was collected from the permitted discharge sample point on January 15, 2004; PCP and other constituent concentrations (e.g., BTEX) were less than the permitted maximum discharge limits identified in the industrial wastewater discharge permit. The data results will be presented in the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Final groundwater data for the first quarter 2004 groundwater sampling event were received on April 2, 2004. Data results will be presented in the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report.*

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- In March 2004, permission was obtained from the City of Portland to make modifications to the WWTP. Since the modifications to the WWTP have been completed, subsequent process effluent samples indicate PCP concentrations of 6.23 µg/L (March 24, 2004) and 7.07 µg/L (March 26, 2004).

- An anomalously high PCP concentration was reported for the groundwater sample collected from well LW-7S for the third quarter 2003 sampling event. Through discussions with the laboratory, it was determined that the concentration that was reported was actually the concentration of a spiked sample that was analyzed directly before LW-7S. The extract from the sample from LW-7S was

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reanalyzed and yielded a PCP concentration of nondetect. The initial incorrect laboratory result was retracted and replaced with the correct result and the case narrative was revised to describe the laboratory error.

WORK TO BE PERFORMED NEXT QUARTER

- Prepare and submit quarterly report to DEQ.
- Continue implementation of the groundwater interim action in the lower zone at RW-2. Continue the upper zone groundwater interim action by re-activating HRW-1 (if feasible) and continue to operate the groundwater intercept system at the storm drain (SDM-1). Continue groundwater treatment and discharge to POTW. Continue review of the system operations performance for the groundwater interim action system at RW-2, HRW-1, SDM-1 and the onsite wastewater treatment system.
- Continue to monitor the effluent from the WWTP.
- Complete preparation of the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* and submit to DEQ.
- Prepare the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Report.*
- Conduct the second quarter 2004 groundwater monitoring event in May 2004.
- Complete preparation of a plan for conducting full scale *in situ* chemical oxidation (ISCO) groundwater interim action within the upper zone and submit to DEQ. Begin preparations for field work.
- Complete preparation of the Phase III RI report and submit to DEQ.

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Work Plan
In Situ Chemical Oxidation
Interim Remedial Action
Time Oil Northwest Terminal
Portland, Oregon

May 11, 2004

Prepared for

Time Oil Co.
2737 West Commodore Way
Seattle, WA 98100-1233

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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1.0 INTRODUCTION

This work plan presents the scope of work for implementation of an *in situ* chemical oxidation (ISCO) interim remedial action program at the Time Oil Northwest Terminal (site) in Portland, Oregon. Pentachlorophenol (PCP) has been identified as the primary contaminant of potential concern (COPC) in soil and groundwater at the site (Landau Associates 2004a) and is the target compound of the proposed ISCO interim remedial action. A laboratory treatability study (ISOTEC 2002) and pilot test results (ISOTEC 2003) indicate that ISCO has proven to be successful in reducing PCP concentrations at the site in both shallow groundwater and saturated zone soil. A vicinity map is shown on Figure 1, and a site plan depicting the western portion of the site that has been impacted by PCP is shown on Figure 2. A description of the ISCO process and the objectives of this work plan are provided below. This work plan will be implemented following receipt of authorization to proceed from the Oregon Department of Environmental Quality (DEQ).

1.1 *IN SITU* CHEMICAL OXIDATION (ISCO) PROCESS DESCRIPTION

As previously presented in the work plan (Landau Associates 2002) prepared prior to the implementation of the pilot test, ISCO is the application of a chemical oxidant to the subsurface of a site with the intention of oxidizing contaminants into less toxic or non-toxic compounds. Some of the potential benefits of ISCO include:

- A fast reaction with contaminants and potential for achieving cleanup goals in a relatively short time period
- Elimination of the need to excavate soil or pump groundwater for treatment
- Elimination of the need for offsite disposal of residuals (e.g., treated groundwater or excavated soil).

The specific type of chemical oxidation that was implemented during the pilot test is based on Fenton's reagent oxidation technology as applied by In-Situ Oxidative Technologies, Inc. (ISOTEC) of Englewood, Colorado. The Fenton's reagent chemical oxidation reaction is created by the reaction of soluble iron with low concentrations of hydrogen peroxide to produce hydroxyl radicals (•OH). The hydroxyl radical is a very powerful and short-lived oxidizer that attacks the carbon double bonds of chlorinated hydrocarbons (e.g., PCP). An example chemical equation for Fenton's chemistry is shown below (where Fe^{2+} is ferrous iron, H_2O_2 is hydrogen peroxide, Fe^{3+} is ferric iron, OH^- is hydroxide ion, and •OH is the hydroxyl free radical):

$$Fe^{2+} + H_2O_2 \text{ ---> } Fe^{3+} + OH^- + \bullet OH$$

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Iron is used to catalyze the reaction. Maintaining iron in the solution is important for the process to be successful in an *in situ* application. Complexed iron, patented by ISOTEC, is used in the process to eliminate the necessity of performing the reaction under low pH conditions, as is the case with traditional Fenton's reagent chemistry. The hydrogen peroxide and dissolved iron solutions are injected into the subsurface. The reaction time is very fast, with oxidation capacity of the reagent typically being used up in a few days. As a result of the chemical reaction induced, hydrogen peroxide ultimately breaks down into water and oxygen, and the iron catalyst is oxidized and precipitates out of solution.

The dilute concentration of hydrogen peroxide used during the pilot test (about 17 percent), will be repeated for full-scale implementation. The low concentration helps to reduce the potential for significant exothermic reactions that can be associated with higher concentrations of hydrogen peroxide. ISOTEC's experience using low hydrogen peroxide concentrations and complexed iron has reportedly resulted in less than a 25°F temperature increase in field applications.

The dosage rate of Fenton's reagent injected into the groundwater during the pilot test will also be repeated for full-scale implementation. Approximately 200 gallons of 17 percent hydrogen peroxide and 200 gallons of complexed iron solution were used at each injection location during the pilot test.

1.2 OBJECTIVE OF ISCO INTERIM REMEDIAL ACTION

The objective of ISCO interim remedial action is to reduce the concentration of PCP present in shallow groundwater within the PCP source area and extent of the PCP plume in the upper zone groundwater, and to reduce the concentration of PCP in the soil located within the zone of groundwater fluctuation (i.e., smear zone). Target cleanup concentrations for PCP in groundwater have not yet been established for the site. Based on the groundwater analytical results observed since the completion of the ISCO pilot test, a decrease in dissolved-phase PCP concentration of 70 percent or more is anticipated.

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2.0 SUMMARY OF PILOT STUDY

In September of 2002, ISOTEC conducted a pilot test at the site to determine the effectiveness of ISCO to reduce PCP concentrations in upper zone groundwater and saturated zone soil at the site. A description of the pilot test and a summary of the results are provided below.

2.1 DESCRIPTION OF PILOT TEST

On September 17 and 18, 2002, ISOTEC injected reagents at ten locations (IP-1 through IP-10) across the pilot test area (Figure 3). The materials injected included 17 percent hydrogen peroxide, complexed iron solution, and tap water. The injection points were direct-push probes installed by the drilling contractor, Cascade Drilling, Inc., and consisted of 1.5-inch diameter, 3-ft long injection screens attached to the bottom of the direct-push rods. The injection points were driven to a depth of 19 to 19.5 feet below ground surface (BGS) and spaced 25 feet apart based on a 12.5- to 15-ft estimated radius of influence (ROI). The ROI was estimated based on site lithology, contaminant concentrations and ISOTEC's previous experience. The depths were chosen so that reagent could be delivered through the 3-ft screened interval to the saturated zone between the water table at approximately 16 ft BGS and a silt layer at approximately 19 ft BGS. The shallow groundwater located above the silt layer is referred to as the upper zone groundwater at the site.

On September 17, 2002, pilot test injections were conducted at IP-6, IP-7, IP-8, IP-9 and IP-10. On September 18, 2002, pilot test injections were completed at IP-1, IP-2, IP-3, IP-4 and IP-5. For each injection location, ISOTEC typically injected approximately 100 gallons of tap water followed by 100 gallons of stabilized 17 percent hydrogen peroxide (oxidizer). Following a second water flush, 100 gallons of the complexed iron solution (catalyst) was injected followed by a third water flush, 100 more gallons of oxidizer, a fourth flush, 100 more gallons of catalyst and a final flush. Injection pressures ranged from 0 to 35 psi and injection rates of fluids ranged from 2 to 6.7 gallons per minute (gpm) for nine of the ten injection points. Injection procedures for IP-8, however, had to be terminated due to injection pressures as high as 60 psi. IP-10 was installed and utilized as a replacement for IP-8, which received only a 20-gal initial flush and 3 gallons of 17 percent hydrogen peroxide prior to termination.

A more detailed description of pilot test injection methodology was presented in the summary report (ISOTEC 2003) submitted to DEQ by Landau Associates in correspondence dated June 18, 2003.

2.2 PILOT TEST RESULTS

Groundwater and saturated zone soil samples were collected by Landau Associates to evaluate the effectiveness of the pilot test. In Appendix A, Figures A-1 through A-6 present dissolved-phase PCP

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concentrations before and after the injection of Fenton's reagent for six monitoring wells. Also in Appendix A, Table A-1 summarizes soil analytical results collected in the pilot test area prior to and after the injection of Fenton's reagent. Based on the analytical data presented in Appendix A, the ISOTEC process was successful in reducing PCP concentrations in both groundwater and soil.

In comparison to analytical results from the baseline sampling event conducted prior to the pilot test injection, groundwater sampling data collected during October 22-24, 2003 indicate that PCP concentrations have decreased from 79 percent to 99.99 percent for wells in the PCP plume area. Wells sampled in October 2003 in the pilot test area include RW-1, LW-11S, OX-1S, and OX-3S. Other monitoring wells within the PCP plume area were not sampled because they were either dry (OX-4S) or contained measurable product (OX-2S). Given the previously reported dissolved-phase PCP concentrations [>5,000 micrograms/liter (µg/L)] reported for monitoring well OX-2S, and the proximity of OX-2S to monitoring well LW-11S, which formerly exhibited measurable product, the presence of product in OX-2S is not unexpected and is likely related to the lower seasonal groundwater elevation in the upper zone in comparison to previous sampling events. One shallow groundwater monitoring well (OX-5S) upgradient of the PCP plume area, and three shallow groundwater monitoring wells (OX-6S, OX-7S, and OX-8S) in the PCP plume area were installed in September 2003 (Figure 2). The new groundwater monitoring wells were initially sampled during the October 2003 sampling event. Groundwater samples collected from these wells will provide baseline data for the ISCO interim remedial action. In addition to the shallow groundwater monitoring wells, one monitoring well (OX-8D) was installed in the lower zone groundwater near OX-8S. Monitoring well OX-8D will not be used to monitor the ISCO interim remedial action effects. The soil boring logs and monitoring well construction details for OX-5S, OX-6S, OX-7S, OX-8S, and OX-8D are provided in Appendix B.

Results of the pilot test indicated that the ROI for an individual injection point was underestimated. The ROI was observed to extend from approximately 17 to 33 feet rather then the estimated 12.5 to 15 feet. As a result, the ROI anticipated for the ISCO interim remedial action program implementation will be greater than the ROI of the pilot test, as described in the pilot test summary report (ISOTEC 2003).

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3.0 CURRENT CONDITIONS

A detailed description of the hydrogeologic conditions at the site is provided in the Phase III Remedial Investigation (RI) report (Landau Associates 2004a). The ISCO interim remedial action is being implemented to target PCP in the upper zone groundwater. Therefore, the hydrogeologic conditions described in this section are limited to the upper zone of groundwater. The subsurface soil chemical conditions presented in this section are compilations of soil analytical data collected historically at the site, taking into consideration remedial activities (i.e., soil excavation and the ISCO pilot test) that have been completed to date. The groundwater conditions described in this section are derived from the quarterly groundwater sampling event conducted in October 2003 and the four groundwater gauging events completed in February, May, August, and October 2003.

3.1 UPPER ZONE HYDROGEOLOGIC CONDITIONS

Four principal near-surface hydrogeologic units have been identified at the terminal, based on similar geologic soil types and hydrogeologic characteristics. In descending order from ground surface, these units include an upper water-bearing zone (upper zone), a confining unit, a lower water-bearing zone (lower zone), and a deep sand unit. Depending on the continuity of the confining unit and silt layers separating the units, the hydrogeologic units can act as distinct aquifer units under unconfined conditions in the upper zone or under confined to semi-confined conditions in the lower zone, or act as a single unconfined aquifer. The ISCO interim remedial action will address the upper zone and associated confining unit described below.

Upper Zone

The upper zone at the site has the following properties:

- The upper zone is a discontinuous, unconfined aquifer in fill and river alluvial deposits, consisting predominantly of sand. Seasonal variability occurs in the upper zone water levels; therefore, the saturated thickness of the zone varies, with seasonal high water levels in the winter and spring, and seasonal low water levels in the fall.

- Horizontal groundwater flow in the upper zone within the developed area of the terminal is generally consistently to the west-southwest toward the Willamette River; however, localized changes in the flow direction to the south-southwest occur in an area near and including the former PCP mixing area. The groundwater elevation in the upper zone is subject to seasonal variation, with a typical variation of approximately 3 ft between the low water table period (fall) and the high water table period (winter and spring). Within the past twelve months, the groundwater elevation of upper zone monitoring wells was measured in February, May, August, and October 2003 (Figures 6 through 9, respectively). The groundwater flow direction in the upper zone does not appear to vary significantly seasonally.

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- Average hydraulic conductivity estimates for the upper zone range from about 40 to 160 ft/day (including slug/bail test results) and the transmissivity is estimated to range from about 180 to 520 ft^2/day, assuming an average aquifer thickness of 4 ft. Groundwater velocities in the upper zone are estimated to range between about 0.7 to 7 ft/day.

Confining Unit

- A silt to sandy silt unit of variable thickness and areal extent separates the upper and lower zones across most of the terminal and appears to act as a confining or semi-confining layer for the lower zone. The silt unit consists of material that is characteristic of natural river overbank deposits, is heterogeneous, and varies in thickness across the site from less than 1 ft to about 17 ft.

- The confining layer thins and terminates west and southwest near the Willamette River and to the north of the former PCP mixing area. Thinning of the confining unit also occurs in a lenticular area south of the former PCP mixing area. As a result of the thinning of the confining unit in these areas, the upper and lower zones appear to be hydraulically connected, or the upper zone does not exist and the lower zone acts as an unconfined aquifer. Average vertical hydraulic conductivities of the confining unit have been determined to range between 0.004 to 0.007 ft/day.

3.2 SUBSURFACE SOIL CONDITIONS

PCP has been analyzed in soil samples collected during a series of subsurface soil investigations completed since 1986 and following a soil removal action completed in September through November 2002 (Landau Associates 2003). Soil analytical data presented in Figure 4 is representative of PCP concentrations present in the subsurface soil following the soil removal activities completed in September through November 2002, and the ISCO pilot test conducted in September 2002.

3.3 UPPER ZONE GROUNDWATER CONDITIONS

PCP in the upper zone groundwater extends in a narrow plume from the former PCP mixing area source area southwest to its most downgradient extent, approximately 400 ft from the source area (near LW-13S). The eastern and western boundaries and downgradient edge of the plume are defined by non-detected PCP concentrations at monitoring locations bordering the plume.

The most recent groundwater samples that were analyzed for PCP, and for which data validation has been completed, were collected on October 22-24, 2003. Based on the analytical results derived from the October 2003 sampling event (Figure 5), well OX-6S contained the highest detected concentration of PCP in the upper zone groundwater (2,100 µg/L). The groundwater analytical results from the October 2003 groundwater sampling event are presented in Figure 5.

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A detailed discussion of the analytical results derived from the October 2003 groundwater sampling event was provided in the fourth quarter 2003 status report (Landau Associates 2004b) submitted to DEQ.

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4.0 ISCO INJECTION APPROACH

As described below, the ISCO interim remedial action will be implemented in general accordance with the recommendations from the pilot test report, and as presented in the Sampling and Analysis Plan (SAP; Appendix C). The ISCO injection events will likely occur three times during 2004, with groundwater progress sampling occurring between events to monitor effectiveness of the ISCO program and identify areas that may require focused treatment during the next injection event. The time between injection events will likely be three to four months, but this schedule may be modified based on analytical results observed. The first injection event is scheduled to take place in May or June 2004 to take advantage of high groundwater conditions.

4.1 SAFETY PROTOCOL

The ISCO interim remedial action will be performed in compliance with the site-specific health and safety plan (HASP; Landau Associates 2002). Prior to mobilization, the current HASP will be reviewed and modified, as necessary, to include appropriate procedures for handling the chemical oxidant and applicable material safety data sheets (MSDS). All personnel present onsite for the ISCO injection activities will be required to review, acknowledge, and comply with the provisions of the HASP.

4.2 INJECTION METHODOLOGY

The direct-push injection approach utilized during the pilot test will be used again for the interim remedial action. Similar to the pilot test method, each injection point will receive approximately 500 gallons of tap water, 200 gallons of 17 percent hydrogen peroxide, and 200 gallons of complexed iron solution. The spacing and depth of injection points is detailed below, however, these parameters may be adjusted based on progress sampling results between injection events and the groundwater elevation at the time the injection event is to be completed. In addition to the direct-push injection locations, additional hydrogen peroxide, complexed iron solution, and tap water may be introduced through a series of lateral injection wells that were installed during the completion of soil excavation activities in the vicinity of the former PCP warehouse and mixing area (Landau Associates 2003). The use of the lateral injection wells will be evaluated during the initial injection event. The continued use of the lateral injection wells in subsequent injection events will be dependent upon the observed effectiveness of injection fluids in entering the shallow groundwater formation and an observed reduction in dissolved-phase PCP in the upper zone.

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4.2.1 BASELINE GROUNDWATER MONITORING EVENT

In preparation for the ISCO interim remedial action, and as a follow up to the soil removal activities completed in 2002, four monitoring wells (OX-5S through OX-8S) were installed in the vicinity of the former PCP warehouse and mixing area in September 2003. These four monitoring wells, and the six additional monitoring wells (RW-1, LW-11S, and OX-1S through OX-4S) previously used to monitor results of the pilot test, will be utilized to document baseline conditions prior to the injection of chemical oxidation reagents into the groundwater and to evaluate the effect of the ISCO injection program on PCP, selenium, and iron concentrations between the injection events. Sampling and analysis will be performed in accordance with the SAP (Appendix C) of this work plan. The SAP includes the full list of parameters for analyses at the monitoring wells.

4.2.2 INJECTION LOCATIONS

The pilot test summary report recommended 50-ft spacing between injection points, with a 25-ft ROI estimated for each injection location. However, 40-ft spacing will be used for the first injection event of the full-scale ISCO implementation in order to allow for overlapping radii of influence. The reagents will be delivered at a depth of approximately 16 to 19 ft BGS. The proposed locations of the direct-push ISCO injection points (IP-1-A through IP-30-A) and lateral injection wells (MPline01, 02E, 02W, 03E, 03W, and 04) are shown on Figure 10.

The lateral injection wells are located in the vicinity of the former PCP warehouse and mixing area, which is considered to be the primary source area for PCP impacts to the subsurface. Each lateral injection well is constructed of 4-inch diameter, schedule 40 PVC pipe with solid wall risers and horizontal sections comprised of alternating sections of solid wall pipe and well screen pipe. If utilized for the introduction, it is anticipated that the Fenton's reagent fluids will be pumped into the lateral injection wells through the solid wall risers and will diffuse into the groundwater formation through the well screen pipe. The horizontal portion of each of these lateral injection wells is approximately 12 ft BGS. This method of injection will only be utilized if the horizontal portions of the injection wells are submerged in the water table or are no more than 1 ft above the water table and if this method appears to effectively deliver injected fluids into the shallow groundwater formation.

4.2.3 INJECTION OF ISCO CHEMICALS

Injection of the chemical oxidation reagents will initially be performed by a team comprised of personnel from Landau Associates, ISOTEC, and Cascade Drilling. Following the initial injection event, the subsequent injection events may be performed by Landau Associates and Cascade Drilling personnel.

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4.2.3.1 Groundwater Injection Methods

Cascade Drilling will use a direct-push rig to install injection screens at the designated injection locations. ISOTEC will attach 3-ft-long injection screens to the bottom of the 1.5-inch diameter direct-push rods, allowing hydrogen peroxide, complexed iron solution, and tap water to be delivered into the 3-ft screened interval. Typically, injection screens will be driven to a depth of approximately 16 to 19 ft BGS and spaced 40 feet apart. The depths were chosen so that reagent will be delivered to the upper zone groundwater, without disturbing the silt layer (confining unit) located at varying depths from 16 to 19 ft BGS at the site. The first injection event will include approximately 30 injection points distributed over the PCP plume area.

Tap water, hydrogen peroxide (oxidizer), and a complexed iron solution (catalyst) will be pumped into the injection points using small diaphragm pumps. For each injection location, ISOTEC will inject fluids as follows (all volumes are approximate):

- 100 gallons tap water as water flush
- 100 gallons of oxidizer (17 percent hydrogen peroxide)
- 100 gallons of tap water
- 100 gallons of catalyst (complexed iron solution)
- 100 gallons of tap water
- 100 gallons of oxidizer
- 100 gallons of tap water
- 100 gallons of catalyst
- 100 gallons of tap water.

Injection pressures are expected to range from 0 to 35 psi and injection rates are expected to range from 2 to 6.7 gpm. If variations in the geologic formation cause injection pressures to exceed 40 psi or injection rates to be less than 1 gpm, adjustments will be made to the injection depth or location. Each injection event is expected to be completed within one to two weeks. A schematic depiction of the ISCO injection process is provided on Figure 11.

In addition to the vertical injection points, similar volumes of water, oxidizer, and catalyst will be introduced to the subsurface through each of the six lateral injection wells located near the former PCP warehouse and mixing area.

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4.2.3.2 Field Monitoring During Groundwater Injection

As referenced in the SAP (Appendix C), field monitoring during injection will consist of the following:

- Monitoring the groundwater temperature in upper zone monitoring wells (OX-1S through OX-8S, LW-11S, and RW-1) located within the injection area so that groundwater temperature is maintained below the level that subsurface utilities and monitoring well materials could be endangered. If the temperature rises above 100°F, injection would be temporarily discontinued until the groundwater temperature stabilizes.

- Monitoring the injection pressure to determine the formational resistance at the injection point. If the injection pressure is determined to be greater than 45 psi, the injection at that point will be terminated and the injection point will be relocated.

- Monitoring the generation of gas in the subsurface. An explosimeter will be used to monitor the condition (i.e., explosive potential and organic concentration) of vapors in the subsurface storm sewer pipeline during the injection event. If explosimeter readings indicate that the subsurface vapors in the monitoring wells or subsurface utilities exceed 20 percent of the lower explosive limit (LEL), ISCO injection activities will be ceased. Vapor extraction will be resumed after explosimeter readings indicate vapors in the subsurface are less than 20 percent of the LEL.

- Monitoring the oxidation/reduction potential of groundwater in the injection area monitoring wells (OX-1S through OX-8S, LW-11S, and RW-1) prior to and after the injections completed on a daily basis.

- If present, the depth and thickness of nonaqueous-phase liquid (NAPL) in monitoring wells located within the vicinity of the injection points will be measured.

4.2.4 POST GROUNDWATER INJECTION MONITORING

A groundwater sampling event will be performed approximately two weeks following the completion of each ISCO injection event. If practical, the injection events will be conducted on a schedule which allows for the routinely-scheduled groundwater monitoring event to serve as the post-injection groundwater monitoring event. In accordance with correspondence submitted by Landau Associates to DEQ dated February 2, 2004, the ISCO monitoring wells RW-1, LW-11S, and OX-1S through OX-8S would be routinely sampled in February and August.

Additional groundwater sampling events may be performed, as needed, to monitor the effects on groundwater induced by the ISCO injection events, specifically to monitor the potential for an increase or "rebound" of PCP concentrations. In addition to PCP, selenium and iron (ferrous iron) concentrations will be monitored during the quarterly groundwater sampling events to determine if the ISCO injections cause an unacceptable increase in concentration of these metals in groundwater. The details of the

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groundwater monitoring associated with the implementation of the ISCO interim remedial action are provided in the SAP in Appendix C.

BZTO104(e)018405

5.0 DISPOSITION OF WASTE MATERIAL

Several types of waste material may be generated during the completion of the ISCO pilot study. A description of the types of waste material anticipated and the proposed method of disposal follow:

- Soil cuttings will not be generated during the completion of injection point installation
- Groundwater generated during the purging of groundwater monitoring wells will be deposited to the terminal wastewater treatment system located onsite for treatment and discharge, as indicated in the SAP
- Disposable personal protective equipment (PPE) will be collected in trash bags and disposed in the existing trash dumpster onsite for disposal at the local municipal waste landfill
- Empty containers of hydrogen peroxide will be removed from the site at the conclusion of each injection event to be recycled by the supplier.

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6.0 ANALYSIS OF EFFECTIVENESS

Following completion of each ISCO injection event and follow-up monitoring, an evaluation will be performed to assess the effects of the ISCO injection program on the upper zone groundwater. The evaluation and subsequent reporting are described below.

6.1 DATA EVALUATION

The data evaluation to be performed following the ISCO injection events will include assessment and/or calculation of the following:

- PCP concentration changes and changes in PCP plume area
- PCP mass removal
- Estimated area of influence observed
- Estimated dosage rate required to meet specific mass removal goals
- Potential health and safety risks
- Formation of undesired reaction by-products (e.g., selenium and iron).

The data analysis will be performed to assess the effectiveness of the ISCO program for the PCP plume in upper zone groundwater and what modifications need to be made prior to future ISCO injection events.

6.2 REPORTING

The results of the data evaluation will be presented within the quarterly progress reports already being completed for submittal to DEQ. If it is determined that more than one injection event is advisable within a quarterly monitoring period, a technical memorandum will be submitted to DEQ to provide a rationale for the injection event prior to mobilizing to the site to complete the injection event.

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7.0 PROPOSED SCHEDULE

The first injection event is scheduled to take place in May or June 2004 to take advantage of high groundwater conditions typical during spring. Subsequent injection events and monitoring schedules will be proposed in quarterly status reports or technical memoranda submitted to DEQ. If feasible, the timing of the injection events will be coordinated to occur approximately two weeks prior to the regularly scheduled groundwater monitoring event to be completed in the second quarter of 2004.

* * * * * *

This [illegible] been prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

REGISTERED PROFESSIONAL ENGINEER [redacted] JAN 15 2002 MARTIN THOMAS POWERS EXPIRATION DATE [illegible]

Martin T. Powers, P.E.
Senior Associate Engineer

Rebekah Brooks
Associate Hydrogeologist

MTP/RB/tam

BZTO104(e)018408

8.0 REFERENCES

In-Situ Oxidation Technologies, Inc. (ISOTEC). 2003. *Field Pilot Test Report, Time Oil Northwest Terminal, Portland, Oregon*. March 26.

In-Site Oxidation Technologies, Inc. (ISOTEC). 2002. *Laboratory Treatability Study Report, Time Oil Northwest Terminal, Portland, Oregon.* August 9.

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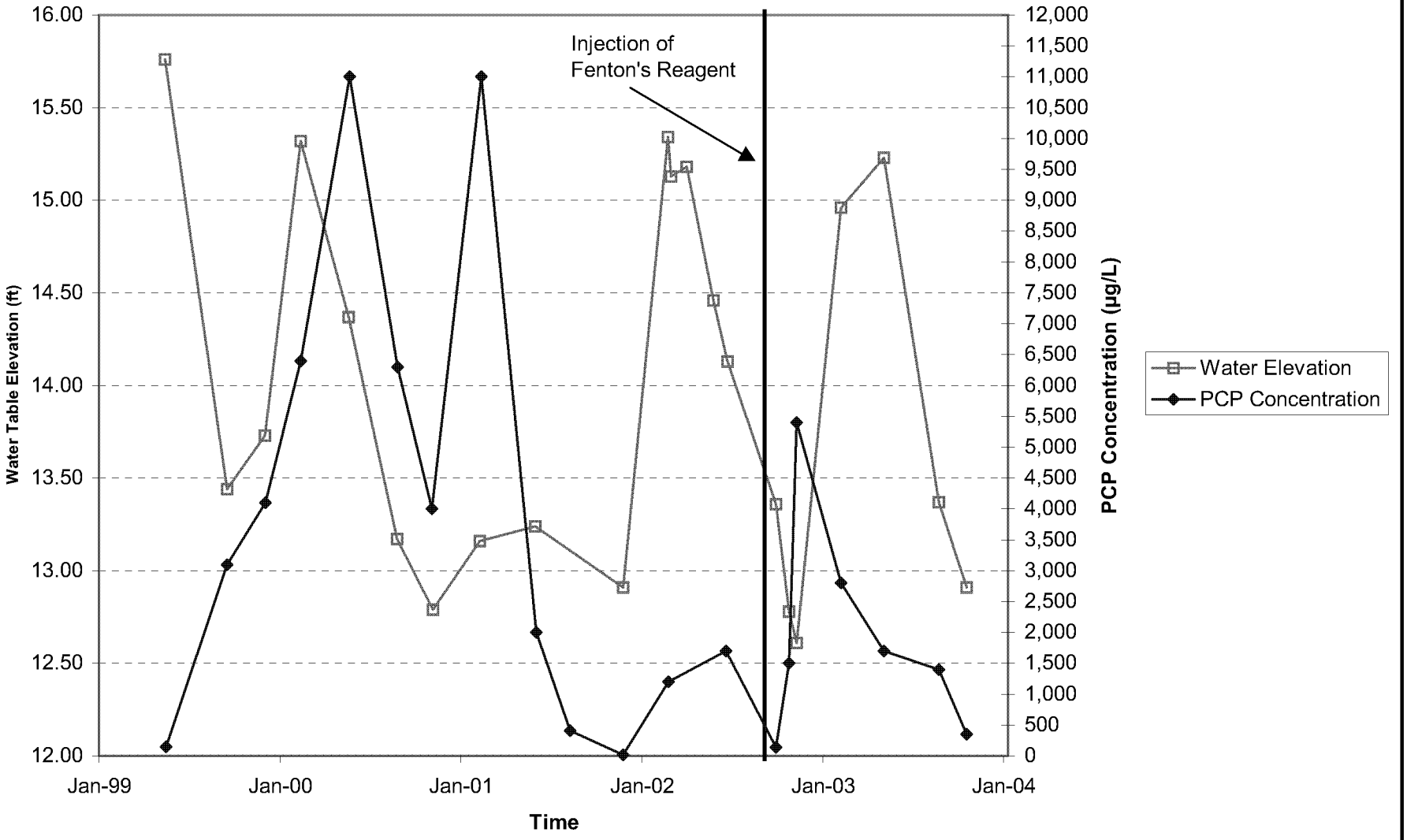
Landau Associates. 2003. Removal Action Completion Report, Phases I/II RI Areas, Time Oil Northwest Terminal, Portland, Oregon. November 10.

Landau Associates. 2002. *Work Plan: In-Situ Chemical Oxidation Pilot Study, Time Oil Northwest Terminal, Portland, Oregon*. June 7.

BZTO104(e)018409

APPENDIX A

Dissolved- and Adsorbed-Phase PCP Results Since Pilot Test



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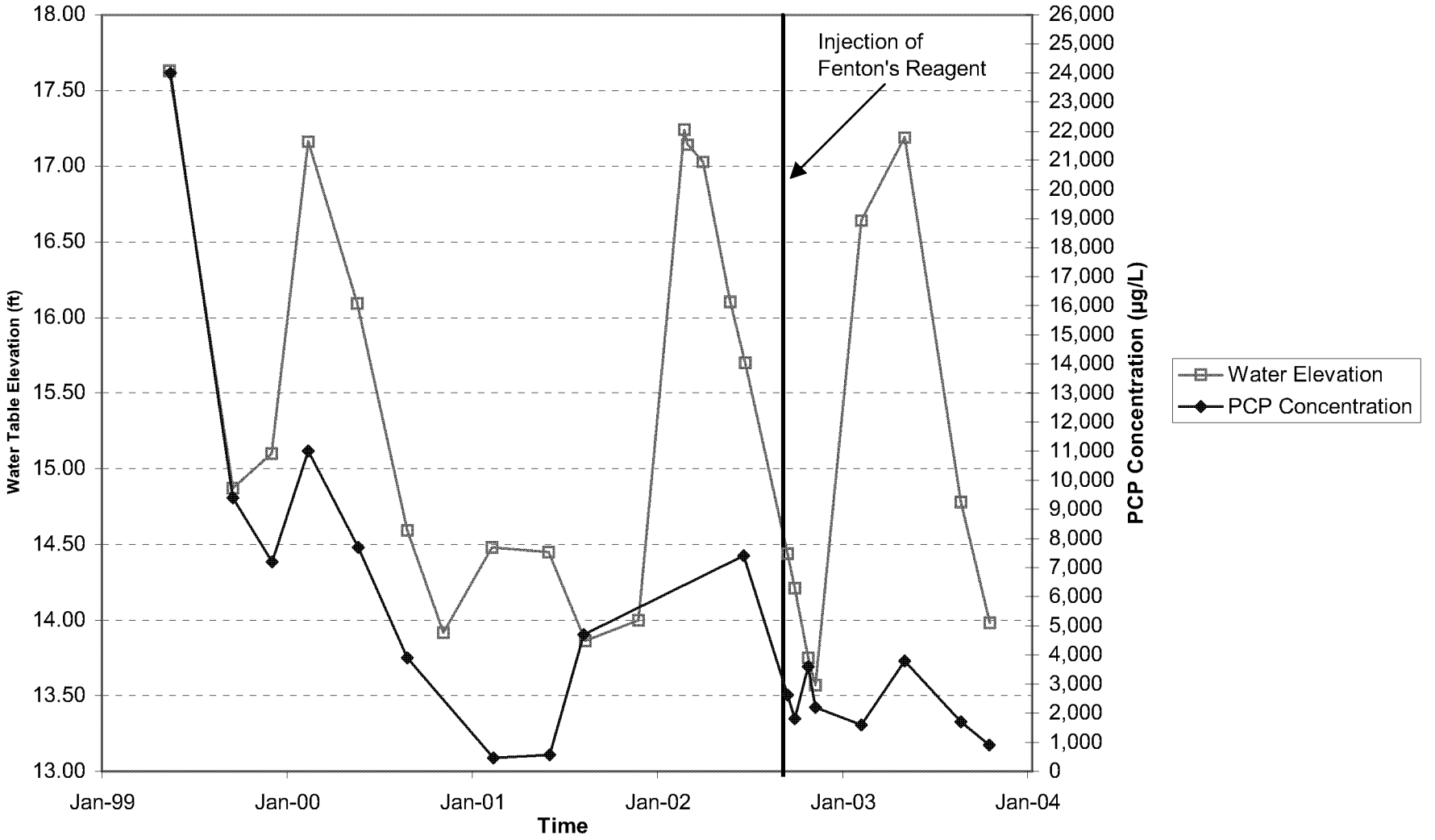
Time Oil Northwest Terminal Portland, Oregon	**RW-1**	Figure A-1



Note: Groundwater elevation without corresponding PCP concentration (e.g., December 2001 - June 2002) is indicative of the presence of LNAPL and no sample was collected for analysis.

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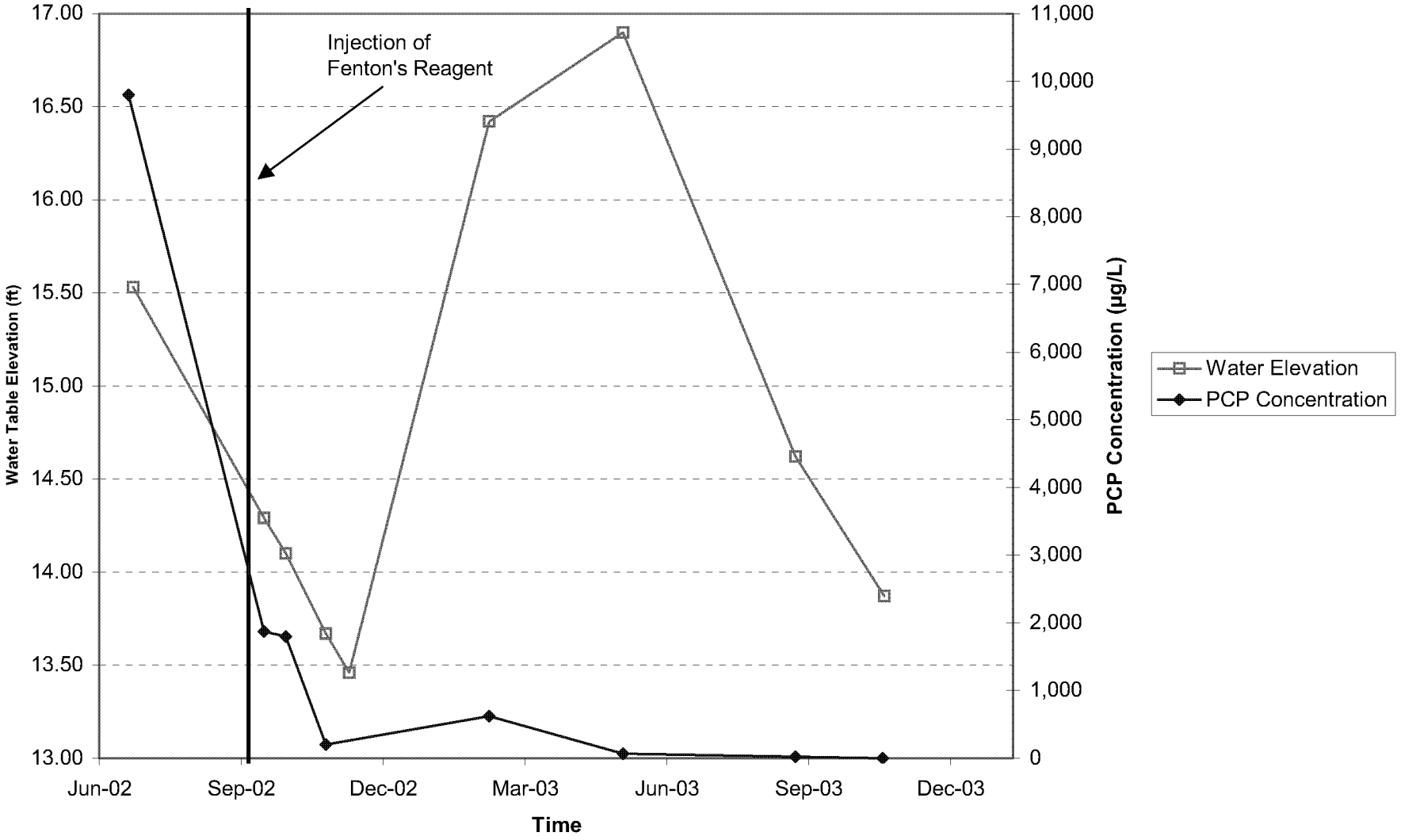
Time Oil Northwest Terminal Portland, Oregon	**LW-11S**	Figure A-2

BZTO104(e)018412

Source: s:\wproc\231\001\118\Pilot Test Cvr Ltr_Tb1.xls OX-1S



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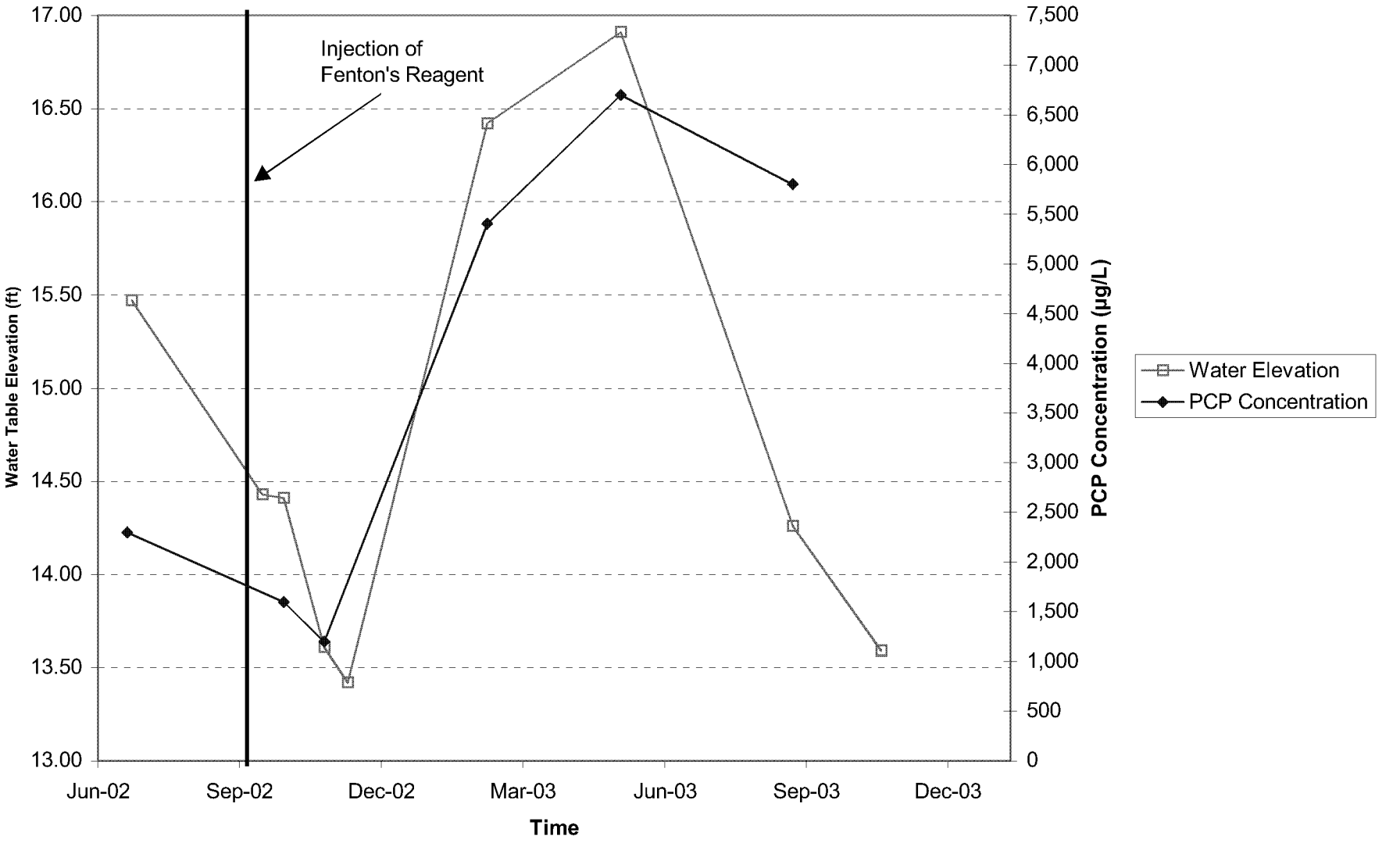
Time Oil Northwest Terminal Portland, Oregon	**OX-1S**	Figure A-3

BZTO104(e)018413



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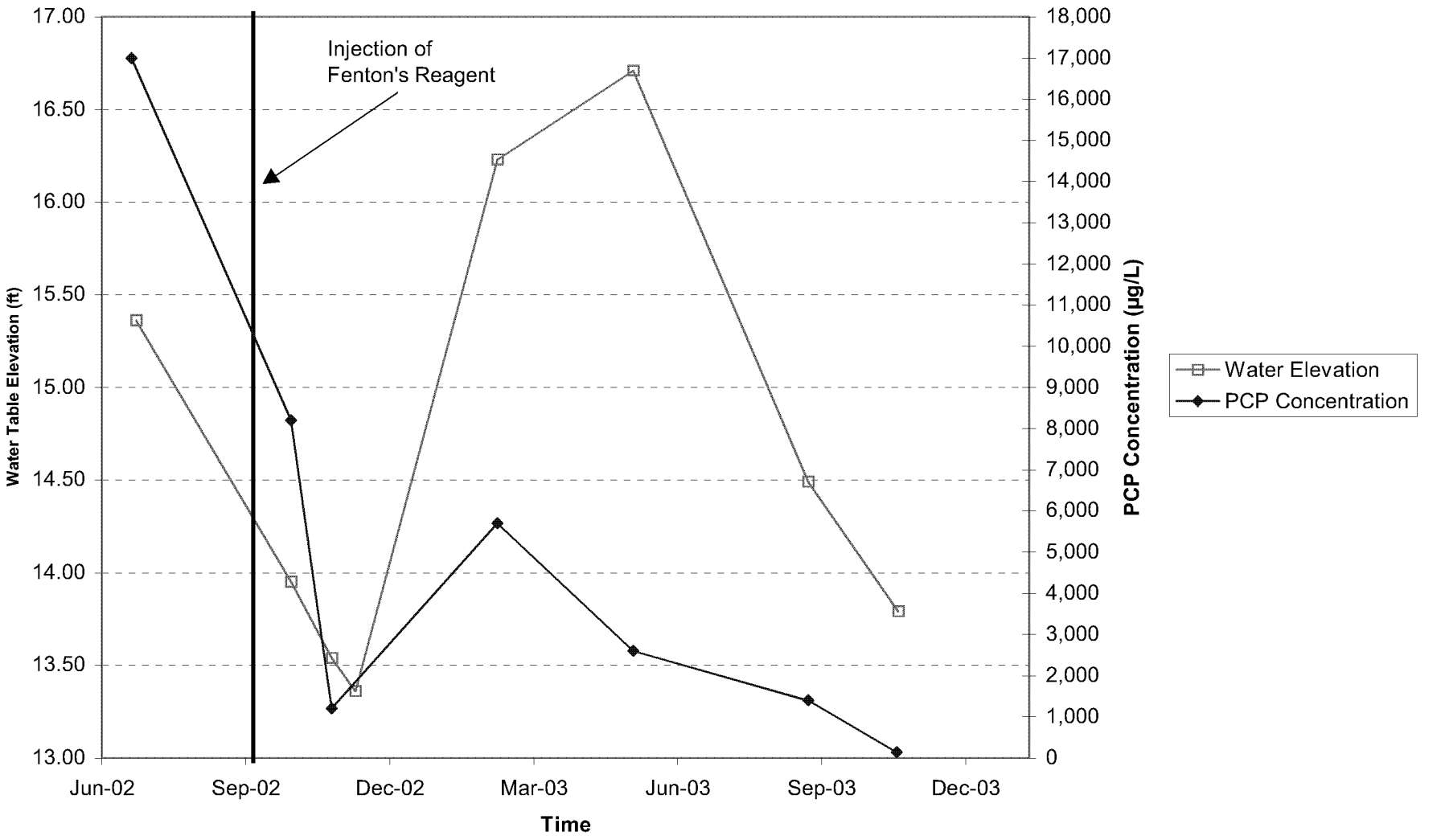
Time Oil Northwest Terminal Portland, Oregon	**OX-2S**	Figure A-4

BZTO104(e)018414

Source: s:\wproc\231\001\118\Pilot Test Cvr Ltr_Tb1.xls OX-3S

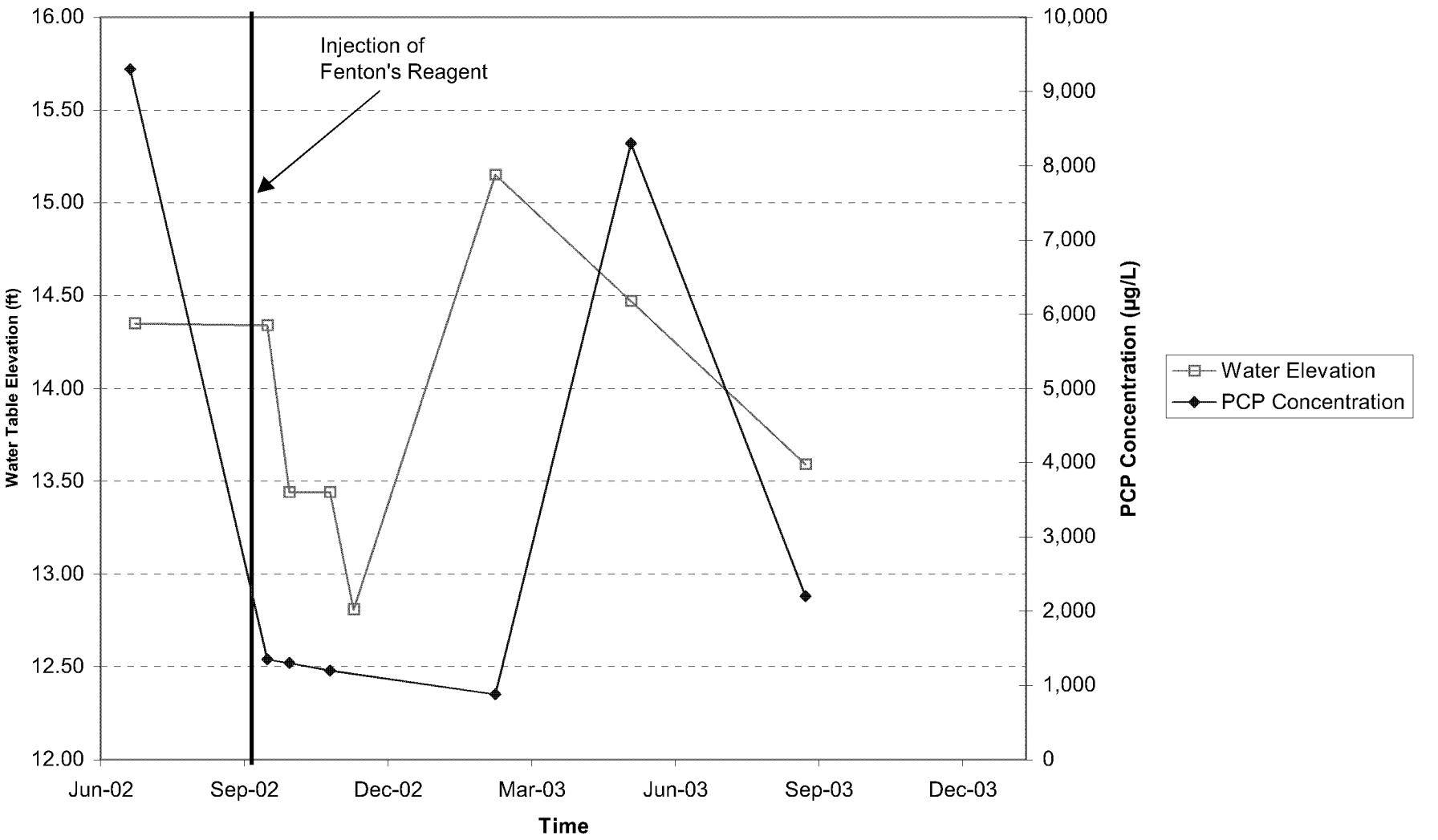


LANDAU ASSOCIATES

Time Oil Northwest Terminal Portland, Oregon	**OX-3S**	Figure A-5

BZTO104(e)018415

Source: s:\wproc\231\001\118\Pilot Test Cvr Ltr_Tb1.xls OX-4S



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Time Oil Northwest Terminal Portland, Oregon	**OX-4S**	Figure A-6

BZTO104(e)018416

TABLE A-1
ISCO PILOT TEST SOIL ANALYTICAL RESULTS
TIME OIL NORTHWEST TERMINAL

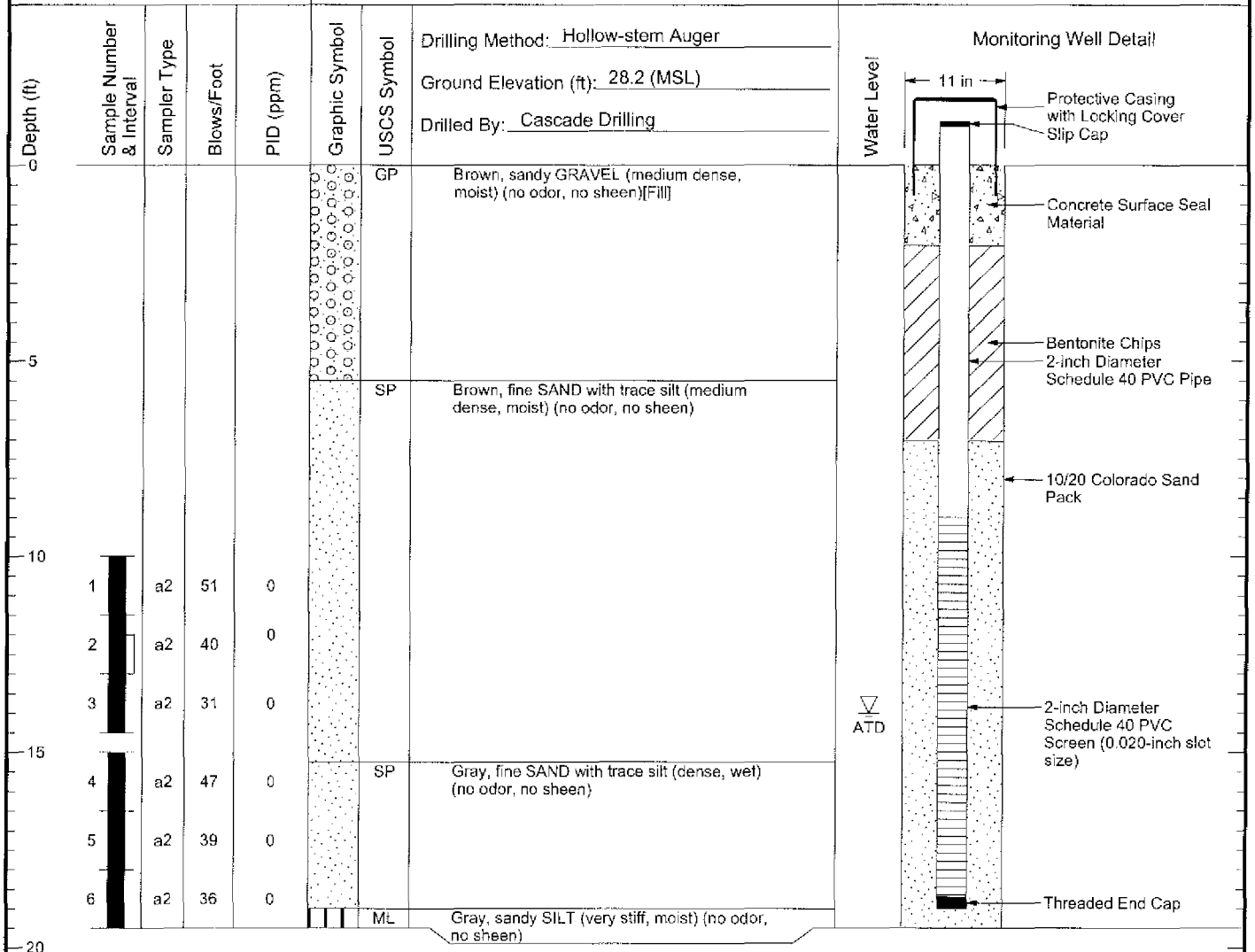
Sample Identification:	Baseline OX-1S	OX-1S	Baseline OX-2S	OX-2S	Baseline OX-3S	OX-3S	Baseline OX-4S	OX-4S	PZ-1	LW11S	RW1
Depth:	15-16	14-17	15-16	14-17	15-16	14-18	15.5-16.5	14-18	13-16	15-19	13-17
Laboratory Identification:	EM10B	0210067-05A	EM10A	0210067-04A	EM10C	0210067-03A	EM10D	0210067-01A	0210067-06A	0210067-02A	0210067-07A
Date Collected:	6/14/2002	10/8/2002	6/14/2002	10/8/2002	6/14/2002	10/8/2002	6/17/2002	10/8/2002	10/8/2002	10/8/2002	10/8/2002
CHLORINATED PHENOLS (µg/kg)											
EPA Method SW8040											
Pentachlorophenol	6000	NA	9900	NA	11000	NA	1300	NA	NA	NA	NA
2,4,6-Trichlorophenol	7.9 U	NA	7.9 U	NA	7.8 U	NA	7.9 U	NA	NA	NA	NA
2,3,6-Trichlorophenol	7.9 U	NA	7.9 U	NA	7.8 U	NA	7.9 U	NA	NA	NA	NA
2,4,5-Trichlorophenol	7.9 U	NA	7.9 U	NA	7.8 U	NA	7.9 U	NA	NA	NA	NA
2,3,4-Trichlorophenol	7.9 U	NA	8.8 U	NA	7.8 U	NA	7.9 U	NA	NA	NA	NA
2,3,5,6- and 2,3,4,6-Tetrachlorophenol	790	NA	470	NA	530	NA	53	NA	NA	NA	NA
2,3,4,5-Tetrachlorophenol	37	NA	31	NA	21	NA	10	NA	NA	NA	NA
CHLORINATED PHENOLS (µg/kg)											
EPA Method SW8270B											
2,3,4,6-Tetrachlorophenol	NA	522	NA	1990	NA	167 U	NA	167 U	167 U	543	167 U
2,4,5-Trichlorophenol	NA	333 U	NA	333 U	NA	333 U	NA	333 U	333 U	333 U	333 U
2,4,6-Trichlorophenol	NA	333 U	NA	333 U	NA	333 U	NA	333 U	333 U	333 U	333 U
2,4-Dichlorophenol	NA	200 U	NA	200 U	NA	200 U	NA	200 U	200 U	200 U	200 U
2,6-Dichlorophenol	NA	167 U	NA	167 U	NA	167 U	NA	167 U	167 U	167 U	167 U
2-Chlorophenol	NA	66.7 U	NA	66.7 U	NA	66.7 U	NA	66.7 U	66.7 U	66.7 U	66.7 U
4-Chloro-3-methylphenol	NA	133 U	NA	133	NA	133 U	NA	133 U	133 U	133	133 U
Pentachlorophenol	NA	2710	NA	37700	NA	3220	NA	415	1090	16700	333 U

U = Indicates compound was analyzed for, but not detected at the given detection limit.
NA = Not analyzed.

APPENDIX B

Soil Boring Logs and Well Construction Diagrams

OX-5S



Boring Completed 09/17/03
Total Depth of Boring = 19.5 ft.

Monitoring Well Completed 09/17/03
Elevation at Top of Protective Casing = 31.00 ft.
Elevation at Top of Monitoring Well Casing = 30.74 ft.
Total Depth of Monitoring Well = 19.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

231001.121 4/1/04 \\EDMDATA\GINTGINT6\PROJECTS\231001A.GPJ WELL LOG

LANDAU ASSOCIATES

Time Oil - NW Terminal Portland, OR	Log of Monitoring Well OX-5S	Figure B-1

OX-6S

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description	Water Level
0						GP	Brown, sandy GRAVEL with trace silt (medium dense, moist) (no odor, no sheen) [Fill]	
10	1	a2	50/5"	0		SP	Brown, fine SAND with trace silt (medium dense to dense, moist) (no odor, no sheen)	
	2	a2	40	0				
	3	a2	75	0				ATD
15	4	a2	19	22.6			Becomes wet	
						SP	Gray, fine SAND with trace silt (loose, wet) (mild PCP like odor, no sheen)	
	5	a2	20	0				
	6	a2	14	0		ML	Gray SILT with trace sand and roots (stiff, moist) (no odor, no sheen)	
20								
25								
30								

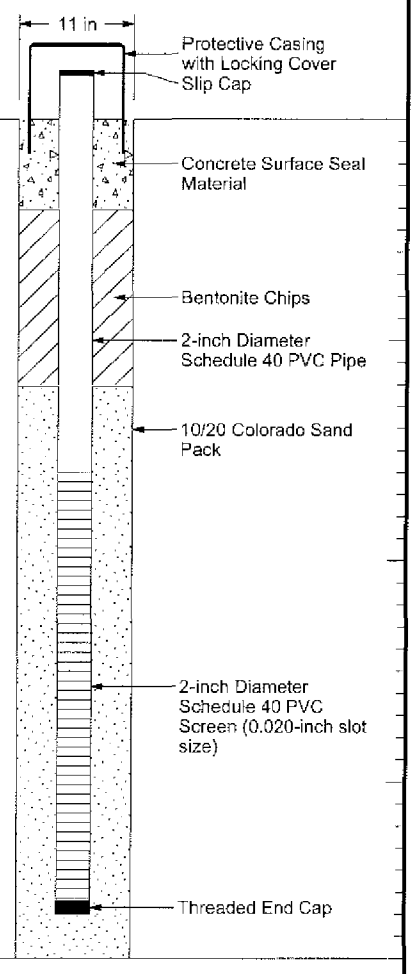
Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 28.6 (MSL)

Drilled By: Cascade Drilling

Boring Completed 09/17/03
Total Depth of Boring = 19.0 ft.

Monitoring Well Detail



Monitoring Well Completed 09/17/03
Elevation at Top of Protective Casing = 31.29 ft.
Elevation at Top of Monitoring Well Casing = 30.92 ft.
Total Depth of Monitoring Well = 18.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

231001.121 4/1/04 \\EDMDATA\GINT\GINT6\PROJECTS\231001A.GPJ WELL.LDG

LANDAU ASSOCIATES

Time Oil - NW Terminal
Portland, OR

Log of Monitoring Well OX-6S

Figure
B-2

OX-7S

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description
0						GP	Brown, sandy GRAVEL with trace silt (medium dense, moist) (no odor, no sheen) [Fill]
10	1	a2	28	0		SP	Brown, fine SAND with trace silt (medium dense to dense, moist) (no odor, no sheen)
	2	a2	28	0			Becomes wet
	3	a2	60	0			
15	4	a2	78	0			
	5	a2	56	0		SP	Gray, fine SAND with trace silt (medium dense, wet) (mild PCP like odor, no sheen)
	6	a2	18	0		ML	Gray SILT with sand and trace roots (very stiff, moist) (no odor, no sheen)
20							
25							
30							

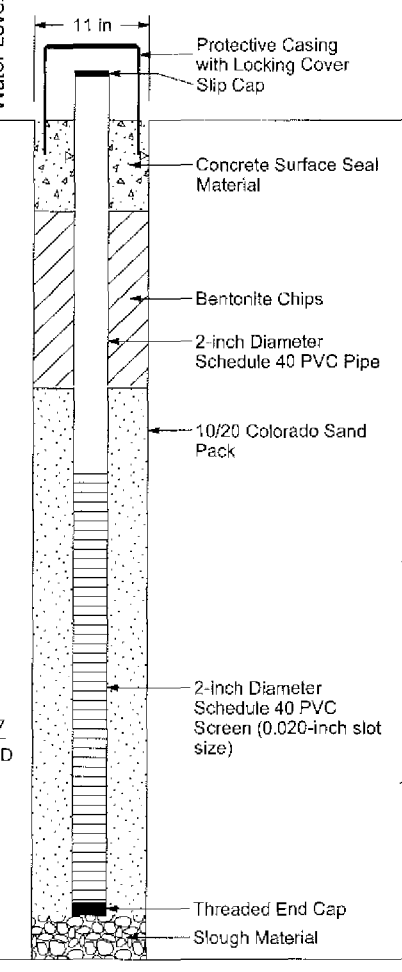
Drilling Method: Hollow-stem Auger

Ground Elevation (ft): 28.6 (MSL)

Drilled By: Cascade Drilling

Water Level: ATD

Monitoring Well Detail



Boring Completed 09/18/03
Total Depth of Boring = 19.0 ft.

Monitoring Well Completed 09/18/03
Elevation at Top of Protective Casing = 31.06 ft.
Elevation at Top of Monitoring Well Casing = 30.68 ft.
Total Depth of Monitoring Well = 18.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

231001.121 4/1/04 \\EDMDATA\GINT\GINT6\PROJECTS\231001A.GPJ WELL LOG

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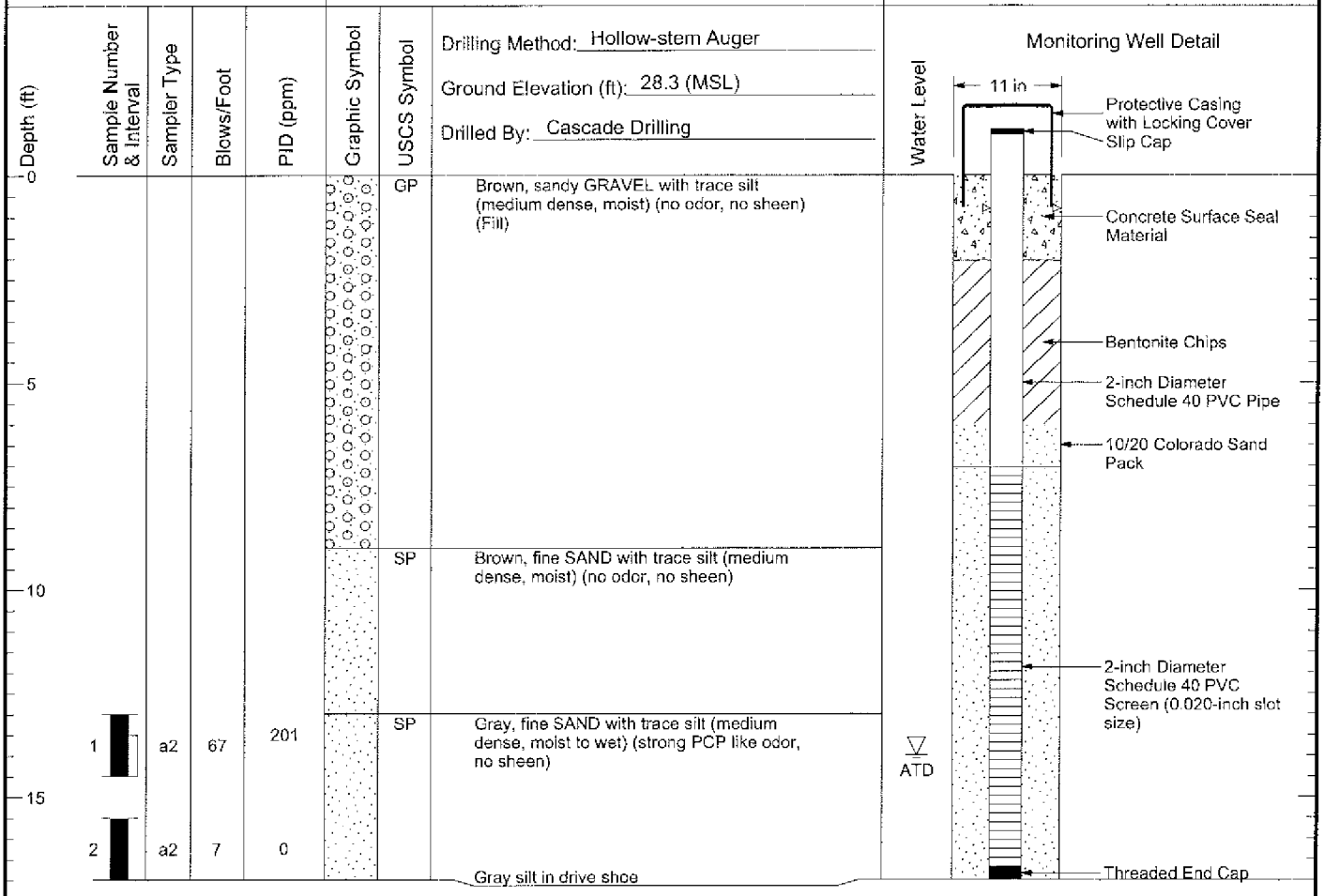
Time Oil - NW Terminal
Portland, OR

Log of Monitoring Well OX-7S

Figure
B-3

OX-8S



Boring Completed 09/16/03
Total Depth of Boring = 17.0 ft.

Monitoring Well Completed 09/16/03
Elevation at Top of Protective Casing = 31.05 ft.
Elevation at Top of Monitoring Well Casing = 30.74 ft.
Total Depth of Monitoring Well = 17.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

231001.121 4/1/04 \\EDMDATA\GINT\GINT6\PROJECTS\231001A.GPJ WELL LOG

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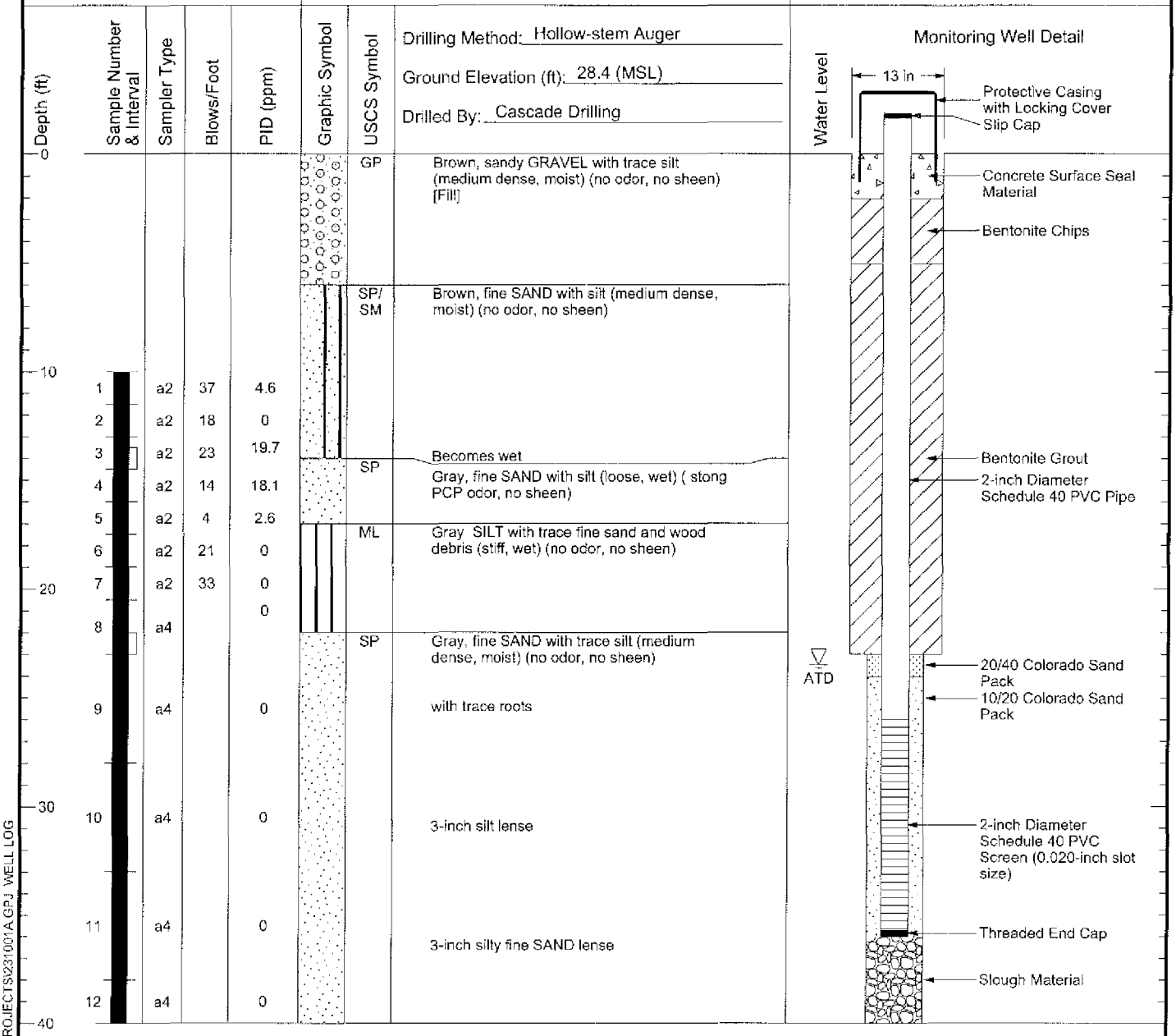
Time Oil - NW Terminal Portland, OR	Log of Monitoring Well OX-8S	Figure B-4

OX-8D



Boring Completed 09/16/03
Total Depth of Boring = 40.0 ft.

Monitoring Well Completed 09/16/03
Elevation at Top of Protective Casing = 31.09 ft.
Elevation at Top of Monitoring Well Casing = 30.84 ft.
Total Depth of Monitoring Well = 36.0 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

231001.121 4/1/04 \\EDMDATA\GINT\GINT6\PROJECTS\231001A.GPJ WELL LOG

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Time Oil - NW Terminal Portland, OR	Log of Monitoring Well OX-8D	Figure B-5

BZTO104(e)018423

APPENDIX C

Sampling and Analysis Plan

Sampling and Analysis Plan
In Situ Chemical Oxidation
Interim Remedial Action
Time Oil Northwest Terminal
Portland, Oregon

May 11, 2004

Prepared for

Time Oil Co.
2737 West Commodore Way
Seattle, WA 98100-1233

LANDAU ASSOCIATES
130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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BZTO104(e)018426

1.0 INTRODUCTION

This sampling and analysis plan (SAP) describes the procedures for conducting field activities during the *in situ* chemical oxidation (ISCO) interim remedial action program to be implemented at the Time Oil Northwest Terminal (site) in Portland, Oregon. The primary objective of this SAP is to provide sampling and subsurface evaluation methodology consistent with accepted procedures such that the effectiveness of ISCO for treatment of the upper zone groundwater and soil can be accurately assessed and the interim remedial action approach can be adjusted, as appropriate. This SAP was prepared in accordance with Oregon Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA) guidance documents (DEQ 1994; EPA 1986; 1987; 1988; 1993a,b), and provides consistent field, sampling, and analytical procedures to be used during the ISCO interim remedial action plan.

BZTO104(e)018427

2.0 FIELD INVESTIGATION PROCEDURES

This section describes the field procedures to be employed during the ISCO interim remedial action plan. Field activities during the ISCO interim remedial action plan will consist primarily of the following:

- Baseline groundwater monitoring. Within two weeks prior to the initial ISCO injection event scheduled for May or June 2004, baseline groundwater analytical samples will be collected from
  RW-1, LW-11S, and OX-1S through OX-8S. The resulting analytical data will be used to establish baseline conditions prior to the implementation of the interim remedial action plan.

- Monitoring of groundwater during the ISCO injection events for geochemical parameters.

- Collection of groundwater samples for chemical analysis approximately two weeks following ISCO injection events in order to evaluate the effectiveness of ISCO in reducing PCP concentrations in groundwater and to determine if the chemical reaction caused by the injection of Fenton's reagent compounds results in increased concentrations of ferrous iron and selenium.

Prior to initiation of any invasive subsurface activity, the locations of each proposed exploration will be checked in the field to locate all underground and aboveground utilities or other physical limitations that would prevent injection at the proposed location; the final location for each injection will be based on the findings of the field check.

2.1 BASELINE GROUNDWATER EVALUATION

Prior to the injection of ISCO reagents, a baseline groundwater sampling event will be performed to assess the quality of groundwater in the vicinity of the proposed ISCO injection points. The baseline evaluation will include groundwater sampling at monitoring wells RW-1, LW-11S, and OX-1S through OX-8S.

2.1.1 GROUNDWATER LEVEL MEASUREMENTS

Prior to withdrawal of any water from the monitoring wells for purging or sampling, the depth to groundwater and thickness of light non-aqueous phase liquid (LNAPL), if present, below the top of the well casing will be measured for documentation of groundwater elevation and for evaluation of groundwater flow. Depth to groundwater and LNAPL, if present, will be measured using a graduated water level indicator or oil-water indicator probe and recorded on a Water Level Measurement form. The water level or oil-water indicator probe will be decontaminated prior to insertion at each well in accordance with procedures described in Section 2.5.

BZTO104(e)018428

2.1.2 GROUNDWATER SAMPLING

Groundwater samples will be collected from the monitoring wells (RW-1, LW-11S, and OX-1S through OX-8S) located within the ISCO injection area to document groundwater conditions before and after the injection of ISCO reagents. Following the measurement of the depth to groundwater, the groundwater monitoring wells will be sampled as follows:

- Prior to purging any groundwater, the oxidation-reduction potential (ORP), dissolved oxygen, specific conductivity, and pH will be measured. The pre-purging data will be collecting using "downhole" probes. This information will be recorded on the Groundwater Sample Collection Form.

- Prior to sampling, each well will be purged using a centrifugal purge pump that is attached to dedicated purge and sample collection tubing (types of pumps used may vary depending on purge volume and depth and include a centrifugal pump, a peristaltic pump, and an electric submersible pump). Purging will continue until at least three casing volumes of water have been removed and specific conductivity and temperature have stabilized or until the well goes dry. The purge volume will be calculated based on the following formula:

  1 casing volume (gallons) = $\pi r^2 h$ x 7.48 gal/ft^3,

  where π = 3.14, r = radius of well casing in ft, h = height of water column from the bottom of the well, in feet.

- Purge data will be recorded on a Groundwater Sample Collection form including purge volume, time of commencement and termination of purging, and any observations regarding physical characteristics of the purge water and field measurements of pH, specific conductivity, temperature, ORP, dissolved oxygen, and turbidity.

- Purge and decontamination water will be initially contained in drums or a trailer-mounted tank, then transferred to the onsite water treatment system for treatment and discharge to the sanitary sewer system.

- Groundwater sampling will begin immediately following well purging except when the well purges dry. In this case, the groundwater will be allowed to recharge in the well casing to approximately 80 percent of the static level prior to sample collection. Sample data will be recorded on a Groundwater Sample Collection form, including sample number and time collected; the observed physical characteristics of the sample (e.g., color, turbidity, etc.); and field parameters (pH, specific conductivity, temperature, dissolved oxygen, and turbidity).

- Four replicate field measurements of temperature and specific conductivity will be obtained using the following procedures:

  - A 250-mL plastic beaker will be rinsed with deionized water followed by sample water.

  - The electrodes and temperature compensation probe will be rinsed with deionized water followed by sample water.

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- The beaker will be filled with sample water; the probes will be placed in the beaker until the readings are stabilized. Temperature and specific conductivity measurements will be recorded on the Groundwater Sample Collection form.

- The above step will be repeated to collect remaining replicates.

- Any problems or significant observations will be noted in the "comments" section of the Groundwater Sample Collection form.

- Groundwater samples will be collected using a peristaltic pump attached to dedicated polyethylene tubing. To prevent degassing during volatile organic analysis (VOA) sampling, a pumping rate will be maintained below about 100 mL/min. The VOA containers will be filled completely so that no head space remains. Samples will be preserved, as specified in the QAPP. Clean gloves will be worn when collecting each sample.

- Specific conductivity, ORP, dissolved oxygen, and pH meters will be calibrated according to manufacturer's specifications at the beginning of each sample day and every four hours afterward. Calibration data will be recorded in a logbook maintained for each instrument. Meter calibration will be checked when recalibrated or when meter drift is suspected, and data will be recorded in the calibration logbook. The meters will be calibrated with buffered solutions closest to known field parameters.

Groundwater sampling will be conducted in accordance with the appropriate provisions of the Quality Assurance Project Plan (QAPP) (Landau Associates 2001a). Analytical methods, containers, laboratories, sample storage and preservation, and holding times are referenced in Table C-1. The locations of the monitoring wells are provided on Figure 10 of the ISCO interim remedial action work plan.

2.1.2.1 Groundwater Analyses

Groundwater samples collected for the ISCO interim remedial action will be analyzed for the chemical analyses that are routinely used for the groundwater sampling events. The analyses completed for routine groundwater sampling events include: semivolatile organic compounds (SVOCs; EPA Method 8270); volatile organic compounds (VOCs; EPA Method 8260); six priority pollutant metals (arsenic, lead, chromium, copper, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, ORP, dissolved oxygen, turbidity, and temperature). In addition to the routine analyses included in quarterly groundwater sampling events, groundwater samples collected in conjunction with the ISCO interim remedial action will be analyzed for selenium (EPA Method 6010) and ferrous iron (SM 3500-Fe). As described in Section 2.3 of the SAP, post-injection groundwater monitoring not completed during regularly-scheduled quarterly monitoring events will be restricted to analysis of PCP (EPA Method 8270), chloride (EPA Method 325.2), selenium (EPA Method 6010), ferrous iron (EPA Method 3500-Fe),

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and field parameters (pH, specific conductivity, ORP, dissolved oxygen, turbidity, and temperature). The proper sample containers, storage, temperature, preservation, and holding times are listed in Table C-1.

2.2 GROUNDWATER MONITORING DURING ISCO INJECTION EVENTS

Groundwater will be monitored using real-time methods during the injection of the ISCO reagent. Real-time groundwater monitoring will be limited to the wells located in the vicinity of the ISCO injection points. The groundwater in the wells will be monitored prior to, during, and after the ISCO injection event for the following parameters: presence of LNAPL, pH, dissolved oxygen, temperature, ORP, and VOC vapors. Real-time groundwater monitoring data will be recorded immediately prior to the initiation of the ISCO injection and at 30-minute intervals until approximately 90 minutes after the injection event is completed.

2.3 QUALITY ASSURANCE AND QUALITY CONTROL

Analytical samples collected will follow standard quality assurance and quality control (QA/QC) procedures and procedures outlined in the QAPP (Landau Associates 2001a). Field QA/QC includes the collection of quality control samples, including blind field duplicate samples and matrix spike and matrix spike duplicate samples. Equipment rinsate blanks will not be collected. Each of these quality control samples will be collected at the rate of one in every twenty samples collected for each sample media type. The procedures for collection of the quality control samples are provided in the QAPP. Field QA/QC samples will be collected in conjunction with routing sampling events, but will not be collected for sampling events completed between the routing sampling events.

2.4 SAMPLE DOCUMENTATION, HANDLING, AND CUSTODY

Sample documentation, handling, and custody procedures to be used during the ISCO interim action plan will follow the procedures specified in the QAPP (Landau Associates 2001a). Sample containers, preservatives, and holding times for each chemical analysis to be performed in conjunction with the ISCO interim remedial action are presented in Table C-1.

2.5 EQUIPMENT DECONTAMINATION

The decontamination procedures described below are to be used by field personnel to clean drilling, sampling, and related field equipment. Deviation from these procedures will be documented in field records.

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2.5.1 MONITORING EQUIPMENT

All groundwater monitoring equipment will be cleaned using a three step process, as follows:

1. Scrub surfaces of equipment that would be in contact with the sample with brushes using an Alconox solution.
2. Rinse and scrub equipment with clean tap water.
3. Rinse equipment a final time with deionized water to remove tap water impurities.

Decontamination of the groundwater monitoring equipment will occur between collection of each sample. Decontamination of monitoring equipment that is suspected to come into contact with free-phase liquid or contains a visible sheen will include a hexane rinse (or other appropriate solvent) prior to the tap water rinse.

2.5.2 INJECTION RIGS

The injection equipment that is used downhole or that contacts material and equipment going downhole, will be cleansed by a hot water, high pressure wash before each use and at completion of the project. Potable tap water from the municipal water supply will be used as the cleansing agent.

2.6 RESIDUAL WASTE MANAGEMENT

Purge and decontamination water generated during the ISCO interim remedial action will be transferred to the terminal wastewater treatment system for treatment and discharge to the sanitary sewer system under an existing permit (No. 400.121) with the City of Portland.

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TABLE C-1
ANALYTICAL SAMPLE PARAMETERS
ISCO INTERIM REMEDIAL ACTION PLAN
TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Monitoring Wells (a)	Matrix	Analytes	Analytical Method/Procedure	Laboratory	Sample Container	Storage Temperature & Preservation	Maximum Sample Holding Time (b)
LW-11S, RW-1S, OX-1S, OX-2S, OX-3S, OX-4S, OX-5S, OX-6S, OX-7S, OX-8S	Water	Volatile Organics (c)	EPA Method 8260	Specialty Analytical, Inc.	3 each 40-mL glass vials	HCl to pH <2 Cool to 4°C	14 days until analysis
	Water	Semivolatile organics (c)	EPA Method 8270	Specialty Analytical, Inc.	1-Liter amber glass, Teflon-lined lid	Cool to 4°C	7 days until extraction; 40 days after extraction
	Water	Priority Pollutant Metals (c)	EPA Method 6010/7000 Series	Specialty Analytical, Inc.	1-Liter high density polyethylene (HDPE)	5 ml $HN0_3$ Cool to 4°C	6 months until analysis
	Water	Ferrous Iron (Fe^{2+})	SM 3500-Fe	Specialty Analytical, Inc.	6 X 1-Liter wide mouth plastic	Cool to 4°C	28 days until analysis
	Water	Total Dissolved Solids (c)	EPA Method 160.1	Specialty Analytical, Inc.	1-Liter plastic	N/A	N/A
	Water	Chloride	EPA Method 325.2	Specialty Analytical, Inc.	500-mL HDPE	Cool to 4°C	28 days until analysis
	Water	Pentachlorophenol	EPA Method 8270	Specialty Analytical, Inc.	1-Liter amber glass, Teflon-lined lid	Cool to 4°C	7 days until extraction; 40 days after extraction
	Water	Selenium	EPA Method 6010	Specialty Analytical, Inc.	1-Liter HDPE	5 ml $HN0_3$ Cool to 4°C	6 months until analysis

(a) Groundwater samples listed will be collected during quarterly groundwater sampling events and two to three weeks after each ISCO injection event.
(b) Holding times are from date of collection unless otherwise specified.
(c) These analyses will only be completed during quarterly groundwater sampling events.

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Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report Time Oil Northwest Terminal Portland, Oregon

May 21, 2004

Prepared for

Time Oil Co.
2737 W. Commodore Way
Seattle, Washington 98199

LANDAU ASSOCIATES

130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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1.0 INTRODUCTION

This report provides the results of the fourth quarter 2003 groundwater monitoring event conducted as part of the ongoing Phase II and III remedial investigation (RI) activities at the Time Oil Northwest Terminal (terminal) in Portland, Oregon. This report also provides performance and status information for the Phase II groundwater interim action currently ongoing at the terminal. Prior quarterly groundwater reports have included groundwater monitoring results collected from wells drilled for the Phase II RI within and downgradient of the former PCP mixing area. For the first time, this report also incorporates groundwater monitoring data that were collected from wells drilled as part of the Phase III RI in the fall of 2003. The Phase III RI monitoring wells were installed to address data gaps within the Phase III study area, which focuses on the Main Terminal and Bell Terminal tank farm areas and other areas of the terminal not covered under previous investigations. The data from this quarterly event, in conjunction with future monitoring events, will be used to assess contaminant distribution and groundwater level trends across the terminal. Additional discussion of these data are included in the upcoming Phase III RI report (Landau Associates 2004a; in production)

The terminal is a former bulk petroleum storage and transfer facility owned by Time Oil Co. (Time Oil). Time Oil ceased operations at the terminal on October 31, 2001. The terminal is located in the industrialized Rivergate area of North Portland, Oregon (Figure 1). Quarterly groundwater monitoring has been conducted at the terminal since April 1997 for the Phase II wells. As indicated above, this is the first quarter monitoring event for the Phase III wells. Groundwater monitoring procedures are conducted in accordance with the *Phase I/II Remedial Investigation/Feasibility Study (RI/FS)* work plan (Landau Associates 1996), and the Phase III Remedial Investigation (RI) Work Plan (Landau Associates 2001). The groundwater monitoring locations at the terminal are shown on Figure 2.

The fourth quarter 2003 groundwater monitoring event was conducted from October 22 to October 28, 2003. This report summarizes groundwater elevation and groundwater quality data for the fourth quarter 2003, transmits analytical laboratory data packages and the associated data validation report, and presents an evaluation of data collected during the fourth quarter 2003 (October 1-December 31, 2003) for the groundwater interim action in the upper and lower water-bearing zones relative to compliance with defined performance criteria.

The chemical analyses conducted during this monitoring event for each groundwater sampling location are summarized in Appendix A, Table A-1. Groundwater level measurements collected at the terminal for the fourth quarter 2003 event and for the previous RI quarterly events since March 1997 are provided in Appendix A, Table A-2. Groundwater quality data for the fourth quarter 2003 event are provided in Tables A-3 and A-4 for the upper and lower zone wells, respectively. Data validation

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qualifiers included in Tables A-3 and A-4 are defined in Table A-5. A summary of the fourth quarter 2003 groundwater interim action recovery data is provided in Appendix B. Procedures for collection of water level measurements and groundwater samples and methods for evaluation are provided in Appendix C. Modifications to the Phase II groundwater quality sampling and analysis requirements, as approved by the Oregon Department of Environmental Quality (DEQ), are documented and referenced in Appendix D. The data validation report for the fourth quarter 2003 data is provided in Appendix E. Laboratory data packages for these data are provided in Appendix F.

As requested by DEQ, a summary of the quarterly water quality data (detected constituents) since March 1997 for the upper and lower zone wells is being provided to DEQ either electronically or on computer diskette. These tables will continue to be updated following each quarterly event.

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2.0 FOURTH QUARTER 2003 GROUNDWATER MONITORING EVENT

The fourth quarter 2003 groundwater monitoring event was conducted from October 22 through October 28, 2003. The quarterly event included measurement of groundwater levels at existing and newly installed monitoring wells and well points, recovery wells, and a river gauge established on the south side of the dock extending into the Willamette River (Figure 2); measurement of product thickness in all site wells, if observed; and collection of groundwater quality samples. The fourth quarter event included the sampling of the routine Phase II monitoring wells; existing selected monitoring wells associated with the Phase II *in situ* chemical oxidation (ISCO) pilot study (OX-1S, OX-2S, OX-3S, OX-4S, LW-11S, and RW-1; ISOTEC 2003); and wells monitored as part of the Phase II groundwater interim action (LW-13S, LW-14D, LW-17D, and LW-18D). Also sampled during the fourth quarter event were five new wells (OX-5S, OX-6S, OX-7S, OX-8S, and OX-8D) installed during September 2003 for use during future ISCO remediation activities; and twenty-two new monitoring wells installed during September 2003 as part of the Phase III RI activities for the terminal. Because the types of contaminant releases to groundwater monitored by the Phase II and Phase III wells are different, groundwater quality is discussed separately for Phase II and Phase III monitoring locations in Sections 2.2 and 2.3. For discussion purposes, Phase II refers to monitoring locations within and downgradient of the former PCP mixing area and warehouse, and Phase III refers to monitoring locations within and downgradient of the Main Terminal and Bell Terminal tank farms and associated petroleum storage operation areas.

A summary of the types of analyses conducted at each sample location for the fourth quarter 2003 event are provided in Table A-1. The newly installed Phase III wells are also indicated on this table. This section presents a summary of the results for the groundwater level measurements and groundwater quality sampling, and provides an evaluation of groundwater flow and contaminant occurrence and trends. The performance and status of the groundwater interim action is discussed in Section 3.0.

2.1 GROUNDWATER LEVEL AND PRODUCT MEASUREMENTS

Groundwater levels were measured at each well for the fourth quarter 2003 event on October 23, 2003 and each day prior to sample collection. Each well was also checked for the presence of product. The measurement and evaluation results are provided in the following sections. The measurement and evaluation procedures are provided in Appendix C. The groundwater measurement locations are shown on Figure 2. Groundwater level measurements conducted for the quarterly groundwater sampling events since March 1997 are provided in Table A-2. Historical (pre-Phase II RI) groundwater level

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measurements conducted from 1993 through 1996 were provided in the Phase II RI report (Landau Associates 2000a).

2.1.1 Product Measurements and Product Recovery

During the fourth quarter 2003 event, a trace amount of product was noted in well P. Measurable product was observed at wells PZ-2 and OX-2S, located downgradient of the former PCP mixing area at thicknesses of 0.24 ft and 0.31 ft, respectively, and at well Q, located within the Main Terminal tank farm area at a thickness of 0.06 ft. Product recovery activities currently being conducted at wells Q, PZ-2, and OX-2S consist of placing product absorbent socks in each of these wells. The absorbent socks were removed and replaced with fresh socks in mid-November and December 2003 and mid-January 2004. Used absorbent socks have been placed in a 55-gal drum onsite for future disposal following completion of product recovery activities at these well locations or when the drum is full. Monitoring of these wells and all site monitoring wells for the presence of product will continue during future quarterly monitoring events.

2.1.2 Upper Water-Bearing Zone

Groundwater elevations measured in the shallow wells were used to estimate groundwater flow conditions in the upper water-bearing zone (upper zone). Groundwater elevation contours for the upper zone are presented on Figure 3. The addition of the groundwater level elevations in the Phase III wells confirms that groundwater flow in the upper zone across the Main Terminal tank farm area and the Bell Terminal is generally to the west-southwest toward the Willamette River. The localized shift in groundwater flow to the south in an area southwest of the former pentachlorophenol (PCP) mixing area appears to be due to the influence of the east-west trending storm drain located about 170 ft north of the southern property boundary (Figure 2). The groundwater flow pattern observed in the upper zone does not vary significantly seasonally based on the previous years of monitoring. Groundwater elevations measured at newly installed wells located along the confining unit boundary reflect the change from two water-bearing zones (upper and lower) to a single unconfined water-bearing zone. For example, during the summer and fall months, well LW-10S and piezometers PZ-3 and PZ-4 are typically dry because they are located near the extent of the confining unit. Also, in the Bell Terminal area, wells LW-28S and LW-33S were dry during the October 2003 groundwater sampling event where the confining unit is thin and likely discontinuous. At Phase III RI well, LW-27S, the water level appears to represent an intermediate groundwater elevation between the upper zone and lower zone, thereby likely indicating the edge of the confining unit and the transition from two groundwater zones to one in this area. The groundwater flow

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patterns in this area mirror the western extent of the confining unit boundary and groundwater gradients increase sharply where groundwater from the upper and lower zones converge.

2.1.3 LOWER WATER-BEARING ZONE

Groundwater elevations measured in the deep wells were used to estimate groundwater flow conditions in the lower zone water-bearing zone (lower zone) and in the area where the confining zone is absent. Groundwater elevation contours for the lower zone are presented on Figure 4. RW-2 pumped continuously during the fourth quarter 2003, except for periodic shutdowns for system maintenance. The contours indicate that pumping of recovery well RW-2 for the groundwater interim action has modified groundwater flow in the lower zone in proximity to the pumping well, such that hydraulic capture is achieved to the west near LW-18D and to the south near LW-10D. Groundwater flow outside the RW-2 capture zone is generally toward the west/southwest toward the Willamette River. The groundwater flow observed during this quarterly event is consistent with the trend seen since the startup of RW-2 in October 2000.

2.2 PHASE II GROUNDWATER QUALITY

Phase II groundwater quality was evaluated based on results from 17 upper zone wells and 16 lower zone wells located within and downgradient of the former PCP mixing area and warehouse. Fourth quarter 2003 Phase II RI groundwater quality samples were collected from October 22 to October 24, 2003. Monitoring wells LW-9S, LW-10S, LW-28S, LW-33S, and OX-4S, and piezometers PZ-3 and PZ-4 were dry and not sampled as part of this event. Also, monitoring wells OX-2S and Q contained measurable product (see Section 2.1.1) and were not sampled as part of this quarterly event. Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: semivolatile organic compounds [SVOCs; U.S. Environmental Protection Agency (EPA) Method 8270]; volatile organic compounds (VOCs; EPA Method 8260); PCP (EPA Method 8270 SIM); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). Additionally, groundwater from eight monitoring wells was analyzed for diesel- and motor oil-range total petroleum hydrocarbons (TPH; NWTPH-Dx). Samples from wells B1, K, LW-1S, LW-7S, LW-8S, LW-11S, RW-1, and RW-2 were also analyzed for gasoline-range TPH (NWTPH-G). The previously listed laboratory analyses were conducted by Analytical Resources, Inc., in Seattle, Washington (ARI). Dioxin and furan (EPA Method SW8290) analysis was conducted at LW-11S, OX-8S and RW-1 by Columbia Analytical Services in

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Houston, Texas. The dioxin/furan analyses were conducted to document baseline conditions prior to implementation of the *in situ* chemical oxidation (ISCO) technique; these results are discussed in the work plan for implementation of the ISCO interim remedial action (Landau Associates 2004b).

Analytical results for the fourth quarter 2003 event are provided in Tables A-3a through A-3g for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the Phase II results are provided in the following sections. Data qualifier definitions are included in Table A-5.

2.2.1 UPPER WATER-BEARING ZONE

The analytical results from the Phase II upper zone wells indicate that samples from 12 wells contained detectable concentrations of PCP during the fourth quarter 2003 event. The highest concentrations were observed in the samples from wells OX-6S and LW-11S [2,100 and 900 micrograms per liter (µg/L), respectively]. Well OX-6S is located within the former PCP mixing area, while LW-11S is located downgradient of this area. During the previous quarterly event, the highest detections were in samples from wells OX-2S (5,800 J µg/L) and OX-4S (2,200 J µg/L). However, during this quarterly event, OX-2S contained measurable product and OX-4S was dry, so these wells were not sampled. In addition, groundwater from downgradient monitoring wells OX-1S, OX-3S, OX-7S, OX-8S, LW-4S, LW-13S, J1, and RW-1 contained PCP concentrations ranging from 0.65 to 720 µg/L. The sample from newly installed monitoring well OX-5S, which is within the footprint of the former PCP warehouse and slightly upgradient of OX-6S, was nondetect. The low level PCP detections at wells LW-19S, LW-20S, and LW-21S are likely residual concentrations related to historical pumping of well M (now abandoned) for groundwater recovery and resulting PCP residual migration from the former PCP mixing area.

Other SVOCs were detected at low concentrations; none were greater than 6.3 µg/L [Bis 2-thylhexyl)phthalate at well B1]. The highest concentrations of VOCs (ethylbenzene; isopropylbenzene; 1,2,4-trimethylbenzene; n-propylbenzene; naphthalene, and xylenes) were detected in samples collected at wells LW-7S, LW-8S, and RW-1. The highest concentrations of TPH-D and TPH-G were observed at well RW-1 [5.8 milligrams per liter (mg/L) and 7 mg/L, respectively]. The highest concentrations of metals were detected in samples collected at wells B1 and LW-8S. Results from the dioxin and furan analyses at wells LW-11S, OX-8S, and RW-1 indicate total dioxin/furan concentrations ranging from 0.7011 to 855.097 ng/L (as TEQ); these results will be discussed more in the work plan for the ISCO interim remedial action

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2.2.2 LOWER WATER-BEARING ZONE

During this quarter, PCP was detected in the following lower zone wells: LW-3D, LW-6D, LW-10D, LW-18D, OX-8D, and RW-2. Concentrations in these wells ranged from 0.58 µg/L (in well LW-18D) to 8.1 µg/L (in well RW-2). This was the third consecutive quarterly detection of PCP in wells LW-6D and LW-10D. The PCP concentration detected at LW-10D (0.94 µg/L), was a decrease from the historical maximum PCP concentration of 5 µg/L detected during the third quarter of 2003. None of the other SVOCs detected were at concentrations greater than 7.2J µg/L (2-methylnapthalene at RW-2). The highest concentrations of VOCs were detected in the samples collected from wells G1A and RW-2; however, none of the detected concentrations were greater than 150 µg/L (isopropylbenzene at G1A). The highest detected concentration of TPH was 2.2 mg/L (diesel-range TPH at G1A). The highest concentrations of metals (arsenic, nickel, lead, and zinc) were detected in samples collected from wells G1A, LW-9D, and LW-11D.

2.2.3 WATER LEVEL AND CONTAMINANT TRENDS

Potential trends between water levels and detected concentrations of selected Phase II constituents were evaluated by generating time versus groundwater elevation and time versus concentration plots for the period covered by the Phase II RI quarterly sampling events (April 1997 or first available through the current quarterly event). Plots of PCP concentrations (maximum concentrations of EPA Methods 8270 and 8040 for events prior to the second quarter 2001 event) versus time for selected upper zone wells (LW-4S, LW-11S, LW-13S, and RW-1); selected lower zone wells (LW-4D, LW-11D, and RW-2); and paired wells (LW-4S and LW-4D) are provided on Figures 5 through 7. Plots of groundwater elevations and PCP concentrations for upper zone wells LW-4S and LW-11S are shown on Figures 8 and 9. Figure 10 shows groundwater elevations and PCP concentrations at lower zone well LW-4D plotted with the Willamette River stage.

As shown on Figure 5, PCP concentrations in the selected upper zone wells show variable concentration trends over time (note the logarithmic scale). The PCP concentration at RW-1 (350 µg/L) has continued the decreasing trend started during the fourth quarter of 2002, but the PCP concentration is still greater than the historic low recorded at this well in November 2001 (17 µg/L). The PCP concentration at LW-11S continued the decreasing trend (900 µg/L) shown during the two previous quarterly events (3,800 and 1,700 µg/L, respectively). Concentrations are lower than those seen since the first quarter 2002, but higher than the historical low observed during the first quarter 2001 (460 µg/L). The decreasing trend in PCP concentration at well LW-11S during recent quarters likely reflects a response to seasonal groundwater fluctuations. The PCP concentration at LW-13S has typically been reported at or near the detection limit since the fourth quarter 2001

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event, but concentrations increased to slightly greater than 1 µg/L during the past two sampling events. The PCP concentration at well LW-4S (3.9 µg/L) continued the decreasing trend observed since the 1,400 µg/L detection in the first quarter of 2003. Historically, well LW-4S has shown intermittent increases in PCP concentration. As illustrated again in the results from this quarter, these increases in PCP concentration appear to be related to seasonal changes in groundwater elevation and resulting changes in PCP concentrations at locations upgradient and within the source areas, followed by downgradient migration of PCP (Figure 8).

As shown on Figure 6 (note the logarithmic scale), PCP concentrations in the lower zone at RW-2 have generally decreased since June 2002, but are greater than the historic low PCP concentration recorded at this well in June 2001 (0.68 µg/L). The PCP concentration at RW-2 for this quarter is only slightly less (8.1 µg/L) than during last quarter (10 µg/L). The detected PCP concentrations at wells LW-11D and LW-4D were lower compared to the previous quarter, but were still higher then the nondetected concentrations observed between the second quarters of 2002 and 2003.

As in previous quarters, PCP concentrations detected this quarter at selected lower zone well locations where PCP has historically been detected are generally lower than the concentrations in the upper zone wells at the same location or similar locations. The PCP concentration trends for paired wells LW-4S and LW-4D (Figure 7) indicate that contamination observed in the lower zone at this location does not appear to be related to the upper zone at the same location, except possibly between December 1999 to November 2001. Overall, PCP concentrations at lower zone well LW-4D have decreased over time, with concentrations below the detection limit mainly observed since groundwater recovery began at nearby well RW-2 in October 2000. However, at adjacent upper zone well LW-4S, intermittent increases in PCP concentration have been observed, as discussed earlier.

Fluctuations in groundwater elevations in the upper zone reflect typical seasonal variability with seasonal lows during the fall months (October-November) and seasonal highs during the winter and early spring months (January-March) since monitoring began in March 1997. The groundwater levels during the past year are similar to those observed during 2000 and 2002. Trends in PCP concentrations can be correlated with groundwater elevations at some locations. Figure 8 shows that there appears to be a direct correlation between the water levels and PCP concentrations in the upper zone at well LW-4S since the first quarter of 2002, as discussed earlier. Figure 9 shows that the PCP concentration in the upper zone at well LW-11S generally follows the water level trends in that zone over time. In the lower zone, groundwater levels show similar trends with seasonal fluctuations in the Willamette River, as shown by the plot of groundwater elevations at LW-4D with river stage on Figure 10. However, there appears to be no correlation between PCP concentrations and groundwater/river stage elevations at LW-4D.

Contaminant and groundwater level trends will continue to be evaluated and discussed for future quarterly events.

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2.3 PHASE III GROUNDWATER QUALITY

An assessment of Phase III groundwater quality was based on results collected from 8 upper zone wells and 11 lower zone wells mainly located in the Main Terminal tank farm and Bell Terminal areas. These wells are indicated in Table A-1. Fourth quarter 2003 Phase III RI groundwater quality samples were collected from October 27 to October 28, 2003. Monitoring wells LW-28S and LW-33S were dry and not sampled as part of this event. Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: SVOCs (EPA Method 8270); VOC (EPA Method 8260) including methyl tert-butyl ether (MTBE); polycyclic aromatic hydrocarbons (PAH, EPA Method 8270 SIM); TPH diesel, motor oil, and gasoline ranges (NWTPH-Dx and NWTPH-G); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). The laboratory analyses were conducted by ARI.

Analytical results for the fourth quarter 2003 event are provided in Tables A-3a through A-3f for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the Phase III results are provided in the following sections. Data qualifier definitions are included in Table A-5. Further discussion and evaluation of fourth quarter 2003 data from the newly installed Phase III monitoring wells, including contour maps of selected groundwater constituents, are included in the Phase III RI Report. Future quarterly reports will contain information on contaminant trends in the Phase III wells and distribution of these contaminants in groundwater across the terminal.

2.3.1 UPPER WATER-BEARING ZONE

The results from first quarterly event from the Phase III monitoring wells installed in the upper zone indicated the following:

- TPH (diesel and gasoline-range) concentrations were detected at all new well locations except for well LW-34S upgradient of the Bell Terminal, well pair LW-29S and LW-29D and well LW-30D downgradient of the Bell Terminal.

- VOCs (benzene, ethylbenzene; isopropylbenzene; 1,2,4-trimethylbenzene; n-propylbenzene; naphthalene, and xylenes) were detected in six of the eight wells sampled for these constituents. The detected VOC concentrations ranged from 1 µg/L (tert-butylbenzene) at well LW-32S to 3,170 µg/L (total xylenes) at well LW-21S.

- MTBE was only observed at one Phase III upper zone well locations (7.5M µg/L at LW-21S) within the Main Tank Farm Area. The highest detection of diesel-range TPH was 5.4 mg/L at well LW-20S; the highest detection of gasoline-range TPH was 24 mg/L at well LW-21S.

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- PAH detections were observed in a majority of the monitoring wells within the Phase III area with the highest detections noted at wells LW-19S, -20S, -21S, -23D, and -24D. The highest individual PAH concentration was observed in the sample from well LW-21S, which contained naphthalene at 100 µg/L. The remaining PAH detections ranged from 0.33 µg/L (phenanthrene at well LW-27S) to 46 µg/L (2-methylnaphthalene at well LW-21S).

- Other SVOC detections included 2,4-dimethylphenol and phenol at well LW-21S with values of 5.4 µg/L and 11 µg/L, respectively.

- The highest detected metals concentrations occurred at wells LW-21S and LW-27S.

2.3.2 LOWER WATER-BEARING ZONE

The results from first quarterly event from the Phase III monitoring wells installed in the upper zone indicated the following:

- PAH detections within the Phase III lower zone wells were limited to wells LW-22D, LW-23D, LW-24D, and LW-25D with individual concentrations ranging from 0.012 µg/L [indeno (1,2,3-cd)pyrene at well LW-23D] to 0.91 µg/L (acenaphthene, at well LW-24D).

- Other SVOC detections included bis(2-ethylhexyl)phthalate ranging from 2.2 to 3.9 µg/L, di-n-butyl phthalate at 1.4 µg/L (LW-25D), and phenol at 4.1 µg/L (LW-22D).

- The highest concentrations of VOCs (acetone, benzene, MTBE, isopropylbenzene) occurred at wells LW-23D, LW-24D, and LW-25D. MTBE was only observed in the Phase III lower zone wells within the Main Tank Farm Area at concentrations ranging from 1.2 µg/L at LW-26D to 33 µg/L at LW-23D.

- The highest detected concentration of diesel-range TPH within the lower zone Phase III monitoring wells occurred at LW-23D (2.9 mg/L). Monitoring well LW-24D contained the highest gasoline-range TPH detection at 0.92 mg/L.

- Metals (arsenic, copper, and zinc) were detected in all Phase III lower zone wells.

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3.0 GROUNDWATER INTERIM ACTION

This section presents a summary of the performance and status of the groundwater interim action system at the terminal for the fourth quarter of 2003 (October 1 through December 31, 2003). System operation data for the groundwater interim action were evaluated in accordance with the startup monitoring plan (Landau Associates 2000b) to determine compliance with performance criteria for the upper zone and the lower zone at the terminal. Specific performance criteria include: 1) groundwater recovery from an upper zone recovery well (HRW-1) when the pump is operating or when sufficient groundwater is present in the upper zone; 2) continuous pumping from a lower zone recovery well (RW-2), except for brief periods of system maintenance (or as described below); 3) groundwater flow toward HRW-1 and RW-2 from the downgradient and upgradient directions; 4) reversal of the lower zone groundwater flow direction at the leading edge of the PCP plume; 5) chemical confirmation that continued migration of PCP in groundwater downgradient of RW-2 and HRW-1 is not occurring; and 6) compliance with the requirements of the existing discharge permit. In addition to the six criteria listed above, information is also presented in this section regarding the operation of an upper zone groundwater intercept system implemented in a storm drain (SDM-1) at the site.

Specific operational information for the fourth quarter 2003, as it relates to the criteria identified above, is as follows:

- As discussed in Section 2.1, groundwater elevation data were collected from the upper zone monitoring wells on October 23, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 3.

- During the fourth quarter 2003, extraction pump HRW-1 was not in operation due to seasonal low groundwater elevations and a lack of recoverable groundwater. A summary of historical groundwater recovery for HRW-1 is included in Appendix B, Table B-1. It is anticipated that low groundwater conditions in the upper zone will continue through the first or second quarter of 2004, at which time groundwater extraction will resume.

- With the exception of periodic shutdowns for system maintenance, groundwater was extracted continuously from the lower zone during the period from October 1 to December 31, 2003 by operating the groundwater recovery pump in RW-2. A total of approximately 1,006,361 gallons of groundwater were recovered from RW-2 during the fourth quarter of 2003 at an estimated average rate of 7.6 gpm. The recovery pump in RW-2 operated for approximately 2,117 hours and discharged water to Tank 16804 for temporary storage until treated by the wastewater treatment system located at the terminal. A summary of the groundwater recovery for RW-2 is included in Appendix B, Table B-1.

- As discussed in Section 2.1, groundwater elevation data were collected from the lower zone wells on October 23, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 4. Based on the groundwater elevation data collected, the groundwater flow direction was reversed locally downgradient of the leading edge of the PCP plume in the lower zone when RW-2 was in operation during this quarter.

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- As previously discussed in Section 2.2, groundwater samples were collected at the site on October 22 through October 28, 2003. Historically, the extent of groundwater impact has been estimated based on the extent of dissolved-phase PCP. The extent of PCP in the upper and lower zones is depicted on Figures 11 and 12, respectively, based on data collected during the October 2003 groundwater sampling event. The extent of PCP in the upper zone is consistent with previous quarterly events. The third quarter lower zone analytical data indicate that monitoring well LW-10D, located approximately 100 ft downgradient from RW-2, contained a detectable concentration (0.94 µg/L) of PCP, and well LW-6D, located downgradient from well LW-18D near the river, contained a detectable PCP concentration of .01 µg/L.

- Between October 1 and December 31, 2003, approximately 235,069 gallons of groundwater was recorded as pumped by the groundwater intercept system at storm drain manhole SDM-1 to Tank 16804 for treatment. During operation, the pump extracted water from SDM-1 at a rate of approximately 1.8 gpm. Groundwater collected from the storm drain contained a PCP concentration of 43 µg/L on October 20, 2003 (Appendix B, Table B-1).

The industrial wastewater discharge permit (City of Portland Permit No. 400.121) for discharge of the extracted groundwater following treatment at the terminal's wastewater treatment plant includes the following discharge limitations:

Parameter	Permitted Limit
PCP	40 µg/L
Benzene	50 µg/L
BTEX (1)	750 µg/L
PH	5 to 11.5

(1) Benzene, Toluene, Ethylbenzene, Xylenes.

Samples of the treated groundwater discharge were collected on a weekly basis during the fourth quarter 2003 for analyses of PCP following the discharge exceedance that occurred during the third quarter 2003. Sampling results indicated PCP concentration below the allowable discharge limit of 40 µg/L. The analytical results for PCP are provided in Appendix B, Table B-1.

BZTO104(e)018449

4.0 FUTURE GROUNDWATER TASKS

The first quarter 2004 groundwater sampling event was conducted February 17 through 25, 2004. The groundwater monitoring and analytical program for the first quarter 2003 event will include the following: 1) monitoring at routine Phase II quarterly well locations, including all ISCO injection monitoring wells; 2) monitoring of wells LW-13S, LW-14D, LW-17D, and LW-18D for evaluation of the groundwater interim action at RW-2; and 3) the sampling of the twenty-two Phase III RI monitoring wells installed in September 2003. The results for the Phase II and Phase III first quarter 2004 groundwater monitoring event and the first quarter groundwater interim action status will be provided in the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

BZTO104(e)018450

5.0 USE OF THIS REPORT

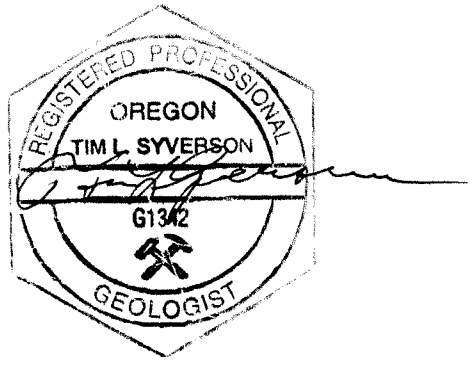
This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil Co. for specific application to the Northwest Terminal. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil Co. or others in connection with any site other than the Northwest Terminal without Landau Associates' written permission shall be at the sole risk of Time Oil Co. and without liability to Landau Associates.

This document was prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

Timothy L. Syverson, R.G.
Associate Geologist



for Christy L. Johnson
Senior Staff Engineer

TLS/CLJ/tam

BZTO104(e)018451

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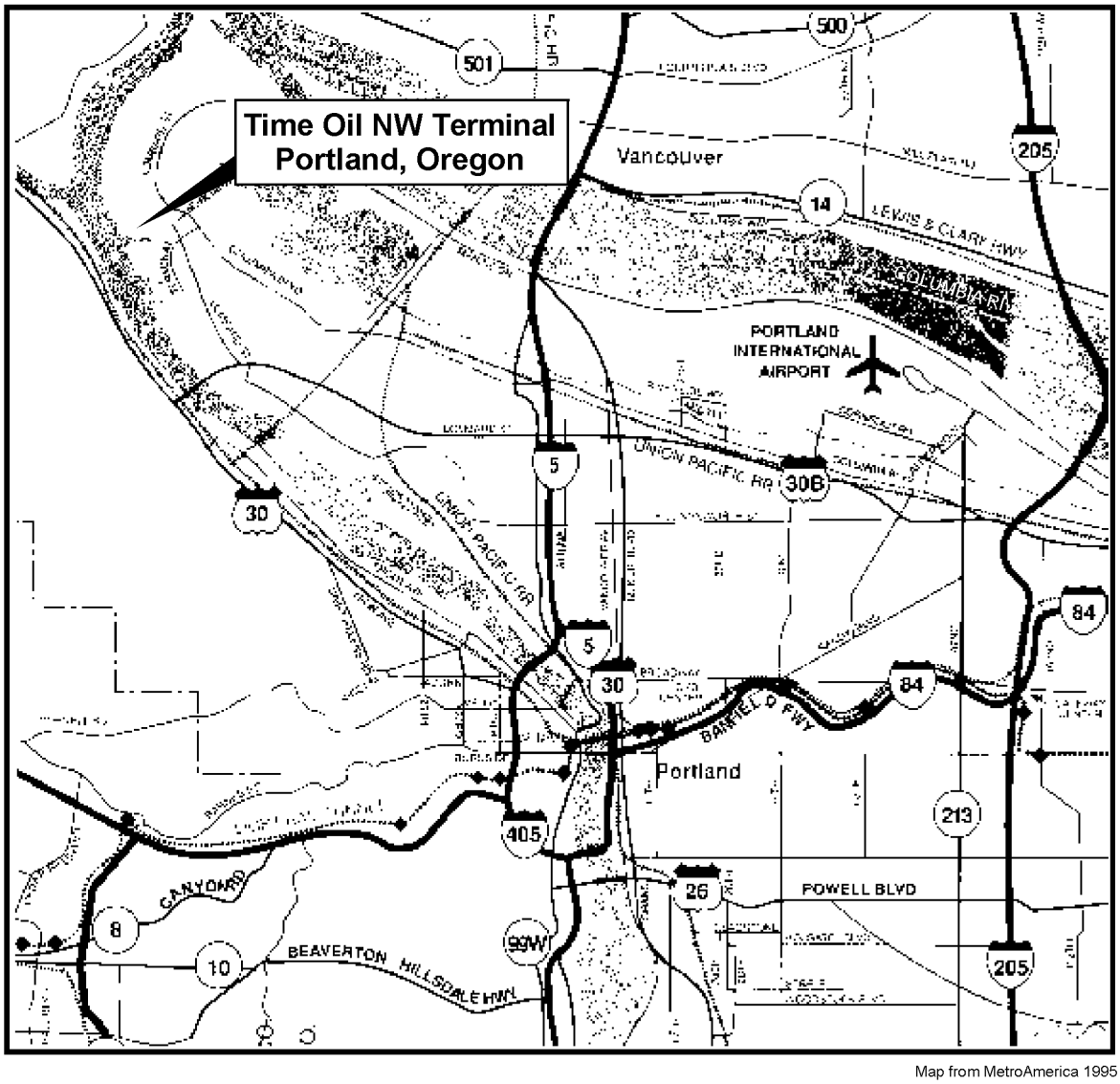
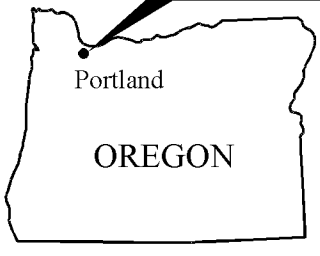
BZTO104(e)018452



Map from MetroAmerica 1995

SITE LOCATION
(see enlarged map area above)



0 2 4
Approximate Scale in Miles

Time Oil | T:\2311001\Vicinity Map.cdr (C) 05/10/2002

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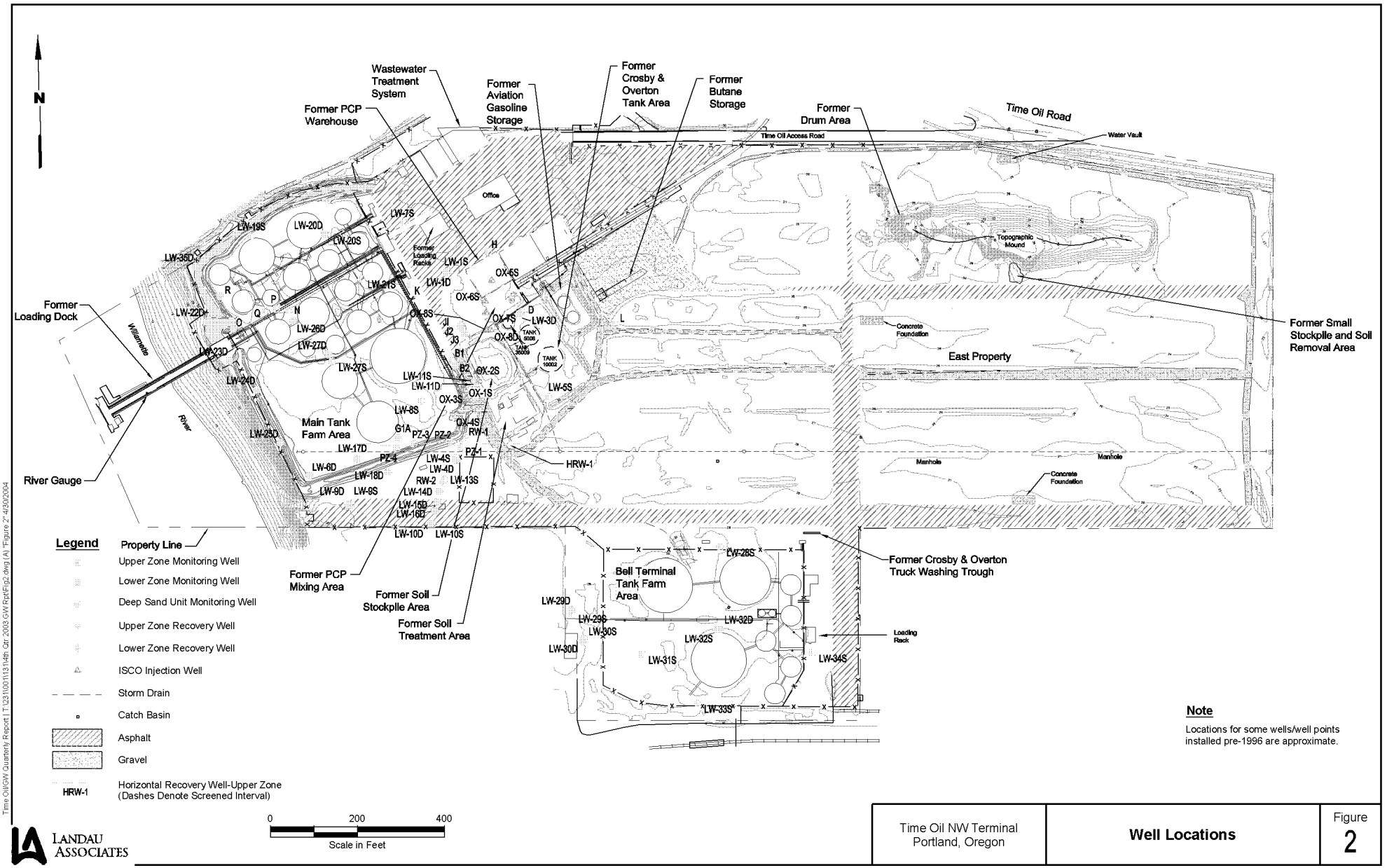
Time Oil NW Terminal Portland, Oregon	**Vicinity Map**	Figure 1

BZTO104(e)018453



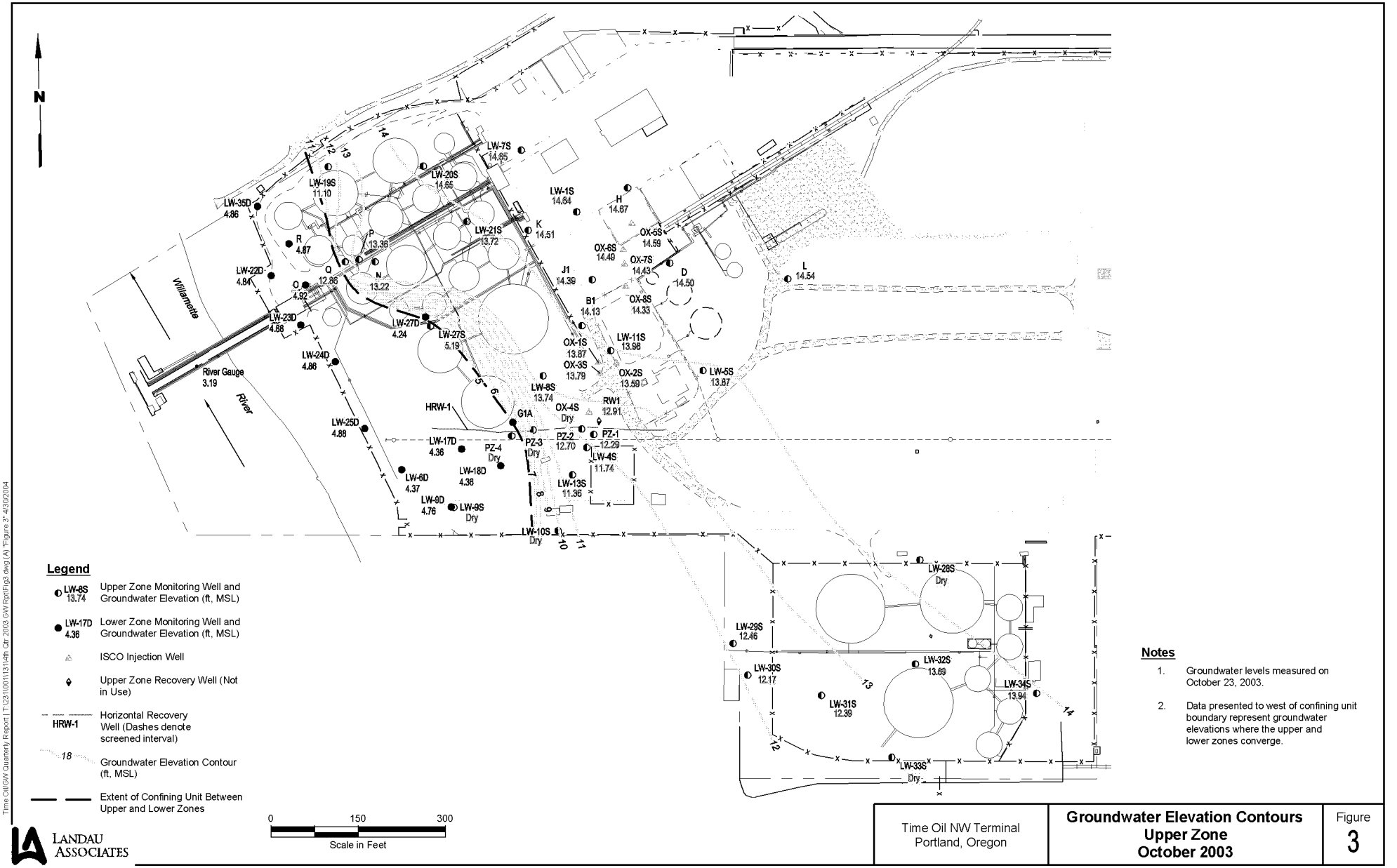
Time Oil NW Terminal
Portland, Oregon

Well Locations

Figure 2

Time Oil/GW Quarterly Report | T:\231\001\131\4th Qtr 2003 GW Rpt\Fig2.dwg (A) "Figure 2" 4/30/2004

BZTO104(e)018454



Legend

- LW-8S 13.74 — Upper Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- LW-17D 4.36 — Lower Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- ISCO Injection Well
- Upper Zone Recovery Well (Not in Use)
- HRW-1 — Horizontal Recovery Well (Dashes denote screened interval)
- 18 — Groundwater Elevation Contour (ft, MSL)
- Extent of Confining Unit Between Upper and Lower Zones

0 150 300
Scale in Feet

Notes

1. Groundwater levels measured on October 23, 2003.
2. Data presented to west of confining unit boundary represent groundwater elevations where the upper and lower zones converge.

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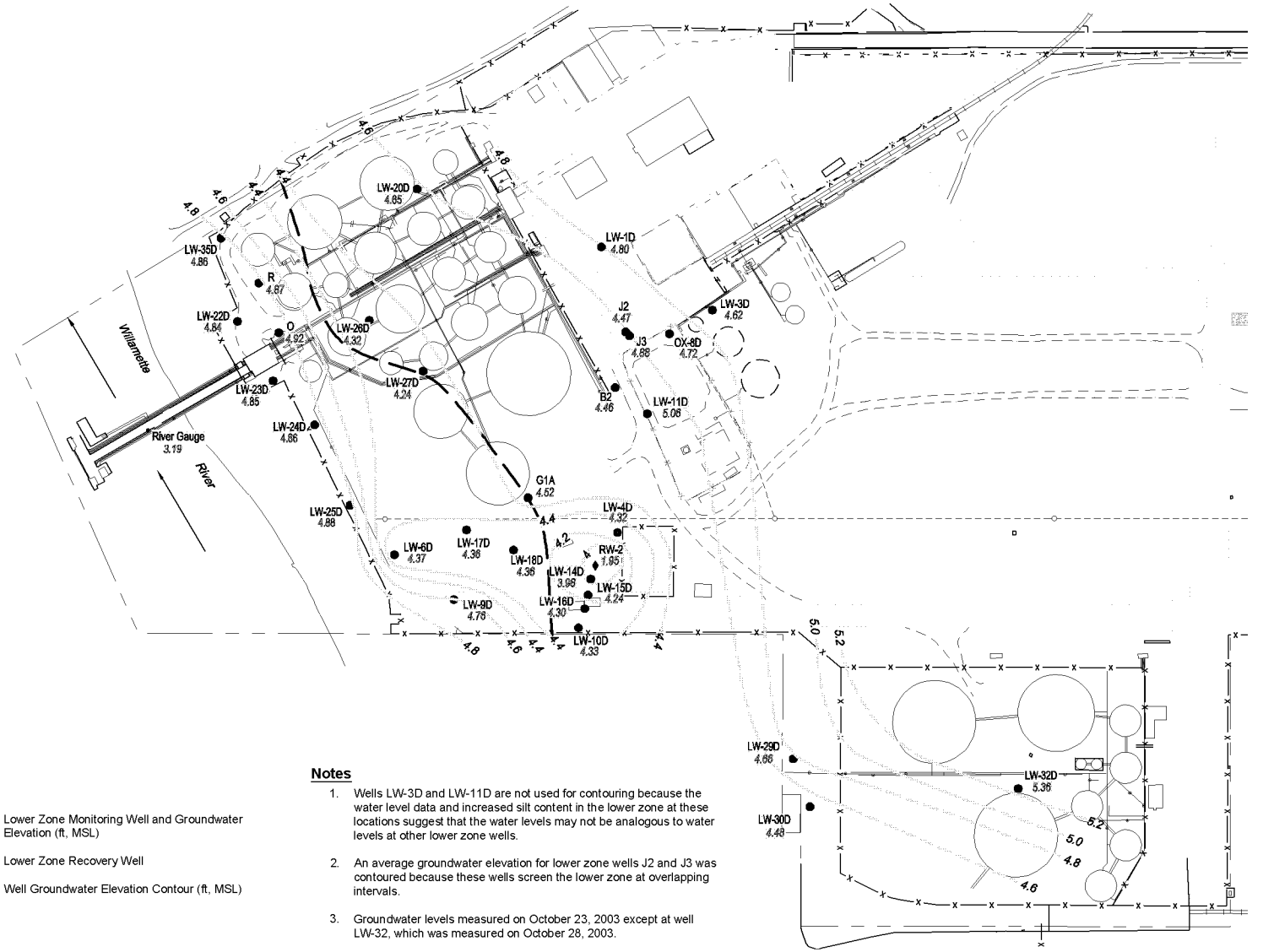
Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Upper Zone October 2003**	Figure 3

Time Oil\GW Quarterly Report\ T:\23\100\N13\14th Qtr 2003 GW Rpt\Fig3.dwg (A) "Figure 3" 4/30/2004

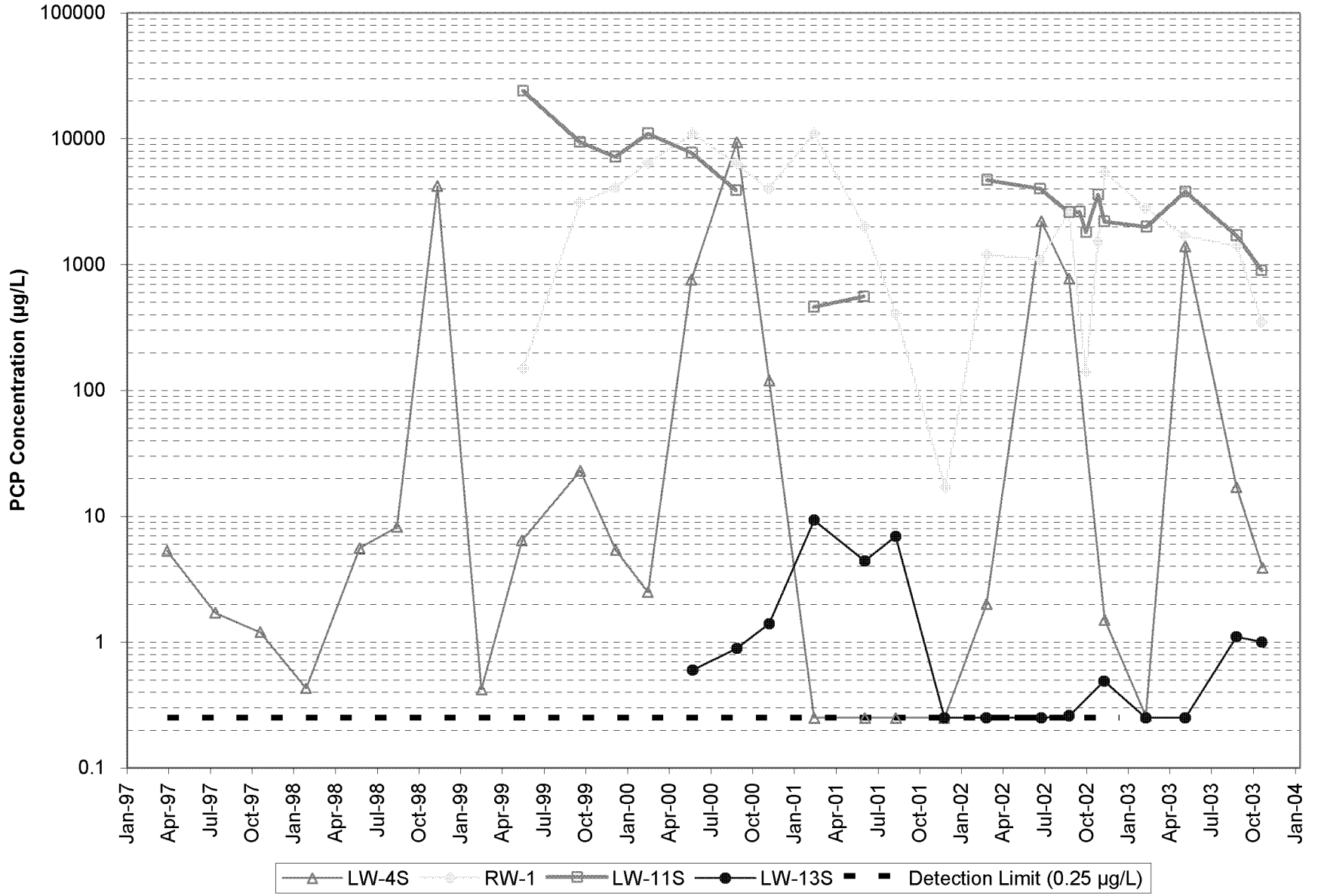
BZTO104(e)018455



Time Oil\GW Quarterly Report\ T:\23\100\13\14th Qtr 2003 GW Rpt\Fig4.dwg (A) "Figure 4" 4/30/2004

BZTO104(e)018456

Source: S:\SHEETS\timeoil\ph2ri\PLOTS2002-2003-2004.xls Log PCP vs. Time-Shallow



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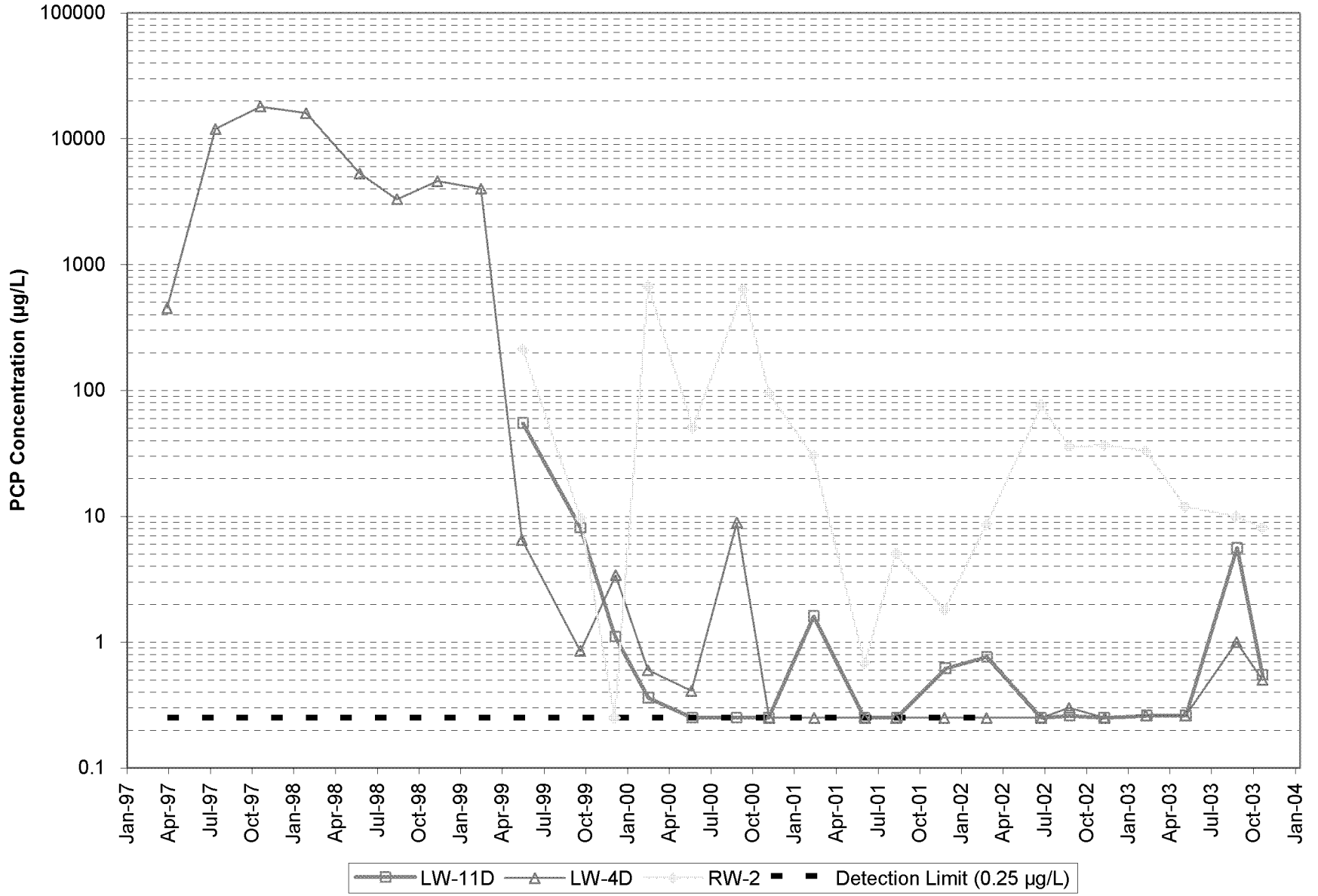
Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Upper Zone Wells
April 1997 – October 2003**

Figure
5

BZTO104(e)018457

Source: S:\SHEETS\timeoil\ph2ri\PLOTS2002-2003-2004.xls Log PCP vs. Time-Deep



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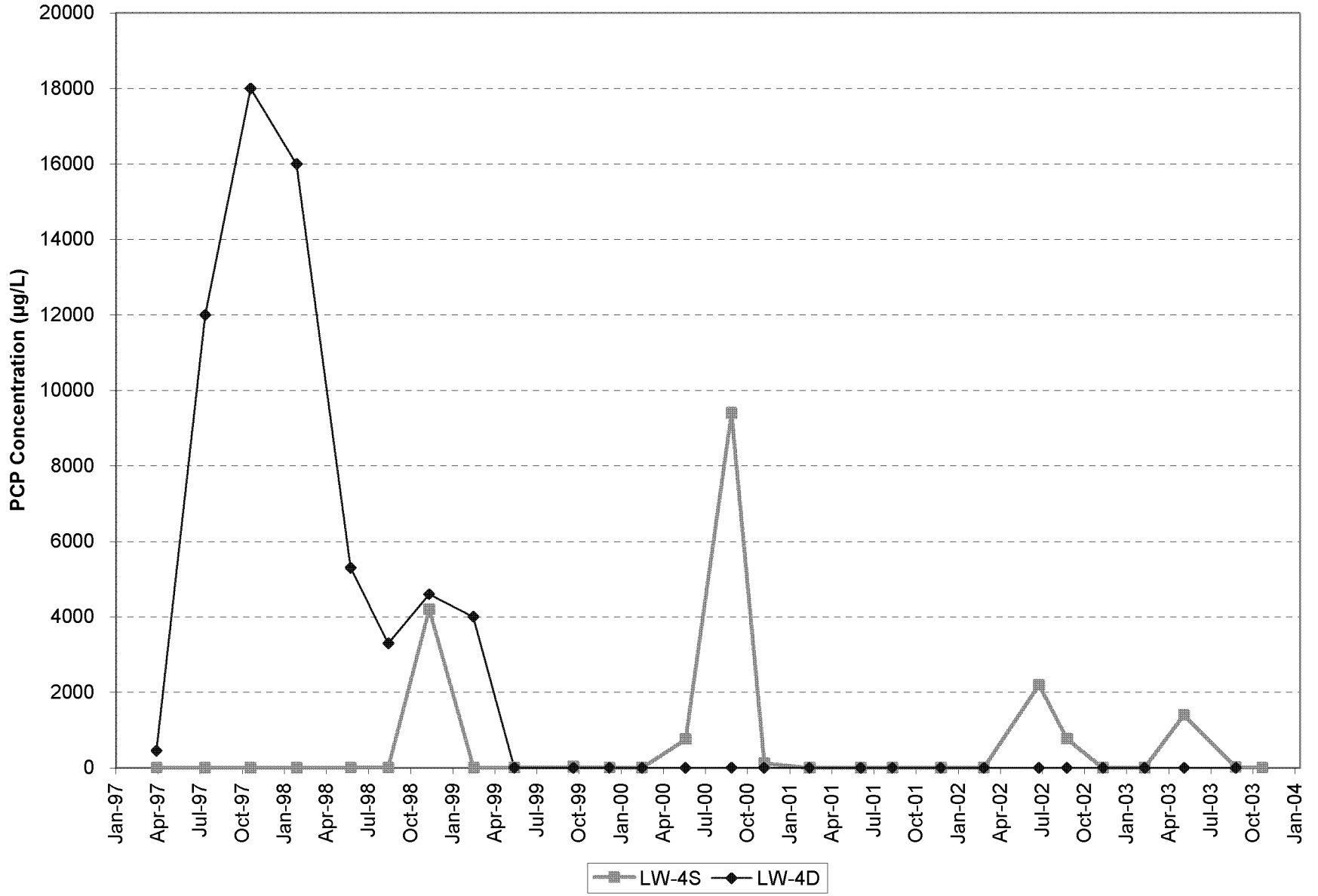
Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Lower Zone Wells
April 1997 – October 2003**

Figure
6

BZTO104(e)018458



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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations, Wells LW-4S and LW-4D, April 1997 – October 2003**	Figure 7

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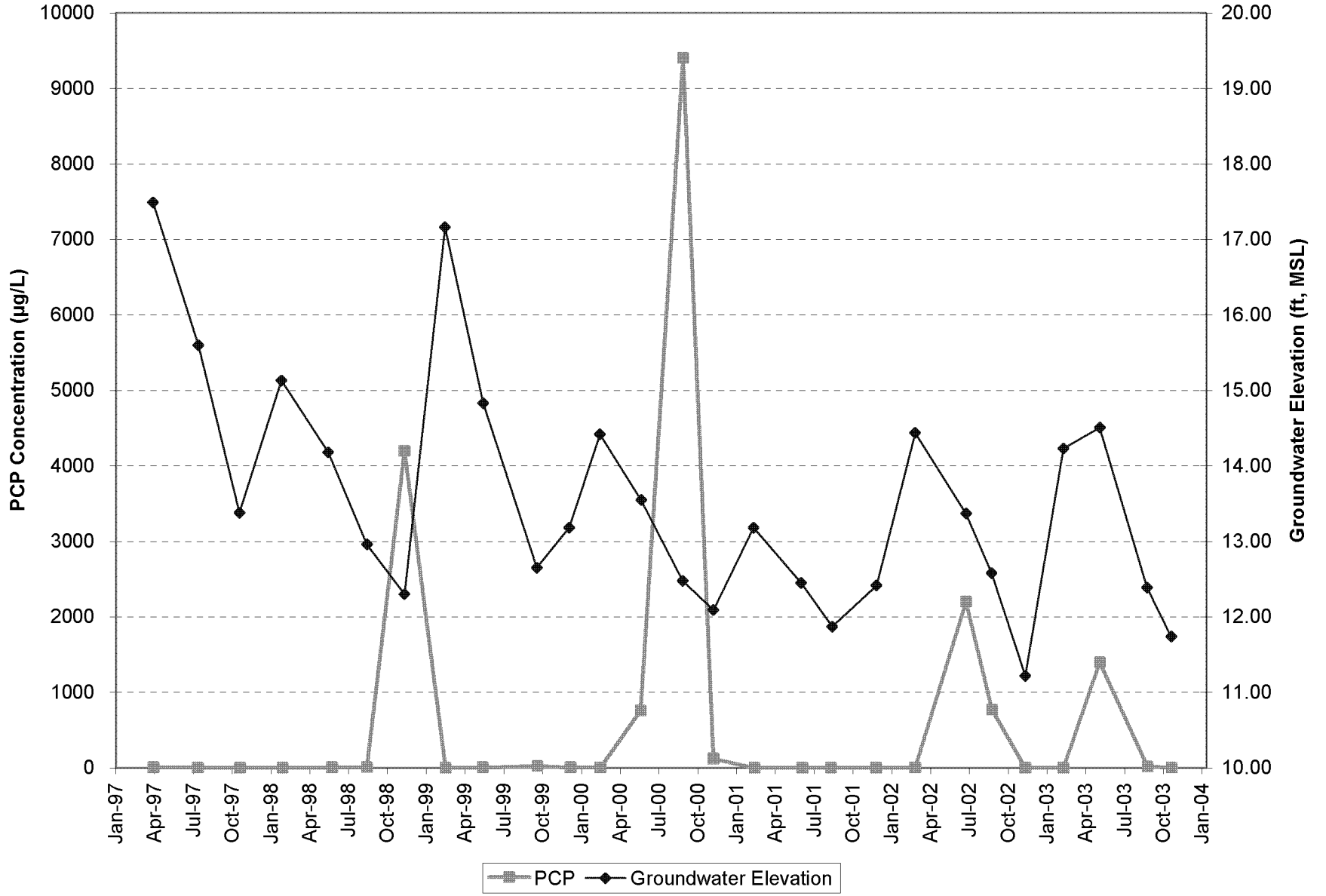
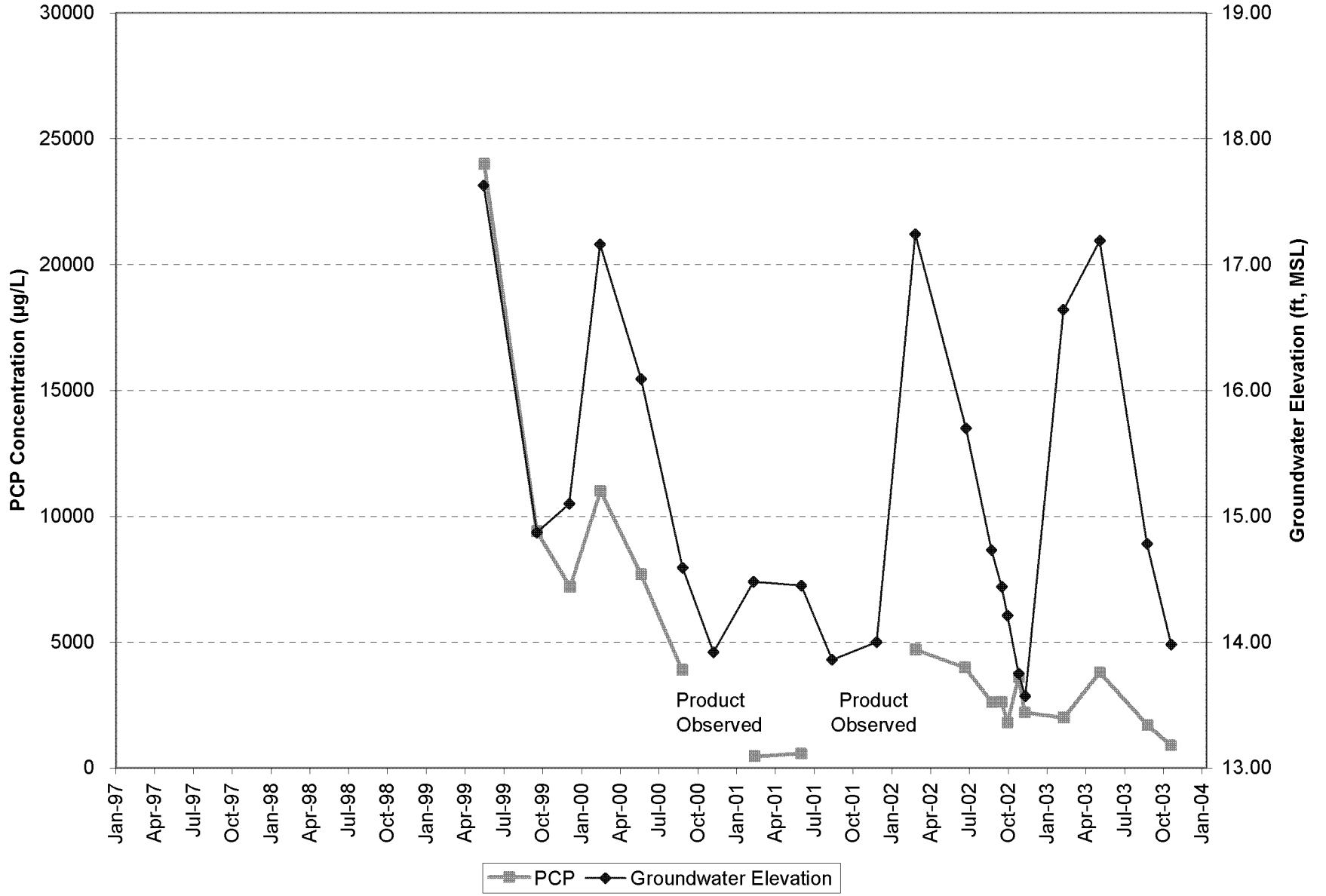


LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**PCP Concentrations and Groundwater Elevations, LW-4S April 1997 – October 2003**	Figure 8

BZTO104(e)018460



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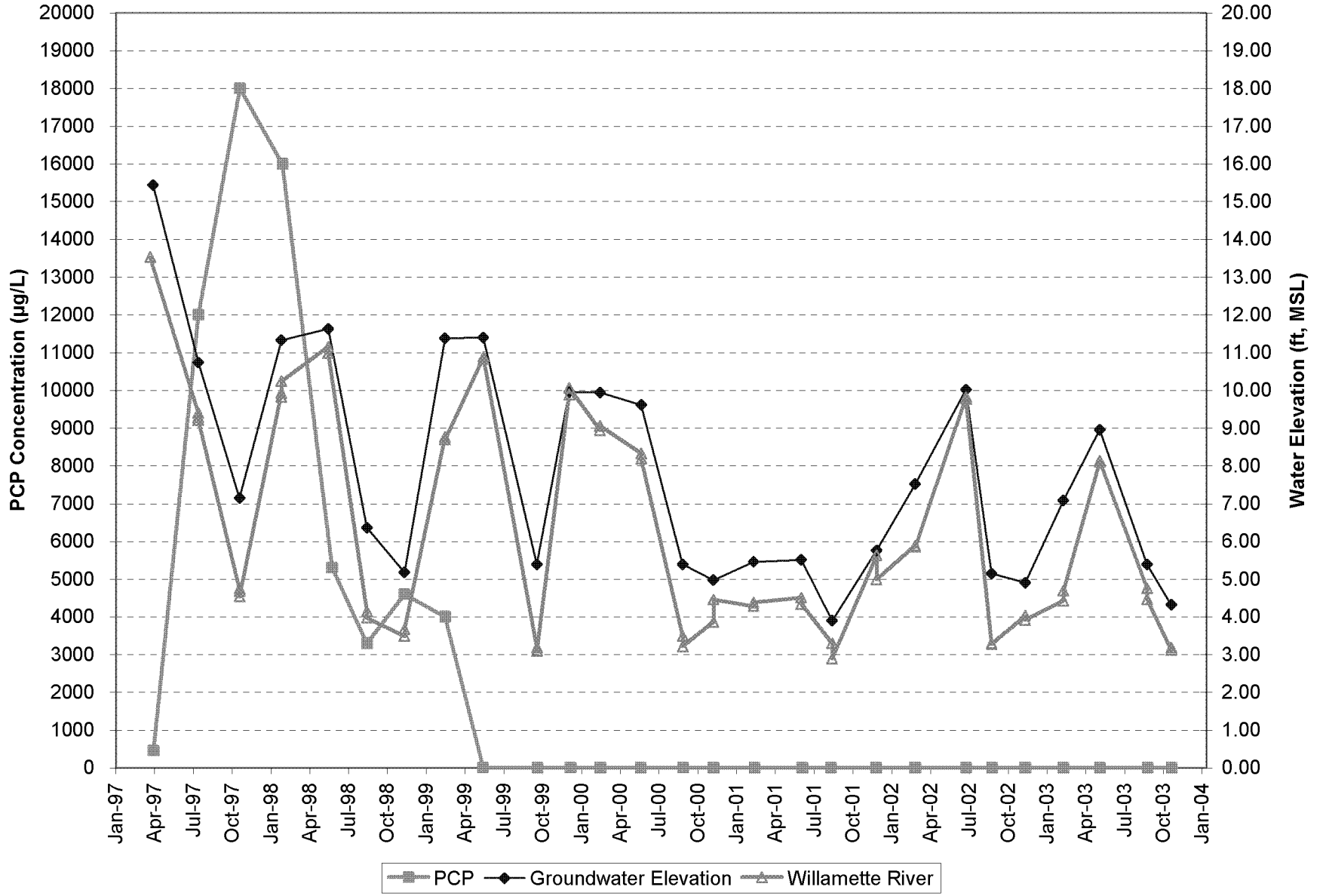
Time Oil NW Terminal
Portland, Oregon

PCP Concentrations and Groundwater Elevations, LW-11S
April 1997 – October 2003

Figure
9

BZTO104(e)018461



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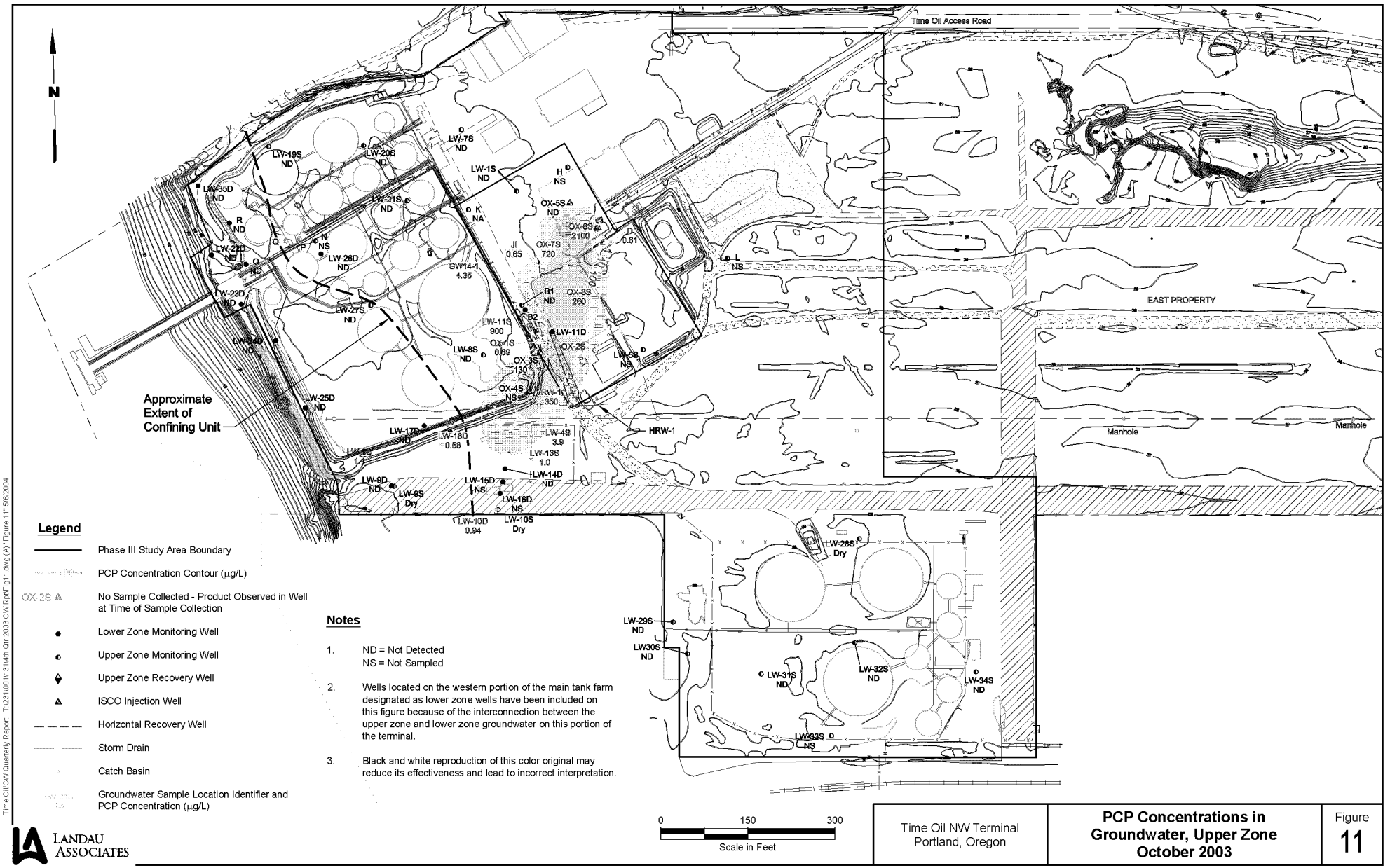
Time Oil NW Terminal
Portland, Oregon

PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D
April 1997 – October 2003

Figure
10



Legend

- Phase III Study Area Boundary
- PCP Concentration Contour (µg/L)
- OX-2S — No Sample Collected - Product Observed in Well at Time of Sample Collection
- Lower Zone Monitoring Well
- Upper Zone Monitoring Well
- Upper Zone Recovery Well
- ISCO Injection Well
- Horizontal Recovery Well
- Storm Drain
- Catch Basin
- Groundwater Sample Location Identifier and PCP Concentration (µg/L)

Notes

1. ND = Not Detected
   NS = Not Sampled
2. Wells located on the western portion of the main tank farm designated as lower zone wells have been included on this figure because of the interconnection between the upper zone and lower zone groundwater on this portion of the terminal.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations in Groundwater, Upper Zone October 2003**	Figure 11

Time Oil\GW Quarterly Report | T:\231\001\131\4th Qtr 2003 GW Rpt\Fig11.dwg (A) "Figure 11" 5/6/2004

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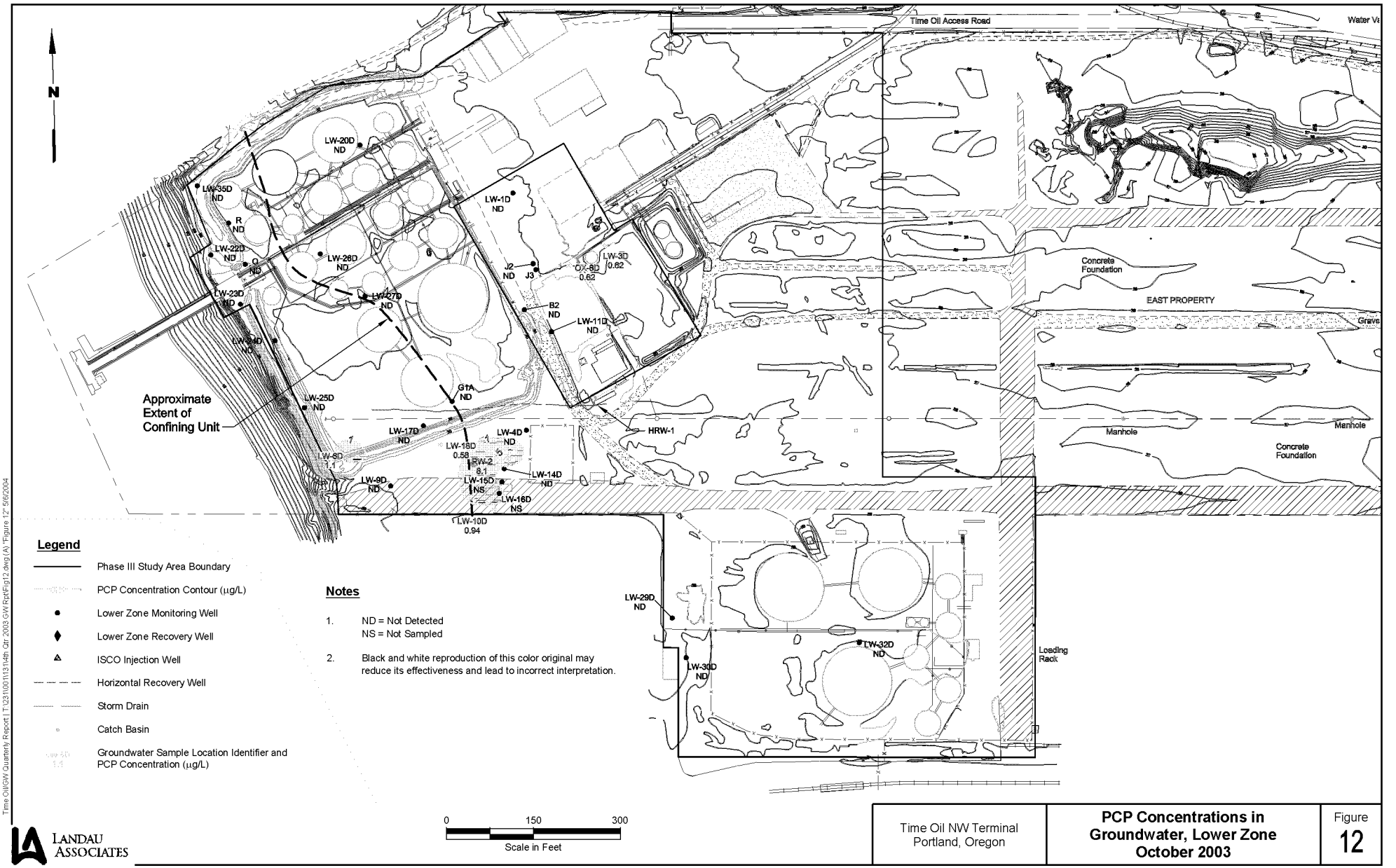

Time Oil\GW Quarterly Report\ T:\23\100\13\14th Qtr 2003 GW Rpt\Fig12.dwg (A) "Figure 12" 5/6/2004

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations in Groundwater, Lower Zone October 2003**	Figure **12**

BZTO104(e)018464

APPENDIX A

Groundwater Level Measurements And Quality Data

TABLE A-1
GROUNDWATER MONITORING LOCATIONS AND ANALYTICAL METHODS
FOURTH QUARTER EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

Well	Semivolatiles (8270)	Volatiles (8260)	MTBE (8260)	PCP (8270 SIM)	PAH (8270 SIM)	TPH-Dx (NWTPH-Dx)	TPH-Gx (NWTPH-G)	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Dioxin/Furans (8290)
Phase II Wells											
B1	X	X		X		X	X	X	X	X	
B2	X	X		X				X	X	X	
D	X	X		X				X	X	X	
G1A	X	X		X		X		X	X	X	
J1	X	X		X				X	X	X	
J2	X	X		X				X	X	X	
K		X	X		X		X	X			
O	X	X									
R	X	X									
LW-1S	X	X	X	X	X		X	X	X	X	
LW-1D	X	X		X				X	X	X	
LW-3D	X	X		X				X	X	X	
LW-4S	X	X		X		X		X	X	X	
LW-4D	X	X		X		X		X	X	X	
LW-6D	X	X		X		X		X	X	X	
LW-7S	X	X	X	X	X	X	X	X	X	X	
LW-8S	X	X		X		X	X	X	X	X	
LW-9S (b)											
LW9D	X	X		X		X		X	X	X	
LW-10S (b)											
LW-10D	X	X		X		X		X	X	X	
LW-11S	X	X		X		X	X	X	X	X	X
LW-11D	X	X		X		X		X	X	X	
LW-13S				X							
LW-14D				X							
LW-17D				X							
LW-18D				X							
RW1	X	X		X		X	X	X	X	X	X
RW2	X	X		X		X	X	X	X	X	
OX-1S				X							
OX-2S (c)											
OX-3S				X							
OX-4S (b)											
OX-5S*				X							
OX-6S*				X							
OX-7S*				X							
OX-8S*				X							X
OX-8D*				X							
HRW-1 (b)											

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TABLE A-1
GROUNDWATER MONITORING LOCATIONS AND ANALYTICAL METHODS
FOURTH QUARTER EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

Well	Semivolatiles (8270)	Volatiles (8260)	MTBE (8260)	PCP (8270 SIM)	PAH (8270 SIM)	TPH-Dx (NWTPH-Dx)	TPH-Gx (NWTPH-G)	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Dioxin/Furans (8290)
Phase III Wells											
LW-19S*	X	X	X		X	X	X	X	X	X	
LW-20S*	X	X	X		X	X	X	X	X	X	
LW-20D*	X	X	X		X	X	X	X	X	X	
LW-21S*	X	X	X		X	X	X	X	X	X	
LW-22D*	X	X	X		X	X	X	X	X	X	
LW-23D*	X	X	X		X	X	X	X	X	X	
LW-24D*	X	X	X		X	X	X	X	X	X	
LW-25D*	X	X	X		X	X	X	X	X	X	
LW-26D*	X	X	X		X	X	X	X	X	X	
LW-27S*	X	X	X		X	X	X	X	X	X	
LW-27D*	X	X	X		X	X	X	X	X	X	
LW-28S* (b)											
LW-29S*	X	X	X		X	X	X	X	X	X	
LW-29D*	X	X	X		X	X	X	X	X	X	
LW-30S*	X	X	X		X	X	X	X	X	X	
LW-30D*	X	X	X		X	X	X	X	X	X	
LW-31S*	X	X	X		X	X	X	X	X	X	
LW-32S*	X	X	X		X	X	X	X	X	X	
LW-32D*	X	X	X		X	X	X	X	X	X	
LW-33S* (b)											
LW-34S*	X	X	X		X	X	X	X	X	X	
LW-35D*	X	X	X		X	X	X	X	X	X	

(a) Metals analyzed include arsenic, chromium, copper, nickel, lead, and zinc.
(b) Well dry and not sampled.
(c) Well contained product and not sampled.
* Well installed in Fall 2003.

BZTO104(e)018467

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Shallow Wells:							
B	03/25/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	03/31/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	07/16/1997	08:30	29.04	11.02	18.02	----	
B	10/21/1997	16:35	29.04	13.39	15.65	----	
B	01/27/1998	12:15	29.04	11.53	17.51	----	
B	05/18/1998	17:56	29.04	12.51	16.53	----	
B	08/17/1998	11:02	29.04	14.40	14.64	----	
B	11/13/1998	10:24	29.04	14.38	14.66	----	
B	02/16/1999	13:36	29.04	9.69	19.35	----	
B	05/18/1999	15:52	29.04	11.72	17.32	----	
B	09/21/1999	12:21	29.04	15.18	13.86	----	
B	12/06/1999	14:37	29.04	13.00	16.04	----	
B	02/16/2000	10:57	29.04	11.84	17.20	----	
B	05/23/2000	17:31	29.04	13.22	15.82	----	
B	08/29/2000	14:23	29.04	15.32	13.72	----	
B	11/09/2000	13:31	29.04	15.29	13.75	----	
B	02/12/2001	15:25	29.04	13.68	15.36	----	
B	06/04/2001	12:49	29.04	14.18	14.86	----	
B	08/16/2001	11:54	29.04	15.80	13.24	----	
B	11/28/2001	12:44	29.04	13.80	15.24	----	
B	02/27/2002	14:33	29.04	12.27	16.77	----	
B	06/27/2002	15:05	29.04	13.38	15.66	----	
B	08/26/2002	16:59	29.04	14.02	15.02	----	
B	11/13/2002	09:01	29.04	13.90	15.14	----	
B	02/11/2003	10:13	29.04	12.85	16.19	----	
B	05/08/2003	08:11	29.04	12.27	16.77	----	
B	08/27/2003	15:30	29.04	14.70	14.34	----	
B1	03/25/1997	10:48	29.74	----	----	----	Couldn't remove cap
B1	03/31/1997	----	29.74	----	----	----	Couldn't remove cap
B1	07/16/1997	07:49	29.74	11.01	18.73	----	
B1	10/21/1997	16:33	29.74	13.56	16.18	----	
B1	01/27/1998	12:10	29.74	11.68	18.06	----	
B1	05/18/1998	17:55	29.74	12.76	16.98	----	
B1	08/17/1998	11:04	29.74	14.15	15.59	----	
B1	11/13/1998	10:21	29.74	15.05	14.69	----	
B1	02/16/1999	13:33	29.74	9.59	20.15	----	
B1	05/18/1999	15:51	29.74	11.79	17.95	----	
B1	09/21/1999	12:19	29.74	14.63	15.11	----	
B1	12/06/1999	14:38	29.74	14.25	15.49	----	
B1	02/16/2000	10:55	29.74	12.20	17.54	----	
B1	05/23/2000	17:32	29.74	13.25	16.49	----	
B1	08/29/2000	14:22	29.74	14.93	14.81	----	
B1	11/09/2000	13:30	29.74	15.56	14.18	----	
B1	02/12/2001	15:26	29.74	15.19	14.55	----	
B1	06/04/2001	12:50	29.74	15.06	14.68	----	
B1	08/16/2001	11:55	29.74	15.72	14.02	----	
B1	11/28/2001	12:45	29.74	15.47	14.27	----	
B1	02/27/2002	14:34	29.74	12.15	17.59	----	
B1	03/05/2002	11:06	29.74	12.28	17.46	----	
B1	04/05/2002	08:42	29.74	12.40	17.34	----	
B1	05/29/2002	00:00	29.74	13.20	16.54	----	
B1	06/27/2002	15:06	29.74	13.77	15.97	----	
B1	08/26/2002	17:00	29.74	14.79	14.95	----	
B1	11/13/2002	09:02	29.74	16.00	13.74	----	
B1	02/11/2003	10:15	29.74	12.86	16.88	----	
B1	05/08/2003	08:12	29.74	12.25	17.49	----	
B1	08/27/2003	15:31	29.74	14.79	14.95	----	
B1	10/23/2003	14:07	29.74	15.61	14.13	----	
C	03/25/1997	12:32	28.89	5.56	23.33	----	
C	03/31/1997	11:38	28.89	6.16	22.73	----	
C	07/16/1997	08:47	28.89	8.28	20.61	----	
C	10/21/1997	15:15	28.89	10.00	18.89	----	
C	01/27/1998	13:41	28.89	7.98	20.91	----	
C	05/18/1998	18:08	28.89	9.54	19.35	----	
C	08/17/1998	11:11	28.89	dry	----	----	

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QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
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Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
C	11/13/1998	10:36	28.89	10.36	18.53	----	
C	02/16/1999	13:58	28.89	5.91	22.98	----	
C	05/18/1999	16:04	28.89	7.90	20.99	----	
C	09/21/1999	12:44	28.89	dry	----	----	
C	12/06/1999	14:50	28.89	9.82	----	----	Water in endcap
C	02/16/2000	09:51	28.89	8.78	20.11	----	
C	05/23/2000	17:55	28.89	dry	----	----	
C	08/29/2000	14:33	28.89	dry	----	----	
C	11/09/2000	13:47	28.89	9.94	18.95	----	Dry?
C	02/12/2001	15:08	28.89	dry	----	----	
C	06/04/2001	13:25	28.89	dry	----	----	
C	08/16/2001	12:11	28.89	dry	----	----	
C	11/28/2001	13:03	28.89	dry	----	----	
C	02/27/2002	14:44	28.89	8.94	19.95	----	
C	06/27/2002	15:36	28.89	dry	----	----	
C	08/26/2002	17:31	28.89	dry	----	----	
C	11/13/2002	09:25	28.89	dry	----	----	
C	02/11/2003	10:46	28.89	dry	----	----	1" water
C	05/08/2003	08:35	28.89	8.53	20.36	----	
C	08/27/2003	15:08	28.89	dry	----	----	
D	03/25/1997	12:25	30.04	8.32	21.72	----	
D	03/31/1997	11:31	30.04	8.66	21.38	----	
D	07/16/1997	08:35	30.04	10.45	19.59	----	
D	10/21/1997	17:10	30.04	13.27	16.77	----	
D	01/27/1998	13:31	30.04	10.72	19.32	----	
D	05/18/1998	17:36	30.04	12.23	17.81	----	
D	08/17/1998	10:57	30.04	13.83	16.21	----	
D	11/13/1998	09:05	30.04	15.01	15.03	----	
D	02/16/1999	13:45	30.04	8.50	21.54	----	
D	05/18/1999	15:59	30.04	11.00	19.04	----	
D	09/21/1999	12:37	30.04	14.41	15.63	----	
D	12/06/1999	14:46	30.04	14.04	16.00	----	
D	02/16/2000	09:55	30.04	11.50	18.54	----	
D	05/23/2000	12:56	30.04	12.74	17.30	----	
D	08/29/2000	14:35	30.04	14.70	15.34	----	
D	11/09/2000	13:43	30.04	15.49	14.55	----	
D	02/12/2001	15:12	30.04	14.99	15.05	----	
D	06/04/2001	12:35	30.04	14.95	15.09	----	
D	08/16/2001	11:46	30.04	15.64	14.40	----	
D	11/28/2001	12:43	30.04	15.45	14.59	----	
D	02/27/2002	14:21	30.04	11.37	18.67	----	
D	03/05/2002	11:00	30.04	11.51	18.53	----	
D	04/05/2002	08:45	30.04	11.65	18.39	----	
D	05/29/2002	00:00	30.04	12.73	17.31	----	
D	06/27/2002	15:00	30.04	13.43	16.61	----	
D	08/26/2002	17:04	30.04	14.68	15.36	----	
D	11/13/2002	09:19	30.04	15.96	14.08	----	
D	02/11/2003	10:41	30.04	12.10	17.94	----	
D	05/08/2003	08:30	30.04	11.48	18.56	----	
D	08/27/2003	15:03	30.04	14.60	15.44	----	
D	10/23/2003	13:50	30.04	15.54	14.50	----	
F	08/18/1998	08:10	NA	14.77	NA		
F							Abandoned August 2003
G	03/25/1997	11:57	30.24	14.49	15.75	----	
G	03/31/1997	09:13	30.24	14.01	16.23	----	
G	07/16/1997	07:37	30.24	14.30	15.94	----	
G	10/21/1997	16:20	30.24	dry	----	----	
G	01/27/1998	11:49	30.24	dry	----	----	
G	05/18/1998	17:30	30.24	dry	----	----	
G	08/17/1998	11:06	30.24	dry	----	----	
G	11/13/1998	09:53	30.24	dry	----	----	
G	02/16/1999	13:14	30.24	dry	----	----	
G	05/18/1999	14:50	30.24	dry	----	----	
G	09/21/1999	11:30	30.24	dry	----	----	
G	12/06/1999	14:07	30.24	dry	----	----	
G	02/16/2000	10:19	30.24	dry	----	----	

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QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
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Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G	05/23/2000	16:33	30.24	dry	----	----	
G	08/29/2000	13:18	30.24	dry	----	----	
G	11/09/2000	12:30	30.24	dry	----	----	
G	02/12/2001	16:02	30.24	dry	----	----	
G	06/04/2001	11:41	30.24	dry	----	----	
G	08/16/2001	10:50	30.24	dry	----	----	
G	11/28/2001	11:33	30.24	dry	----	----	
G	02/27/2002	13:38	30.24	dry	----	----	
G	06/27/2002	14:13	30.24	dry	----	----	
G	08/26/2002	16:05	30.24	dry	----	----	
G	11/13/2002	07:37	30.24	dry	----	----	
G	02/11/2003	08:58	30.24	dry	----	----	
G	05/08/2003	06:57	30.24	dry	----	----	
G	08/27/2003	13:38	30.24	dry	----	----	
G	10/23/2003	12:38	30.24	dry	----	----	
H	03/31/1997	11:51	27.08	5.42	21.66	----	
H	07/16/1997	08:44	27.08	7.29	19.79	----	
H	10/21/1997	17:45	27.08	10.08	17.00	----	
H	01/27/1998	13:45	27.08	7.56	19.52	----	
H	05/18/1998	17:50	27.08	9.06	18.02	----	
H	08/17/1998	09:15	27.08	10.68	16.40	----	
H	11/13/1998	10:54	27.08	11.84	15.24	----	
H	02/16/1999	13:50	27.08	5.35	21.73	----	
H	05/18/1999	15:41	27.08	7.78	19.30	----	
H	09/21/1999	12:15	27.08	11.23	15.85	----	
H	12/06/1999	15:13	27.08	10.91	16.17	----	
H	02/16/2000	10:52	27.08	8.28	18.80	----	
H	05/23/2000	17:20	27.08	9.48	17.60	----	
H	08/29/2000	14:06	27.08	11.55	15.53	----	
H	11/09/2000	13:23	27.08	12.34	14.74	----	
H	02/12/2001	15:36	27.08	11.88	15.20	----	
H	06/04/2001	12:27	27.08	11.81	15.27	----	
H	08/16/2001	11:41	27.08	12.57	14.51	----	
H	11/28/2001	12:34	27.08	12.39	14.69	----	
H	02/27/2002	14:18	27.08	8.14	18.94	----	
H	03/05/2002	10:58	27.08	8.28	18.80	----	
H	04/05/2002	09:10	27.08	8.45	18.63	----	
H	05/29/2002	00:00	27.08	9.38	17.70	----	
H	06/27/2002	14:51	27.08	10.25	16.83	----	
H	08/26/2002	17:00	27.08	11.54	15.54	----	
H	11/13/2002	09:12	27.08	12.83	14.25	----	
H	02/11/2003	10:33	27.08	8.96	18.12	----	
H	05/08/2003	08:24	27.08	8.24	18.84	----	
H	08/27/2003	15:02	27.08	11.48	15.60	----	
H	10/23/2003	13:42	27.08	12.41	14.67	----	
J1	03/25/1997	12:15	29.70	8.78	20.92	----	Orange/brown algae
J1	03/31/1997	11:19	29.70	9.02	20.68	----	
J1	07/16/1997	08:22	29.70	10.49	19.21	----	
J1	10/21/1997	16:58	29.70	13.10	16.60	----	
J1	01/27/1998	13:15	29.70	11.03	18.67	----	
J1	05/18/1998	18:01	29.70	12.27	17.43	----	
J1	08/17/1998	11:00	29.70	13.78	15.92	----	
J1	11/13/1998	10:30	29.70	14.77	14.93	----	
J1	02/16/1999	13:37	29.70	8.91	20.79	----	
J1	05/18/1999	15:46	29.70	11.19	18.51	----	
J1	09/21/1999	12:28	29.70	14.36	15.34	----	
J1	12/06/1999	15:07	29.70	13.95	15.75	----	
J1	02/16/2000	11:05	29.70	11.67	18.03	----	
J1	05/23/2000	17:27	29.70	12.78	16.92	----	
J1	08/29/2000	14:14	29.70	14.58	15.12	----	
J1	11/09/2000	13:25	29.70	15.30	14.40	----	
J1	02/12/2001	15:22	29.70	14.87	14.83	----	
J1	06/04/2001	12:39	29.70	14.83	14.87	----	
J1	08/16/2001	11:52	29.70	15.48	14.22	----	
J1	11/28/2001	12:35	29.70	15.23	14.47	----	
J1	02/27/2002	14:30	29.70	11.62	18.08	----	

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QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J1	03/05/2002	11:04	29.70	11.76	17.94	----	
J1	04/05/2002	08:40	29.70	11.87	17.83	----	
J1	05/29/2002	00:00	29.70	12.77	16.93	----	
J1	06/27/2002	15:02	29.70	13.40	16.30	----	
J1	08/26/2002	16:54	29.70	14.51	15.19	----	
J1	11/13/2002	09:00	29.70	15.71	13.99	----	
J1	02/11/2003	10:18	29.70	12.33	17.37	----	
J1	05/08/2003	08:14	29.70	11.65	18.05	----	
J1	08/27/2003	14:47	29.70	14.46	15.24	----	
J1	10/23/2003	13:52	29.70	15.31	14.39	----	
K	03/25/1997	12:08	29.42	8.20	21.22	----	
K	03/31/1997	09:32	29.42	8.46	20.96	----	
K	07/16/1997	08:00	29.42	10.03	19.39	----	
K	10/21/1997	16:45	29.42	12.71	16.71	----	
K	01/27/1998	12:37	29.42	10.46	18.96	----	
K	05/18/1998	17:52	29.42	11.77	17.65	----	
K	08/17/1998	10:50	29.42	13.34	16.08	----	
K	11/13/1998	10:14	29.42	14.30	15.12	----	
K	02/16/1999	13:55	29.42	8.41	21.01	----	
K	05/18/1999	15:30	29.42	10.68	18.74	----	
K	09/21/1999	12:08	29.42	13.91	15.51	----	
K	12/06/1999	14:32	29.42	13.44	15.98	----	
K	02/16/2000	10:48	29.42	11.15	18.27	----	
K	05/23/2000	17:12	29.42	12.25	17.17	----	
K	08/29/2000	13:56	29.42	14.16	15.26	----	
K	11/09/2000	13:16	29.42	14.84	14.58	----	
K	02/12/2001	15:41	29.42	14.35	15.07	----	
K	06/04/2001	12:20	29.42	14.22	15.20	----	
K	08/16/2001	11:35	29.42	15.12	14.30	----	
K	11/28/2001	12:26	29.42	14.68	14.74	----	
K	02/27/2002	14:17	29.42	11.05	18.37	----	
K	03/05/2002	10:55	29.42	11.25	18.17	----	
K	04/05/2002	08:55	29.42	11.30	18.12	----	
K	05/29/2002	00:00	29.42	12.22	17.20	----	
K	06/27/2002	14:47	29.42	12.92	16.50	----	
K	08/26/2002	17:17	29.42	14.12	15.30	----	
K	11/13/2002	09:11	29.42	15.18	14.24	----	
K	02/11/2003	10:29	29.42	11.80	17.62	----	
K	05/08/2003	08:21	29.42	11.14	18.28	----	
K	08/27/2003	14:52	29.42	14.08	15.34	----	
K	10/23/2003	13:40	29.42	14.91	14.51	----	
L	03/25/1997	12:35	28.10	4.98	23.12	----	
L	03/31/1997	11:40	28.10	5.24	22.86	----	
L	07/16/1997	08:49	28.10	7.50	20.60	----	
L	10/21/1997	15:18	28.10	9.55	18.55	----	
L	01/27/1998	13:39	28.10	6.45	21.65	----	
L	05/18/1998	18:07	28.10	9.21	18.89	----	
L	08/17/1998	11:10	28.10	11.59	16.51	----	
L	11/13/1998	10:35	28.10	13.02	15.08	----	
L	02/16/1999	13:57	28.10	4.78	23.32	----	
L	05/18/1999	16:03	28.10	7.62	20.48	----	
L	09/21/1999	12:43	28.10	12.30	15.80	----	
L	12/06/1999	14:49	28.10	9.51	18.59	----	
L	02/16/2000	09:49	28.10	7.13	20.97	----	
L	05/23/2000	17:54	28.10	9.11	18.99	----	
L	08/29/2000	14:32	28.10	12.66	15.44	----	
L	11/09/2000	13:46	28.10	13.56	14.54	----	
L	02/12/2001	15:07	28.10	13.04	15.06	----	
L	06/04/2001	13:24	28.10	12.78	15.32	----	
L	08/16/2001	12:10	28.10	13.66	14.44	----	
L	11/28/2001	13:02	28.10	12.34	15.76	----	
L	02/27/2002	14:42	28.10	7.16	20.94	----	
L	03/05/2002	11:12	28.10	7.39	20.71	----	
L	04/05/2002	08:39	28.10	7.63	20.47	----	
L	05/29/2002	00:00	28.10	9.09	19.01	----	
L	06/27/2002	10:38	28.10	10.11	17.99	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
L	08/26/2002	17:30	28.10	12.56	15.54	----	
L	11/13/2002	09:26	28.10	14.00	14.10	----	
L	02/11/2003	10:47	28.10	7.17	20.93	----	
L	05/08/2003	08:34	28.10	7.01	21.09	----	
L	08/27/2003	15:09	28.10	15.20	12.90	----	
L	10/23/2003	14:20	28.10	13.56	14.54	----	
N	03/25/1997	11:48	31.40	14.05	17.35	----	
N	03/31/1997	08:59	31.40	14.26	17.14	----	Hydrocarbon odor, product
N	07/16/1997	07:20	31.40	16.03	16.33	1.20	Light brown color; thick coating on probe
N	10/21/1997	16:09	31.40	16.46	14.94	----	No product - strong petroleum odor
N	10/23/1997	17:20	31.40	16.48	14.92	----	No product - strong petroleum odor
N	01/27/1998	11:13	31.40	15.01	16.41	0.02	
N	05/18/1998	17:20	31.40	16.39	15.06	0.06	
N	08/17/1998	10:40	31.40	17.16	14.26	0.02	Thin coat of thick product
N	11/13/1998	09:48	31.40	17.83	13.58	0.01	
N	02/16/1999	12:55	31.40	14.09	17.53	0.27	Strong petroleum odor
N	05/18/1999	14:47	31.40	15.79	15.64	0.04	
N	09/21/1999	11:23	31.40	17.39	14.02	0.01	
N	12/06/1999	14:00	31.40	16.57	14.83	----	
N	02/16/2000	10:10	31.40	15.69	15.71	----	
N	05/23/2000	16:24	31.40	16.42	14.98	----	Strong petroleum odor, no product
N	08/29/2000	13:07	31.40	17.61	13.79	----	
N	11/09/2000	12:26	31.40	18.23	13.19	0.03	
N	02/12/2001	15:49	31.40	17.64	13.76	----	
N	06/04/2001	11:31	31.40	17.58	13.82	----	
N	08/16/2001	10:29	31.40	18.08	13.32	----	Trace product
N	11/28/2001	11:27	31.40	18.06	13.34	----	Trace product
N	02/27/2002	13:25	31.40	15.76	15.64	----	
N	04/05/2002	08:09	31.40	15.88	15.52	----	
N	05/29/2002	00:00	31.40	16.42	14.98	----	
N	06/27/2002	14:12	31.40	16.80	14.60	----	
N	08/26/2002	15:56	31.40	17.51	13.89	----	
N	11/13/2002	07:27	31.40	18.44	12.98	0.03	Product present
N	02/11/2003	08:49	31.40	15.33	16.07	----	
N	05/08/2003	06:51	31.40	15.71	15.69	----	
N	08/27/2003	13:33	31.40	17.54	13.86	----	
N	10/23/2003	12:08	31.40	18.18	13.22	----	
P	03/25/1997	11:45	29.96	12.88	17.08	----	
P	03/31/1997	08:55	29.96	12.94	17.02	----	Hydrocarbon odor, product
P	07/16/1997	07:15	29.96	14.02	16.08	0.17	Light coating on probe; light brown color
P	10/21/1997	16:05	29.96	15.23	14.73	----	No product - strong petroleum odor
P	10/23/1997	17:25	29.96	15.21	14.75	----	No product - strong petroleum odor
P	01/27/1998	11:09	29.96	13.87	16.09	----	
P	05/18/1998	17:18	29.96	13.08	16.88	----	Trace of product on probe
P	08/17/1998	10:37	29.96	15.82	14.15	0.01	Sheen on probe, strong petroleum odor
P	11/13/1998	09:46	29.96	16.63	13.37	0.05	Strong gasoline odor
P	02/16/1999	12:52	29.96	12.91	17.10	0.06	Strong petroleum odor
P	05/18/1999	14:43	29.96	14.68	15.38	0.13	
P	09/21/1999	11:20	29.96	16.08	13.89	0.01	
P	12/06/1999	13:55	29.96	15.41	14.55	----	
P	02/16/2000	10:08	29.96	14.51	15.45	----	
P	05/23/2000	16:21	29.96	15.15	14.81	----	Trace of product on surface
P	08/29/2000	13:04	29.96	16.26	13.71	0.01	
P	11/09/2000	12:24	29.96	16.98	13.00	0.03	
P	02/12/2001	15:46	29.96	16.31	13.65	----	
P	06/04/2001	11:27	29.96	16.26	13.70	----	Trace product
P	08/16/2001	10:28	29.96	16.75	13.21	----	
P	11/28/2001	11:24	29.96	17.01	12.95	----	
P	02/27/2002	13:22	29.96	14.60	15.44	0.10	Strong ethanol-like odor
P	04/05/2002	08:07	29.96	14.70	15.34	0.10	
P	05/29/2002	00:00	29.96	15.00	14.96	----	Trace product
P	06/27/2002	14:11	29.96	15.49	14.47	----	
P	08/26/2002	15:54	29.96	16.15	13.81	----	
P	11/13/2002	07:25	29.96	16.99	13.00	0.04	Product present
P	02/11/2003	08:44	29.96	14.13	15.84	0.01	Product present
P	05/08/2003	06:47	29.96	15.53	14.44	0.01	Product barely present

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
P	08/27/2003	13:30	29.96	16.19	13.77	----	
P	10/23/2003	12:05	29.96	16.60	13.38	0.02	Trace product
Q	03/25/1997	11:42	30.36	13.55	16.81	----	
Q	03/31/1997	08:52	30.36	13.54	16.82	----	Hydrocarbon odor
Q	07/16/1997	07:10	30.36	14.55	15.83	0.02	Light coating on probe; light brown color
Q	10/21/1997	16:04	30.36	15.70	14.66	----	No product - strong petroleum odor
Q	10/23/1997	17:29	30.36	15.69	14.67	----	No product - strong petroleum odor
Q	01/27/1998	11:05	30.36	14.48	15.88	----	
Q	05/18/1998	17:16	30.36	15.58	14.78	----	
Q	08/17/1998	10:35	30.36	16.27	14.09	----	Slight sheen on probe; no product, strong petroleum odor
Q	11/13/1998	09:44	30.36	17.01	13.36	0.01	Strong gasoline odor
Q	02/16/1999	12:49	30.36	13.61	16.76	0.01	Strong petroleum odor
Q	05/18/1999	14:40	30.36	15.13	15.23	----	Strong odor when cap removed
Q	09/21/1999	11:17	30.36	16.51	13.85	----	
Q	12/06/1999	13:53	30.36	15.88	14.48	----	
Q	02/16/2000	10:06	30.36	15.02	15.34	----	Film of product
Q	05/23/2000	16:19	30.36	15.64	14.72	----	Strong petroleum odor, no product
Q	08/29/2000	13:01	30.36	16.69	13.67	----	
Q	11/09/2000	12:23	30.36	17.50	12.86	----	Trace of product
Q	02/12/2001	15:45	30.36	16.71	13.65	----	
Q	06/04/2001	11:25	30.36	16.66	13.70	----	
Q	08/16/2001	10:26	30.36	17.15	13.21	----	Trace product
Q	11/28/2001	11:21	30.36	17.76	12.94	0.42	
Q	02/27/2002	13:20	30.36	15.07	15.29	----	Strong petroleum odor, no product
Q	04/05/2002	08:05	30.36	15.23	15.13	----	Trace product
Q	05/29/2002	00:00	30.36	15.53	14.83	----	Trace product
Q	06/27/2002	14:10	30.36	15.95	14.41	----	Trace product
Q	08/26/2002	15:52	30.36	16.60	13.76	----	
Q	11/13/2002	07:30	30.36	17.50	12.87	0.01	Product present
Q	02/11/2003	08:47	30.36	14.67	15.69	----	
Q	05/08/2003	06:48	30.36	15.00	15.54	0.22	
Q	08/27/2003	13:28	30.36	16.60	13.76	----	
Q	10/23/2003	12:03	30.36	17.50	13.05	0.24	
LW001S	03/31/1997	11:12	27.96	6.65	21.31		
LW001S	07/16/1997	08:15	27.96	8.34	19.62	----	
LW001S	10/21/1997	16:53	27.96	11.02	16.94	----	
LW001S	01/27/1998	13:00	27.96	8.75	19.21	----	
LW001S	05/18/1998	17:40	27.96	9.15	18.81	----	
LW001S	08/17/1998	10:54	27.96	11.67	16.29	----	
LW001S	11/13/1998	10:02	27.96	12.76	15.20	----	
LW001S	02/16/1999	13:24	27.96	6.60	21.36	----	
LW001S	05/18/1999	15:38	27.96	8.92	19.04	----	
LW001S	09/21/1999	12:10	27.96	12.20	15.76	----	
LW001S	12/06/1999	14:33	27.96	11.86	16.10	----	
LW001S	02/16/2000	10:50	27.96	9.42	18.54	----	
LW001S	05/23/2000	17:18	27.96	10.52	17.44	----	
LW001S	08/29/2000	13:58	27.96	12.51	15.45	----	
LW001S	11/09/2000	13:17	27.96	13.26	14.70	----	
LW001S	02/12/2001	15:33	27.96	12.82	15.14	----	
LW001S	06/04/2001	12:24	27.96	12.77	15.19	----	
LW001S	08/16/2001	11:37	27.96	13.45	14.51	----	
LW001S	11/28/2001	12:28	27.96	13.25	14.71	----	
LW001S	02/27/2002	14:19	27.96	9.31	18.65	----	
LW001S	03/05/2002	10:56	27.96	9.45	18.51	----	
LW001S	04/05/2002	09:08	27.96	9.60	18.36	----	
LW001S	05/29/2002	00:00	27.96	10.49	17.47	----	
LW001S	06/27/2002	14:50	27.96	11.26	16.70	----	
LW001S	08/26/2002	17:11	27.96	12.47	15.49	----	
LW001S	11/13/2002	09:07	27.96	13.72	14.24	----	
LW001S	02/11/2003	10:25	27.96	10.11	17.85	----	
LW001S	05/08/2003	08:20	27.96	9.41	18.55	----	
LW001S	08/27/2003	14:51	27.96	12.46	15.50	----	
LW001S	10/23/2003	13:58	27.96	13.32	14.64	----	
LW002S	03/25/1997	12:22	29.56	8.06	21.50	----	
LW002S	03/31/1997	11:27	29.56	8.34	21.22	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW002S	07/16/1997	08:33	29.56	10.05	19.51	----	
LW002S	10/21/1997	17:04	29.56	12.77	16.79	----	
LW002S	01/27/1998	13:25	29.56	10.39	19.17	----	
LW002S	05/18/1998	18:02	29.56	11.78	17.78	----	
LW002S	08/17/1998	10:56	29.56	13.38	16.18	----	
LW002S	11/13/1998	10:32	29.56	14.47	15.09	----	
LW002S	02/16/1999	13:42	29.56	8.27	21.29	----	
LW002S	05/18/1999	15:45	29.56	10.63	18.93	----	
LW002S	09/21/1999	12:34	29.56	13.95	15.61	----	
LW002S	12/06/1999	15:11	29.56	13.54	16.02	----	
LW002S	02/16/2000	10:38	29.56	11.08	18.48	----	
LW002S	05/23/2000	17:24	29.56	12.29	17.27	----	
LW002S	08/29/2000	14:12	29.56	14.23	15.33	----	
LW002S	11/09/2000	13:04	29.56	15.00	14.56	----	
LW002S	02/12/2001	15:30	29.56	14.52	15.04	----	
LW002S	06/04/2001	12:34	29.56	14.46	15.10	----	
LW002S	08/16/2001	11:45	29.56	15.16	14.40	----	
LW002S	11/28/2001	12:41	29.56	14.90	14.66	----	
LW002S	02/27/2002	14:19	29.56	11.02	18.54	----	
LW002S	03/05/2002	10:59	29.56	11.17	18.39	----	
LW002S	04/05/2002	08:47	29.56	11.33	18.23	----	
LW002S	05/29/2002	00:00	29.56	12.22	17.34	----	
LW002S	06/27/2002	14:56	29.56	13.00	16.56	----	
LW004S	03/31/1997	09:20	30.26	12.77	17.49	----	
LW004S	07/16/1997	07:40	30.26	14.66	15.60	----	
LW004S	10/21/1997	16:25	30.26	16.88	13.38	----	
LW004S	01/27/1998	12:00	30.26	15.13	15.13	----	
LW004S	05/18/1998	17:32	30.26	16.08	14.18	----	
LW004S	08/17/1998	11:07	30.26	17.30	12.96	----	
LW004S	11/13/1998	09:56	30.26	17.96	12.30	----	
LW004S	02/16/1999	13:16	30.26	13.10	17.16	----	
LW004S	05/18/1999	15:03	30.26	15.43	14.83	----	
LW004S	09/21/1999	11:44	30.26	17.61	12.65	----	
LW004S	12/06/1999	14:19	30.26	17.08	13.18	----	
LW004S	02/16/2000	10:31	30.26	15.84	14.42	----	
LW004S	05/23/2000	16:55	30.26	16.71	13.55	----	
LW004S	08/29/2000	13:39	30.26	17.78	12.48	----	
LW004S	11/09/2000	12:53	30.26	18.17	12.09	----	
LW004S	02/12/2001	16:38	30.26	17.08	13.18	----	
LW004S	06/04/2001	12:08	30.26	17.81	12.45	----	
LW004S	08/16/2001	11:14	30.26	18.39	11.87	----	
LW004S	11/28/2001	12:05	30.26	17.84	12.42	----	
LW004S	02/27/2002	14:01	30.26	15.82	14.44	----	
LW004S	03/05/2002	11:35	30.26	15.95	14.31	----	
LW004S	04/05/2002	08:20	30.26	16.02	14.24	----	
LW004S	05/29/2002	00:00	30.26	16.74	13.52	----	
LW004S	06/27/2002	14:39	30.26	16.89	13.37	----	
LW004S	08/26/2002	16:31	30.26	17.68	12.58	----	
LW004S	11/13/2002	08:22	30.26	19.04	11.22	----	
LW004S	02/11/2003	09:31	30.26	16.03	14.23	----	
LW004S	05/08/2003	07:43	30.26	15.75	14.51	----	
LW004S	08/27/2003	13:59	30.26	17.87	12.39	----	
LW004S	10/23/2003	13:18	30.26	18.52	11.74	----	
LW005S	03/25/1997	12:29	30.79	10.57	20.22	----	
LW005S	03/31/1997	11:35	30.79	10.84	19.95	----	
LW005S	07/16/1997	08:53	30.79	12.29	18.50	----	
LW005S	10/21/1997	15:16	30.79	15.00	15.79	----	
LW005S	01/27/1998	13:36	30.79	12.90	17.89	----	
LW005S	05/18/1998	18:05	30.79	14.19	16.60	----	
LW005S	08/17/1998	11:09	30.79	15.54	15.25	----	
LW005S	11/13/1998	10:38	30.79	16.55	14.24	----	
LW005S	02/16/1999	13:16	30.79	10.59	20.20	----	
LW005S	05/18/1999	16:01	30.79	13.12	17.67	----	
LW005S	09/21/1999	12:40	30.79	16.00	14.79	----	
LW005S	12/06/1999	14:47	30.79	15.64	15.15	----	
LW005S	02/16/2000	09:56	30.79	13.54	17.25	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW005S	05/23/2000	17:51	30.79	14.80	15.99	----	
LW005S	08/29/2000	14:37	30.79	16.35	14.44	----	
LW005S	11/09/2000	13:45	30.79	16.98	13.81	----	
LW005S	02/12/2001	15:13	30.79	16.51	14.28	----	
LW005S	06/04/2001	13:23	30.79	16.43	14.36	----	
LW005S	08/16/2001	12:07	30.79	17.03	13.76	----	
LW005S	11/28/2001	13:01	30.79	16.94	13.85	----	
LW005S	02/27/2002	14:39	30.79	13.48	17.31	----	
LW005S	03/05/2002	11:13	30.79	13.62	17.17	----	
LW005S	04/05/2002	08:38	30.79	13.60	17.19	----	
LW005S	05/29/2002	00:00	30.79	14.81	15.98	----	
LW005S	06/27/2002	10:43	30.79	15.15	15.64	----	
LW005S	08/26/2002	17:08	30.79	16.12	14.67	----	
LW005S	11/13/2002	09:22	30.79	17.39	13.40	----	
LW005S	02/11/2003	10:43	30.79	13.95	16.84	----	
LW005S	05/08/2003	08:32	30.79	13.58	17.21	----	
LW005S	08/27/2003	15:07	30.79	16.11	14.68	----	
LW005S	10/23/2003	14:17	30.79	16.92	13.87	----	
LW007S	03/31/1997	11:05	28.10	6.75	21.35	----	
LW007S	07/16/1997	08:05	28.10	8.62	19.48	----	
LW007S	10/21/1997	16:45	28.10	11.26	16.84	----	
LW007S	01/27/1998	12:47	28.10	8.85	19.25	----	
LW007S	05/18/1998	17:48	28.10	10.34	17.76	----	
LW007S	08/17/1998	10:48	28.10	11.85	16.25	----	
LW007S	11/13/1998	10:12	28.10	12.90	15.20	----	Strong gasoline odor
LW007S	02/16/1999	13:53	28.10	6.81	21.29	----	
LW007S	05/18/1999	15:23	28.10	9.14	18.96	----	
LW007S	09/21/1999	12:03	28.10	12.37	15.73	----	
LW007S	12/06/1999	14:27	28.10	12.00	16.10	----	
LW007S	02/16/2000	10:46	28.10	9.60	18.50	----	
LW007S	05/23/2000	17:09	28.10	10.70	17.40	----	
LW007S	08/29/2000	13:53	28.10	12.64	15.46	----	
LW007S	11/09/2000	13:14	28.10	13.36	14.74	----	
LW007S	02/12/2001	15:39	28.10	12.94	15.16	----	
LW007S	06/04/2001	12:17	28.10	12.87	15.23	----	
LW007S	08/16/2001	11:33	28.10	13.58	14.52	----	
LW007S	11/28/2001	12:22	28.10	13.34	14.76	----	
LW007S	02/27/2002	14:15	28.10	9.47	18.63	----	
LW007S	03/05/2002	10:52	28.10	9.62	18.48	----	
LW007S	04/05/2002	08:57	28.10	9.73	18.37	----	
LW007S	05/29/2002	00:00	28.10	10.63	17.47	----	
LW007S	06/27/2002	14:45	28.10	11.36	16.74	----	
LW007S	08/26/2002	17:18	28.10	12.69	15.41	----	
LW007S	11/13/2002	09:16	28.10	13.82	14.28	----	
LW007S	02/11/2003	10:37	28.10	10.18	17.92	----	
LW007S	05/08/2003	08:27	28.10	9.54	18.56	----	
LW007S	08/27/2003	14:58	28.10	12.62	15.48	----	
LW007S	10/23/2003	13:39	28.10	13.45	14.65	----	
LW008S	05/18/1999	14:55	31.28	14.84	16.44	----	
LW008S	09/21/1999	12:24	31.28	16.94	14.34	----	
LW008S	12/06/1999	14:40	31.28	16.63	14.65	----	
LW008S	02/16/2000	10:16	31.28	15.18	16.10	----	
LW008S	05/23/2000	17:42	31.28	15.88	15.40	----	
LW008S	08/29/2000	14:26	31.28	17.06	14.22	----	
LW008S	11/09/2000	13:32	31.28	17.55	13.73	----	
LW008S	02/12/2001	15:58	31.28	17.24	14.04	----	
LW008S	06/04/2001	13:05	31.28	17.14	14.14	----	
LW008S	08/16/2001	12:00	31.28	17.70	13.58	----	
LW008S	11/28/2001	12:57	31.28	17.63	13.65	0.04	
LW008S	02/27/2002	14:37	31.28	15.12	16.16	----	
LW008S	03/05/2002	11:09	31.28	15.26	16.02	----	
LW008S	04/05/2002	08:17	31.28	15.34	15.94	----	
LW008S	05/29/2002	00:00	31.28	15.91	15.37	----	
LW008S	06/27/2002	15:21	31.28	16.21	15.07	----	
LW008S	08/26/2002	16:38	31.28	16.95	14.33	----	
LW008S	11/13/2002	08:50	31.28	17.88	13.40	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW008S	02/11/2003	09:48	31.28	15.57	15.71	----	
LW008S	05/08/2003	08:00	31.28	15.11	16.17	----	
LW008S	08/27/2003	14:25	31.28	16.97	14.31	----	
LW008S	10/23/2003	12:42	31.28	17.54	13.74	----	
LW009S	05/18/1999	14:57	31.04	19.58	11.46	----	Water level appears to be more representative of lower zone
LW009S	09/21/1999	11:36	31.04	dry	----	----	
LW009S	12/06/1999	14:13	31.04	19.64	----	----	Water in endcap
LW009S	02/16/2000	10:24	31.04	19.59	----	----	Water in endcap
LW009S	05/23/2000	16:39	31.04	dry	----	----	
LW009S	08/29/2000	13:28	31.04	dry	----	----	
LW009S	11/09/2000	12:42	31.04	dry	----	----	
LW009S	02/12/2001	16:12	31.04	dry	----	----	
LW009S	06/04/2001	11:50	31.04	dry	----	----	
LW009S	08/16/2001	11:01	31.04	dry	----	----	
LW009S	11/28/2001	11:52	31.04	dry	----	----	
LW009S	02/27/2002	13:48	31.04	dry	----	----	
LW009S	03/05/2002	11:15	31.04	dry	----	----	
LW009S	04/05/2002	08:26	31.04	dry	----	----	
LW009S	05/29/2002	00:00	31.04	dry	----	----	
LW009S	06/27/2002	14:24	31.04	dry	----	----	
LW009S	08/26/2002	16:09	31.04	dry	----	----	
LW009S	11/13/2002	07:49	31.04	dry	----	----	
LW009S	02/11/2003	09:06	31.04	dry	----	----	Recorded DTW of 19.58; well most likely dry
LW009S	05/08/2003	07:11	31.04	dry	----	----	
LW009S	08/27/2003	13:48	31.04	dry	----	----	
LW009S	10/23/2003	12:46	31.04	dry	----	----	
LW010S	05/18/1999	14:59	30.75	17.24	13.51	----	
LW010S	09/21/1999	11:38	30.75	19.13	11.62	----	
LW010S	12/06/1999	14:14	30.75	18.54	12.21	----	
LW010S	02/16/2000	10:26	30.75	17.62	13.13	----	
LW010S	05/23/2000	16:41	30.75	18.25	12.50	----	
LW010S	08/29/2000	13:30	30.75	dry	----	----	
LW010S	11/09/2000	12:45	30.75	dry	----	----	
LW010S	02/12/2001	16:14	30.75	dry	----	----	
LW010S	06/04/2001	11:53	30.75	dry	----	----	
LW010S	08/16/2001	11:03	30.75	dry	----	----	
LW010S	11/28/2001	11:54	30.75	dry	----	----	
LW010S	02/27/2002	13:50	30.75	17.77	12.98	----	
LW010S	03/05/2002	11:32	30.75	17.84	12.91	----	
LW010S	04/05/2002	08:24	30.75	17.82	12.93	----	
LW010S	05/29/2002	00:00	30.75	18.22	12.53	----	
LW010S	06/27/2002	14:28	30.75	18.27	12.48	----	
LW010S	08/26/2002	16:15	30.75	dry	----	----	
LW010S	11/13/2002	08:00	30.75	dry	----	----	
LW010S	02/11/2003	09:20	30.75	17.50	13.25	----	
LW010S	05/08/2003	07:32	30.75	17.68	13.07	----	
LW010S	08/27/2003	13:51	30.75	dry	----	----	
LW010S	10/23/2003	12:51	30.75	dry	----	----	
LW011S	05/18/1999	15:10	29.10	11.47	17.63	----	
LW011S	09/21/1999	11:51	29.10	14.23	14.87	----	
LW011S	12/06/1999	15:05	29.10	14.00	15.10	----	
LW011S	02/16/2000	11:01	29.10	11.94	17.16	----	
LW011S	05/23/2000	11:01	29.10	13.01	16.09	----	
LW011S	08/29/2000	14:55	29.10	14.51	14.59	----	
LW011S	11/09/2000	13:36	29.10	15.48	13.92	0.37	First occurrence of product in well.
LW011S	02/12/2001	15:18	29.10	14.62	14.48	----	
LW011S	06/04/2001	13:12	29.10	14.65	14.45	----	
LW011S	08/16/2001	11:24	29.10	15.46	13.86	0.28	
LW011S	11/28/2001	12:51	29.10	15.10	14.00	----	Trace product
LW011S	02/27/2002	14:59	29.10	11.86	17.24	----	
LW011S	03/05/2002	11:40	29.10	11.96	17.14	----	
LW011S	04/05/2002	08:34	29.10	12.07	17.03	----	
LW011S	05/29/2002	00:00	29.10	13.00	16.10	----	
LW011S	06/27/2002	15:09	29.10	13.40	15.70	----	
LW011S	08/26/2002	16:48	29.10	14.37	14.73	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW011S	11/13/2002	08:54	29.10	15.53	13.57	----	
LW011S	02/11/2003	10:03	29.10	12.46	16.64	----	
LW011S	05/08/2003	08:07	29.10	11.91	17.19	----	
LW011S	08/27/2003	14:36	29.10	14.32	14.78	----	
LW011S	10/23/2003	14:12	29.10	15.12	13.98	----	
LW013S	05/23/2000	16:51	30.17	17.23	12.94	----	
LW013S	08/29/2000	13:37	30.17	18.27	11.90	----	
LW013S	11/09/2000	12:51	30.17	18.75	11.42	----	
LW013S	02/12/2001	16:30	30.17	18.26	11.91	----	
LW013S	06/04/2001	12:06	30.17	18.30	11.87	----	
LW013S	08/16/2001	11:13	30.17	18.81	11.36	----	
LW013S	11/28/2001	12:03	30.17	18.37	11.80	----	
LW013S	02/27/2002	13:58	30.17	16.60	13.57	----	
LW013S	03/05/2002	11:33	30.17	16.68	13.49	----	
LW013S	04/05/2002	08:22	30.17	16.73	13.44	----	
LW013S	05/29/2002	00:00	30.17	17.30	12.87	----	
LW013S	06/27/2002	14:37	30.17	17.38	12.79	----	
LW013S	08/26/2002	16:30	30.17	18.11	12.06	----	
LW013S	11/13/2002	08:14	30.17	19.04	11.13	----	
LW013S	02/11/2003	09:30	30.17	16.57	13.60	----	
LW013S	05/08/2003	07:41	30.17	16.53	13.64	----	
LW013S	08/27/2003	13:57	30.17	18.27	11.90	----	
LW013S	10/23/2003	13:14	30.17	18.81	11.36	----	
LW019S	10/23/2003	11:54	27.72	16.62	11.10	----	
LW020S	10/23/2003	12:14	29.51	14.86	14.65	----	
LW021S	10/23/2003	12:16	30.29	16.57	13.72	----	
LW027S	10/23/2003	12:20	30.59	25.40	5.19	----	
LW028S	10/23/2003	14:26	30.98	dry	----	----	
LW029S	10/23/2003	14:39	31.34	18.88	12.46	----	
LW030S	10/23/2003	14:41	30.08	17.91	12.17	----	
LW031S	10/23/2003	14:30	31.26	18.87	12.39	----	
LW032S	10/23/2003	14:32	30.71	17.02	13.69	----	
LW033S	10/23/2003	14:35	29.89	dry	----	----	
LW034S	10/23/2003	14:24	30.93	16.99	13.94	----	
LW101S	03/31/1997	09:54	29.41	4.51	24.90	----	
LW101S	07/16/1997	09:01	29.41	6.81	22.60	----	
LW101S	10/21/1997	18:01	29.41	7.28	22.13	----	
LW101S	01/27/1998	14:15	29.41	4.10	25.31	----	
LW101S	05/18/1998	18:18	29.41	6.68	22.73	----	
LW101S	08/17/1998	11:21	29.41	8.14	21.27	----	
LW101S	11/13/1998	10:48	29.41	8.61	20.80	----	
LW101S	02/16/1999	14:11	29.41	3.21	26.20	----	
LW101S	05/18/1999	16:17	29.41	6.00	23.41	----	
LW101S	09/21/1999	12:54	29.41	8.60	20.81	----	
LW101S	12/06/1999	14:58	29.41	6.98	22.43	----	
LW101S	02/16/2000	09:44	29.41	4.96	24.45	----	
LW101S	05/23/2000	18:06	29.41	6.83	22.58	----	
LW101S	08/29/2000	14:47	29.41	8.67	20.74	----	
LW101S	11/09/2000	13:56	29.41	9.39	20.02	----	
LW101S	02/12/2001	15:02	29.41	8.02	21.39	----	
LW101S	06/04/2001	13:35	29.41	8.40	21.01	----	
LW101S	08/16/2001	12:20	29.41	9.44	19.97	----	
LW101S	11/28/2001	13:12	29.41	8.58	20.83	----	
LW101S	02/27/2002	14:52	29.41	5.70	23.71	----	
LW101S	06/27/2002	15:32	29.41	7.80	21.61	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW101S	08/26/2002	17:34	29.41	8.85	20.56	----	
LW101S	11/13/2002	09:35	29.41	9.92	19.49	----	
LW101S	02/11/2003	10:59	29.41	5.27	24.14	----	
LW101S	05/08/2003	08:43	29.41	5.40	24.01	----	
LW101S	08/27/2003	15:14	29.41	8.59	20.82	----	
LW102S	03/31/1997	10:01	25.77	1.86	23.91	----	
LW102S	07/16/1997	09:09	25.77	3.91	21.86	----	
LW102S	10/21/1997	17:59	25.77	4.03	21.74	----	
LW102S	01/27/1998	14:07	25.77	1.26	24.51	----	
LW102S	05/18/1998	18:15	25.77	3.57	22.20	----	
LW102S	08/17/1998	11:18	25.77	4.88	20.89	----	
LW102S	11/13/1998	10:45	25.77	5.14	20.63	----	
LW102S	02/16/1999	14:08	25.77	0.45	25.32	----	
LW102S	05/18/1999	16:12	25.77	3.24	22.53	----	
LW102S	09/21/1999	12:52	25.77	5.33	20.44	----	
LW102S	12/06/1999	14:56	25.77	3.67	22.10	----	
LW102S	02/16/2000	09:41	25.77	1.91	23.86	----	
LW102S	05/23/2000	18:03	25.77	3.72	22.05	----	
LW102S	08/29/2000	14:45	25.77	5.40	20.37	----	
LW102S	11/09/2000	13:53	25.77	5.94	19.83	----	
LW102S	02/12/2001	15:00	25.77	4.52	21.25	----	
LW102S	06/04/2001	13:32	25.77	4.93	20.84	----	
LW102S	08/16/2001	12:17	25.77	5.96	19.81	----	
LW102S	11/28/2001	13:10	25.77	5.15	20.62	----	
LW102S	02/27/2002	14:48	25.77	2.14	23.63	----	
LW102S	06/27/2002	15:30	25.77	4.50	21.27	----	
LW102S	08/26/2002	17:39	25.77	5.48	20.29	----	
LW102S	11/13/2002	09:32	25.77	6.50	19.27	----	
LW102S	02/11/2003	10:55	25.77	1.88	23.89	----	
LW102S	05/08/2003	08:40	25.77	2.22	23.55	----	
LW102S	08/27/2003	15:17	25.77	5.24	20.53	----	
LW103S	03/31/1997	09:50	29.07	5.50	23.57	----	
LW103S	07/16/1997	08:59	29.07	6.93	22.14	----	
LW103S	10/21/1997	18:03	29.07	7.08	21.99	----	
LW103S	01/27/1998	14:20	29.07	5.11	23.96	----	
LW103S	05/18/1998	18:21	29.07	6.57	22.50	----	
LW103S	08/17/1998	11:24	29.07	7.80	21.27	----	
LW103S	11/13/1998	10:51	29.07	7.91	21.16	----	
LW103S	02/16/1999	14:14	29.07	4.54	24.53	----	
LW103S	05/18/1999	16:20	29.07	6.20	22.87	----	
LW103S	09/21/1999	12:57	29.07	8.30	20.77	----	
LW103S	12/06/1999	15:00	29.07	6.60	22.47	----	
LW103S	02/16/2000	09:46	29.07	5.50	23.57	----	
LW103S	05/23/2000	18:10	29.07	6.64	22.43	----	
LW103S	08/29/2000	14:50	29.07	8.41	20.66	----	
LW103S	11/09/2000	13:58	29.07	8.78	20.29	----	
LW103S	02/12/2001	15:04	29.07	7.39	21.68	----	
LW103S	06/04/2001	13:37	29.07	7.83	21.24	----	
LW103S	08/16/2001	12:23	29.07	9.07	20.00	----	
LW103S	11/28/2001	13:16	29.07	8.02	21.05	----	
LW103S	02/27/2002	14:50	29.07	5.26	23.81	----	
LW103S	06/27/2002	15:34	29.07	7.42	21.65	----	
LW103S	08/26/2002	17:36	29.07	8.57	20.50	----	
LW103S	11/13/2002	09:37	29.07	9.48	19.59	----	
LW103S	02/11/2003	11:03	29.07	5.65	23.42	----	
LW103S	05/08/2003	08:46	29.07	5.86	23.21	----	
LW103S	08/27/2003	15:15	29.07	8.33	20.74	----	
LW104S	03/31/1997	10:06	26.57	3.55	23.02	----	
LW104S	07/16/1997	08:54	26.57	5.71	20.86	----	
LW104S	10/21/1997	16:22	26.57	5.71	20.86	----	
LW104S	01/27/1998	14:00	26.57	2.84	23.73	----	
LW104S	05/18/1998	18:11	26.57	5.17	21.40	----	
LW104S	08/17/1998	11:15	26.57	6.64	19.93	----	
LW104S	11/13/1998	10:41	26.57	6.72	19.85	----	
LW104S	02/16/1999	14:03	26.57	2.11	24.46	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW104S	05/18/1999	16:08	26.57	4.97	21.60	----	
LW104S	09/21/1999	12:48	26.57	7.18	19.39	----	
LW104S	12/06/1999	14:54	26.57	5.00	21.57	----	
LW104S	02/16/2000	09:39	26.57	3.61	22.96	----	
LW104S	05/23/2000	17:59	26.57	5.61	20.96	----	
LW104S	08/29/2000	14:43	26.57	7.08	19.49	----	
LW104S	11/09/2000	13:51	26.57	7.49	19.08	----	
LW104S	02/12/2001	14:57	26.57	6.28	20.29	----	
LW104S	06/04/2001	13:30	26.57	6.64	19.93	----	
LW104S	08/16/2001	12:15	26.57	7.56	19.01	----	
LW104S	11/28/2001	13:06	26.57	6.30	20.27	----	
LW104S	02/27/2002	14:46	26.57	4.07	22.50	----	
LW104S	06/27/2002	15:27	26.57	6.28	20.29	----	
LW104S	08/26/2002	17:41	26.57	7.13	19.44	----	
LW104S	11/13/2002	09:30	26.57	7.85	18.72	----	
LW104S	02/11/2003	10:51	26.57	3.72	22.85	----	
LW104S	05/08/2003	08:38	26.57	4.94	21.63	----	
LW104S	08/27/2003	15:19	26.57	6.87	19.70	----	
RW1	05/18/1999	15:06	31.46	15.70	15.76	----	
RW1	09/21/1999	11:46	31.46	18.02	13.44	----	
RW1	12/06/1999	14:43	31.46	17.73	13.73	----	
RW1	02/16/2000	10:33	31.46	16.14	15.32	----	
RW1	05/23/2000	17:46	31.46	17.09	14.37	----	
RW1	08/29/2000	14:28	31.46	18.29	13.17	----	
RW1	11/09/2000	12:57	31.46	18.67	12.79	----	
RW1	02/12/2001	16:44	31.46	18.30	13.16	----	
RW1	06/04/2001	13:17	31.46	18.22	13.24	----	
RW1	08/16/2001	10:55	31.46		----	----	Vapor/water recovery system test running - not measured
RW1	11/28/2001	12:02	31.46	18.55	12.91	----	
RW1	02/27/2002	14:03	31.46	16.12	15.34	----	
RW1	03/05/2002	11:38	31.46	16.33	15.13	----	
RW1	04/05/2002	08:27	31.46	16.28	15.18	----	
RW1	05/29/2002	00:00	31.46	17.00	14.46	----	
RW1	06/27/2002	15:16	31.46	17.33	14.13	----	
RW1	08/26/2002	16:40	31.46	18.00	13.46	----	
RW1	11/13/2002	08:26	31.46	18.85	12.61	----	
RW1	02/11/2003	09:34	31.46	16.50	14.96	----	
RW1	05/08/2003	07:46	31.46	16.23	15.23	----	
RW1	08/27/2003	14:04	31.46	18.09	13.37	----	
RW1	10/23/2003	13:23	31.46	18.55	12.91	----	
RW3	12/06/1999	15:24	29.96	14.20	15.76	----	
RW3	02/16/2000	10:37	29.96	11.88	18.08	----	
RW3	05/23/2000	17:26	29.96	13.02	16.94	----	
RW3	08/29/2000	13:42	29.96	14.88	15.08	----	
RW3	11/09/2000	13:03	29.96	15.58	14.38	----	
RW3	02/12/2001	15:28	29.96	15.13	14.83	----	
RW3	06/04/2001	12:30	29.96	15.09	14.87	----	
RW3	08/16/2001	11:44	29.96	15.74	14.22	----	
RW3	11/28/2001	12:40	29.96	15.52	14.44	----	
RW3	02/27/2002	14:26	29.96	11.80	18.16	----	
RW3	03/05/2002	11:02	29.96	11.94	18.02	----	
RW3	04/05/2002	08:44	29.96	12.06	17.90	----	
RW3	05/29/2002	00:00	29.96	13.00	16.96	----	
RW3	06/27/2002	14:59	29.96	13.64	16.32	----	
RW3							Abandoned August 2003
PZ1	05/23/2000	17:47	28.04	14.21	13.83	----	
PZ1	08/29/2000	14:30	28.04	15.33	12.71	----	
PZ1	11/09/2000	12:55	28.04	15.68	12.36	----	
PZ1	02/12/2001	16:42	28.04	15.30	12.74	----	
PZ1	06/04/2001	13:20	28.04	15.29	12.75	----	
PZ1	08/16/2001	11:17	28.04	15.94	12.10	----	
PZ1	11/28/2001	12:09	28.04	15.48	12.56	----	
PZ1	02/27/2002	14:02	28.04	13.28	14.76	----	
PZ1	03/05/2002	11:34	28.04	13.40	14.64	----	
PZ1	04/05/2002	08:32	28.04	13.44	14.60	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
PZ1	05/29/2002	00:00	28.04	14.16	13.88	----	
PZ1	06/27/2002	15:17	28.04	14.50	13.54	----	
PZ1	08/26/2002	16:33	28.04	15.17	12.87	----	
PZ1	11/13/2002	08:42	28.04	15.83	12.21	----	
PZ1	02/11/2003	09:36	28.04	13.58	14.46	----	
PZ1	05/08/2003	07:58	28.04	13.25	14.79	----	
PZ1	08/27/2003	14:20	28.04	15.32	12.72	----	
PZ1	10/23/2003	13:19	28.04	15.75	12.29	----	
PZ2	06/27/2002	15:18	31.97	18.31	13.66	----	
PZ2	08/26/2002	16:34	31.97	18.88	13.09	----	
PZ2	11/13/2002	08:25	31.97	19.40	12.57	----	
PZ2	02/11/2003	09:44	31.97	17.46	14.51	----	
PZ2	05/08/2003	07:45	31.97	17.15	14.82	----	
PZ2	08/27/2003	14:03	31.97	19.02	12.95	----	
PZ2	10/23/2003	13:21	31.97	19.27	12.70	0.06	
PZ3	06/27/2002	15:19	31.12	19.35	11.77	----	
PZ3	08/26/2002	16:35	31.12	19.74	11.38	----	
PZ3	11/13/2002	08:45	31.12	16.87	----	----	
PZ3	02/11/2003	09:40	31.12	19.05	12.07	----	
PZ3	05/08/2003	07:53	31.12	18.95	12.17	----	
PZ3	08/27/2003	14:26	31.12	19.82	11.30	----	
PZ3	10/23/2003	12:39	31.12	dry	----	----	
PZ4	06/27/2002	15:20	28.47	dry	----	----	
PZ4	08/26/2002	16:36	28.47	dry	----	----	
PZ4	11/13/2002	08:48	28.47	16.87	11.60	----	
PZ4	02/11/2003	09:41	28.47	dry	----	----	
PZ4	05/08/2003	07:52	28.47	17.78	10.69	----	
PZ4	08/27/2003	14:27	28.47	dry	----	----	
PZ4	10/23/2003	12:36	28.47	dry	----	----	
OX001S	06/27/2002	15:13	33.38	17.85	15.53	----	
OX001S	08/26/2002	16:45	33.38	18.75	14.63	----	
OX001S	11/13/2002	08:30	33.38	19.92	13.46	----	
OX001S	02/11/2003	09:59	33.38	16.96	16.42	----	
OX001S	05/08/2003	08:04	33.38	16.48	16.90	----	
OX001S	08/27/2003	14:38	33.38	18.76	14.62	----	
OX001S	10/23/2003	14:09	33.38	19.51	13.87	----	
OX002S	06/27/2002	15:12	28.69	13.22	15.47	----	
OX002S	08/26/2002	16:44	28.69	14.26	14.43	----	
OX002S	11/13/2002	08:33	28.81	15.39	13.42	----	New reference elevation September 2002
OX002S	02/11/2003	10:06	28.81	12.39	16.42	----	
OX002S	05/08/2003	08:09	28.81	11.90	16.91	----	
OX002S	08/27/2003	14:33	28.81	14.55	14.26	----	
OX002S	10/23/2003	14:14	28.81	15.22	13.59	0.31	
OX003S	06/27/2002	15:14	30.01	14.65	15.36	----	
OX003S	08/26/2002	16:42	30.01	15.50	14.51	----	
OX003S	11/13/2002	08:31	30.01	16.65	13.36	----	
OX003S	02/11/2003	09:58	30.01	13.78	16.23	----	
OX003S	05/08/2003	08:03	30.01	13.30	16.71	----	
OX003S	08/27/2003	14:40	30.01	15.52	14.49	----	
OX003S	10/23/2003	14:10	30.01	16.22	13.79	----	
OX004S	06/27/2002	15:15	33.42	19.07	14.35	----	
OX004S	08/26/2002	16:39	33.42	19.74	13.68	----	
OX004S	11/13/2002	08:24	33.54	20.73	12.81	----	New reference elevation September 2002
OX004S	02/11/2003	09:38	33.54	18.39	15.15	----	
OX004S	05/08/2003	07:47	33.54	19.07	14.47	----	
OX004S	08/27/2003	14:07	33.54	19.95	13.59	----	
OX004S	10/23/2003	12:43	33.54	dry	----	----	
OX005S	10/23/2003	13:44	30.74	16.15	14.59	----	
OX006S	10/23/2003	13:45	30.92	16.43	14.49	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
OX007S	10/23/2003	13:46	30.68	16.25	14.43	----	
OX008S	10/23/2003	13:47	30.74	16.41	14.33	----	
Deep Wells:							
B2	08/11/1993	10:02	30.31	25.44	4.87	----	Slight sheen, slight to mod solvent-like odor
B2	10/26/1993	13:32	30.31	25.25	5.06	----	
B2	11/17/1993	13:32	30.31	25.23	5.08	----	
B2	12/17/1993	12:59	30.31	23.88	6.43	----	
B2	01/17/1994	13:12	30.31	23.99	6.32	----	
B2	02/18/1994	14:20	30.31	23.73	6.58	----	
B2	03/18/1994	12:59	30.31	23.15	7.16	----	
B2	04/18/1994	14:42	30.31	24.35	5.96	----	
B2	05/18/1994	15:22	30.31	23.12	7.19	----	
B2	06/17/1994	14:54	30.31	22.90	7.41	----	
B2	07/19/1994	09:20	30.31	24.38	5.93	----	
B2	08/17/1994	07:35	30.31	25.22	5.09	----	
B2	09/16/1994	07:27	30.31	25.89	4.42	----	
B2	10/17/1994	09:03	30.31	25.43	4.88	----	
B2	11/21/1994	11:51	30.31	24.56	5.75	----	
B2	12/19/1994	11:10	30.31	21.82	8.49	----	
B2	01/18/1995	11:18	30.31	18.93	11.38	----	
B2	02/21/1995	13:23	30.31	17.12	13.19	----	
B2	03/21/1995	13:05	30.31	20.37	9.94	----	
B2	04/19/1995	12:48	30.31	21.21	9.10	----	
B2	05/19/1995	13:38	30.31	19.30	11.01	----	
B2	07/17/1995	13:55	30.31	22.72	7.59	----	
B2	08/22/1995	07:53	30.31	24.42	5.89	----	
B2	09/22/1995	08:28	30.31	25.28	5.03	----	
B2	11/20/1995	07:57	30.31	22.02	8.29	----	
B2	12/01/1995	08:29	30.31	13.63	16.68	----	
B2	12/19/1995	07:26	30.31	15.57	14.74	----	
B2	01/19/1996	08:38	30.31	16.48	13.83	----	
B2	02/20/1996	10:42	30.31	10.63	19.68	----	
B2	03/19/1996	09:23	30.31	16.61	13.70	----	
B2	04/19/1996	11:53	30.31	16.20	14.11	----	
B2	07/22/1996	14:24	30.31	22.29	8.02	----	
B2	08/20/1996	14:20	30.31	23.43	6.88	----	
B2	09/24/1996	08:11	30.31	24.30	6.01	----	
B2	10/28/1996	11:09	30.31	23.76	6.55	----	
B2	12/13/1996	10:47	30.31	16.70	13.61	----	
B2	03/25/1997	12:02	30.31	15.85	14.46	----	
B2	03/31/1997	09:27	30.31	14.91	15.40	----	
B2	07/16/1997	07:45	30.31	19.91	10.40	----	
B2	10/21/1997	16:30	30.31	23.56	6.75	----	
B2	01/27/1998	12:06	30.31	19.32	10.99	----	
B2	05/18/1998	17:54	30.31	18.80	11.51	----	
B2	08/17/1998	10:23	30.31	24.38	5.93	----	
B2	11/13/1998	10:17	30.31	25.33	4.98	----	
B2	02/16/1999	13:34	30.31	19.64	10.67	----	
B2	05/18/1999	15:50	30.31	19.04	11.27	----	
B2	09/21/1999	12:18	30.31	25.34	4.97	----	
B2	12/06/1999	14:39	30.31	20.25	10.06	----	
B2	02/16/2000	10:56	30.31	20.57	9.74	----	
B2	05/23/2000	17:33	30.31	20.99	9.32	----	
B2	08/29/2000	14:20	30.31	25.38	4.93	----	
B2	11/09/2000	13:29	30.31	25.31	5.00	----	
B2	02/12/2001	15:27	30.31	24.62	5.69	----	
B2	06/04/2001	13:04	30.31	24.84	5.47	----	
B2	08/16/2001	11:58	30.31	26.75	3.56	----	
B2	11/28/2001	12:46	30.31	24.14	6.17	----	
B2	02/27/2002	14:35	30.31	22.90	7.41	----	
B2	06/27/2002	15:07	30.31	20.16	10.15	----	
B2	08/26/2002	17:01	30.31	25.32	4.99	----	
B2	11/13/2002	09:03	30.31	25.28	5.03	----	
B2	02/11/2003	10:14	30.31	23.58	6.73	----	
B2	05/08/2003	08:13	30.31	21.33	8.98	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
B2	08/27/2003	15:32	30.31	24.25	6.06	----	
B2	10/23/2003	14:08	30.31	25.85	4.46	----	
G1A	03/25/1997	11:55	29.72	14.84	14.88	----	
G1A	03/31/1997	09:11	29.72	14.28	15.44	----	
G1A	07/16/1997	07:33	29.72	18.94	10.78	----	
G1A	10/21/1997	16:18	29.72	22.44	7.28	----	
G1A	01/27/1998	11:46	29.72	18.42	11.30	----	
G1A	05/18/1998	17:31	29.72	18.05	11.67	----	
G1A	08/17/1998	10:07	29.72	23.35	6.37	----	
G1A	11/13/1998	09:54	29.72	24.59	5.13	----	
G1A	02/16/1999	13:14	29.72	18.28	11.44	----	
G1A	05/18/1999	14:51	29.72	18.42	11.30	----	
G1A	09/21/1999	11:29	29.72	24.32	5.40	----	
G1A	12/06/1999	14:05	29.72	19.82	9.90	----	
G1A	02/16/2000	10:18	29.72	19.81	9.91	----	
G1A	05/23/2000	16:31	29.72	20.08	9.64	----	Replaced lock and tubing
G1A	08/29/2000	13:13	29.72	24.36	5.36	----	
G1A	11/09/2000	12:32	29.72	24.85	4.87	----	
G1A	02/12/2001	16:01	29.72	24.08	5.64	----	
G1A	06/04/2001	11:40	29.72	24.10	5.62	----	
G1A	08/16/2001	10:52	29.72	25.51	4.21	----	
G1A	11/28/2001	11:32	29.72	23.84	5.88	----	
G1A	02/27/2002	13:39	29.72	21.96	7.76	----	
G1A	06/27/2002	14:17	29.72	19.48	10.24	----	
G1A	08/26/2002	16:06	29.72	24.36	5.36	----	
G1A	11/13/2002	07:35	29.72	24.60	5.12	----	
G1A	02/11/2003	08:59	29.72	22.32	7.40	----	
G1A	05/08/2003	06:58	29.72	20.51	9.21	----	
G1A	08/27/2003	13:36	29.72	24.16	5.56	----	
G1A	10/23/2003	12:37	29.72	25.20	4.52	----	
J2	03/25/1997	12:18	29.65	15.22	14.43	----	
J2	03/31/1997	11:21	29.65	14.38	15.27	----	
J2	07/16/1997	08:24	29.65	19.28	10.37	----	
J2	10/21/1997	17:00	29.65	23.02	6.63	----	
J2	01/27/1998	13:19	29.65	18.69	10.96	----	
J2	05/18/1998	18:00	29.65	18.14	11.51	----	
J2	08/17/1998	10:21	29.65	23.70	5.95	----	
J2	11/13/1998	10:28	29.65	24.64	5.01	----	
J2	02/16/1999	13:40	29.65	19.00	10.65	----	
J2	05/18/1999	15:46	29.65	18.40	11.25	----	
J2	09/21/1999	12:30	29.65	24.73	4.92	----	
J2	12/06/1999	15:08	29.65	19.53	10.12	----	
J2	02/16/2000	11:07	29.65	19.89	9.76	----	
J2	05/23/2000	17:28	29.65	20.33	9.32	----	
J2	08/29/2000	14:15	29.65	24.67	4.98	----	
J2	11/09/2000	13:26	29.65	24.66	4.99	----	
J2	02/12/2001	15:23	29.65	23.92	5.73	----	
J2	06/04/2001	13:02	29.65	24.17	5.48	----	
J2	08/16/2001	11:51	29.65	25.57	4.08	----	
J2	11/28/2001	12:36	29.65	23.45	6.20	----	
J2	02/27/2002	14:31	29.65	22.21	7.44	----	
J2	06/27/2002	15:03	29.65	19.48	10.17	----	
J2	08/26/2002	16:56	29.65	24.67	4.98	----	
J2	11/13/2002	08:59	29.65	24.60	5.05	----	
J2	02/11/2003	10:19	29.65	22.95	6.70	----	
J2	05/08/2003	08:16	29.65	20.65	9.00	----	
J2	08/27/2003	14:48	29.65	24.12	5.53	----	
J2	10/23/2003	13:54	29.65	25.18	4.47	----	
J3	03/25/1997	12:20	29.58	14.70	14.88	----	
J3	03/31/1997	11:25	29.58	14.03	15.55	----	
J3	07/16/1997	08:25	29.58	18.91	10.67	----	
J3	10/21/1997	17:02	29.58	22.37	7.21	----	
J3	01/27/1998	13:21	29.58	18.28	11.30	----	
J3	05/18/1998	17:58	29.58	17.84	11.74	----	
J3	08/17/1998	10:22	29.58	23.12	6.46	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J3	11/13/1998	10:26	29.58	24.14	5.44	----	
J3	02/16/1999	13:41	29.58	18.32	11.26	----	
J3	05/18/1999	15:48	29.58	18.01	11.57	----	
J3	09/21/1999	12:31	29.58	24.12	5.46	----	
J3	12/06/1999	15:09	29.58	19.31	10.27	----	
J3	02/16/2000	10:07	29.58	19.50	10.08	----	
J3	05/23/2000	17:29	29.58	19.86	9.72	----	
J3	08/29/2000	14:17	29.58	24.05	5.53	----	
J3	11/09/2000	13:27	29.58	24.24	5.34	----	
J3	02/12/2001	15:24	29.58	23.45	6.13	----	
J3	06/04/2001	12:44	29.58	23.62	5.96	----	
J3	08/16/2001	11:50	29.58	24.98	4.60	----	
J3	11/28/2001	12:37	29.58	22.98	6.60	----	
J3	02/27/2002	14:32	29.58	21.52	8.06	----	
J3	06/27/2002	15:04	29.58	19.14	10.44	----	
J3	08/26/2002	16:57	29.58	23.99	5.59	----	
J3	11/13/2002	08:58	29.58	24.10	5.48	----	
J3	02/11/2003	10:20	29.58	22.28	7.30	----	
J3	05/08/2003	08:17	29.58	20.16	9.42	----	
J3	08/27/2003	14:49	29.58	23.60	5.98	----	
J3	10/23/2003	13:56	29.58	24.70	4.88	----	
O	03/25/1997	11:40	32.03	17.01	15.02	----	
O	03/31/1997	08:48	32.03	16.39	15.64	----	
O	07/16/1997	07:05	32.03	21.93	10.10	----	
O	10/21/1997	16:01	32.03	22.23	9.80	----	
O	01/27/1998	11:03	32.03	20.51	11.52	----	
O	05/18/1998	17:14	32.03	20.25	11.78	----	
O	08/17/1998	10:13	32.03	25.42	6.61	----	
O	11/13/1998	09:31	32.03	26.49	5.54	----	
O	02/16/1999	12:45	32.03	20.25	11.78	----	
O	05/18/1999	14:36	32.03	21.23	10.80	----	
O	09/21/1999	11:09	32.03	26.22	5.81	----	
O	12/06/1999	13:48	32.03	21.90	10.13	----	
O	02/16/2000	10:04	32.03	22.21	9.82	----	
O	05/23/2000	16:15	32.03	22.18	9.85	----	
O	08/29/2000	12:56	32.03	26.49	5.54	----	
O	11/09/2000	12:18	32.03	27.01	5.02	----	
O	02/12/2001	15:52	32.03	26.12	5.91	----	
O	06/04/2001	11:22	32.03	26.08	5.95	----	
O	08/16/2001	10:22	32.03	27.58	4.45	----	
O	11/28/2001	11:18	32.03	26.15	5.88	----	
O	02/27/2002	13:15	32.03	24.08	7.95	----	
O	06/27/2002	14:09	32.03	21.29	10.74	----	
O	08/26/2002	15:47	32.03	25.91	6.12	----	
O	11/13/2002	07:21	32.03	26.56	5.47	----	
O	02/11/2003	08:38	32.03	22.81	9.22	----	
O	05/08/2003	06:44	32.03	22.70	9.33	----	
O	08/27/2003	13:23	32.03	26.43	5.60	----	
O	10/23/2003	12:02	32.03	27.11	4.92	----	
R	03/25/1997	11:36	30.47	15.56	14.91	----	
R	03/31/1997	08:43	30.47	14.85	15.62	----	
R	07/16/1997	07:00	30.47	20.37	10.10	----	
R	10/21/1997	15:56	30.47	22.54	7.93	----	
R	01/27/1998	10:57	30.47	18.98	11.49	----	
R	05/18/1998	17:15	30.47	18.73	11.74	----	
R	08/17/1998	10:12	30.47	23.93	6.54	----	
R	11/13/1998	09:35	30.47	25.17	5.30	----	
R	02/16/1999	13:05	30.47	18.79	11.68	----	
R	05/18/1999	14:37	30.47	19.64	10.83	----	
R	09/21/1999	11:15	30.47	24.53	5.94	----	
R	12/06/1999	13:46	30.47	20.33	10.14	----	
R	02/16/2000	10:12	30.47	20.65	9.82	----	
R	05/23/2000	16:17	30.47	20.64	9.83	----	
R	08/29/2000	12:58	30.47	24.97	5.50	----	
R	11/09/2000	12:20	30.47	25.47	5.00	----	
R	02/12/2001	15:54	30.47	24.46	6.01	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
R	06/04/2001	11:36	30.47	24.53	5.94	----	
R	08/16/2001	10:35	30.47	26.02	4.45	----	
R	11/28/2001	11:19	30.47	24.57	5.90	----	
R	02/27/2002	13:17	30.47	22.50	7.97	----	
R	06/27/2002	14:08	30.47	19.75	10.72	----	
R	08/26/2002	15:58	30.47	24.38	6.09	----	
R	11/13/2002	07:22	30.47	25.04	5.43	----	
R	02/11/2003	08:41	30.47	21.22	9.25	----	
R	05/08/2003	06:46	30.47	21.14	9.33	----	
R	08/27/2003	13:25	30.47	24.91	5.56	----	
R	10/23/2003	11:56	30.47	25.60	4.87	----	
LW001D	03/31/1997	11:11	28.31	12.71	15.60	----	
LW001D	07/16/1997	08:12	28.31	17.65	10.66	----	
LW001D	10/21/1997	16:55	28.31	21.29	7.02	----	
LW001D	01/27/1998	13:07	28.31	17.06	11.25	----	
LW001D	05/18/1998	17:39	28.31	16.53	11.78	----	
LW001D	08/17/1998	10:30	28.31	21.82	6.49	----	
LW001D	11/13/1998	10:01	28.31	22.77	5.54	----	
LW001D	02/16/1999	13:21	28.31	17.30	11.01	----	
LW001D	05/18/1999	15:36	28.31	16.76	11.55	----	
LW001D	09/21/1999	12:12	28.31	22.91	5.40	----	
LW001D	12/06/1999	14:34	28.31	18.00	10.31	----	
LW001D	02/16/2000	10:49	28.31	18.16	10.15	----	
LW001D	05/23/2000	17:19	28.31	18.62	9.69	----	
LW001D	08/29/2000	13:59	28.31	22.81	5.50	----	
LW001D	11/09/2000	13:20	28.31	22.98	5.33	----	
LW001D	02/12/2001	15:35	28.31	22.23	6.08	----	
LW001D	06/04/2001	12:23	28.31	22.36	5.95	----	
LW001D	08/16/2001	11:38	28.31	23.73	4.58	----	
LW001D	11/28/2001	12:29	28.31	21.73	6.58	----	
LW001D	02/27/2002	14:17	28.31	20.31	8.00	----	
LW001D	06/27/2002	14:49	28.31	17.81	10.50	----	
LW001D	08/26/2002	17:12	28.31	22.85	5.46	----	
LW001D	11/13/2002	09:08	28.31	22.91	5.40	----	
LW001D	02/11/2003	10:27	28.31	21.11	7.20	----	
LW001D	05/08/2003	08:19	28.31	18.91	9.40	----	
LW001D	08/27/2003	14:50	28.31	22.40	5.91	----	
LW001D	10/23/2003	13:57	28.31	23.51	4.80	----	
LW003D	03/31/1997	11:45	30.80	19.38	11.42	----	Time estimated
LW003D	07/16/1997	08:38	30.80	28.09	2.71	----	
LW003D	10/21/1997	17:07	30.80	23.36	7.44	----	
LW003D	01/27/1998	13:30	30.80	21.66	9.14	----	
LW003D	05/18/1998	17:35	30.80	19.21	11.59	----	
LW003D	08/17/1998	10:24	30.80	24.62	6.18	----	
LW003D	11/13/1998	09:03	30.80	25.56	5.24	----	
LW003D	02/16/1999	13:44	30.80	20.00	10.80	----	
LW003D	05/18/1999	15:58	30.80	19.42	11.38	----	Purged dry at 11:00
LW003D	09/21/1999	10:40	30.80	25.76	5.04	----	
LW003D	12/06/1999	14:45	30.80	20.69	10.11	----	
LW003D	02/16/2000	09:54	30.80	20.98	9.82	----	
LW003D	05/23/2000	14:40	30.80	21.16	9.64	----	Purged dry at 13:10
LW003D	08/29/2000	14:36	30.80	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW003D	11/09/2000		30.80	----	----	----	Well sampled 11/8/00 - water level not representative
LW003D	02/12/2001	15:11	30.80	24.85	5.95	----	
LW003D	06/04/2001	12:35	30.80	25.09	5.71	----	
LW003D	08/16/2001	11:47	30.80	26.43	4.37	----	
LW003D	11/28/2001	12:42	30.80	24.48	6.32	----	
LW003D	02/27/2002	14:20	30.80	23.13	7.67	----	
LW003D	06/27/2002	14:59	30.80	20.55	10.25	----	
LW003D	08/26/2002	17:03	30.80	25.63	5.17	----	
LW003D	11/13/2002	09:20	30.80	25.57	5.23	----	
LW003D	02/11/2003	10:40	30.80	24.03	6.77	----	
LW003D	05/08/2003	08:29	30.80	21.68	9.12	----	
LW003D	08/27/2003	15:04	30.80	25.10	5.70	----	
LW003D	10/23/2003	13:49	30.80	26.18	4.62	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW004D	03/31/1997	09:18	30.17	14.73	15.44	----	
LW004D	07/16/1997	07:42	30.17	19.43	10.74	----	
LW004D	10/21/1997	16:27	30.17	23.02	7.15	----	
LW004D	01/27/1998	11:56	30.17	18.84	11.33	----	
LW004D	05/18/1998	17:33	30.17	18.54	11.63	----	
LW004D	08/17/1998	10:18	30.17	23.81	6.36	----	
LW004D	11/13/1998	09:57	30.17	24.99	5.18	----	
LW004D	02/16/1999	13:17	30.17	18.79	11.38	----	
LW004D	05/18/1999	15:04	30.17	18.77	11.40	----	Completed sampling at 13:40
LW004D	09/21/1999	11:41	30.17	24.78	5.39	----	
LW004D	12/06/1999	14:18	30.17	20.21	9.96	----	
LW004D	02/16/2000	10:30	30.17	20.23	9.94	----	
LW004D	05/23/2000	16:54	30.17	20.55	9.62	----	
LW004D	08/29/2000	13:38	30.17	24.78	5.39	----	
LW004D	11/09/2000	12:52	30.17	25.19	4.98	----	
LW004D	02/12/2001	16:39	30.17	24.71	5.46	----	
LW004D	06/04/2001	12:07	30.17	24.66	5.51	----	
LW004D	08/16/2001	11:15	30.17	26.27	3.90	----	
LW004D	11/28/2001	12:04	30.17	24.41	5.76	----	
LW004D	02/27/2002	14:00	30.17	22.65	7.52	----	
LW004D	03/05/2002	11:36	30.17	22.94	7.23	----	
LW004D	04/05/2002	08:19	30.17	23.75	6.42	----	
LW004D	05/29/2002	00:00	30.17	20.48	9.69	----	
LW004D	06/27/2002	14:41	30.17	20.15	10.02	----	
LW004D	08/26/2002	16:32	30.17	25.02	5.15	----	
LW004D	11/13/2002	08:23	30.17	25.26	4.91	----	
LW004D	02/11/2003	09:32	30.17	23.08	7.09	----	
LW004D	05/08/2003	07:44	30.17	21.21	8.96	----	
LW004D	08/27/2003	14:01	30.17	24.78	5.39	----	
LW004D	10/23/2003	13:16	30.17	25.85	4.32	----	
LW006D	03/25/1997	11:52	30.84	16.51	14.33	----	
LW006D	03/31/1997	09:05	30.84	15.53	15.31	----	Faint odor
LW006D	07/16/1997	07:30	30.84	20.74	10.10	----	
LW006D	10/21/1997	16:16	30.84	24.05	6.79	----	
LW006D	01/27/1998	11:38	30.84	19.94	10.90	----	
LW006D	05/18/1998	17:28	30.84	19.36	11.48	----	
LW006D	08/17/1998	10:05	30.84	24.92	5.92	----	
LW006D	11/13/1998	09:50	30.84	25.94	4.90	----	
LW006D	02/16/1999	13:11	30.84	20.40	10.44	----	
LW006D	05/18/1999	14:53	30.84	19.81	11.03	----	
LW006D	09/21/1999	11:32	30.84	25.92	4.92	----	
LW006D	12/06/1999	14:09	30.84	20.86	9.98	----	
LW006D	02/16/2000	10:20	30.84	21.27	9.57	----	
LW006D	05/23/2000	16:35	30.84	21.64	9.20	----	
LW006D	08/29/2000	13:20	30.84	25.93	4.91	----	
LW006D	11/09/2000	12:35	30.84	26.21	4.63	----	
LW006D	02/12/2001	16:03	30.84	25.37	5.47	----	
LW006D	06/04/2001	11:42	30.84	25.30	5.54	----	
LW006D	08/16/2001	10:54	30.84	26.72	4.12	----	
LW006D	11/28/2001	11:46	30.84	24.92	5.92	----	
LW006D	02/27/2002	13:35	30.84	23.62	7.22	----	
LW006D	06/27/2002	14:19	30.84	20.68	10.16	----	
LW006D	08/26/2002	16:04	30.84	25.79	5.05	----	
LW006D	11/13/2002	07:42	30.84	25.82	5.02	----	
LW006D	02/11/2003	09:01	30.84	24.08	6.76	----	
LW006D	05/08/2003	07:01	30.84	21.97	8.87	----	
LW006D	08/27/2003	13:40	30.84	25.37	5.47	----	
LW006D	10/23/2003	12:31	30.84	26.47	4.37	----	
LW009D	05/18/1999	14:56	30.98	20.02	10.96	----	
LW009D	09/21/1999	11:34	30.98	25.23	5.75	----	
LW009D	12/06/1999	14:11	30.98	21.04	9.94	----	
LW009D	02/16/2000	10:23	30.98	21.17	9.81	----	
LW009D	05/23/2000	16:39	30.98	21.15	9.83	----	
LW009D	08/29/2000	13:27	30.98	25.36	5.62	----	
LW009D	11/09/2000	12:43	30.98	25.96	5.02	----	
LW009D	02/12/2001	16:11	30.98	25.13	5.85	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW009D	06/04/2001	11:49	30.98	25.15	5.83	----	
LW009D	08/16/2001	11:02	30.98	26.57	4.41	----	
LW009D	11/28/2001	11:53	30.98	25.40	5.58	----	
LW009D	02/27/2002	13:47	30.98	22.97	8.01	----	
LW009D	06/27/2002	14:25	30.98	20.38	10.60	----	
LW009D	08/26/2002	16:11	30.98	24.90	6.08	----	
LW009D	11/13/2002	07:48	30.98	25.73	5.25	----	
LW009D	02/11/2003	09:07	30.98	22.03	8.95	----	
LW009D	05/08/2003	07:12	30.98	21.65	9.33	----	
LW009D	08/27/2003	13:47	30.98	25.50	5.48	----	
LW009D	10/23/2003	12:50	30.98	26.22	4.76	----	
LW010D	05/18/1999	15:00	31.12	19.82	11.30	----	
LW010D	09/21/1999	11:37	31.12	25.81	5.31	----	
LW010D	12/06/1999	14:15	31.12	21.18	9.94	----	
LW010D	02/16/2000	10:27	31.12	21.20	9.92	----	
LW010D	05/23/2000	16:42	31.12	21.51	9.61	----	
LW010D	08/29/2000	13:29	31.12	25.86	5.26	----	
LW010D	11/09/2000	12:46	31.12	26.26	4.86	----	
LW010D	02/12/2001	16:15	31.12	25.63	5.49	----	
LW010D	06/04/2001	11:52	31.12	25.62	5.50	----	
LW010D	08/16/2001	11:04	31.12	27.16	3.96	----	
LW010D	11/28/2001	11:55	31.12	25.46	5.66	----	
LW010D	02/27/2002	13:49	31.12	23.58	7.54	----	
LW010D	06/27/2002	14:29	31.12	21.03	10.09	----	
LW010D	08/26/2002	16:17	31.12	25.91	5.21	----	
LW010D	11/13/2002	08:01	31.12	26.17	4.95	----	
LW010D	02/11/2003	09:21	31.12	23.83	7.29	----	
LW010D	05/08/2003	07:33	31.12	22.10	9.02	----	
LW010D	08/27/2003	13:53	31.12	25.74	5.38	----	
LW010D	10/23/2003	13:10	31.12	26.79	4.33	----	
LW011D	05/18/1999	15:09	29.04	18.59	10.45	----	
LW011D	09/21/1999	11:50	29.04	20.76	8.28	----	
LW011D	12/06/1999	15:06	29.04	21.81	7.23	----	
LW011D	02/16/2000	11:02	29.04	20.35	8.69	----	
LW011D	05/23/2000	17:37	29.04	19.50	9.54	----	
LW011D	08/29/2000	14:54	29.04	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW011D	11/09/2000		29.04	----	----	----	Well sampled 11/8/00 - water level not representative
LW011D	02/12/2001	15:16	29.04	23.14	5.90	----	
LW011D	06/04/2001	13:11	29.04	23.35	5.69	----	
LW011D	08/16/2001	11:25	29.04	26.94	2.10	----	
LW011D	11/28/2001	12:53	29.04	24.54	4.50	----	
LW011D	02/27/2002	14:57	29.04	21.80	7.24	----	
LW011D	06/27/2002	15:11	29.04	18.84	10.20	----	
LW011D	08/26/2002	16:47	29.04	22.71	6.33	----	
LW011D	11/13/2002	08:55	29.04	23.87	5.17	----	
LW011D	02/11/2003	10:04	29.04	21.79	7.25	----	
LW011D	05/08/2003	08:08	29.04	19.28	9.76	----	
LW011D	08/27/2003	14:34	29.04	23.35	5.69	----	
LW011D	10/23/2003	14:11	29.04	23.98	5.06	----	
LW012D1	05/18/1999	15:13	30.02	18.45	11.57	----	
LW012D1	09/21/1999	11:54	30.02	24.44	5.58	----	
LW012D1	12/06/1999	14:21	30.02	19.72	10.30	----	
LW012D1	02/16/2000	10:35	30.02	19.89	10.13	----	
LW012D1	05/23/2000	17:00	30.02	20.23	9.79	----	
LW012D1	08/29/2000	13:45	30.02	24.38	5.64	----	
LW012D1	11/09/2000	13:00	30.02	24.66	5.36	----	
LW012D1	02/12/2001	15:57	30.02	23.92	6.10	----	
LW012D1	06/04/2001	12:32	30.02	23.99	6.03	----	
LW012D1	08/16/2001	11:42	30.02	25.39	4.63	----	
LW012D1	11/28/2001	12:38	30.02	23.33	6.69	----	
LW012D1	02/27/2002	14:28	30.02	21.88	8.14	----	
LW012D1	06/27/2002	14:57	30.02	19.58	10.44	----	
LW012D1							Abandoned August 2003
LW012D2	05/18/1999	15:14	29.24	18.23	11.01	----	
LW012D2	09/21/1999	11:53	29.24	24.69	4.55	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW012D2	12/06/1999	14:22	29.24	19.40	9.84	----	
LW012D2	02/16/2000	10:36	29.24	19.90	9.34	----	
LW012D2	05/23/2000	16:59	29.24	20.38	8.86	----	
LW012D2	08/29/2000	13:44	29.24	24.68	4.56	----	
LW012D2	11/09/2000	13:01	29.24	24.56	4.68	----	
LW012D2	02/12/2001	15:56	29.24	23.88	5.36	----	
LW012D2	06/04/2001	12:31	29.24	24.10	5.14	----	
LW012D2	08/16/2001	11:43	29.24	25.43	3.81	----	
LW012D2	11/28/2001	12:39	29.24	23.17	6.07	----	
LW012D2	02/27/2002	14:29	29.24	22.38	6.86	----	
LW012D2	06/27/2002	14:58	29.24	19.44	9.80	----	
LW012D2							Abandoned August 2003
LW014D	05/23/2000	16:50	30.54	21.26	9.28	----	
LW014D	08/29/2000	13:35	30.54	25.68	4.86	----	
LW014D	11/09/2000	12:49	30.54	25.90	4.64	----	
LW014D	02/12/2001	16:20	30.54	25.33	5.21	----	
LW014D	06/04/2001	12:00	30.54	25.37	5.17	----	
LW014D	08/16/2001	11:08	30.54	27.00	3.54	----	
LW014D	11/28/2001	11:56	30.54	25.03	5.51	----	
LW014D	02/27/2002	13:55	30.54	23.57	6.97	----	
LW014D	06/27/2002	14:33	30.54	20.70	9.84	----	
LW014D	08/26/2002	16:26	30.54	25.90	4.64	----	
LW014D	11/13/2002	08:07	30.54	25.76	4.78	----	
LW014D	02/11/2003	09:27	30.54	24.33	6.21	----	
LW014D	05/08/2003	07:38	30.54	21.92	8.62	----	
LW014D	08/27/2003	13:56	30.54	25.32	5.22	----	
LW014D	10/23/2003	13:13	30.54	26.56	3.98	----	
LW015D	05/23/2000	16:49	30.85	21.26	9.59	----	
LW015D	08/29/2000	13:34	30.85	25.54	5.31	----	
LW015D	11/09/2000	12:48	30.85	25.98	4.87	----	
LW015D	02/12/2001	16:18	30.85	25.43	5.42	----	
LW015D	06/04/2001	11:59	30.85	25.41	5.44	----	
LW015D	08/16/2001	11:07	30.85	27.05	3.80	----	
LW015D	11/28/2001	11:55	30.85	25.29	5.56	----	
LW015D	02/27/2002	13:52	30.85	23.42	7.43	----	
LW015D	06/27/2002	14:32	30.85	20.91	9.94	----	
LW015D	08/26/2002	16:25	30.85	25.77	5.08	----	
LW015D	11/13/2002	08:05	30.85	26.04	4.81	----	
LW015D	02/11/2003	09:23	30.85	23.65	7.20	----	
LW015D	05/08/2003	07:37	30.85	21.95	8.90	----	
LW015D	08/27/2003	13:55	30.85	25.58	5.27	----	
LW015D	10/23/2003	13:12	30.85	26.61	4.24	----	
LW016D	05/23/2000	16:48	28.40	18.79	9.61	----	
LW016D	08/29/2000	13:32	28.40	23.07	5.33	----	
LW016D	11/09/2000	12:47	28.40	23.59	4.81	----	
LW016D	02/12/2001	16:17	28.40	22.94	5.46	----	
LW016D	06/04/2001	11:57	28.40	23.00	5.40	----	
LW016D	08/16/2001	11:05	28.40	24.43	3.97	----	
LW016D	11/28/2001	11:57	28.40	22.87	5.53	----	
LW016D	02/27/2002	13:54	28.40	20.94	7.46	----	
LW016D	06/27/2002	14:31	28.40	18.46	9.94	----	
LW016D	08/26/2002	16:23	28.40	23.24	5.16	----	
LW016D	11/13/2002	08:08	28.40	23.45	4.95	----	
LW016D	02/11/2003	09:25	28.40	21.14	7.26	----	
LW016D	05/08/2003	07:36	28.40	19.65	8.75	----	
LW016D	08/27/2003	13:54	28.40	23.08	5.32	----	
LW016D	10/23/2003	13:11	28.40	24.10	4.30	----	
LW017D	08/29/2000	13:21	27.82	22.96	4.86	----	
LW017D	11/09/2000	12:36	27.82	23.17	4.65	----	
LW017D	02/12/2001	16:04	27.82	22.44	5.38	----	
LW017D	06/04/2001	11:44	27.82	22.42	5.40	----	
LW017D	08/16/2001	10:55	27.82	23.80	4.02	----	
LW017D	11/28/2001	11:50	27.82	22.00	5.82	----	
LW017D	02/27/2002	13:37	27.82	19.82	8.00	----	
LW017D	03/05/2002	11:30	27.82	20.46	7.36	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW017D	04/05/2002	08:15	27.82	21.34	6.48	----	
LW017D	05/29/2002	00:00	27.82	17.90	9.92	----	
LW017D	06/27/2002	14:20	27.82	17.64	10.18	----	
LW017D	08/26/2002	16:07	27.82	22.67	5.15	----	
LW017D	11/13/2002	07:45	27.82	22.80	5.02	----	
LW017D	02/11/2003	09:03	27.82	20.79	7.03	----	
LW017D	05/08/2003	07:05	27.82	18.82	9.00	----	
LW017D	08/27/2003	13:43	27.82	22.38	5.44	----	
LW017D	10/23/2003	12:34	27.82	23.46	4.36	----	
LW018D	08/29/2000	13:25	27.82	22.79	5.03	----	
LW018D	11/09/2000	12:40	27.82	22.91	4.91	----	
LW018D	02/12/2001	16:10	27.82	22.56	5.26	----	
LW018D	06/04/2001	11:47	27.82	22.28	5.54	----	
LW018D	08/16/2001	11:00	27.82	23.81	4.01	----	
LW018D	11/28/2001	11:51	27.82	22.00	5.82	----	
LW018D	02/27/2002	13:43	27.82	20.44	7.38	----	
LW018D	06/27/2002	14:23	27.82	17.72	10.10	----	
LW018D	08/26/2002	16:13	27.82	21.90	5.92	----	
LW018D	11/13/2002	07:51	27.82	22.71	5.11	----	
LW018D	02/11/2003	09:05	27.82	20.95	6.87	----	
LW018D	05/08/2003	07:10	27.82	18.75	9.07	----	
LW018D	08/27/2003	13:45	27.82	22.41	5.41	----	
LW018D	10/23/2003	12:45	27.82	23.46	4.36	----	
LW020D	10/23/2003	12:15	29.51	24.86	4.65	----	
LW022D	10/23/2003	11:58	32.56	27.72	4.84	----	
LW023D	10/23/2003	12:00	31.41	26.56	4.85	----	
LW024D	10/23/2003	12:23	33.47	28.61	4.86	----	
LW025D	10/23/2003	12:28	35.38	30.50	4.88	----	
LW026D	10/23/2003	12:09	31.49	27.17	4.32	----	
LW027D	10/23/2003	12:21	29.71	25.47	4.24	----	
LW029D	10/23/2003	14:40	31.12	26.46	4.66	----	
LW030D	10/23/2003	14:52	30.06	25.58	4.48	----	
LW032D	10/23/2003	14:33	30.86	26.50	4.36	----	
LW035D	10/23/2003	11:48	33.19	28.33	4.86	----	
OX008D	10/23/2003	13:48	30.84	26.12	4.72	----	
RW2	05/18/1999	15:02	30.68	19.50	11.18	----	
RW2	09/21/1999	11:40	30.68	25.75	4.93	----	
RW2	12/06/1999	14:17	30.68	20.77	9.91	----	
RW2	02/16/2000	10:29	30.68	20.99	9.69	----	
RW2	05/23/2000	16:52	30.68	21.37	9.31	----	
RW2	08/29/2000	13:36	30.68	25.36	5.32	----	Groundwater interim action pumping began 10/5/00 in the lower zone at this well. Pump not running at time of measurement.
RW2	11/09/2000	12:50	30.68	25.83	4.85	----	
RW2	02/12/2001	16:37	30.68	26.40	4.28	----	
RW2	06/04/2001	12:05	30.68	26.26	4.42	----	
RW2	08/16/2001	11:11	30.68	28.98	1.70	----	
RW2	11/28/2001	12:02	30.68	26.86	3.82	----	
RW2	02/27/2002	13:57	30.68	26.02	4.66	----	
RW2	06/27/2002	14:35	30.68	23.68	7.00	----	
RW2	08/26/2002	16:29	30.68	28.26	2.42	----	
RW2	11/13/2002	08:20	30.68	28.50	2.18	----	
RW2	02/11/2003	09:29	30.68	26.96	3.72	----	
RW2	05/07/2003	17:30	30.68	24.80	5.88	----	Date of measurement is day of sampling

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RW2	08/27/2003	13:57	30.68	27.91	2.77	----	
RW2	10/23/2003	13:30	30.68	28.73	1.95	----	
RIVER_GAUGE	08/11/1993	12:57	28.13	24.90	3.23	----	
RIVER_GAUGE	10/26/1993	13:17	28.13	25.27	2.86	----	
RIVER_GAUGE	11/17/1993	13:21	28.13	24.18	3.95	----	
RIVER_GAUGE	12/17/1993	12:46	28.13	22.48	5.65	----	
RIVER_GAUGE	01/17/1994	12:58	28.13	22.90	5.23	----	
RIVER_GAUGE	02/18/1994	14:10	28.13	22.30	5.83	----	
RIVER_GAUGE	03/18/1994	12:48	28.13	21.70	6.43	----	
RIVER_GAUGE	04/18/1994	14:34	28.13	23.50	4.63	----	
RIVER_GAUGE	05/18/1994	15:14	28.13	21.80	6.33	----	
RIVER_GAUGE	06/17/1994	14:45	28.13	21.32	6.81	----	
RIVER_GAUGE	07/19/1994	09:10	28.13	23.25	4.88	----	
RIVER_GAUGE	08/17/1994	07:26	28.13	24.00	4.13	----	
RIVER_GAUGE	09/16/1994	07:30	28.13	24.66	3.47	----	
RIVER_GAUGE	10/17/1994	08:58	28.13	24.10	4.03	----	
RIVER_GAUGE	11/21/1994	11:43	28.13	23.20	4.93	----	
RIVER_GAUGE	12/19/1994	10:58	28.13	19.95	8.18	----	
RIVER_GAUGE	01/18/1995	11:04	28.13	16.70	11.43	----	
RIVER_GAUGE	02/21/1995	13:14	28.13	14.65	13.48	----	
RIVER_GAUGE	03/21/1995	12:58	28.13	18.90	9.23	----	
RIVER_GAUGE	04/19/1995	12:37	28.13	19.80	8.33	----	
RIVER_GAUGE	05/19/1995	13:22	28.13	17.40	10.73	----	
RIVER_GAUGE	07/17/1995	13:48	28.13	22.00	6.13	----	
RIVER_GAUGE	08/22/1995	07:45	28.13	23.24	4.89	----	
RIVER_GAUGE	09/22/1995	08:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/20/1995	07:50	28.13	20.20	7.93	----	
RIVER_GAUGE	12/01/1995	08:23	28.13	8.45	19.68	----	
RIVER_GAUGE	12/19/1995	07:11	28.13	14.10	14.03	----	
RIVER_GAUGE	01/19/1996	08:29	28.13	14.06	14.07	----	
RIVER_GAUGE	02/20/1996	10:36	28.13	8.00	20.13	----	
RIVER_GAUGE	03/19/1996	09:15	28.13	15.95	12.18	----	
RIVER_GAUGE	04/19/1996	11:45	28.13	13.95	14.18	----	
RIVER_GAUGE	07/22/1996	14:18	28.13	22.00	6.13	----	
RIVER_GAUGE	07/22/1996	15:05	28.13	22.20	5.93	----	
RIVER_GAUGE	08/20/1996	14:09	28.13	22.80	5.33	----	
RIVER_GAUGE	08/20/1996	15:10	28.13	23.00	5.13	----	
RIVER_GAUGE	09/24/1996	07:55	28.13	23.41	4.72	----	
RIVER_GAUGE	09/24/1996	10:15	28.13	24.25	3.88	----	
RIVER_GAUGE	10/28/1996	10:53	28.13	22.95	5.18	----	
RIVER_GAUGE	10/28/1996	12:12	28.13	23.21	4.92	----	
RIVER_GAUGE	12/13/1996	12:09	28.13	14.50	13.63	----	
RIVER_GAUGE	03/25/1997	11:33	28.13	14.60	13.53	----	
RIVER_GAUGE	03/31/1997		28.13	----	----	----	Locked
RIVER_GAUGE	07/16/1997	06:55	28.13	18.73	9.40	----	
RIVER_GAUGE	07/16/1997	07:55	28.13	18.84	9.29	----	
RIVER_GAUGE	07/16/1997	09:14	28.13	18.92	9.21	----	
RIVER_GAUGE	10/21/1997	15:52	28.13	23.38	4.75	----	
RIVER_GAUGE	10/21/1997	16:11	28.13	23.44	4.69	----	
RIVER_GAUGE	10/21/1997	17:55	28.13	23.59	4.54	----	
RIVER_GAUGE	01/27/1998	10:46	28.13	18.20	9.93	----	
RIVER_GAUGE	01/27/1998	12:25	28.13	18.31	9.82	----	
RIVER_GAUGE	01/27/1998	13:56	28.13	17.89	10.24	----	
RIVER_GAUGE	05/18/1998	17:12	28.13	16.97	11.16	----	
RIVER_GAUGE	05/18/1998	17:45	28.13	17.15	10.98	----	
RIVER_GAUGE	08/17/1998	09:58	28.13	23.98	4.15	----	
RIVER_GAUGE	08/17/1998	10:34	28.13	24.15	3.98	----	
RIVER_GAUGE	11/13/1998	09:30	28.13	24.64	3.49	----	
RIVER_GAUGE	11/13/1998	10:05	28.13	24.45	3.68	----	
RIVER_GAUGE	02/16/1999	12:40	28.13	19.36	8.77	----	
RIVER_GAUGE	02/16/1999	13:27	28.13	19.43	8.70	----	
RIVER_GAUGE	05/18/1999	14:33	28.13	17.24	10.89	----	
RIVER_GAUGE	05/18/1999	15:19	28.13	17.30	10.83	----	
RIVER_GAUGE	09/21/1999	11:10	28.13	24.94	3.19	----	
RIVER_GAUGE	09/21/1999	11:59	28.13	25.03	3.10	----	
RIVER_GAUGE	12/06/1999	13:43	28.13	18.24	9.89	----	
RIVER_GAUGE	12/06/1999	14:25	28.13	18.06	10.07	----	

TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	02/16/2000	10:03	28.13	19.18	8.95	----	
RIVER_GAUGE	02/16/2000	10:41	28.13	19.07	9.06	----	
RIVER_GAUGE	05/23/2000	16:12	28.13	19.80	8.33	----	
RIVER_GAUGE	05/23/2000	17:04	28.13	19.94	8.19	----	
RIVER_GAUGE	08/29/2000	12:54	28.13	24.63	3.50	----	
RIVER_GAUGE	08/29/2000	13:49	28.13	24.91	3.22	----	
RIVER_GAUGE	11/09/2000	12:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/09/2000	13:10	28.13	23.67	4.46	----	
RIVER_GAUGE	02/12/2001	15:45	28.13	23.75	4.38	----	
RIVER_GAUGE	02/12/2001	16:43	28.13	24.00	4.13	----	
RIVER_GAUGE	06/04/2001	11:20	28.13	23.62	4.51	----	
RIVER_GAUGE	06/04/2001	12:15	28.13	23.79	4.34	----	
RIVER_GAUGE	08/16/2001	10:20	28.13	24.83	3.30	----	
RIVER_GAUGE	08/16/2001	11:29	28.13	25.23	2.90	----	
RIVER_GAUGE	11/28/2001	11:16	28.13	22.50	5.63	----	
RIVER_GAUGE	11/28/2001	12:18	28.13	23.13	5.00	----	
RIVER_GAUGE	02/27/2002	13:11	28.13	22.24	5.89	----	
RIVER_GAUGE	02/27/2002	14:12	28.13	22.27	5.86	----	
RIVER_GAUGE	03/05/2002	11:25	28.13	21.42	6.71	----	
RIVER_GAUGE	04/05/2002	08:00	28.13	23.10	5.03	----	
RIVER_GAUGE	05/29/2002	14:07	28.13	17.31	10.82	----	
RIVER_GAUGE	06/27/2002	14:07	28.13	18.31	9.82	----	
RIVER_GAUGE	06/27/2002	14:43	28.13	18.36	9.77	----	
RIVER_GAUGE	08/26/2002	15:45	28.13	24.83	3.30	----	
RIVER_GAUGE	08/26/2002	16:13	28.13	24.85	3.28	----	
RIVER_GAUGE	11/13/2002	07:19	28.13	24.10	4.03	----	
RIVER_GAUGE	11/13/2002	07:54	28.13	24.21	3.92	----	
RIVER_GAUGE	02/11/2003	08:34	28.13	23.70	4.43	----	
RIVER_GAUGE	02/11/2003	09:14	28.13	23.43	4.70	----	
RIVER_GAUGE	05/08/2003	06:40	28.13	20.02	8.11	----	
RIVER_GAUGE	05/08/2003	07:17	28.13	20.00	8.13	----	
RIVER_GAUGE	08/27/2003	13:18	28.13	23.36	4.77	----	
RIVER_GAUGE	08/27/2003	14:15	28.13	23.66	4.47	----	
RIVER_GAUGE	10/23/2003	11:46	28.13	25.00	3.13	----	
RIVER_GAUGE	10/23/2003	13:35	28.13	24.94	3.19	----	

Notes:
NM Not measured.
NA Not available.
-- No measurable product or odor observed.
* Well Point
(a) Reference Elevation (Ref. Elev) is the north side of the top of the 1.25-, 2- or 4-inch well casing, reference elevation surveys were conducted by Zarosinski-Tatone Engineers, Inc., Portland, Oregon. For the river gauge, the reference elevation was measured at a marked location on the south side of the dock on the Willamette River.
(b) Depth to water (DTW) measured from surveyed reference elevation [see note (1)].
(c) Where LNAPL thickness measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "*Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells* " [Lenhard and Parker 1990; Groundwater 28(1):57-67].

TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
2-Methylnaphthalene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Acenaphthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Acenaphthylene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Chrysene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Dibenzofuran	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Fluorene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Naphthalene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Pentachlorophenol	(ug/l)	0.52U	0.61	0.65	NT	0.5U	3.9
Phenanthrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW013S 10/23/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
2-Methylnaphthalene	(ug/l)	1.6	NT	NT	0.1U	0.11U	46
Acenaphthene	(ug/l)	0.1U	NT	NT	0.84	1.3	0.8
Acenaphthylene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.14	0.12U
Benzo(a)anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(a)pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(b)fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(ghi)perylene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(k)fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Chrysene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Dibenzo(a,h)anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Dibenzofuran	(ug/l)	0.1U	NT	NT	0.77	0.59	0.57
Fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Fluorene	(ug/l)	0.1U	NT	NT	2.5	3.3	2.1
Indeno(1,2,3-cd)pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Naphthalene	(ug/l)	4.1	NT	NT	0.1U	0.11U	100
Pentachlorophenol	(ug/l)	0.5U	0.55U	1	NT	NT	NT
Phenanthrene	(ug/l)	0.1U	NT	NT	2	2.3	1.5
Pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
2-Methylnaphthalene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Acenaphthene	(ug/l)	1.1	0.1U	0.84	0.84	0.1U	0.52
Acenaphthylene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Anthracene	(ug/l)	0.16	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(a)anthracene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(a)pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(b)fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(ghi)perylene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(k)fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Chrysene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Dibenzo(a,h)anthracene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Dibenzofuran	(ug/l)	0.71	0.1U	0.8	0.82	0.1U	0.38
Fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Fluorene	(ug/l)	2.3	0.1U	1.6	1.7	0.1U	0.67
Indeno(1,2,3-cd)pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Naphthalene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.33	0.1U	1.6	1.6	0.1U	0.31
Pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U

Landau Associates

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW034S	OX001S	OX003S	OX005S	OX006S	OX007S
	DATE	10/27/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003	10/22/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
2-Methylnaphthalene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Chrysene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	0.1U	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Fluorene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	NT	0.69	130	0.5U	2100	720
Phenanthrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX008S 10/22/2003 Primary	OX008S 10/22/2003 Duplicate 1
2-Methylnaphthalene	(ug/l)	NT	NT
Acenaphthene	(ug/l)	NT	NT
Acenaphthylene	(ug/l)	NT	NT
Anthracene	(ug/l)	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT
Chrysene	(ug/l)	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT
Dibenzofuran	(ug/l)	NT	NT
Fluoranthene	(ug/l)	NT	NT
Fluorene	(ug/l)	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT
Naphthalene	(ug/l)	NT	NT
Pentachlorophenol	(ug/l)	260	300
Phenanthrene	(ug/l)	NT	NT
Pyrene	(ug/l)	NT	NT

Landau Associates

BZTO104(e)018495

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1.1U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,4,6-Trichlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,4-Dichlorophenol	(ug/l)	3.1U	3U	3.2U	3U	3U	3U
2,4-Dimethylphenol	(ug/l)	4.4	3U	3.2U	3U	3U	3U
2,4-Dinitrophenol	(ug/l)	26U	25U	27U	25U	25U	25U
2,4-Dinitrotoluene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,6-Dinitrotoluene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2-Chloronaphthalene	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	3	1U	1.4	1U	1U	1.9
2-Methylphenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Nitroaniline	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2-Nitrophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
3,3-Dichlorobenzidine	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
3-Nitroaniline	(ug/l)	6.2U	6.1U	6.4U	6U	6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	16U	15U	15U	15U

BZTO104(e)018496

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
4-Chloroaniline	(ug/l)	3.1U	3U	3.2U	3U	3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Methylphenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Nitroaniline	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
4-Nitrophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Acenaphthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Acenaphthylene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzoic acid	(ug/l)	10U	10U	11U	10U	10U	10U
Benzyl alcohol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1.1U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	6.3	1U	1.1U	1U	1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U

BZTO104(e)018497

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
Carbazole	(ug/l)	1U	1U	1.1U	1U	1U	1U
Chrysene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dibenzofuran	(ug/l)	1U	1U	1.1U	1U	1U	1U
Diethyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Fluorene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Hexachlorocyclopentadiene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Hexachloroethane	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Isophorone	(ug/l)	1U	1U	1.1U	1U	1U	1U
Naphthalene	(ug/l)	3.5	1U	2.1	1U	1U	4.4
Nitrobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1.1U	1U	1U	1U
Pentachlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U

BZTO104(e)018498

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Phenol	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U

BZTO104(e)018499

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,2-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,3-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,4-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2,4,5-Trichlorophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,4,6-Trichlorophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,4-Dichlorophenol	(ug/l)	3.3U	3U	3U	3.3U	3.6U	3.7U
2,4-Dimethylphenol	(ug/l)	3.3U	3U	3U	3.3U	5.4	3.7U
2,4-Dinitrophenol	(ug/l)	27U	25U	25U	28U	30U	30U
2,4-Dinitrotoluene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,6-Dinitrotoluene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2-Chloronaphthalene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Chlorophenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Methylnaphthalene	(ug/l)	3.1	2.9	1U	1.1U	46	1.2U
2-Methylphenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Nitroaniline	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2-Nitrophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
3,3-Dichlorobenzidine	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
3-Nitroaniline	(ug/l)	6.6U	6.1U	6U	6.7U	7.1U	7.3U
4,6-Dinitro-2-Methylphenol	(ug/l)	16U	15U	15U	17U	18U	18U

BZTO104(e)018500

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Chloro-3-methylphenol	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
4-Chloroaniline	(ug/l)	3.3U	3U	3U	3.3U	3.6U	3.7U
4-Chlorophenylphenyl ether	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Methylphenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Nitroaniline	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
4-Nitrophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Acenaphthene	(ug/l)	1.1U	1U	1.1	1.4	1.2U	1.2
Acenaphthylene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(a)anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(a)pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(b)fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(ghi)perylene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(k)fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzoic acid	(ug/l)	11U	10U	10U	11U	12U	12U
Benzyl alcohol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Bis(2-chloroethoxy)methane	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Bis(2-chloroethyl)ether	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Butyl benzyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U

BZTO104(e)018501

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
Carbazole	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Chrysene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Dibenzo(a,h)anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Dibenzofuran	(ug/l)	1.1U	1U	1.5	1.1U	1.2U	1.2U
Diethyl phthalate	(ug/l)	1.1U	1U	NT	1.1U	1.2U	1.2U
Dimethyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Di-n-butyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Di-n-octyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Fluorene	(ug/l)	1.1U	1U	3.5	3.8	1.9	2.3
Hexachlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Hexachlorobutadiene	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Hexachlorocyclopentadiene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Hexachloroethane	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Isophorone	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Naphthalene	(ug/l)	2.2	3.2	1U	1.1U	100	1.2U
Nitrobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
N-Nitrosodiphenylamine	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Pentachlorophenol	(ug/l)	5.5U	900	5U	5.6U	6U	6.1U

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BZTO104(e)018502

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
Phenanthrene	(ug/l)	1.1U	1U	3.3	2.3	1.3	1.2U
Phenol	(ug/l)	2.2U	2U	2U	2.2U	11	2.4U
Pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U

BZTO104(e)018503

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,4,6-Trichlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,4-Dichlorophenol	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
2,4-Dimethylphenol	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
2,4-Dinitrophenol	(ug/l)	25U	27U	27U	25U	26U	26U
2,4-Dinitrotoluene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,6-Dinitrotoluene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2-Chloronaphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Chlorophenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Methylphenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Nitroaniline	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2-Nitrophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
3,3-Dichlorobenzidine	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
3-Nitroaniline	(ug/l)	6U	6.6U	6.5U	6.1U	6.2U	6.1U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	16U	16U	15U	15U	15U

BZTO104(e)018504

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
4-Chloroaniline	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Methylphenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Nitroaniline	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
4-Nitrophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Acenaphthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Acenaphthylene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzoic acid	(ug/l)	10U	11U	11U	10U	10U	10U
Benzyl alcohol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1.1U	1.7	2.4	2.1	4.9
Butyl benzyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U

BZTO104(e)018505

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW029S	LW030S	LW030S	LW031S	LW032S	LW034S
	DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Primary	Primary
Carbazole	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Chrysene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dibenzofuran	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Diethyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Fluorene	(ug/l)	1U	1.4	1.5	1U	1U	1U
Hexachlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Hexachlorocyclopentadiene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Hexachloroethane	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Isophorone	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Naphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Nitrobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Pentachlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U

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BZTO104(e)018506

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW029S	LW030S	LW030S	LW031S	LW032S	LW034S
	DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Primary	Primary
Phenanthrene	(ug/l)	1U	1.5	1.5	1U	1U	1U
Phenol	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U

BZTO104(e)018507

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,3-Dichlorobenzene	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U
2,4,5-Trichlorophenol	(ug/l)	33
2,4,6-Trichlorophenol	(ug/l)	5.1U
2,4-Dichlorophenol	(ug/l)	3.1U
2,4-Dimethylphenol	(ug/l)	NT
2,4-Dinitrophenol	(ug/l)	26U
2,4-Dinitrotoluene	(ug/l)	5.1U
2,6-Dinitrotoluene	(ug/l)	5.1U
2-Chloronaphthalene	(ug/l)	1U
2-Chlorophenol	(ug/l)	1U
2-Methylnaphthalene	(ug/l)	1U
2-Methylphenol	(ug/l)	1U
2-Nitroaniline	(ug/l)	5.1U
2-Nitrophenol	(ug/l)	5.1U
3,3-Dichlorobenzidine	(ug/l)	5.1U
3-Nitroaniline	(ug/l)	6.1U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U

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BZTO104(e)018508

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U
4-Chloro-3-methylphenol	(ug/l)	2U
4-Chloroaniline	(ug/l)	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U
4-Methylphenol	(ug/l)	1U
4-Nitroaniline	(ug/l)	5.1U
4-Nitrophenol	(ug/l)	5.1U
Acenaphthene	(ug/l)	1U
Acenaphthylene	(ug/l)	1U
Anthracene	(ug/l)	1U
Benzo(a)anthracene	(ug/l)	1U
Benzo(a)pyrene	(ug/l)	1U
Benzo(b)fluoranthene	(ug/l)	1U
Benzo(ghi)perylene	(ug/l)	1U
Benzo(k)fluoranthene	(ug/l)	1U
Benzoic acid	(ug/l)	10U
Benzyl alcohol	(ug/l)	5.1U
Bis(2-chloroethoxy)methane	(ug/l)	1U
Bis(2-chloroethyl)ether	(ug/l)	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U
Butyl benzyl phthalate	(ug/l)	1U

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BZTO104(e)018509

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
Carbazole	(ug/l)	1U
Chrysene	(ug/l)	1U
Dibenzo(a,h)anthracene	(ug/l)	1U
Dibenzofuran	(ug/l)	1U
Diethyl phthalate	(ug/l)	1U
Dimethyl phthalate	(ug/l)	1U
Di-n-butyl phthalate	(ug/l)	1U
Di-n-octyl phthalate	(ug/l)	1U
Fluoranthene	(ug/l)	1U
Fluorene	(ug/l)	1U
Hexachlorobenzene	(ug/l)	1U
Hexachlorobutadiene	(ug/l)	2U
Hexachlorocyclopentadiene	(ug/l)	5.1U
Hexachloroethane	(ug/l)	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U
Isophorone	(ug/l)	1U
Naphthalene	(ug/l)	5.1
Nitrobenzene	(ug/l)	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U
N-Nitrosodiphenylamine	(ug/l)	1U
Pentachlorophenol	(ug/l)	350

BZTO104(e)018510

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW1
	DATE	10/22/2003
	RESULT TYPE	Primary
Phenanthrene	(ug/l)	1U
Phenol	(ug/l)	3.7M
Pyrene	(ug/l)	1U

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BZTO104(e)018511

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	NT	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	NT	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	NT	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	NT	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	12	1U	1U	NT	1U	1.4
1,2-Dibromoethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	3.6	1U	1U	NT	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U

BZTO104(e)018512

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	NT	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	NT	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	NT	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	NT	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	NT	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	NT	5U	5U
Acetone	(ug/l)	5U	5U	5U	NT	5U	5U
Acrolein	(ug/l)	50U	50U	50U	NT	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	NT	1U	1U
Benzene	(ug/l)	5.6	1U	1U	NT	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	NT	2U	2U
Bromoform	(ug/l)	1U	1U	1U	NT	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	NT	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	NT	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	NT	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
Chloroform	(ug/l)	1U	1U	1U	NT	1U	1U

BZTO104(e)018513

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	NT	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	NT	1U	1U
Ethylbenzene	(ug/l)	31	1U	1U	NT	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	NT	5U	5U
Isopropylbenzene	(ug/l)	3.3	1.1	7.1	NT	1U	1U
m,p-Xylene	(ug/l)	40	1U	1U	NT	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	NT	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	1U	1U	NT
Methylene chloride	(ug/l)	2U	2U	2U	NT	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	NT	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
n-Propylbenzene	(ug/l)	4.5	1U	11	NT	1U	1U
o-Xylene	(ug/l)	9.2	1U	1U	NT	1U	1U
sec-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Styrene	(ug/l)	1U	1U	1U	NT	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	NT	1U	1U

BZTO104(e)018514

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Toluene	(ug/l)	2.1	1U	1U	NT	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	NT	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	NT	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	NT	1U	1U

BZTO104(e)018515

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	2.2	1U	73	1U	1U	540
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	3.3	1U	16	1U	1U	120
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018516

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
2-Butanone	(ug/l)	17M	5U	7.5M	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1.6	1U	3.2	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	5U	7M	5.1M	5U	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	2.1	1U	1U	1600
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018517

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	29	7.2	14	1U	1U	940
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	42	140	7.6	6.5	7	72
m,p-Xylene	(ug/l)	16	1U	20	1U	1U	2400
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	NT	NT	1U	1U	7.5M
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5.5	5U	5U	5U	5U	190
n-Butylbenzene	(ug/l)	4.3	9	3.7M	2.9M	2.2	8
n-Propylbenzene	(ug/l)	54	94	13	8.9	9.2	110
o-Xylene	(ug/l)	1U	1U	23	1U	1U	770
sec-Butylbenzene	(ug/l)	3.7	19	4.7	4.7	5.1	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	7.4	1	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018518

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	72
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018519

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1.3	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018520

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	6	5U	5U	5U	5U	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018521

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	12	1U	9.8	9.6	1U	18
m,p-Xylene	(ug/l)	1U	1U	1U	1	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	3.3	1U	3.5	3.2M	1U	6.1
n-Propylbenzene	(ug/l)	13	1U	25	23	1U	20
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	4	1U	2.5	2.4	1U	6.5
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018523

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	170
1,2-Dibromoethane	(ug/l)	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	31
1,3-Dichlorobenzene	(ug/l)	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U

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BZTO104(e)018524

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW034S	RW1
	DATE	10/27/2003	10/22/2003
	RESULT TYPE	Primary	Primary
2-Butanone	(ug/l)	5U	46M
2-Chlorotoluene	(ug/l)	1U	1U
2-Hexanone	(ug/l)	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U
4-Isopropyltoluene	(ug/l)	1U	3.6
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U
Acetone	(ug/l)	5U	15M
Acrolein	(ug/l)	50U	50U
Acrylonitrile	(ug/l)	1U	1U
Benzene	(ug/l)	1U	4.9
Bromobenzene	(ug/l)	1U	1U
Bromochloromethane	(ug/l)	1U	1U
Bromodichloromethane	(ug/l)	1U	1U
Bromoethane	(ug/l)	2U	2U
Bromoform	(ug/l)	1U	1U
Bromomethane	(ug/l)	1U	1U
Carbon disulfide	(ug/l)	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U
Chlorobenzene	(ug/l)	1U	1U
Chloroethane	(ug/l)	1U	1U
Chloroform	(ug/l)	1U	1U

BZTO104(e)018525

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
Chloromethane	(ug/l)	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U
Dibromochloromethane	(ug/l)	1U	1U
Dibromochloropropane	(ug/l)	5U	5U
Dibromomethane	(ug/l)	1U	1U
Ethylbenzene	(ug/l)	1U	64
Hexachlorobutadiene	(ug/l)	5U	5U
Isopropylbenzene	(ug/l)	1U	34
m,p-Xylene	(ug/l)	1U	62
Methyl iodide	(ug/l)	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	NT
Methylene chloride	(ug/l)	2U	2U
Naphthalene	(ug/l)	5U	13
n-Butylbenzene	(ug/l)	1U	4.7M
n-Propylbenzene	(ug/l)	1U	40
o-Xylene	(ug/l)	1U	90
sec-Butylbenzene	(ug/l)	1U	11
Styrene	(ug/l)	1U	1U
tert-Butylbenzene	(ug/l)	1U	2
Tetrachloroethene	(ug/l)	1U	1U

BZTO104(e)018526

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW034S	RW1
	DATE	10/27/2003	10/22/2003
	RESULT TYPE	Primary	Primary
Toluene	(ug/l)	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U
Trichloroethene	(ug/l)	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U
Vinyl Acetate	(ug/l)	5U	5U
Vinyl Chloride	(ug/l)	1U	1U

BZTO104(e)018527

TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.7	NT	NT	0.26	0.6	3.5
Gasoline Range Hydrocarbons	(mg/l)	1.2	0.25U	0.25U	NT	2.1	4.6
TPH-Motor Oil Range	(mg/l)	0.5U	NT	NT	0.5U	0.5U	0.5U

BZTO104(e)018528

TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.3	4.4	5.4	4.3	4.4	0.25U
Gasoline Range Hydrocarbons	(mg/l)	2.8	1.1	0.96	24	1.6	0.25U
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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BZTO104(e)018529

TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.87	0.86	0.59	3.3	0.25U	5.8
Gasoline Range Hydrocarbons	(mg/l)	0.84	0.89	0.25U	1.8	0.25U	7
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Arsenic	(mg/l)	0.007	0.018	0.006	0.001U	0.008	0.001
Chromium	(mg/l)	0.006	0.005U	0.005U	0.005U	0.005U	0.006
Copper	(mg/l)	0.015	0.002U	0.002	0.006	0.003	0.006
Lead	(mg/l)	0.005	0.001U	0.001U	0.001U	0.001U	0.001U
Nickel	(mg/l)	0.01	0.01U	0.01U	0.03	0.01U	0.01U
Zinc	(mg/l)	0.018	0.006U	0.006U	0.014	0.007	0.009

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
Arsenic	(mg/l)	0.012	0.021	0.006	0.046	0.04	0.025
Chromium	(mg/l)	0.005U	0.007	0.005U	0.005U	0.005U	0.005U
Copper	(mg/l)	0.003	0.007	0.002	0.002U	0.002U	0.005
Lead	(mg/l)	0.001U	0.002	0.001U	0.001	0.001U	0.005
Nickel	(mg/l)	0.01U	0.02	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.006U	0.027	0.006U	0.006U	0.01	0.012

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BZTO104(e)018532

TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Arsenic	(mg/l)	0.038	0.002	0.013	0.013	0.001U	0.034
Chromium	(mg/l)	0.005U	0.005U	0.005U	0.005U	0.005U	0.005U
Copper	(mg/l)	0.002	0.002U	0.002U	0.002U	0.002U	0.002U
Lead	(mg/l)	0.002	0.001U	0.001U	0.001U	0.001U	0.001U
Nickel	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.008	0.007	0.006U	0.007	0.008	0.008

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW034S	RW1
	DATE	10/27/2003	10/22/2003
	RESULT TYPE	Primary	Primary
Arsenic	(mg/l)	0.001	0.005
Chromium	(mg/l)	0.005U	0.005U
Copper	(mg/l)	0.002U	0.005
Lead	(mg/l)	0.001U	0.001U
Nickel	(mg/l)	0.01U	0.01U
Zinc	(mg/l)	0.009	0.01

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Chloride	(mg/l)	3	2.4	2.2	NT	3.2	3
Dissolved Oxygen	(mg/l)	1.48	1.66	1.65	2.57	1.64	2.95
pH	(s.u.)	6.51	6.71	6.8	6.37	6.77	6.65
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	285	382	255	250	237	217
Temperature	(c)	15.9	15	17.8	17.3	18.3	15.2
Total Dissolved Solids	(mg/l)	210	260	190	NT	200	140
Turbidity	(ntu)	55	36	0	10	160	100

BZTO104(e)018535

TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW013S 10/23/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary
Chloride	(mg/l)	2.9	4.8	4	NT	1.1	2
Dissolved Oxygen	(mg/l)	1.08	1.03	1.97	5.65	1.72	1.79
pH	(s.u.)	6.77	6.57	6.65	6.38	6.65	6.33
Redox	(mv)	NT	NT	-171	NT	NT	NT
Specific Conductivity	(us)	308	352	300	119	506	445
Temperature	(c)	15.6	19	15.8	14.7	14.4	16.5
Total Dissolved Solids	(mg/l)	220	260	240	NT	140	270
Turbidity	(ntu)	255	44	37	65	10	44

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary
Chloride	(mg/l)	2.7	1.9	1.8	1.3	1.3	1.7
Dissolved Oxygen	(mg/l)	1.25	1.53	1.44	2.46	2.27	3.10
pH	(s.u.)	6.54	6.62	6.56	6.59	6.59	5.90
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	373	400	112	192	193	187
Temperature	(c)	16.4	14.9	14.7	14.7	14.7	14.7
Total Dissolved Solids	(mg/l)	240	270	91	130	140	140
Turbidity	(ntu)	191	107	59	197	215	43

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary	OX001S 10/22/2003 Primary	OX003S 10/22/2003 Primary	OX005S 10/22/2003 Primary	OX006S 10/22/2003 Primary
Chloride	(mg/l)	2.8	2.9	NT	NT	NT	NT
Dissolved Oxygen	(mg/l)	1.65	2.62	1.26	2.14	1.18	2.63
pH	(s.u.)	6.35	6.01	6.57	6.65	6.59	6.67
Redox	(mv)	NT	NT	-184	-95	-179	-187.1
Specific Conductivity	(us)	409	234	317	318	288	352
Temperature	(c)	14.6	15.4	15.9	16.2	16.5	16.3
Total Dissolved Solids	(mg/l)	250	180	NT	NT	NT	NT
Turbidity	(ntu)	113	55	89	47	157	31

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX007S 10/22/2003 Primary	OX008S 10/22/2003 Primary	OX008S 10/22/2003 Duplicate 1	RW1 10/22/2003 Primary
Chloride	(mg/l)	NT	NT	NT	7.8
Dissolved Oxygen	(mg/l)	1.76	2.26	2.3	2.65
pH	(s.u.)	6.6	6.65	6.65	6.73
Redox	(mv)	-174.4	160	78	-201
Specific Conductivity	(us)	326	337	337	415
Temperature	(c)	16.1	16.3	16.3	17.5
Total Dissolved Solids	(mg/l)	NT	NT	NT	320
Turbidity	(ntu)	173	35	35	131

BZTO104(e)018539

TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXIN AND FURANS (SW8290)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW011S 10/22/2003	OX008S 10/22/2003	RW1 10/22/2003
1,2,3,4,6,7,8-HpCDD	(pg/l)	34761.362J	36.153	124.756
1,2,3,4,6,7,8-HpCDF	(pg/l)	5015.064	7.543J	18.145J
1,2,3,4,7,8,9-HpCDF	(pg/l)	335.279	3.834U	4.331U
1,2,3,4,7,8-HxCDD	(pg/l)	30.589	2.924U	2.808U
1,2,3,4,7,8-HxCDF	(pg/l)	185.273	2.347U	2.152U
1,2,3,6,7,8-HxCDD	(pg/l)	811.768	2.247U	3.039U
1,2,3,6,7,8-HxCDF	(pg/l)	100.956	2.056U	1.885U
1,2,3,7,8,9-HxCDD	(pg/l)	111.191	2.495U	2.397U
1,2,3,7,8,9-HxCDF	(pg/l)	11.372U	2.529U	2.318U
1,2,3,7,8-PeCDD	(pg/l)	5.19U	3.224U	2.939U
1,2,3,7,8-PeCDF	(pg/l)	30.072	2.796U	2.923U
2,3,4,6,7,8-HxCDF	(pg/l)	141.15	2.297U	2.106U
2,3,4,7,8-PeCDF	(pg/l)	23.833J	2.609U	2.727U
2,3,7,8-TCDD	(pg/l)	3.075U	3.459U	4.084U
2,3,7,8-TCDF	(pg/l)	6.882J	3.813U	3.029U
Heptachlorodibenzofuran	(pg/l)	23730.425	33.506	86.297
Heptachlorodibenzo-p-dioxins	(pg/l)	53330.489	57.332	210.738
Hexachlorodibenzofuran	(pg/l)	6012.83	9.192	20.238
Hexachlorodibenzo-p-dioxin	(pg/l)	2768.657	2.247U	19.924
OCDD	(pg/l)	276443.602J	229.507	1225.865
OCDF	(pg/l)	25344.713J	34.621J	119.196

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TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXIN AND FURANS (SW8290)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW011S 10/22/2003	OX008S 10/22/2003	RW1 10/22/2003
Pentachlorodibenzofuran	(pg/l)	664.328	2.609U	2.727U
Pentachlorodibenzo-p-dioxin	(pg/l)	143.82	3.224U	6.528
Tetrachlorodibenzofuran	(pg/l)	7.909	3.813U	3.029U
Tetrachlorodibenzo-p-dioxin	(pg/l)	3.075U	3.459U	2.412U
Total TEQ	(pg/l)	855.097	0.7011	2.778

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	B2 10/20/2003	G1A 10/24/2003	J2 10/21/2003	LW001D 10/21/2003	LW003D 10/24/2003	LW004D 10/24/2003
2-Methylnaphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	NT	NT	NT	NT	NT	NT
Anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Chrysene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	NT	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Fluorene	(ug/l)	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	0.5U	0.5U	0.5U	0.5U	0.62	0.5U
Phenanthrene	(ug/l)	NT	NT	NT	NT	NT	NT
Pyrene	(ug/l)	NT	NT	NT	NT	NT	NT

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BZTO104(e)018542

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW006D 10/24/2003	LW009D 10/24/2003	LW010D 10/23/2003	LW011D 10/24/2003	LW014D 10/23/2003	LW017D 10/23/2003
2-Methylnaphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	NT	NT	NT	NT	NT	NT
Anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Chrysene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	NT	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Fluorene	(ug/l)	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	1.1	0.51U	0.94	0.55U	0.5U	0.51U
Phenanthrene	(ug/l)	NT	NT	NT	NT	NT	NT
Pyrene	(ug/l)	NT	NT	NT	NT	NT	NT

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BZTO104(e)018543

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW018D 10/23/2003	LW020D 10/28/2003	LW022D 10/27/2003	LW023D 10/27/2003	LW024D 10/28/2003	LW025D 10/28/2003
2-Methylnaphthalene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Acenaphthene	(ug/l)	NT	0.1U	1	0.61	0.91	0.45
Acenaphthylene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Anthracene	(ug/l)	NT	0.1U	0.14U	0.11	0.43	0.12U
Benzo(a)anthracene	(ug/l)	NT	0.1U	0.14U	0.16	0.4	0.12U
Benzo(a)pyrene	(ug/l)	NT	0.1U	0.14U	0.33	0.34	0.12U
Benzo(b)fluoranthene	(ug/l)	NT	0.1U	0.14U	0.13	0.18	0.12U
Benzo(ghi)perylene	(ug/l)	NT	0.1U	0.14U	0.15	0.13	0.12U
Benzo(k)fluoranthene	(ug/l)	NT	0.1U	0.14U	0.15	0.27	0.12U
Chrysene	(ug/l)	NT	0.1U	0.14U	0.21	0.4	0.12U
Dibenzo(a,h)anthracene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Dibenzofuran	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Fluoranthene	(ug/l)	NT	0.1U	0.14U	0.36	0.78	0.13
Fluorene	(ug/l)	NT	0.1U	0.35	0.31	0.7	0.57
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	0.1U	0.14U	0.12	0.12	0.12U
Naphthalene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Pentachlorophenol	(ug/l)	0.58	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	NT	0.1U	0.14U	0.2	1.2	0.33
Pyrene	(ug/l)	NT	0.1U	0.14U	0.44	0.94	0.16

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BZTO104(e)018544

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW026D 10/28/2003	LW027D 10/28/2003	LW029D 10/27/2003	LW030D 10/27/2003	LW032D 10/27/2003	LW035D 10/27/2003
2-Methylnaphthalene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Acenaphthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Acenaphthylene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(a)anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(a)pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(b)fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(ghi)perylene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(k)fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Chrysene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Dibenzo(a,h)anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Dibenzofuran	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Fluorene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Naphthalene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U

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BZTO104(e)018545

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	OX008D 10/22/2003
2-Methylnaphthalene	(ug/l)	NT
Acenaphthene	(ug/l)	NT
Acenaphthylene	(ug/l)	NT
Anthracene	(ug/l)	NT
Benzo(a)anthracene	(ug/l)	NT
Benzo(a)pyrene	(ug/l)	NT
Benzo(b)fluoranthene	(ug/l)	NT
Benzo(ghi)perylene	(ug/l)	NT
Benzo(k)fluoranthene	(ug/l)	NT
Chrysene	(ug/l)	NT
Dibenzo(a,h)anthracene	(ug/l)	NT
Dibenzofuran	(ug/l)	NT
Fluoranthene	(ug/l)	NT
Fluorene	(ug/l)	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT
Naphthalene	(ug/l)	NT
Pentachlorophenol	(ug/l)	0.62
Phenanthrene	(ug/l)	NT
Pyrene	(ug/l)	NT

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BZTO104(e)018546

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1U	1U	1.1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,4,6-Trichlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,4-Dichlorophenol	(ug/l)	3U	3U	3U	3U	3.3U	3U
2,4-Dimethylphenol	(ug/l)	3U	3U	3U	3U	3.3U	3U
2,4-Dinitrophenol	(ug/l)	25U	25U	25U	25U	27U	25U
2,4-Dinitrotoluene	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,6-Dinitrotoluene	(ug/l)	5U	5U	5U	5U	5.5U	5U
2-Chloronaphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Methylnaphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Methylphenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Nitroaniline	(ug/l)	5U	5U	5U	5U	5.5U	5U
2-Nitrophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
3,3-Dichlorobenzidine	(ug/l)	5U	5U	5U	5U	5.5U	5U
3-Nitroaniline	(ug/l)	6U	6U	6U	6U	6.6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	15U	15U	16U	15U

BZTO104(e)018547

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2U	2U	2.2U	2U
4-Chloroaniline	(ug/l)	3U	3U	3U	3U	3.3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Methylphenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Nitroaniline	(ug/l)	5U	5U	5U	5U	5.5U	5U
4-Nitrophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
Acenaphthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Acenaphthylene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzoic acid	(ug/l)	10U	10U	10U	10U	11U	10U
Benzyl alcohol	(ug/l)	5U	5U	5U	5U	5.5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1U	1U	1.1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2U	2U	2.2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U

BZTO104(e)018548

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	B2	G1A	J2	LW001D	LW003D	LW004D
	DATE	10/20/2003	10/24/2003	10/21/2003	10/21/2003	10/24/2003	10/24/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Carbazole	(ug/l)	1U	1U	1U	1U	1.1U	1U
Chrysene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dibenzofuran	(ug/l)	1U	1U	1U	1U	1.1U	1U
Diethyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Fluorene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Hexachlorobutadiene	(ug/l)	2U	2U	2U	2U	2.2U	2U
Hexachlorocyclopentadiene	(ug/l)	5U	5U	5U	5U	5.5U	5U
Hexachloroethane	(ug/l)	2U	2U	2U	2U	2.2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Isophorone	(ug/l)	1U	1U	1U	1U	1.1U	1U
Naphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Nitrobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2U	2U	2.2U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1U	1U	1.1U	1U
Pentachlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U

BZTO104(e)018549

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	B2	G1A	J2	LW001D	LW003D	LW004D
	DATE	10/20/2003	10/24/2003	10/21/2003	10/21/2003	10/24/2003	10/24/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Phenanthrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Phenol	(ug/l)	2U	2U	2U	2U	2.2U	2U
Pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U

BZTO104(e)018550

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2,4,5-Trichlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,4,6-Trichlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,4-Dichlorophenol	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
2,4-Dimethylphenol	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
2,4-Dinitrophenol	(ug/l)	26U	26U	25U	27U	25U	35U
2,4-Dinitrotoluene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,6-Dinitrotoluene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2-Chloronaphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Chlorophenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Methylnaphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Methylphenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Nitroaniline	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2-Nitrophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
3,3-Dichlorobenzidine	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
3-Nitroaniline	(ug/l)	6.1U	6.1U	6U	6.6U	6U	8.5U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	15U	16U	15U	21U

BZTO104(e)018551

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
4-Chloroaniline	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Methylphenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Nitroaniline	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
4-Nitrophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Acenaphthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Acenaphthylene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(a)anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(a)pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(ghi)perylene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzoic acid	(ug/l)	10U	10U	10U	11U	10U	14U
Benzyl alcohol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1U	1U	1.5	3.9	1.4U
Butyl benzyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U

BZTO104(e)018552

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Carbazole	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Chrysene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Dibenzofuran	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Diethyl phthalate	(ug/l)	1.4	1U	1U	1.1U	1U	1.4U
Dimethyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Di-n-butyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Di-n-octyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Fluorene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Hexachlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Hexachlorobutadiene	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Hexachlorocyclopentadiene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Hexachloroethane	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Isophorone	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Naphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Nitrobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Pentachlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U

BZTO104(e)018553

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Phenol	(ug/l)	2U	2U	2U	2.2U	2U	4.1
Pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U

BZTO104(e)018554

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,4,6-Trichlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,4-Dichlorophenol	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
2,4-Dimethylphenol	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
2,4-Dinitrophenol	(ug/l)	25U	25U	29U	27U	27U	26U
2,4-Dinitrotoluene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,6-Dinitrotoluene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2-Chloronaphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Methylnaphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Methylphenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Nitroaniline	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2-Nitrophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
3,3-Dichlorobenzidine	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
3-Nitroaniline	(ug/l)	6U	6U	7U	6.6U	6.5U	6.2U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	17U	16U	16U	16U

BZTO104(e)018555

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
4-Chloroaniline	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Methylphenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Nitroaniline	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
4-Nitrophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Acenaphthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Acenaphthylene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzoic acid	(ug/l)	10U	10U	12U	11U	11U	10U
Benzyl alcohol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Bis(2-ethylhexyl)phthalate	(ug/l)	6.8	5.6	1.2U	1.1U	1.1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U

BZTO104(e)018556

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Carbazole	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Chrysene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Dibenzofuran	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Diethyl phthalate	(ug/l)	1U	2U	1.2U	1.1U	1.1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1.4	1.1U	1.1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Fluorene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Hexachlorobutadiene	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Hexachlorocyclopentadiene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Hexachloroethane	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Isophorone	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Naphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Nitrobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Pentachlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U

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BZTO104(e)018557

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Phenol	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U

BZTO104(e)018558

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,4,6-Trichlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,4-Dichlorophenol	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
2,4-Dimethylphenol	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
2,4-Dinitrophenol	(ug/l)	28U	27U	36U	26U	25U	25U
2,4-Dinitrotoluene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,6-Dinitrotoluene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2-Chloronaphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Chlorophenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	7.2J
2-Methylphenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Nitroaniline	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2-Nitrophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
3,3-Dichlorobenzidine	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
3-Nitroaniline	(ug/l)	6.7U	6.4U	8.6U	6.2U	6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	17U	16U	21U	16U	15U	15U

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BZTO104(e)018559

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
4-Chloroaniline	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Methylphenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Nitroaniline	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
4-Nitrophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Acenaphthene	(ug/l)	1.1U	1.1U	1.4U	1.2	1U	1U
Acenaphthylene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzoic acid	(ug/l)	11U	11U	14U	10U	10U	10U
Benzyl alcohol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.1U	2.2	2.7	1U	1U	1U
Butyl benzyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U

BZTO104(e)018560

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Carbazole	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Chrysene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dibenzofuran	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Diethyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Fluorene	(ug/l)	1.1U	1.1U	1.4U	1.8	1U	1U
Hexachlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Hexachlorocyclopentadiene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Hexachloroethane	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Isophorone	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Naphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1.8
Nitrobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
N-Nitrosodiphenylamine	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Pentachlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	8.1

BZTO104(e)018561

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Phenanthrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Phenol	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U

BZTO104(e)018562

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
1,2,4-Trichlorobenzene	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,3-Dichlorobenzene	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U
2,4,5-Trichlorophenol	(ug/l)	5U
2,4,6-Trichlorophenol	(ug/l)	5U
2,4-Dichlorophenol	(ug/l)	3U
2,4-Dimethylphenol	(ug/l)	3U
2,4-Dinitrophenol	(ug/l)	25U
2,4-Dinitrotoluene	(ug/l)	5U
2,6-Dinitrotoluene	(ug/l)	5U
2-Chloronaphthalene	(ug/l)	1U
2-Chlorophenol	(ug/l)	1U
2-Methylnaphthalene	(ug/l)	5.4J
2-Methylphenol	(ug/l)	1U
2-Nitroaniline	(ug/l)	5U
2-Nitrophenol	(ug/l)	5U
3,3-Dichlorobenzidine	(ug/l)	5U
3-Nitroaniline	(ug/l)	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U

BZTO104(e)018563

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
4-Bromophenyl-phenylether	(ug/l)	1U
4-Chloro-3-methylphenol	(ug/l)	2U
4-Chloroaniline	(ug/l)	3U
4-Chlorophenylphenyl ether	(ug/l)	1U
4-Methylphenol	(ug/l)	1U
4-Nitroaniline	(ug/l)	5U
4-Nitrophenol	(ug/l)	5U
Acenaphthene	(ug/l)	1U
Acenaphthylene	(ug/l)	1U
Anthracene	(ug/l)	1U
Benzo(a)anthracene	(ug/l)	1U
Benzo(a)pyrene	(ug/l)	1U
Benzo(b)fluoranthene	(ug/l)	1U
Benzo(ghi)perylene	(ug/l)	1U
Benzo(k)fluoranthene	(ug/l)	1U
Benzoic acid	(ug/l)	10U
Benzyl alcohol	(ug/l)	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U
Bis(2-chloroethyl)ether	(ug/l)	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U
Butyl benzyl phthalate	(ug/l)	1U

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BZTO104(e)018564

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
Carbazole	(ug/l)	1U
Chrysene	(ug/l)	1U
Dibenzo(a,h)anthracene	(ug/l)	1U
Dibenzofuran	(ug/l)	1U
Diethyl phthalate	(ug/l)	1U
Dimethyl phthalate	(ug/l)	1U
Di-n-butyl phthalate	(ug/l)	1U
Di-n-octyl phthalate	(ug/l)	1U
Fluoranthene	(ug/l)	1U
Fluorene	(ug/l)	1U
Hexachlorobenzene	(ug/l)	1U
Hexachlorobutadiene	(ug/l)	2U
Hexachlorocyclopentadiene	(ug/l)	5U
Hexachloroethane	(ug/l)	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U
Isophorone	(ug/l)	1U
Naphthalene	(ug/l)	1.3
Nitrobenzene	(ug/l)	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U
N-Nitrosodiphenylamine	(ug/l)	1U
Pentachlorophenol	(ug/l)	6.4

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BZTO104(e)018565

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW2
	DATE	10/23/2003
	RESULT TYPE	Duplicate 1
Phenanthrene	(ug/l)	1U
Phenol	(ug/l)	2U
Pyrene	(ug/l)	1U

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BZTO104(e)018566

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1.4
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018567

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
2-Butanone	(ug/l)	5U	6.7M	5U	5U	5U	9.1M
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	7.3M	5U	5.1	64	6.6M
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018568

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	1U	150	1U	1U	1U	1.9
m,p-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	NT	NT	NT
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	10	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	1U	130	1U	1U	1U	1.6
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	1U	17	1U	1U	1U	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	3.5	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018569

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	B2	G1A	J2	LW001D	LW003D	LW004D
	DATE	10/20/2003	10/24/2003	10/21/2003	10/21/2003	10/24/2003	10/24/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018570

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018571

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	5U	5U	71	6M	5.2M
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	2.9
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018572

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	4.2	12	1U	1U	1U	14
m,p-Xylene	(ug/l)	1U	1U	1U	1U	1U	1.6
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	NT	1.5	1.9M
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	1U	5.4	1U	1U	1U	12
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	2.1	1.3	1U	1U	1U	1.5
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	2.9	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018573

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1.6
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018574

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018575

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	19	5U	5U	11	7.9	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	40	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1.1
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1M	1U	7	1.4M

BZTO104(e)018576

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	16	2.2	5.6	1U	1U	1U
m,p-Xylene	(ug/l)	1.2	1U	1.6	1U	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	33	1U	1U	1.2	1U	1U
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1.6	1U	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	8.6	1U	2	1U	1U	1U
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	3.3	1.3	1.2	1U	1U	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Toluene	(ug/l)	1.2	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018578

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	16
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	4.4
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018579

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5.1	5U	7.9M	11	16	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1.5	1U	3.6
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018580

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	3.8	2.6
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	1U	1U	2.2	27	43	28
m,p-Xylene	(ug/l)	1U	1U	1U	1U	9.4	4.3
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	1U	1.5	NT	NT	NT
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	3	1.7	3.6
n-Propylbenzene	(ug/l)	1U	1U	1U	29	20	35
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	1U	1U	1U	5.6	4.3	5.1
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1.2
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1.4	2.5	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
1,1,1,2-Tetrachloroethane	(ug/l)	1U
1,1,1-Trichloroethane	(ug/l)	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U
1,1,2-Trichloroethane	(ug/l)	1U
1,1-Dichloroethane	(ug/l)	1U
1,1-Dichloroethene	(ug/l)	1U
1,1-Dichloropropene	(ug/l)	1U
1,2,3-Trichlorobenzene	(ug/l)	5U
1,2,3-Trichloropropane	(ug/l)	3U
1,2,4-Trichlorobenzene	(ug/l)	5U
1,2,4-Trimethylbenzene	(ug/l)	17
1,2-Dibromoethane	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,2-Dichloroethane	(ug/l)	1U
1,2-Dichloropropane	(ug/l)	1U
1,3,5-Trimethylbenzene	(ug/l)	5.1
1,3-Dichlorobenzene	(ug/l)	1U
1,3-Dichloropropane	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2-Dichloropropane	(ug/l)	1U

BZTO104(e)018583

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
2-Butanone	(ug/l)	5U
2-Chlorotoluene	(ug/l)	1U
2-Hexanone	(ug/l)	5U
4-Chlorotoluene	(ug/l)	1U
4-Isopropyltoluene	(ug/l)	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U
Acetone	(ug/l)	5U
Acrolein	(ug/l)	50U
Acrylonitrile	(ug/l)	1U
Benzene	(ug/l)	3.4
Bromobenzene	(ug/l)	1U
Bromochloromethane	(ug/l)	1U
Bromodichloromethane	(ug/l)	1U
Bromoethane	(ug/l)	2U
Bromoform	(ug/l)	1U
Bromomethane	(ug/l)	1U
Carbon disulfide	(ug/l)	1U
Carbon tetrachloride	(ug/l)	1U
Chlorobenzene	(ug/l)	1U
Chloroethane	(ug/l)	1U
Chloroform	(ug/l)	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
Chloromethane	(ug/l)	1U
cis-1,2-Dichloroethene	(ug/l)	1U
cis-1,3-Dichloropropene	(ug/l)	1U
Dibromochloromethane	(ug/l)	1U
Dibromochloropropane	(ug/l)	5U
Dibromomethane	(ug/l)	1U
Ethylbenzene	(ug/l)	2.7
Hexachlorobutadiene	(ug/l)	5U
Isopropylbenzene	(ug/l)	29
m,p-Xylene	(ug/l)	4.5
Methyl iodide	(ug/l)	1U
Methyl tert-butyl ether	(ug/l)	NT
Methylene chloride	(ug/l)	2U
Naphthalene	(ug/l)	5U
n-Butylbenzene	(ug/l)	3.9
n-Propylbenzene	(ug/l)	36
o-Xylene	(ug/l)	1U
sec-Butylbenzene	(ug/l)	5.4
Styrene	(ug/l)	1U
tert-Butylbenzene	(ug/l)	1.2
Tetrachloroethene	(ug/l)	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW2
	DATE	10/23/2003
	RESULT TYPE	Duplicate 1
Toluene	(ug/l)	1U
trans-1,2-Dichloroethene	(ug/l)	1U
trans-1,3-Dichloropropene	(ug/l)	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U
Trichloroethene	(ug/l)	1U
Trichlorofluoromethane	(ug/l)	1U
Vinyl Acetate	(ug/l)	5U
Vinyl Chloride	(ug/l)	1U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 10/24/2003 Primary	LW004D 10/24/2003 Primary	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.2	1.6	1.1	0.25U	0.25U	0.66
Gasoline Range Hydrocarbons	(mg/l)	NT	NT	NT	NT	NT	NT
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.4	2	2.9	2.5	1.3	1.1
Gasoline Range Hydrocarbons	(mg/l)	0.25U	0.54	0.88	0.92	0.43	0.35
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	RW2 10/23/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.54	0.25U	0.25U	0.35	3.1	0.73
Gasoline Range Hydrocarbons	(mg/l)	0.25U	0.25U	0.25U	0.25U	0.25U	1.2
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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BZTO104(e)018589

TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE / DATE / RESULT TYPE	RW2 / 10/23/2003 / Duplicate 1
Diesel Range Hydrocarbons	(mg/l)	0.72
Gasoline Range Hydrocarbons	(mg/l)	1.2
TPH-Motor Oil Range	(mg/l)	0.5U

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BZTO104(e)018590

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Arsenic	(mg/l)	0.002	0.035	0.004	0.006	0.018	0.028
Chromium	(mg/l)	0.005U	0.01	0.005U	0.005	0.006	0.009
Copper	(mg/l)	0.002U	0.007	0.004	0.005	0.004	0.006
Lead	(mg/l)	0.001U	0.003	0.001U	0.036	0.001	0.001U
Nickel	(mg/l)	0.01U	0.08	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.006U	0.021	0.006	0.019	0.013	0.017

BZTO104(e)018591

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW006D	LW009D	LW010D	LW011D	LW020D	LW022D
	DATE	10/24/2003	10/24/2003	10/23/2003	10/24/2003	10/28/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Arsenic	(mg/l)	0.016	0.038	0.024	0.005	0.021	0.023
Chromium	(mg/l)	0.008	0.012	0.012	0.016	0.005U	0.15
Copper	(mg/l)	0.005	0.011	0.011	0.015	0.004	0.199
Lead	(mg/l)	0.003	0.002	0.003	0.004	0.001U	0.056
Nickel	(mg/l)	0.01U	0.01U	0.01U	0.02	0.01U	0.14
Zinc	(mg/l)	0.013	0.027	0.024	0.041	0.015	0.4

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BZTO104(e)018592

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Arsenic	(mg/l)	0.021	0.009	0.032	0.007	0.006	0.004
Chromium	(mg/l)	0.135	0.125	0.31	0.012	0.009	0.019
Copper	(mg/l)	0.201	0.163	0.373	0.016	0.02	0.019
Lead	(mg/l)	0.068	0.058	0.15	0.006	0.014	0.006
Nickel	(mg/l)	0.11	0.11	0.28	0.01	0.01	0.02
Zinc	(mg/l)	0.348	0.327	0.83	0.036	0.047	0.04

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BZTO104(e)018593

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	RW2 10/23/2003 Primary	RW2 10/23/2003 Duplicate 1
Arsenic	(mg/l)	0.01	0.004	0.018	0.019	0.018
Chromium	(mg/l)	0.026	0.063	0.35	0.005U	0.005U
Copper	(mg/l)	0.04	0.082	0.37	0.002U	0.002U
Lead	(mg/l)	0.008	0.018	0.12	0.001U	0.001U
Nickel	(mg/l)	0.03	0.05	0.32	0.01U	0.01U
Zinc	(mg/l)	0.07	0.146	0.93	0.062J	0.008J

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BZTO104(e)018594

TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Chloride	(mg/l)	3.1	8.4	4.1	2.9	3.6	11
Dissolved Oxygen	(mg/l)	0.56	2.92	3.09	2.51	2	2.57
pH	(s.u.)	6.71	6.64	6.93	7.07	6.33	6.79
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	560	603	457	381	543	523
Temperature	(c)	14.9	14.7	16.1	17.1	13	14.6
Total Dissolved Solids	(mg/l)	250	310	340	330	290	340
Turbidity	(ntu)	39	337	17	19	279	453

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW014D 10/23/2003 Primary	LW017D 10/23/2003 Primary
Chloride	(mg/l)	2.9	1.2	1.5	5.8	NT	NT
Dissolved Oxygen	(mg/l)	2.86	2.91	5.66	2.8	2.29	3.72
pH	(s.u.)	6.57	6.69	6.48	6.48	6.56	6.47
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	375	255	164	376	238	434
Temperature	(c)	14.7	14.9	17.9	13.3	14.2	15.8
Total Dissolved Solids	(mg/l)	250	160	120	290	NT	NT
Turbidity	(ntu)	79	292	108	651	691	418

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW018D 10/23/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary
Chloride	(mg/l)	NT	5.6	1.7	2.4	2.2	12
Dissolved Oxygen	(mg/l)	4.38	2.04	4.51	0.35	0.57	2.68
pH	(s.u.)	6.53	6.62	6.65	6.78	6.87	6.55
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	425	347	498	547	494	290
Temperature	(c)	17.9	15.8	17.2	15.8	16.9	18.1
Total Dissolved Solids	(mg/l)	NT	220	280	330	340	210
Turbidity	(ntu)	999	782	999	999	999	999

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary
Chloride	(mg/l)	18	24	30	7.3	2.7	3.2
Dissolved Oxygen	(mg/l)	2.65	1.07	3.36	1.96	5.75	0.58
pH	(s.u.)	6.8	6.84	6.69	6.65	6.80	6.51
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	509	329	569	426	436	526
Temperature	(c)	19	15	16	13.8	15.8	14.9
Total Dissolved Solids	(mg/l)	300	240	370	270	270	240
Turbidity	(ntu)	199	489	431	999	999	999

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	O 10/24/2003 Primary	OX008D 10/22/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary	RW2 10/23/2003 Duplicate 1
Chloride	(mg/l)	NT	NT	NT	5.2	4.9
Dissolved Oxygen	(mg/l)	3.07	1.24	3.62	2.37	2.15
pH	(s.u.)	6.62	7	6.75	6.52	6.53
Redox	(mv)	NT	-208	NT	NT	NT
Specific Conductivity	(us)	467	406	644	392	392
Temperature	(c)	14.9	15.5	15.5	13.8	13.8
Total Dissolved Solids	(mg/l)	NT	NT	NT	230	250
Turbidity	(ntu)	384	330	426	88	71

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BZTO104(e)018599

TABLE A-5
KEY TO FOOTNOTES AND ANALYTICAL DATA QUALIFIERS

Footnotes:

NA = Not analyzed.

NM = Not measured.

U = Indicates compound was analyzed for, but was not detected at the reported sample detection limit.

UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.

M = Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.

J = Data validation flag indicating the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R = The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

[ ] = Detected constituent.

(a) The laboratory reported that hydrocarbon patterns that eluted in the gas range were detected; however the elution patterns do not match available standards.

(b) The laboratory reported that these samples have a pattern in the mineral spirits and diesel standard pattern range that does not resemble the standard patterns. This could possibly be a weathered mixture of mineral spirits and diesel.

(c) The laboratory reported that these samples have a pattern in the diesel and motor oil range that do not resemble the diesel or motor oil standard pattern. This could possibly be a weathered fuel.

(d) The laboratory reported that these samples show a pattern in the diesel range that does not resemble the diesel standard pattern. This could possibly be a weathered diesel.

(e) The laboratory reported that these samples show a pattern in the gas and diesel range that does not resemble either of the typical peak patterns for these standards.

(f) These results are questionable because of laboratory blank contamination within this data set and the lack of PCP detections in these wells historically. However, the results were not qualified because the method blank contamination could not be linked directly to the sample results.

APPENDIX B

Groundwater Interim Action Recovery Summary

TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

Monitoring Period	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			Comments
	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	
Fourth Quarter 2000																
October 2000	439,003			0.35									0			Mass removal calculated using 11/00 PCP concentration.
November 2000	305,601	11/9/2000	95	0.24									467,478	11/7/2000	ND (a)	
December 2000	348,720	12/20/2000	39	0.11									497,656	12/6/2000	5.89	
														12/20/2000	9.73	
Quarterly Totals	*1,093,324*			*0.70*				*0.00*					*965,134*			
First Quarter 2001																
January 2001	416,140	1/18/2001	38.8	0.13									239,207	1/18/2001	14.3	
February 2001	335,008	2/13/2001	30	0.08									184,192			
March 2001	332,963	3/7/2001	ND (b)	0.03									517,332	3/7/2001	ND (b)	
Quarterly Totals	*1,084,111*			*0.25*				*0.00*					*940,731*			
Second Quarter 2001																
April 2001	377,931			0.04									275,519			
May 2001	344,252	5/22/2001	12.3	0.04									195,522	5/22/2001	5.29	
June 2001	361,846	6/4/2001	0.68	0.04									563,853			
Quarterly Totals	*1,084,029*			*0.11*				*0.00*					*1,034,894*			
Third Quarter 2001																
July 2001	351,509			0.01									559,015			
August 2001	486,123	8/13/2001	5	0.02									66,876			
Quarterly Totals	*837,632*			*0.03*				*0.00*					*625,891*			
Fourth Quarter 2001																
October 2001	393,168	10/11/2001	ND (a)	0.01									484,158	10/11/2001	ND (a)	
November 2001	319,798			0.01									118,786	11/1 & 11/15/01	ND (a)	
December 2001	361,058	12/6/2001	ND (c)	0.01									717,769	12/6/2001	ND (c)	
Quarterly Totals	*680,856*			*0.02*				*0.00*					*836,555*			
First Quarter 2002																
January 2002	331,224			0.02	1,812			0.01					340,688			Recovered groundwater from HRW-1 from January 22-29. Re-initiated groundwater recovery from HRW-1 on February 28.
February 2002	282,480	2/27/2002	8.6	0.02	58			0.00					437,943			HRW-1 mass removal estimates for January and February are based on the March 12 sampling event.
March 2002	280,814			0.02	40,294	3/12/2002	786	0.26					234,816			RW-2 mass removal estimates for January and March are based on February 27 sampling event.
Quarterly Totals	*894,518*			*0.06*	*42,164*			*0.28*					*1,013,447*			
Second Quarter 2002																
April 2002	292,099			0.19	74,996	4/5/2002	94	0.06					391,263	4/5/02	34.4	
														4/22/02	9.33	RW-2 mass removal estimates for April and May are based on June 27 sampling event.
May 2002	310,584			0.20	23,427	5/29/2002	452	0.09					247,440			
June 2002	272,393	6/27/2002	76	0.17	25,484	6/25/2002	410	0.09					307,810			
Quarterly Totals	*875,076*			*0.56*	*123,907*			*0.23*					*946,513*			
Third Quarter 2002																
July 2002	272,771			0.08	51,111			0.18					188,300	7/24/2002	2.09	
August 2002	270,746	8/27/2002	36	0.08	7								301,613	8/20/2002	9.15	HRW-1 shut down on July 24 due to dry pumping conditions and potential biofouling of the well. HRW-1 mass removal rate estimate based on June 2002 data.
September 2002	143,862			0.04	0				110,000	9/23/2002	47.0		369,469	9/23/2002	11.8	RW-2 temporarily shut down on September 25. Water being intercepted from SDM-1 and pumped to treatment system beginning on September 18.
Quarterly Totals	*687,179*			*0.21*	*51,118*			*0.18*					*859,382*			RW-2 mass removal rates based on August 27 sampling event. Total Volume pumped from SDM-1 estimated based on throughout of WWTP and volume recovered from RW-2; Flowmeter to be installed for SDM-1 in October 2002.
Fourth Quarter 2002																
October 2002	177,937			0.06	0				Not metered				112,129	10/3/2002	8.84	
November 2002	275,033	11/13/2002	37	0.09	0				95,157				399,747			The storage tank gauge was moved to groundwater sump SDM-1 on November 1.
December 2002	418,846			0.13	0				124,894				507,766			
Quarterly Totals	*871,816*			*0.27*	*0*			*0.00*				*0.00*	*1,019,642*			RW-2 mass removal rates based on November 13 sampling event.

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TABLE B-1
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			
Monitoring Period	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	Comments
First Quarter 2003																
January 2003	417,646			0.12	0				166,663			0.38	574,451	1/15/2003	11.6	
February 2003	398,299	2/11/2003	33	0.11	0				192,395	2/13/2003	290	0.43	483,579			
March 2003	458,160			0.13	0				210,400			0.47	624,807			SDM-1 mass removal rates based on February 13 sampling event.
Quarterly Totals	*1,140,149*			*0.35*	*51,118*			*0.00*	*95,157*			*1.28*	*1,371,258*			RW-2 mass removal rates based on February 11 sampling event.
Second Quarter 2003																
April 2003	445,275			0.04	0				55,037			0.00	481,816	4/9/2003	22.2	
May 2003	455,994	5/7/2003	12	0.05	0	Not Analyzed			0	5/7/2003	0.93	0.00	469,079			
June 2003	385,658			0.04	4,175				89,243			0.00	446,127			RW-2 mass removal rates based on April 8, 2003 sampling event.
Quarterly Totals	*1,286,927*			*0.13*	*4,175*			*0.00*	*144,280*			*0.00*	*1,397,022*			
Third Quarter 2003																
July 2003	330,738	7/28/2003	<5.0	0.01	30,104	7/28/2003	370	0.09	128,562	7/28/2003	409	0.44	441,023	7/11/2003 7/30/2003	87.4 8.6	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
August 2003	366,307	8/27/2003	10	0.03	7,388			0.02	119,831	8/27/2003	120	0.41	397,748	8/4/2003 8/6/2003 8/11/2003	<5.0 <5.0 <4.76	HRW-1 mass removal rates based on July 28 sampling event.
														8/13/2003 8/18/2003 8/20/2003 8/25/2003 8/27/2003	<4.83 <4.75 <5.16 23.8 36.5	SDM-1 mass removal rates based on July 28 sampling event. RW-2 mass removal rates based on August 27 sampling event.
September 2003	262,403			0.02	0			0.00	87,439			0.09	479,703	9/3/2003 9/5/2003 9/9/2003 9/23/2003 9/29/2003	19.3 19.6 7.09 16.9 5.96	
Quarterly Totals	*959,448*			*0.07*	*37,492*			*0.12*	*335,832*			*0.94*	*1,318,474*			
Fourth Quarter 2003																
October 2003	298,092	10/23/2003	8.1	0.02					74,025	10/20/2003	43	0.03	350,921	10/6/2003 10/13/2003 10/20/2003 10/30/2003	<4.75 <4.76 <4.84 <5.19	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
November 2003	216,630			0.01					45,472			0.02	216,711	11/3/2003 11/10/2003 11/17/2003 11/21/2003	<4.73 <4.78 <4.84 <4.79	SDM-1 mass removal rates based on October 20 sampling event. RW-2 mass removal rates based on October 23 sampling event.
December 2003	367,462			0.02					95,504			0.03	488,055	12/1/2003 12/15/2003 12/29/2003 12/30/2003	<4.79 <4.92 30.40 31.10	
Quarterly Totals	*882,184*			*0.06*				*0.00*	*215,001*			*0.08*	*1,055,687*			
Grand Totals	***12,377,249***			***2.83***	***309,974***			***0.80***	***790,270***			***2.30***	***13,384,630***			

ND = Not Detected.

(a) PCP not detected above the detection limit of 5 µg/L; concentration-dependent calculations based on half the detection limit.
(b) PCP not detected above the detection limit of 25 µg/L; concentration-dependent calculations based on half the detection limit.
(c) PCP not detected above the detection limit of 5.25 µg/L; concentration-dependent calculations based on half the detection limit.

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APPENDIX C

Measurement and Evaluation Procedures

APPENDIX C
MEASUREMENT AND EVALUATION PROCEDURES

This appendix discusses the procedures for conducting groundwater level and product (where observed) measurements during the quarterly groundwater events and the method used to evaluate the groundwater elevations.

MEASUREMENT PROCEDURES

Groundwater level measurements and the check for the presence of product were conducted using an electronic oil-water interface probe. Measurements were taken from the top of the PVC well casing at a marked survey point or at the north side of the casing, and recorded to the nearest 0.01 ft. Measurements in the Willamette River were taken from a surveyed PK nail with washer located on the south side of the dock. Surveyed reference elevations for each water level measurement location, obtained by a licensed land surveyor (ZTec Engineers, Inc., Portland, Oregon), are shown in Table A-2 of this report.

Water level measurements for the quarterly event were obtained over about a 2.5-hour period beginning at about 2.5 hours after a predicted mean river stage, based on predictions for the St. Johns station on the Willamette River. The timing for water level measurements was scheduled to estimate a mean water level elevation or elevation minimally influenced by river stage, and to reduce the time-dependent variation between wells screened in the same water-bearing zone. The timing of the water level measurements was based on average time lag calculations presented in the additional groundwater investigation technical memorandum (Landau Associates 1998), aquifer test report (Landau Associates 1999), and previous quarterly measurements.

GROUNDWATER LEVEL EVALUATION METHODS

For evaluation purposes, the groundwater level measurements were converted from depth-to-water readings to groundwater elevations using the survey information for each location. At locations where product was observed, the groundwater elevations were adjusted to account for the presence of product using the method defined by Lenhard and Parker (1990). Groundwater elevations for the upper and lower zones were contoured using GIS/Key or manually in conjunction with the evaluations conducted to evaluate the capture zone of the groundwater interim action for the upper and lower zones.

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GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the shallow wells using a peristaltic pump attached to dedicated polyethylene tubing immediately following purging. The deep wells were sampled with disposable bailers, with the following exceptions: the sample from RW-2 was collected from the in-line sampling port on the groundwater interim action system, and the sample from the groundwater intercept system at SDM-1 was collected from the discharge line at the output into Tank 16804. Wells were purged using a peristaltic pump or a centrifugal purge pump. Purging continued until at least 3 casing volumes of water had been removed and specific conductance and temperature had stabilized or until the well purged dry. Four replicate measurements of field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature) were collected at each well during sampling. To prevent degassing of volatile organic compounds during sampling, the pumping rate was maintained below about 100 milliliters per minute. All sampling was conducted in accordance with the Phase I/II RI/FS work plan (Landau Associates 1996) and appropriate provisions of the revised quality assurance project plan and project health and safety plan (Landau Associates 2001). A more detailed description of groundwater sampling procedures is provided in the Phase II RI report (Landau Associates 2000).

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APPENDIX D

Summary of Modifications to Quarterly Groundwater Analysis Program

APPENDIX D
SUMMARY OF MODIFICATIONS TO QUARTERLY GROUNDWATER ANALYSIS PROGRAM

A summary of modifications to the quarterly groundwater monitoring program for the Time Oil Northwest Terminal in Portland, Oregon is presented below by the date of first implementation. A reference list for the modifications is attached.

- ***Second Quarter 1998*** (Landau Associates 1998; DEQ 1998):
  - Annual sampling of east property wells LW-101S, LW-102S, LW-103S, and LW-104S
  - Elimination of 2-chloroethylvinylether from the volatile analyte list
  - Reduction of the suite of metals analyses to include only arsenic, chromium, copper, lead, nickel, and zinc
  - Quarterly analysis of only metals in well K and only chlorinated phenols and metals in well H
  - Elimination of PCB analysis
  - Annual analysis for major ions; quarterly analysis for chloride and dissolved oxygen.
- ***First Quarter 1999*** (Landau Associates 1999; Urbanowicz, K., 12 February 1999, personal communication):
  - Analysis of polycyclic aromatic hydrocarbons (PAHs) using analytical techniques that provide lower detection limits at upper zone wells LW-2S, LW-7S and LW-101S and at lower zone wells G1A, O, and LW-4D for the first quarter 1999 event only
  - Elimination of sampling at well J3.
- ***Second Quarter 2000*** (Landau Associates 2000a; DEQ 2000):
  - Elimination of dioxin/furan analyses.
- ***Third Quarter 2000*** (Landau Associates 2000b; Roick 2000):
  - Reduction of sampling frequency of wells H, L, and LW-5S from quarterly to annually.
- ***Second Quarter 2001*** (Landau Associates 2001a, 2001b; Roick 2001):
  - Reduction of the list of chlorinated phenols being analyzed by EPA Method 8040 to pentachlorophenol (PCP) only using EPA Method 8270 SIM
  - Reduction of the frequency of total petroleum hydrocarbon (TPH) analysis from quarterly to annually at upper zone wells J1 and LW-1S; lower zone wells B2, J2, LW-1D; and deep sand unit well LW-12D2. In addition, TPH analysis was eliminated for the following wells: upper zone wells D, L, LW-5S, LW-101S through -104S, and lower zone well LW-3D.

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APPENDIX E

Data Validation Report

TECHNICAL MEMORANDUM

LANDAU ASSOCIATES
ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Rebekah Brooks, Project Manager

cc: Tom Roick, Oregon Department of Environmental Quality (DEQ)
Kevin Murphy, Time Oil Co.
Patty Dost, Schwabe, Williamson & Wyatt
Mike Tischuk, Beazer East, Inc.

FROM: Stacy Pischer and Terry McGourty

DATE: February 11, 2004

RE: FOURTH QUARTER 2003 GROUNDWATER MONITORING
LABORATORY DATA QUALITY EVALUATION
TIME OIL NORTHWEST TERMINAL

This technical memorandum provides the results of a data quality evaluation for 62 groundwater samples and 3 trip blanks collected at the Time Oil Northwest Terminal on October 20 through 24 and October 27 and 28, 2003 for the Phase II remedial investigation (RI) fourth quarter 2003 groundwater monitoring event. A data quality evaluation was performed for analyses of total petroleum hydrocarbons (DEQ TPH-D, TPH-D extended, and TPH-G); volatile organic compounds [VOCs; U.S. Environmental Protection Agency (EPA) Method 8260B]; pentachlorophenol [PCP; EPA Method 8270 with selected ion monitoring (SIM)]; semivolatile organic compounds (SVOCs; EPA Method 8270C); selected priority pollutant metals (EPA Method 6010/7000 series); chloride (EPA Method 325.2); total dissolved solids (TDS; EPA Method 160.1); and dioxins/furans (Method 8290). Dioxins/furans analyses were performed by Columbia Analytical Services (CAS) in Houston, Texas. All other analyses were performed by Analytical Resources, Inc. (ARI), located in Seattle, Washington. This data quality evaluation covers ARI data packages FY64, FY72, FY82, FZ04, and CAS data package E2300731. The data quality evaluation was performed in accordance with the revised quality assurance project plan (QAPP) contained in Appendix C of the *Phase III Remedial Investigation* work plan (Landau Associates 2001), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review* and *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994a,b).

The evaluation considered the following elements:

- Chain-of-custody records
- Holding times
- Surrogate spike recoveries
- Matrix spike and matrix spike duplicate (MS/MSD) results
- Laboratory control sample (LCS) results

- Method blank results
- Duplicate (laboratory and field) results
- Reporting limits
- Overall data quality and completeness.

Data validation qualifiers are added to sample results based on the evaluation of data quality. The absence of a data qualifier indicates that the datum is acceptable without qualification. Applicable data validation qualifiers are summarized in Table 1. The data quality evaluation is summarized below.

CHAIN-OF-CUSTODY RECORDS

Signed chain-of-custody records accompanied each data package. The laboratory received all samples in good condition and all analyses requested were performed.

HOLDING TIMES

For all analyses and all samples, the time between sample collection, extraction, and analysis was determined to be within EPA and project-specified holding times. No qualification of the data was necessary.

METHOD BLANK RESULTS

Method blanks were analyzed with each batch of samples for each analysis. No contamination was detected in the method blanks. No qualification of the data was necessary.

FIELD BLANK RESULTS

In accordance with the QAPP, field equipment rinsate blanks were not collected (all sampling equipment was dedicated and/or disposable, which eliminated the potential for cross contamination). Trip blanks were submitted for analysis of VOCs. No VOCs were detected in the trip blanks. No qualification of the data was necessary.

SURROGATE SPIKE RECOVERIES

Surrogate spikes were performed with each organic analysis (or internal standards for dioxin/furan analysis). Recovery values for the surrogate spikes were within the current laboratory control limits for the project samples. No qualification of the data was necessary.

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MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) RESULTS

For data package FY64, one MS/MSD pair was performed with the VOC, SVOC, and PCP analyses, and one MS was performed with the total metals and chloride analyses. For data package FY72, one MS/MSD pair was performed with the PCP analyses, and one MS sample was performed with the chloride analyses. One MS/MSD pair was performed with the total metals analyses reported in data package FY82. Two MS/MSD pairs were performed with the VOC analyses, and one MS/MSD pair was performed with the SVOC, PCP, TPH-G, TPH-D, total metals, and chloride analyses reported in data packet FZ04. No MS/MSD was performed for TDS. Each MS/MSD was performed using a project sample. Recoveries and relative percent differences (RPDs) for the MS/MSDs were within the laboratory control limits. No qualification of the data was necessary.

LABORATORY DUPLICATE RESULTS

At least one laboratory duplicate sample was performed with the TDS analyses reported each data package, and with the chloride analyses reported with data packages FY64, FY72, FZ04. All RPDs were within the laboratory control limits. No qualification of the data was necessary.

LABORATORY CONTROL SAMPLE (LCS) RESULTS

Except for the analysis of TDS, at least one LCS (or blank spike sample) was analyzed with each batch of samples for each analysis. LCS duplicates were also performed with some of the analyses. Recoveries and RPDs for the LCSs and associated duplicates were within laboratory control limits. No qualification of the data was necessary.

FIELD DUPLICATE RESULTS

Two blind field duplicate pairs (RW2/W and LW030S/X) were collected during this sampling event. The project-specified criterion of at least one blind field duplicate sample per 20 samples was met. A project-specified control limit of 20 percent was used to evaluate the RPDs between the duplicate samples except when the sample results were within five times the reporting limit. In these cases, a project-specified control limit of plus or minus the reporting limit was used. RPDs for both duplicate sample pairs submitted for analysis were within the project-specified control limits, except as indicated in Table 1 and as discussed below:

- The RPD between 2-methylnaphthalene results and the zinc results for field duplicate pair RW2/W exceeded the project-specified control limit of 20 percent. Detected concentrations for these compounds in samples RW2 and W were qualified as estimates (J), as indicated in Table 1.

REPORTING LIMITS

No qualifiers were signed as a result of elevated reporting limits.

OTHER

Other factors which required qualification of the data include the following:

- The 1,2,3,7,8-PeCdd result for sample LW011S was qualified by the laboratory as an estimated maximum possible concentration (EMPC); therefore, the 1,2,3,7,8-PeCdd result for this sample was qualified as nondetect (U) at the EMPC, as indicated in Table 1.

- The 2,3,7,8-TCDD and 1,2,3,6,7,8-HxCDD results for samples RW-1 were qualified by the laboratory as EMPCs; therefore, the 2,3,7,8-TCDD result and the 1,2,3,6,7,8-HxCDD result for this sample were qualified as nondetects (U) at the EMPC, as indicated in Table 1.

- The results for 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDD, OCDD, and OCDF for sample LW011S were qualified as estimates (J) by the laboratory because the concentrations exceed the method calibration limits.

OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, field duplicates, matrix spike duplicates, and laboratory control samples duplicates. Data accuracy was evaluated through surrogate spikes, matrix spikes, and laboratory control samples. Based on this data quality evaluation, all of the data were determined to be acceptable and no data were rejected.

The completeness for this set of data is 100 percent, which exceeds the project-specified goal of 90 percent.

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EPA. 1994a. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. U.S. Environmental Protection Agency.

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Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

TABLE 1

SUMMARY OF DATA QUALIFIERS
FOURTH QUARTER 2003 EVENT GROUNDWATER SAMPLE RESULTS
ARI DATA PACKAGES FY64, FY72, FY82, FZ04 AND CAS DATA PACKAGE E2300731

Data Package Number	Analyte	Qualifier	Sample Number	Reason
FY82	2-Methylnaphthalene	J	W RW2	High field duplicate RPD
FY82	Zinc	J	W RW2	High field duplicate RPD
E2300731	1,2,3,7,8-PcCdd	U	LW011S	Estimated maximum possible concentration
E2300731	2,3,7,8-TCDD	U	RW-1	Estimated maximum possible concentration
E2300731	1,2,3,6,7,8-HxCDD	U	RW-1	Estimated maximum possible concentration
E2300731	2,3,7,8-TCDF	J	LW011S	Concentration exceeds method calibration limit
E2300731	1,2,3,4,6,7,8-HpCDD	J	LW011S	Concentration exceeds method calibration limit
E2300731	OCDF	J	LW011S	Concentration exceeds method calibration limit
E2300731	OCDD	J	LW011S	Concentration exceeds method calibration limit

APPENDIX F

Laboratory Data

Draft Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report Time Oil Northwest Terminal Portland, Oregon

May 6, 2004

Prepared for

Time Oil Co.
2737 W. Commodore Way
Seattle, Washington 98199

LANDAU ASSOCIATES

130 2nd Avenue South
Edmonds, WA 98020
(425) 778-0907

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10	PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D, April 1997 – October 2003
11	PCP Concentrations in Groundwater, Upper Zone, Fourth Quarter 2003
12	PCP Concentration in Groundwater, Lower Zone, Fourth Quarter 2003

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1.0 INTRODUCTION

This report provides the results of the fourth quarter 2003 groundwater monitoring event conducted as part of the ongoing Phase II and III remedial investigation (RI) activities at the Time Oil Northwest Terminal (terminal) in Portland, Oregon. This report also provides performance and status information for the Phase II groundwater interim action currently ongoing at the terminal. Prior quarterly groundwater reports have included groundwater monitoring results collected from wells drilled for the Phase II RI within and downgradient of the former PCP mixing area. For the first time, this report also incorporates groundwater monitoring data that were collected from wells drilled as part of the Phase III RI in the fall of 2003. The Phase III RI monitoring wells were installed to address data gaps within the Phase III study area, which focuses on the Main Terminal and Bell Terminal tank farm areas and other areas of the terminal not covered under previous investigations. The data from this quarterly event, in conjunction with future monitoring events, will be used to assess contaminant distribution and groundwater level trends across the terminal. Additional discussion of these data are included in the upcoming Phase III RI report (Landau Associates 2004a; in production)

The terminal is a former bulk petroleum storage and transfer facility owned by Time Oil Co. (Time Oil). Time Oil ceased operations at the terminal on October 31, 2001. The terminal is located in the industrialized Rivergate area of North Portland, Oregon (Figure 1). Quarterly groundwater monitoring has been conducted at the terminal since April 1997 for the Phase II wells. As indicated above, this is the first quarter monitoring event for the Phase III wells. Groundwater monitoring procedures are conducted in accordance with the *Phase I/II Remedial Investigation/Feasibility Study (RI/FS)* work plan (Landau Associates 1996), and the Phase III Remedial Investigation (RI) Work Plan (Landau Associates 2001). The groundwater monitoring locations at the terminal are shown on Figure 2.

The fourth quarter 2003 groundwater monitoring event was conducted from October 22 to October 28, 2003. This report summarizes groundwater elevation and groundwater quality data for the fourth quarter 2003, transmits analytical laboratory data packages and the associated data validation report, and presents an evaluation of data collected during the fourth quarter 2003 (October 1-December 31, 2003) for the groundwater interim action in the upper and lower water-bearing zones relative to compliance with defined performance criteria.

The chemical analyses conducted during this monitoring event for each groundwater sampling location are summarized in Appendix A, Table A-1. Groundwater level measurements collected at the terminal for the fourth quarter 2003 event and for the previous RI quarterly events since March 1997 are provided in Appendix A, Table A-2. Groundwater quality data for the fourth quarter 2003 event are provided in Tables A-3 and A-4 for the upper and lower zone wells, respectively. Data validation

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qualifiers included in Tables A-3 and A-4 are defined in Table A-5. A summary of the fourth quarter 2003 groundwater interim action recovery data is provided in Appendix B. Procedures for collection of water level measurements and groundwater samples and methods for evaluation are provided in Appendix C. Modifications to the Phase II groundwater quality sampling and analysis requirements, as approved by the Oregon Department of Environmental Quality (DEQ), are documented and referenced in Appendix D. The data validation report for the fourth quarter 2003 data is provided in Appendix E. Laboratory data packages for these data are provided in Appendix F.

As requested by DEQ, a summary of the quarterly water quality data (detected constituents) since March 1997 for the upper and lower zone wells is being provided to DEQ either electronically or on computer diskette. These tables will continue to be updated following each quarterly event.

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2.0 FOURTH QUARTER 2003 GROUNDWATER MONITORING EVENT

The fourth quarter 2003 groundwater monitoring event was conducted from October 22 through October 28, 2003. The quarterly event included measurement of groundwater levels at existing and newly installed monitoring wells and well points, recovery wells, and a river gauge established on the south side of the dock extending into the Willamette River (Figure 2); measurement of product thickness in all site wells, if observed; and collection of groundwater quality samples. The fourth quarter event included the sampling of the routine Phase II monitoring wells; existing selected monitoring wells associated with the Phase II *in situ* chemical oxidation (ISCO) pilot study (OX-1S, OX-2S, OX-3S, OX-4S, LW-11S, and RW-1; ISOTEC 2003); and wells monitored as part of the Phase II groundwater interim action (LW-13S, LW-14D, LW-17D, and LW-18D). Also sampled during the fourth quarter event were five new wells (OX-5S, OX-6S, OX-7S, OX-8S, and OX-8D) installed during September 2003 for use during future ISCO remediation activities; and twenty-two new monitoring wells installed during September 2003 as part of the Phase III RI activities for the terminal. Because the types of contaminant releases to groundwater monitored by the Phase II and Phase III wells are different, groundwater quality is discussed separately for Phase II and Phase III monitoring locations in Sections 2.2 and 2.3. For discussion purposes, Phase II refers to monitoring locations within and downgradient of the former PCP mixing area and warehouse, and Phase III refers to monitoring locations within and downgradient of the Main Terminal and Bell Terminal tank farms and associated petroleum storage operation areas.

A summary of the types of analyses conducted at each sample location for the fourth quarter 2003 event are provided in Table A-1. The newly installed Phase III wells are also indicated on this table. This section presents a summary of the results for the groundwater level measurements and groundwater quality sampling, and provides an evaluation of groundwater flow and contaminant occurrence and trends. The performance and status of the groundwater interim action is discussed in Section 3.0.

2.1 GROUNDWATER LEVEL AND PRODUCT MEASUREMENTS

Groundwater levels were measured at each well for the fourth quarter 2003 event on October 23, 2003 and each day prior to sample collection. Each well was also checked for the presence of product. The measurement and evaluation results are provided in the following sections. The measurement and evaluation procedures are provided in Appendix C. The groundwater measurement locations are shown on Figure 2. Groundwater level measurements conducted for the quarterly groundwater sampling events since March 1997 are provided in Table A-2. Historical (pre-Phase II RI) groundwater level

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measurements conducted from 1993 through 1996 were provided in the Phase II RI report (Landau Associates 2000a).

2.1.1 Product Measurements and Product Recovery

During the fourth quarter 2003 event, a trace amount of product was noted in well P. Measurable product was observed at wells PZ-2 and OX-2S, located downgradient of the former PCP mixing area at thicknesses of 0.24 ft and 0.31 ft, respectively, and at well Q, located within the Main Terminal tank farm area at a thickness of 0.06 ft. Product recovery activities currently being conducted at wells Q, PZ-2, and OX-2S consist of placing product absorbent socks in each of these wells. The absorbent socks were removed and replaced with fresh socks in mid-November and December 2003 and mid-January 2004. Used absorbent socks have been placed in a 55-gal drum onsite for future disposal following completion of product recovery activities at these well locations or when the drum is full. Monitoring of these wells and all site monitoring wells for the presence of product will continue during future quarterly monitoring events.

2.1.2 Upper Water-Bearing Zone

Groundwater elevations measured in the shallow wells were used to estimate groundwater flow conditions in the upper water-bearing zone (upper zone). Groundwater elevation contours for the upper zone are presented on Figure 3. The addition of the groundwater level elevations in the Phase III wells confirms that groundwater flow in the upper zone across the Main Terminal tank farm area and the Bell Terminal is generally to the west-southwest toward the Willamette River. The localized shift in groundwater flow to the south in an area southwest of the former pentachlorophenol (PCP) mixing area appears to be due to the influence of the east-west trending storm drain located about 170 ft north of the southern property boundary (Figure 2). The groundwater flow pattern observed in the upper zone does not vary significantly seasonally based on the previous years of monitoring. Groundwater elevations measured at newly installed wells located along the confining unit boundary reflect the change from two water-bearing zones (upper and lower) to a single unconfined water-bearing zone. For example, during the summer and fall months, well LW-10S and piezometers PZ-3 and PZ-4 are typically dry because they are located near the extent of the confining unit. Also, in the Bell Terminal area, wells LW-28S and LW-33S were dry during the October 2003 groundwater sampling event where the confining unit is thin and likely discontinuous. At Phase III RI well, LW-27S, the water level appears to represent an intermediate groundwater elevation between the upper zone and lower zone, thereby likely indicating the edge of the confining unit and the transition from two groundwater zones to one in this area. The groundwater flow

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patterns in this area mirror the western extent of the confining unit boundary and groundwater gradients increase sharply where groundwater from the upper and lower zones converge.

2.1.3 LOWER WATER-BEARING ZONE

Groundwater elevations measured in the deep wells were used to estimate groundwater flow conditions in the lower zone water-bearing zone (lower zone) and in the area where the confining zone is absent. Groundwater elevation contours for the lower zone are presented on Figure 4. RW-2 pumped continuously during the fourth quarter 2003, except for periodic shutdowns for system maintenance. The contours indicate that pumping of recovery well RW-2 for the groundwater interim action has modified groundwater flow in the lower zone in proximity to the pumping well, such that hydraulic capture is achieved to the west near LW-18D and to the south near LW-10D. Groundwater flow outside the RW-2 capture zone is generally toward the west/southwest toward the Willamette River. The groundwater flow observed during this quarterly event is consistent with the trend seen since the startup of RW-2 in October 2000.

2.2 PHASE II GROUNDWATER QUALITY

Phase II groundwater quality was evaluated based on results from 17 upper zone wells and 16 lower zone wells located within and downgradient of the former PCP mixing area and warehouse. Fourth quarter 2003 Phase II RI groundwater quality samples were collected from October 22 to October 24, 2003. Monitoring wells LW-9S, LW-10S, LW-28S, LW-33S, and OX-4S, and piezometers PZ-3 and PZ-4 were dry and not sampled as part of this event. Also, monitoring wells OX-2S and Q contained measurable product (see Section 2.1.1) and were not sampled as part of this quarterly event. Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: semivolatile organic compounds [SVOCs; U.S. Environmental Protection Agency (EPA) Method 8270]; volatile organic compounds (VOCs; EPA Method 8260); PCP (EPA Method 8270 SIM); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). Additionally, groundwater from eight monitoring wells was analyzed for diesel- and motor oil-range total petroleum hydrocarbons (TPH; NWTPH-Dx). Samples from wells B1, K, LW-1S, LW-7S, LW-8S, LW-11S, RW-1, and RW-2 were also analyzed for gasoline-range TPH (NWTPH-G). The previously listed laboratory analyses were conducted by Analytical Resources, Inc., in Seattle, Washington (ARI). Dioxin and furan (EPA Method SW8290) analysis was conducted at LW-11S, OX-8S and RW-1 by Columbia Analytical Services in Houston, Texas. The dioxin/furan analyses were conducted to document baseline conditions prior to

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implementation of the *in situ* chemical oxidation (ISCO) technique; these results are discussed in the work plan for implementation of the ISCO interim remedial action (Landau Associates 2004b).

Analytical results for the fourth quarter 2003 event are provided in Tables A-3a through A-3g for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the Phase II results are provided in the following sections. Data qualifier definitions are included in Table A-5.

2.2.1 UPPER WATER-BEARING ZONE

The analytical results from the Phase II upper zone wells indicate that samples from 12 wells contained detectable concentrations of PCP during the fourth quarter 2003 event. The highest concentrations were observed in the samples from wells OX-6S and LW-11S [2,100 and 900 micrograms per liter (µg/L), respectively]. Well OX-6S is located within the former PCP mixing area, while LW-11S is located downgradient of this area. During the previous quarterly event, the highest detections were in samples from wells OX-2S (5,800 J µg/L) and OX-4S (2,200 J µg/L). However, during this quarterly event, OX-2S contained measurable product and OX-4S was dry, so these wells were not sampled. In addition, groundwater from downgradient monitoring wells OX-1S, OX-3S, OX-7S, OX-8S, LW-4S, LW-13S, J1, and RW-1 contained PCP concentrations ranging from 0.65 to 720 µg/L. The sample from newly installed monitoring well OX-5S, which is within the footprint of the former PCP warehouse and slightly upgradient of OX-6S, was nondetect. The low level PCP detections at wells LW-19S, LW-20S, and LW-21S are likely residual concentrations related to historical pumping of well M (now abandoned) for groundwater recovery and resulting PCP residual migration from the former PCP mixing area.

Other SVOCs were detected at low concentrations; none were greater than 6.3 µg/L [Bis 2-thylhexyl)phthalate at well B1]. The highest concentrations of VOCs (ethylbenzene; isopropylbenzene; 1,2,4-trimethylbenzene; n-propylbenzene; naphthalene, and xylenes) were detected in samples collected at wells LW-7S, LW-8S, and RW-1. The highest concentrations of TPH-D and TPH-G were observed at well RW-1 [5.8 milligrams per liter (mg/L) and 7 mg/L, respectively]. The highest concentrations of metals were detected in samples collected at wells B1 and LW-8S. Results from the dioxin and furan analyses at wells LW-11S, OX-8S, and RW-1 indicate total dioxin/furan concentrations ranging from 0.7011 to 855.097 ng/L (as TEQ); these results will be discussed more in the work plan for the ISCO interim remedial action

2.2.2 LOWER WATER-BEARING ZONE

During this quarter, PCP was detected in the following lower zone wells: LW-3D, LW-6D, LW-10D, LW-18D, OX-8D, and RW-2. Concentrations in these wells ranged from 0.58 µg/L (in well LW-18D) to

8.1 µg/L (in well RW-2). This was the third consecutive quarterly detection of PCP in wells LW-6D and LW-10D. The PCP concentration detected at LW-10D (0.94 µg/L), was a decrease from the historical maximum PCP concentration of 5 µg/L detected during the third quarter of 2003. None of the other SVOCs detected were at concentrations greater than 7.2J µg/L (2-methylnapthalene at RW-2). The highest concentrations of VOCs were detected in the samples collected from wells G1A and RW-2; however, none of the detected concentrations were greater than 150 µg/L (isopropylbenzene at G1A). The highest detected concentration of TPH was 2.2 mg/L (diesel-range TPH at G1A). The highest concentrations of metals (arsenic, nickel, lead, and zinc) were detected in samples collected from wells G1A, LW-9D, and LW-11D.

2.2.3 WATER LEVEL AND CONTAMINANT TRENDS

Potential trends between water levels and detected concentrations of selected Phase II constituents were evaluated by generating time versus groundwater elevation and time versus concentration plots for the period covered by the Phase II RI quarterly sampling events (April 1997 or first available through the current quarterly event). Plots of PCP concentrations (maximum concentrations of EPA Methods 8270 and 8040 for events prior to the second quarter 2001 event) versus time for selected upper zone wells (LW-4S, LW-11S, LW-13S, and RW-1); selected lower zone wells (LW-4D, LW-11D, and RW-2); and paired wells (LW-4S and LW-4D) are provided on Figures 5 through 7. Plots of groundwater elevations and PCP concentrations for upper zone wells LW-4S and LW-11S are shown on Figures 8 and 9. Figure 10 shows groundwater elevations and PCP concentrations at lower zone well LW-4D plotted with the Willamette River stage.

As shown on Figure 5, PCP concentrations in the selected upper zone wells show variable concentration trends over time (note the logarithmic scale). The PCP concentration at RW-1 (350 µg/L) has continued the decreasing trend started during the fourth quarter of 2002, but the PCP concentration is still greater than the historic low recorded at this well in November 2001 (17 µg/L). The PCP concentration at LW-11S continued the decreasing trend (900 µg/L) shown during the two previous quarterly events (3,800 and 1,700 µg/L, respectively). Concentrations are lower than those seen since the first quarter 2002, but higher than the historical low observed during the first quarter 2001 (460 µg/L). The decreasing trend in PCP concentration at well LW-11S during recent quarters likely reflects a response to seasonal groundwater fluctuations. The PCP concentration at LW-13S has typically been reported at or near the detection limit since the fourth quarter 2001 event, but concentrations increased to slightly greater than 1 µg/L during the past two sampling events. The PCP concentration at well LW-4S (3.9 µg/L) continued the decreasing trend observed since the 1,400 µg/L detection in the first quarter of 2003. Historically, well LW-4S has shown intermittent increases in PCP concentration. As

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illustrated again in the results from this quarter, these increases in PCP concentration appear to be related to seasonal changes in groundwater elevation and resulting changes in PCP concentrations at locations upgradient and within the source areas, followed by downgradient migration of PCP (Figure 8).

As shown on Figure 6 (note the logarithmic scale), PCP concentrations in the lower zone at RW-2 have generally decreased since June 2002, but are greater than the historic low PCP concentration recorded at this well in June 2001 (0.68 µg/L). The PCP concentration at RW-2 for this quarter is only slightly less (8.1 µg/L) than during last quarter (10 µg/L). The detected PCP concentrations at wells LW-11D and LW-4D were lower compared to the previous quarter, but were still higher then the nondetected concentrations observed between the second quarters of 2002 and 2003.

As in previous quarters, PCP concentrations detected this quarter at selected lower zone well locations where PCP has historically been detected are generally lower than the concentrations in the upper zone wells at the same location or similar locations. The PCP concentration trends for paired wells LW-4S and LW-4D (Figure 7) indicate that contamination observed in the lower zone at this location does not appear to be related to the upper zone at the same location, except possibly between December 1999 to November 2001. Overall, PCP concentrations at lower zone well LW-4D have decreased over time, with concentrations below the detection limit mainly observed since groundwater recovery began at nearby well RW-2 in October 2000. However, at adjacent upper zone well LW-4S, intermittent increases in PCP concentration have been observed, as discussed earlier.

Fluctuations in groundwater elevations in the upper zone reflect typical seasonal variability with seasonal lows during the fall months (October-November) and seasonal highs during the winter and early spring months (January-March) since monitoring began in March 1997. The groundwater levels during the past year are similar to those observed during 2000 and 2002. Trends in PCP concentrations can be correlated with groundwater elevations at some locations. Figure 8 shows that there appears to be a direct correlation between the water levels and PCP concentrations in the upper zone at well LW-4S since the first quarter of 2002, as discussed earlier. Figure 9 shows that the PCP concentration in the upper zone at well LW-11S generally follows the water level trends in that zone over time. In the lower zone, groundwater levels show similar trends with seasonal fluctuations in the Willamette River, as shown by the plot of groundwater elevations at LW-4D with river stage on Figure 10. However, there appears to be no correlation between PCP concentrations and groundwater/river stage elevations at LW-4D.

Contaminant and groundwater level trends will continue to be evaluated and discussed for future quarterly events.

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2.3 PHASE III GROUNDWATER QUALITY

An assessment of Phase III groundwater quality was based on results collected from 8 upper zone wells and 11 lower zone wells mainly located in the Main Terminal tank farm and Bell Terminal areas. These wells are indicated in Table A-1. Fourth quarter 2003 Phase III RI groundwater quality samples were collected from October 27 to October 28, 2003. Monitoring wells LW-28S and LW-33S were dry and not sampled as part of this event. Except as shown in Table A-1, all groundwater samples were analyzed for the following constituents: SVOCs (EPA Method 8270); VOC (EPA Method 8260) including methyl tert-butyl ether (MTBE); polycyclic aromatic hydrocarbons (PAH, EPA Method 8270 SIM); TPH diesel, motor oil, and gasoline ranges (NWTPH-Dx and NWTPH-G); six priority pollutant metals (arsenic, chromium, copper, lead, nickel, and zinc; EPA Methods 6010/7000 series); total dissolved solids (TDS; EPA Method 160.1); chloride (EPA Method 325.2); and field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature). The laboratory analyses were conducted by ARI.

Analytical results for the fourth quarter 2003 event are provided in Tables A-3a through A-3f for the upper zone wells and Tables A-4a through A-4f for the lower zone wells. A summary of the Phase III results are provided in the following sections. Data qualifier definitions are included in Table A-5. Further discussion and evaluation of fourth quarter 2003 data from the newly installed Phase III monitoring wells, including contour maps of selected groundwater constituents, are included in the Phase III RI Report. Future quarterly reports will contain information on contaminant trends in the Phase III wells and distribution of these contaminants in groundwater across the terminal.

2.3.1 UPPER WATER-BEARING ZONE

The results from first quarterly event from the Phase III monitoring wells installed in the upper zone indicated the following:

- TPH (diesel and gasoline-range) concentrations were detected at all new well locations except for well LW-34S upgradient of the Bell Terminal, well pair LW-29S and LW-29D and well LW-30D downgradient of the Bell Terminal.

- VOCs (benzene, ethylbenzene; isopropylbenzene; 1,2,4-trimethylbenzene; n-propylbenzene; naphthalene, and xylenes) were detected in six of the eight wells sampled for these constituents. The detected VOC concentrations ranged from 1 µg/L (tert-butylbenzene) at well LW-32S to 3,170 µg/L (total xylenes) at well LW-21S.

- MTBE was only observed at one Phase III upper zone well locations (7.5M µg/L at LW-21S) within the Main Tank Farm Area. The highest detection of diesel-range TPH was 5.4 mg/L at well LW-20S; the highest detection of gasoline-range TPH was 24 mg/L at well LW-21S.

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- PAH detections were observed in a majority of the monitoring wells within the Phase III area with the highest detections noted at wells LW-19S, -20S, -21S, -23D, and -24D. The highest individual PAH concentration was observed in the sample from well LW-21S, which contained naphthalene at 100 µg/L. The remaining PAH detections ranged from 0.33 µg/L (phenanthrene at well LW-27S) to 46 µg/L (2-methylnaphthalene at well LW-21S).

- Other SVOC detections included 2,4-dimethylphenol and phenol at well LW-21S with values of 5.4 µg/L and 11 µg/L, respectively.

- The highest detected metals concentrations occurred at wells LW-21S and LW-27S.

2.3.2 LOWER WATER-BEARING ZONE

The results from first quarterly event from the Phase III monitoring wells installed in the upper zone indicated the following:

- PAH detections within the Phase III lower zone wells were limited to wells LW-22D, LW-23D, LW-24D, and LW-25D with individual concentrations ranging from 0.012 µg/L [indeno (1,2,3-cd)pyrene at well LW-23D] to 0.91 µg/L (acenaphthene, at well LW-24D).

- Other SVOC detections included bis(2-ethylhexyl)phthalate ranging from 2.2 to 3.9 µg/L, di-n-butyl phthalate at 1.4 µg/L (LW-25D), and phenol at 4.1 µg/L (LW-22D).

- The highest concentrations of VOCs (acetone, benzene, MTBE, isopropylbenzene) occurred at wells LW-23D, LW-24D, and LW-25D. MTBE was only observed in the Phase III lower zone wells within the Main Tank Farm Area at concentrations ranging from 1.2 µg/L at LW-26D to 33 µg/L at LW-23D.

- The highest detected concentration of diesel-range TPH within the lower zone Phase III monitoring wells occurred at LW-23D (2.9 mg/L). Monitoring well LW-24D contained the highest gasoline-range TPH detection at 0.92 mg/L.

- Metals (arsenic, copper, and zinc) were detected in all Phase III lower zone wells.

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3.0 GROUNDWATER INTERIM ACTION

This section presents a summary of the performance and status of the groundwater interim action system at the terminal for the fourth quarter of 2003 (October 1 through December 31, 2003). System operation data for the groundwater interim action were evaluated in accordance with the startup monitoring plan (Landau Associates 2000b) to determine compliance with performance criteria for the upper zone and the lower zone at the terminal. Specific performance criteria include: 1) groundwater recovery from an upper zone recovery well (HRW-1) when the pump is operating or when sufficient groundwater is present in the upper zone; 2) continuous pumping from a lower zone recovery well (RW-2), except for brief periods of system maintenance (or as described below); 3) groundwater flow toward HRW-1 and RW-2 from the downgradient and upgradient directions; 4) reversal of the lower zone groundwater flow direction at the leading edge of the PCP plume; 5) chemical confirmation that continued migration of PCP in groundwater downgradient of RW-2 and HRW-1 is not occurring; and 6) compliance with the requirements of the existing discharge permit. In addition to the six criteria listed above, information is also presented in this section regarding the operation of an upper zone groundwater intercept system implemented in a storm drain (SDM-1) at the site.

Specific operational information for the fourth quarter 2003, as it relates to the criteria identified above, is as follows:

- As discussed in Section 2.1, groundwater elevation data were collected from the upper zone monitoring wells on October 23, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 3.

- During the fourth quarter 2003, extraction pump HRW-1 was not in operation due to seasonal low groundwater elevations and a lack of recoverable groundwater. A summary of historical groundwater recovery for HRW-1 is included in Appendix B, Table B-1. It is anticipated that low groundwater conditions in the upper zone will continue through the first or second quarter of 2004, at which time groundwater extraction will resume.

- With the exception of periodic shutdowns for system maintenance, groundwater was extracted continuously from the lower zone during the period from October 1 to December 31, 2003 by operating the groundwater recovery pump in RW-2. A total of approximately 1,006,361 gallons of groundwater were recovered from RW-2 during the fourth quarter of 2003 at an estimated average rate of 7.6 gpm. The recovery pump in RW-2 operated for approximately 2,117 hours and discharged water to Tank 16804 for temporary storage until treated by the wastewater treatment system located at the terminal. A summary of the groundwater recovery for RW-2 is included in Appendix B, Table B-1.

- As discussed in Section 2.1, groundwater elevation data were collected from the lower zone wells on October 23, 2003. The groundwater elevation data are summarized in Table A-2 and presented on Figure 4. Based on the groundwater elevation data collected, the groundwater flow direction was reversed locally downgradient of the leading edge of the PCP plume in the lower zone when RW-2 was in operation during this quarter.

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- As previously discussed in Section 2.2, groundwater samples were collected at the site on October 22 through October 28, 2003. Historically, the extent of groundwater impact has been estimated based on the extent of dissolved-phase PCP. The extent of PCP in the upper and lower zones is depicted on Figures 11 and 12, respectively, based on data collected during the October 2003 groundwater sampling event. The extent of PCP in the upper zone is consistent with previous quarterly events. The third quarter lower zone analytical data indicate that monitoring well LW-10D, located approximately 100 ft downgradient from RW-2, contained a detectable concentration (0.94 µg/L) of PCP, and well LW-6D, located downgradient from well LW-18D near the river, contained a detectable PCP concentration of .01 µg/L.

- Between October 1 and December 31, 2003, approximately 235,069 gallons of groundwater was recorded as pumped by the groundwater intercept system at storm drain manhole SDM-1 to Tank 16804 for treatment. During operation, the pump extracted water from SDM-1 at a rate of approximately 1.8 gpm. Groundwater collected from the storm drain contained a PCP concentration of 43 µg/L on October 20, 2003 (Appendix B, Table B-1).

The industrial wastewater discharge permit (City of Portland Permit No. 400.121) for discharge of the extracted groundwater following treatment at the terminal's wastewater treatment plant includes the following discharge limitations:

Parameter	Permitted Limit
PCP	40 µg/L
Benzene	50 µg/L
BTEX (1)	750 µg/L
PH	5 to 11.5

(1) Benzene, Toluene, Ethylbenzene, Xylenes.

Samples of the treated groundwater discharge were collected on a weekly basis during the fourth quarter 2003 for analyses of PCP following the discharge exceedance that occurred during the third quarter 2003. Sampling results indicated PCP concentration below the allowable discharge limit of 40 µg/L. The analytical results for PCP are provided in Appendix B, Table B-1.

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4.0 FUTURE GROUNDWATER TASKS

The first quarter 2004 groundwater sampling event was conducted February 17 through 25, 2004. The groundwater monitoring and analytical program for the first quarter 2003 event will include the following: 1) monitoring at routine Phase II quarterly well locations, including all ISCO injection monitoring wells; 2) monitoring of wells LW-13S, LW-14D, LW-17D, and LW-18D for evaluation of the groundwater interim action at RW-2; and 3) the sampling of the twenty-two Phase III RI monitoring wells installed in September 2003. The results for the Phase II and Phase III first quarter 2004 groundwater monitoring event and the first quarter groundwater interim action status will be provided in the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

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5.0 USE OF THIS REPORT

This quarterly groundwater report has been prepared by Landau Associates for the exclusive use of Time Oil Co. for specific application to the Northwest Terminal. Services for this project were conducted in accordance with the Environmental Services Contract between Time Oil Co. and Landau Associates, Inc. Landau Associates has performed our services in accordance with generally accepted engineering and consulting standards for environmental work in effect at the time and locality services were performed. The reuse of information, conclusions, and recommendations provided herein by Time Oil Co. or others in connection with any site other than the Northwest Terminal without Landau Associates' written permission shall be at the sole risk of Time Oil Co. and without liability to Landau Associates.

This document was prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

Timothy L. Syverson, R.G.
Senior Geologist

Christy L. Johnson
Senior Staff Engineer

TLS/CLJ/tam

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APPENDIX A

Groundwater Level Measurements And Quality Data

TABLE A-1
GROUNDWATER MONITORING LOCATIONS AND ANALYTICAL METHODS
FOURTH QUARTER EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

Well	Semivolatiles (8270)	Volatiles (8260)	MTBE (8260)	PCP (8270 SIM)	PAH (8270 SIM)	TPH-Dx (NWTPH-Dx)	TPH-Gx (NWTPH-G)	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Dioxin/Furans (8290)
Phase II Wells											
B1	X	X		X		X	X	X	X	X	
B2	X	X		X				X	X	X	
D	X	X		X				X	X	X	
G1A	X	X		X		X		X	X	X	
J1	X	X		X				X	X	X	
J2	X	X		X				X	X	X	
K		X	X		X		X	X			
O	X	X									
R	X	X									
LW-1S	X	X	X	X	X		X	X	X	X	
LW-1D	X	X		X				X	X	X	
LW-3D	X	X		X				X	X	X	
LW-4S	X	X		X		X		X	X	X	
LW-4D	X	X		X		X		X	X	X	
LW-6D	X	X		X		X		X	X	X	
LW-7S	X	X	X	X	X	X	X	X	X	X	
LW-8S	X	X		X		X	X	X	X	X	
LW-9S (b)											
LW9D	X	X		X		X		X	X	X	
LW-10S (b)											
LW-10D	X	X		X		X		X	X	X	
LW-11S	X	X		X		X	X	X	X	X	X
LW-11D	X	X		X		X		X	X	X	
LW-13S				X							
LW-14D				X							
LW-17D				X							
LW-18D				X							
RW1	X	X		X		X	X	X	X	X	X
RW2	X	X		X		X	X	X	X	X	
OX-1S				X							
OX-2S (c)											
OX-3S				X							
OX-4S (b)											
OX-5S*				X							
OX-6S*				X							
OX-7S*				X							
OX-8S*				X							X
OX-8D*				X							
HRW-1 (b)											

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TABLE A-1
GROUNDWATER MONITORING LOCATIONS AND ANALYTICAL METHODS
FOURTH QUARTER EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

Well	Semivolatiles (8270)	Volatiles (8260)	MTBE (8260)	PCP (8270 SIM)	PAH (8270 SIM)	TPH-Dx (NWTPH-Dx)	TPH-Gx (NWTPH-G)	PP Metals (a) (6010/7000)	TDS (160.1)	Chloride (325.2)	Dioxin/Furans (8290)
Phase III Wells											
LW-19S*	X	X	X		X	X	X	X	X	X	
LW-20S*	X	X	X		X	X	X	X	X	X	
LW-20D*	X	X	X		X	X	X	X	X	X	
LW-21S*	X	X	X		X	X	X	X	X	X	
LW-22D*	X	X	X		X	X	X	X	X	X	
LW-23D*	X	X	X		X	X	X	X	X	X	
LW-24D*	X	X	X		X	X	X	X	X	X	
LW-25D*	X	X	X		X	X	X	X	X	X	
LW-26D*	X	X	X		X	X	X	X	X	X	
LW-27S*	X	X	X		X	X	X	X	X	X	
LW-27D*	X	X	X		X	X	X	X	X	X	
LW-28S* (b)											
LW-29S*	X	X	X		X	X	X	X	X	X	
LW-29D*	X	X	X		X	X	X	X	X	X	
LW-30S*	X	X	X		X	X	X	X	X	X	
LW-30D*	X	X	X		X	X	X	X	X	X	
LW-31S*	X	X	X		X	X	X	X	X	X	
LW-32S*	X	X	X		X	X	X	X	X	X	
LW-32D*	X	X	X		X	X	X	X	X	X	
LW-33S* (b)											
LW-34S*	X	X	X		X	X	X	X	X	X	
LW-35D*	X	X	X		X	X	X	X	X	X	

(a) Metals analyzed include arsenic, chromium, copper, nickel, lead, and zinc.
(b) Well dry and not sampled.
(c) Well contained product and not sampled.
* Well installed in Fall 2003.

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
Shallow Wells:							
B	03/25/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	03/31/1997	----	29.04	NM	----	NM	Couldn't remove cap
B	07/16/1997	08:30	29.04	11.02	18.02	----	
B	10/21/1997	16:35	29.04	13.39	15.65	----	
B	01/27/1998	12:15	29.04	11.53	17.51	----	
B	05/18/1998	17:56	29.04	12.51	16.53	----	
B	08/17/1998	11:02	29.04	14.40	14.64	----	
B	11/13/1998	10:24	29.04	14.38	14.66	----	
B	02/16/1999	13:36	29.04	9.69	19.35	----	
B	05/18/1999	15:52	29.04	11.72	17.32	----	
B	09/21/1999	12:21	29.04	15.18	13.86	----	
B	12/06/1999	14:37	29.04	13.00	16.04	----	
B	02/16/2000	10:57	29.04	11.84	17.20	----	
B	05/23/2000	17:31	29.04	13.22	15.82	----	
B	08/29/2000	14:23	29.04	15.32	13.72	----	
B	11/09/2000	13:31	29.04	15.29	13.75	----	
B	02/12/2001	15:25	29.04	13.68	15.36	----	
B	06/04/2001	12:49	29.04	14.18	14.86	----	
B	08/16/2001	11:54	29.04	15.80	13.24	----	
B	11/28/2001	12:44	29.04	13.80	15.24	----	
B	02/27/2002	14:33	29.04	12.27	16.77	----	
B	06/27/2002	15:05	29.04	13.38	15.66	----	
B	08/26/2002	16:59	29.04	14.02	15.02	----	
B	11/13/2002	09:01	29.04	13.90	15.14	----	
B	02/11/2003	10:13	29.04	12.85	16.19	----	
B	05/08/2003	08:11	29.04	12.27	16.77	----	
B	08/27/2003	15:30	29.04	14.70	14.34	----	
B1	03/25/1997	10:48	29.74	----	----	----	Couldn't remove cap
B1	03/31/1997	----	29.74	----	----	----	Couldn't remove cap
B1	07/16/1997	07:49	29.74	11.01	18.73	----	
B1	10/21/1997	16:33	29.74	13.56	16.18	----	
B1	01/27/1998	12:10	29.74	11.68	18.06	----	
B1	05/18/1998	17:55	29.74	12.76	16.98	----	
B1	08/17/1998	11:04	29.74	14.15	15.59	----	
B1	11/13/1998	10:21	29.74	15.05	14.69	----	
B1	02/16/1999	13:33	29.74	9.59	20.15	----	
B1	05/18/1999	15:51	29.74	11.79	17.95	----	
B1	09/21/1999	12:19	29.74	14.63	15.11	----	
B1	12/06/1999	14:38	29.74	14.25	15.49	----	
B1	02/16/2000	10:55	29.74	12.20	17.54	----	
B1	05/23/2000	17:32	29.74	13.25	16.49	----	
B1	08/29/2000	14:22	29.74	14.93	14.81	----	
B1	11/09/2000	13:30	29.74	15.56	14.18	----	
B1	02/12/2001	15:26	29.74	15.19	14.55	----	
B1	06/04/2001	12:50	29.74	15.06	14.68	----	
B1	08/16/2001	11:55	29.74	15.72	14.02	----	
B1	11/28/2001	12:45	29.74	15.47	14.27	----	
B1	02/27/2002	14:34	29.74	12.15	17.59	----	
B1	03/05/2002	11:06	29.74	12.28	17.46	----	
B1	04/05/2002	08:42	29.74	12.40	17.34	----	
B1	05/29/2002	00:00	29.74	13.20	16.54	----	
B1	06/27/2002	15:06	29.74	13.77	15.97	----	
B1	08/26/2002	17:00	29.74	14.79	14.95	----	
B1	11/13/2002	09:02	29.74	16.00	13.74	----	
B1	02/11/2003	10:15	29.74	12.86	16.88	----	
B1	05/08/2003	08:12	29.74	12.25	17.49	----	
B1	08/27/2003	15:31	29.74	14.79	14.95	----	
B1	10/23/2003	14:07	29.74	15.61	14.13	----	
C	03/25/1997	12:32	28.89	5.56	23.33	----	
C	03/31/1997	11:38	28.89	6.16	22.73	----	
C	07/16/1997	08:47	28.89	8.28	20.61	----	
C	10/21/1997	15:15	28.89	10.00	18.89	----	
C	01/27/1998	13:41	28.89	7.98	20.91	----	
C	05/18/1998	18:08	28.89	9.54	19.35	----	
C	08/17/1998	11:11	28.89	dry	----	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
C	11/13/1998	10:36	28.89	10.36	18.53	----	
C	02/16/1999	13:58	28.89	5.91	22.98	----	
C	05/18/1999	16:04	28.89	7.90	20.99	----	
C	09/21/1999	12:44	28.89	dry	----	----	
C	12/06/1999	14:50	28.89	9.82	----	----	Water in endcap
C	02/16/2000	09:51	28.89	8.78	20.11	----	
C	05/23/2000	17:55	28.89	dry	----	----	
C	08/29/2000	14:33	28.89	dry	----	----	
C	11/09/2000	13:47	28.89	9.94	18.95	----	Dry?
C	02/12/2001	15:08	28.89	dry	----	----	
C	06/04/2001	13:25	28.89	dry	----	----	
C	08/16/2001	12:11	28.89	dry	----	----	
C	11/28/2001	13:03	28.89	dry	----	----	
C	02/27/2002	14:44	28.89	8.94	19.95	----	
C	06/27/2002	15:36	28.89	dry	----	----	
C	08/26/2002	17:31	28.89	dry	----	----	
C	11/13/2002	09:25	28.89	dry	----	----	
C	02/11/2003	10:46	28.89	dry	----	----	1" water
C	05/08/2003	08:35	28.89	8.53	20.36	----	
C	08/27/2003	15:08	28.89	dry	----	----	
D	03/25/1997	12:25	30.04	8.32	21.72	----	
D	03/31/1997	11:31	30.04	8.66	21.38	----	
D	07/16/1997	08:35	30.04	10.45	19.59	----	
D	10/21/1997	17:10	30.04	13.27	16.77	----	
D	01/27/1998	13:31	30.04	10.72	19.32	----	
D	05/18/1998	17:36	30.04	12.23	17.81	----	
D	08/17/1998	10:57	30.04	13.83	16.21	----	
D	11/13/1998	09:05	30.04	15.01	15.03	----	
D	02/16/1999	13:45	30.04	8.50	21.54	----	
D	05/18/1999	15:59	30.04	11.00	19.04	----	
D	09/21/1999	12:37	30.04	14.41	15.63	----	
D	12/06/1999	14:46	30.04	14.04	16.00	----	
D	02/16/2000	09:55	30.04	11.50	18.54	----	
D	05/23/2000	12:56	30.04	12.74	17.30	----	
D	08/29/2000	14:35	30.04	14.70	15.34	----	
D	11/09/2000	13:43	30.04	15.49	14.55	----	
D	02/12/2001	15:12	30.04	14.99	15.05	----	
D	06/04/2001	12:35	30.04	14.95	15.09	----	
D	08/16/2001	11:46	30.04	15.64	14.40	----	
D	11/28/2001	12:43	30.04	15.45	14.59	----	
D	02/27/2002	14:21	30.04	11.37	18.67	----	
D	03/05/2002	11:00	30.04	11.51	18.53	----	
D	04/05/2002	08:45	30.04	11.65	18.39	----	
D	05/29/2002	00:00	30.04	12.73	17.31	----	
D	06/27/2002	15:00	30.04	13.43	16.61	----	
D	08/26/2002	17:04	30.04	14.68	15.36	----	
D	11/13/2002	09:19	30.04	15.96	14.08	----	
D	02/11/2003	10:41	30.04	12.10	17.94	----	
D	05/08/2003	08:30	30.04	11.48	18.56	----	
D	08/27/2003	15:03	30.04	14.60	15.44	----	
D	10/23/2003	13:50	30.04	15.54	14.50	----	
F	08/18/1998	08:10	NA	14.77	NA		
F							Abandoned August 2003
G	03/25/1997	11:57	30.24	14.49	15.75	----	
G	03/31/1997	09:13	30.24	14.01	16.23	----	
G	07/16/1997	07:37	30.24	14.30	15.94	----	
G	10/21/1997	16:20	30.24	dry	----	----	
G	01/27/1998	11:49	30.24	dry	----	----	
G	05/18/1998	17:30	30.24	dry	----	----	
G	08/17/1998	11:06	30.24	dry	----	----	
G	11/13/1998	09:53	30.24	dry	----	----	
G	02/16/1999	13:14	30.24	dry	----	----	
G	05/18/1999	14:50	30.24	dry	----	----	
G	09/21/1999	11:30	30.24	dry	----	----	
G	12/06/1999	14:07	30.24	dry	----	----	
G	02/16/2000	10:19	30.24	dry	----	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
G	05/23/2000	16:33	30.24	dry	----	----	
G	08/29/2000	13:18	30.24	dry	----	----	
G	11/09/2000	12:30	30.24	dry	----	----	
G	02/12/2001	16:02	30.24	dry	----	----	
G	06/04/2001	11:41	30.24	dry	----	----	
G	08/16/2001	10:50	30.24	dry	----	----	
G	11/28/2001	11:33	30.24	dry	----	----	
G	02/27/2002	13:38	30.24	dry	----	----	
G	06/27/2002	14:13	30.24	dry	----	----	
G	08/26/2002	16:05	30.24	dry	----	----	
G	11/13/2002	07:37	30.24	dry	----	----	
G	02/11/2003	08:58	30.24	dry	----	----	
G	05/08/2003	06:57	30.24	dry	----	----	
G	08/27/2003	13:38	30.24	dry	----	----	
G	10/23/2003	12:38	30.24	dry	----	----	
H	03/31/1997	11:51	27.08	5.42	21.66	----	
H	07/16/1997	08:44	27.08	7.29	19.79	----	
H	10/21/1997	17:45	27.08	10.08	17.00	----	
H	01/27/1998	13:45	27.08	7.56	19.52	----	
H	05/18/1998	17:50	27.08	9.06	18.02	----	
H	08/17/1998	09:15	27.08	10.68	16.40	----	
H	11/13/1998	10:54	27.08	11.84	15.24	----	
H	02/16/1999	13:50	27.08	5.35	21.73	----	
H	05/18/1999	15:41	27.08	7.78	19.30	----	
H	09/21/1999	12:15	27.08	11.23	15.85	----	
H	12/06/1999	15:13	27.08	10.91	16.17	----	
H	02/16/2000	10:52	27.08	8.28	18.80	----	
H	05/23/2000	17:20	27.08	9.48	17.60	----	
H	08/29/2000	14:06	27.08	11.55	15.53	----	
H	11/09/2000	13:23	27.08	12.34	14.74	----	
H	02/12/2001	15:36	27.08	11.88	15.20	----	
H	06/04/2001	12:27	27.08	11.81	15.27	----	
H	08/16/2001	11:41	27.08	12.57	14.51	----	
H	11/28/2001	12:34	27.08	12.39	14.69	----	
H	02/27/2002	14:18	27.08	8.14	18.94	----	
H	03/05/2002	10:58	27.08	8.28	18.80	----	
H	04/05/2002	09:10	27.08	8.45	18.63	----	
H	05/29/2002	00:00	27.08	9.38	17.70	----	
H	06/27/2002	14:51	27.08	10.25	16.83	----	
H	08/26/2002	17:00	27.08	11.54	15.54	----	
H	11/13/2002	09:12	27.08	12.83	14.25	----	
H	02/11/2003	10:33	27.08	8.96	18.12	----	
H	05/08/2003	08:24	27.08	8.24	18.84	----	
H	08/27/2003	15:02	27.08	11.48	15.60	----	
H	10/23/2003	13:42	27.08	12.41	14.67	----	
J1	03/25/1997	12:15	29.70	8.78	20.92	----	Orange/brown algae
J1	03/31/1997	11:19	29.70	9.02	20.68	----	
J1	07/16/1997	08:22	29.70	10.49	19.21	----	
J1	10/21/1997	16:58	29.70	13.10	16.60	----	
J1	01/27/1998	13:15	29.70	11.03	18.67	----	
J1	05/18/1998	18:01	29.70	12.27	17.43	----	
J1	08/17/1998	11:00	29.70	13.78	15.92	----	
J1	11/13/1998	10:30	29.70	14.77	14.93	----	
J1	02/16/1999	13:37	29.70	8.91	20.79	----	
J1	05/18/1999	15:46	29.70	11.19	18.51	----	
J1	09/21/1999	12:28	29.70	14.36	15.34	----	
J1	12/06/1999	15:07	29.70	13.95	15.75	----	
J1	02/16/2000	11:05	29.70	11.67	18.03	----	
J1	05/23/2000	17:27	29.70	12.78	16.92	----	
J1	08/29/2000	14:14	29.70	14.58	15.12	----	
J1	11/09/2000	13:25	29.70	15.30	14.40	----	
J1	02/12/2001	15:22	29.70	14.87	14.83	----	
J1	06/04/2001	12:39	29.70	14.83	14.87	----	
J1	08/16/2001	11:52	29.70	15.48	14.22	----	
J1	11/28/2001	12:35	29.70	15.23	14.47	----	
J1	02/27/2002	14:30	29.70	11.62	18.08	----	

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GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J1	03/05/2002	11:04	29.70	11.76	17.94	----	
J1	04/05/2002	08:40	29.70	11.87	17.83	----	
J1	05/29/2002	00:00	29.70	12.77	16.93	----	
J1	06/27/2002	15:02	29.70	13.40	16.30	----	
J1	08/26/2002	16:54	29.70	14.51	15.19	----	
J1	11/13/2002	09:00	29.70	15.71	13.99	----	
J1	02/11/2003	10:18	29.70	12.33	17.37	----	
J1	05/08/2003	08:14	29.70	11.65	18.05	----	
J1	08/27/2003	14:47	29.70	14.46	15.24	----	
J1	10/23/2003	13:52	29.70	15.31	14.39	----	
K	03/25/1997	12:08	29.42	8.20	21.22	----	
K	03/31/1997	09:32	29.42	8.46	20.96	----	
K	07/16/1997	08:00	29.42	10.03	19.39	----	
K	10/21/1997	16:45	29.42	12.71	16.71	----	
K	01/27/1998	12:37	29.42	10.46	18.96	----	
K	05/18/1998	17:52	29.42	11.77	17.65	----	
K	08/17/1998	10:50	29.42	13.34	16.08	----	
K	11/13/1998	10:14	29.42	14.30	15.12	----	
K	02/16/1999	13:55	29.42	8.41	21.01	----	
K	05/18/1999	15:30	29.42	10.68	18.74	----	
K	09/21/1999	12:08	29.42	13.91	15.51	----	
K	12/06/1999	14:32	29.42	13.44	15.98	----	
K	02/16/2000	10:48	29.42	11.15	18.27	----	
K	05/23/2000	17:12	29.42	12.25	17.17	----	
K	08/29/2000	13:56	29.42	14.16	15.26	----	
K	11/09/2000	13:16	29.42	14.84	14.58	----	
K	02/12/2001	15:41	29.42	14.35	15.07	----	
K	06/04/2001	12:20	29.42	14.22	15.20	----	
K	08/16/2001	11:35	29.42	15.12	14.30	----	
K	11/28/2001	12:26	29.42	14.68	14.74	----	
K	02/27/2002	14:17	29.42	11.05	18.37	----	
K	03/05/2002	10:55	29.42	11.25	18.17	----	
K	04/05/2002	08:55	29.42	11.30	18.12	----	
K	05/29/2002	00:00	29.42	12.22	17.20	----	
K	06/27/2002	14:47	29.42	12.92	16.50	----	
K	08/26/2002	17:17	29.42	14.12	15.30	----	
K	11/13/2002	09:11	29.42	15.18	14.24	----	
K	02/11/2003	10:29	29.42	11.80	17.62	----	
K	05/08/2003	08:21	29.42	11.14	18.28	----	
K	08/27/2003	14:52	29.42	14.08	15.34	----	
K	10/23/2003	13:40	29.42	14.91	14.51	----	
L	03/25/1997	12:35	28.10	4.98	23.12	----	
L	03/31/1997	11:40	28.10	5.24	22.86	----	
L	07/16/1997	08:49	28.10	7.50	20.60	----	
L	10/21/1997	15:18	28.10	9.55	18.55	----	
L	01/27/1998	13:39	28.10	6.45	21.65	----	
L	05/18/1998	18:07	28.10	9.21	18.89	----	
L	08/17/1998	11:10	28.10	11.59	16.51	----	
L	11/13/1998	10:35	28.10	13.02	15.08	----	
L	02/16/1999	13:57	28.10	4.78	23.32	----	
L	05/18/1999	16:03	28.10	7.62	20.48	----	
L	09/21/1999	12:43	28.10	12.30	15.80	----	
L	12/06/1999	14:49	28.10	9.51	18.59	----	
L	02/16/2000	09:49	28.10	7.13	20.97	----	
L	05/23/2000	17:54	28.10	9.11	18.99	----	
L	08/29/2000	14:32	28.10	12.66	15.44	----	
L	11/09/2000	13:46	28.10	13.56	14.54	----	
L	02/12/2001	15:07	28.10	13.04	15.06	----	
L	06/04/2001	13:24	28.10	12.78	15.32	----	
L	08/16/2001	12:10	28.10	13.66	14.44	----	
L	11/28/2001	13:02	28.10	12.34	15.76	----	
L	02/27/2002	14:42	28.10	7.16	20.94	----	
L	03/05/2002	11:12	28.10	7.39	20.71	----	
L	04/05/2002	08:39	28.10	7.63	20.47	----	
L	05/29/2002	00:00	28.10	9.09	19.01	----	
L	06/27/2002	10:38	28.10	10.11	17.99	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
L	08/26/2002	17:30	28.10	12.56	15.54	----	
L	11/13/2002	09:26	28.10	14.00	14.10	----	
L	02/11/2003	10:47	28.10	7.17	20.93	----	
L	05/08/2003	08:34	28.10	7.01	21.09	----	
L	08/27/2003	15:09	28.10	15.20	12.90	----	
L	10/23/2003	14:20	28.10	13.56	14.54	----	
N	03/25/1997	11:48	31.40	14.05	17.35	----	
N	03/31/1997	08:59	31.40	14.26	17.14	----	Hydrocarbon odor, product
N	07/16/1997	07:20	31.40	16.03	16.33	1.20	Light brown color; thick coating on probe
N	10/21/1997	16:09	31.40	16.46	14.94	----	No product - strong petroleum odor
N	10/23/1997	17:20	31.40	16.48	14.92	----	No product - strong petroleum odor
N	01/27/1998	11:13	31.40	15.01	16.41	0.02	
N	05/18/1998	17:20	31.40	16.39	15.06	0.06	
N	08/17/1998	10:40	31.40	17.16	14.26	0.02	Thin coat of thick product
N	11/13/1998	09:48	31.40	17.83	13.58	0.01	
N	02/16/1999	12:55	31.40	14.09	17.53	0.27	Strong petroleum odor
N	05/18/1999	14:47	31.40	15.79	15.64	0.04	
N	09/21/1999	11:23	31.40	17.39	14.02	0.01	
N	12/06/1999	14:00	31.40	16.57	14.83	----	
N	02/16/2000	10:10	31.40	15.69	15.71	----	
N	05/23/2000	16:24	31.40	16.42	14.98	----	Strong petroleum odor, no product
N	08/29/2000	13:07	31.40	17.61	13.79	----	
N	11/09/2000	12:26	31.40	18.23	13.19	0.03	
N	02/12/2001	15:49	31.40	17.64	13.76	----	
N	06/04/2001	11:31	31.40	17.58	13.82	----	
N	08/16/2001	10:29	31.40	18.08	13.32	----	Trace product
N	11/28/2001	11:27	31.40	18.06	13.34	----	Trace product
N	02/27/2002	13:25	31.40	15.76	15.64	----	
N	04/05/2002	08:09	31.40	15.88	15.52	----	
N	05/29/2002	00:00	31.40	16.42	14.98	----	
N	06/27/2002	14:12	31.40	16.80	14.60	----	
N	08/26/2002	15:56	31.40	17.51	13.89	----	
N	11/13/2002	07:27	31.40	18.44	12.98	0.03	Product present
N	02/11/2003	08:49	31.40	15.33	16.07	----	
N	05/08/2003	06:51	31.40	15.71	15.69	----	
N	08/27/2003	13:33	31.40	17.54	13.86	----	
N	10/23/2003	12:08	31.40	18.18	13.22	----	
P	03/25/1997	11:45	29.96	12.88	17.08	----	
P	03/31/1997	08:55	29.96	12.94	17.02	----	Hydrocarbon odor, product
P	07/16/1997	07:15	29.96	14.02	16.08	0.17	Light coating on probe; light brown color
P	10/21/1997	16:05	29.96	15.23	14.73	----	No product - strong petroleum odor
P	10/23/1997	17:25	29.96	15.21	14.75	----	No product - strong petroleum odor
P	01/27/1998	11:09	29.96	13.87	16.09	----	
P	05/18/1998	17:18	29.96	13.08	16.88	----	Trace of product on probe
P	08/17/1998	10:37	29.96	15.82	14.15	0.01	Sheen on probe, strong petroleum odor
P	11/13/1998	09:46	29.96	16.63	13.37	0.05	Strong gasoline odor
P	02/16/1999	12:52	29.96	12.91	17.10	0.06	Strong petroleum odor
P	05/18/1999	14:43	29.96	14.68	15.38	0.13	
P	09/21/1999	11:20	29.96	16.08	13.89	0.01	
P	12/06/1999	13:55	29.96	15.41	14.55	----	
P	02/16/2000	10:08	29.96	14.51	15.45	----	
P	05/23/2000	16:21	29.96	15.15	14.81	----	Trace of product on surface
P	08/29/2000	13:04	29.96	16.26	13.71	0.01	
P	11/09/2000	12:24	29.96	16.98	13.00	0.03	
P	02/12/2001	15:46	29.96	16.31	13.65	----	
P	06/04/2001	11:27	29.96	16.26	13.70	----	Trace product
P	08/16/2001	10:28	29.96	16.75	13.21	----	
P	11/28/2001	11:24	29.96	17.01	12.95	----	
P	02/27/2002	13:22	29.96	14.60	15.44	0.10	Strong ethanol-like odor
P	04/05/2002	08:07	29.96	14.70	15.34	0.10	
P	05/29/2002	00:00	29.96	15.00	14.96	----	Trace product
P	06/27/2002	14:11	29.96	15.49	14.47	----	
P	08/26/2002	15:54	29.96	16.15	13.81	----	
P	11/13/2002	07:25	29.96	16.99	13.00	0.04	Product present
P	02/11/2003	08:44	29.96	14.13	15.84	0.01	Product present
P	05/08/2003	06:47	29.96	15.53	14.44	0.01	Product barely present

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
P	08/27/2003	13:30	29.96	16.19	13.77	----	
P	10/23/2003	12:05	29.96	16.60	13.38	0.02	Trace product
Q	03/25/1997	11:42	30.36	13.55	16.81	----	
Q	03/31/1997	08:52	30.36	13.54	16.82	----	Hydrocarbon odor
Q	07/16/1997	07:10	30.36	14.55	15.83	0.02	Light coating on probe; light brown color
Q	10/21/1997	16:04	30.36	15.70	14.66	----	No product - strong petroleum odor
Q	10/23/1997	17:29	30.36	15.69	14.67	----	No product - strong petroleum odor
Q	01/27/1998	11:05	30.36	14.48	15.88	----	
Q	05/18/1998	17:16	30.36	15.58	14.78	----	
Q	08/17/1998	10:35	30.36	16.27	14.09	----	Slight sheen on probe; no product, strong petroleum odor
Q	11/13/1998	09:44	30.36	17.01	13.36	0.01	Strong gasoline odor
Q	02/16/1999	12:49	30.36	13.61	16.76	0.01	Strong petroleum odor
Q	05/18/1999	14:40	30.36	15.13	15.23	----	Strong odor when cap removed
Q	09/21/1999	11:17	30.36	16.51	13.85	----	
Q	12/06/1999	13:53	30.36	15.88	14.48	----	
Q	02/16/2000	10:06	30.36	15.02	15.34	----	Film of product
Q	05/23/2000	16:19	30.36	15.64	14.72	----	Strong petroleum odor, no product
Q	08/29/2000	13:01	30.36	16.69	13.67	----	
Q	11/09/2000	12:23	30.36	17.50	12.86	----	Trace of product
Q	02/12/2001	15:45	30.36	16.71	13.65	----	
Q	06/04/2001	11:25	30.36	16.66	13.70	----	
Q	08/16/2001	10:26	30.36	17.15	13.21	----	Trace product
Q	11/28/2001	11:21	30.36	17.76	12.94	0.42	
Q	02/27/2002	13:20	30.36	15.07	15.29	----	Strong petroleum odor, no product
Q	04/05/2002	08:05	30.36	15.23	15.13	----	Trace product
Q	05/29/2002	00:00	30.36	15.53	14.83	----	Trace product
Q	06/27/2002	14:10	30.36	15.95	14.41	----	Trace product
Q	08/26/2002	15:52	30.36	16.60	13.76	----	
Q	11/13/2002	07:30	30.36	17.50	12.87	0.01	Product present
Q	02/11/2003	08:47	30.36	14.67	15.69	----	
Q	05/08/2003	06:48	30.36	15.00	15.54	0.22	
Q	08/27/2003	13:28	30.36	16.60	13.76	----	
Q	10/23/2003	12:03	30.36	17.50	13.05	0.24	
LW001S	03/31/1997	11:12	27.96	6.65	21.31		
LW001S	07/16/1997	08:15	27.96	8.34	19.62	----	
LW001S	10/21/1997	16:53	27.96	11.02	16.94	----	
LW001S	01/27/1998	13:00	27.96	8.75	19.21	----	
LW001S	05/18/1998	17:40	27.96	9.15	18.81	----	
LW001S	08/17/1998	10:54	27.96	11.67	16.29	----	
LW001S	11/13/1998	10:02	27.96	12.76	15.20	----	
LW001S	02/16/1999	13:24	27.96	6.60	21.36	----	
LW001S	05/18/1999	15:38	27.96	8.92	19.04	----	
LW001S	09/21/1999	12:10	27.96	12.20	15.76	----	
LW001S	12/06/1999	14:33	27.96	11.86	16.10	----	
LW001S	02/16/2000	10:50	27.96	9.42	18.54	----	
LW001S	05/23/2000	17:18	27.96	10.52	17.44	----	
LW001S	08/29/2000	13:58	27.96	12.51	15.45	----	
LW001S	11/09/2000	13:17	27.96	13.26	14.70	----	
LW001S	02/12/2001	15:33	27.96	12.82	15.14	----	
LW001S	06/04/2001	12:24	27.96	12.77	15.19	----	
LW001S	08/16/2001	11:37	27.96	13.45	14.51	----	
LW001S	11/28/2001	12:28	27.96	13.25	14.71	----	
LW001S	02/27/2002	14:19	27.96	9.31	18.65	----	
LW001S	03/05/2002	10:56	27.96	9.45	18.51	----	
LW001S	04/05/2002	09:08	27.96	9.60	18.36	----	
LW001S	05/29/2002	00:00	27.96	10.49	17.47	----	
LW001S	06/27/2002	14:50	27.96	11.26	16.70	----	
LW001S	08/26/2002	17:11	27.96	12.47	15.49	----	
LW001S	11/13/2002	09:07	27.96	13.72	14.24	----	
LW001S	02/11/2003	10:25	27.96	10.11	17.85	----	
LW001S	05/08/2003	08:20	27.96	9.41	18.55	----	
LW001S	08/27/2003	14:51	27.96	12.46	15.50	----	
LW001S	10/23/2003	13:58	27.96	13.32	14.64	----	
LW002S	03/25/1997	12:22	29.56	8.06	21.50	----	
LW002S	03/31/1997	11:27	29.56	8.34	21.22	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW002S	07/16/1997	08:33	29.56	10.05	19.51	----	
LW002S	10/21/1997	17:04	29.56	12.77	16.79	----	
LW002S	01/27/1998	13:25	29.56	10.39	19.17	----	
LW002S	05/18/1998	18:02	29.56	11.78	17.78	----	
LW002S	08/17/1998	10:56	29.56	13.38	16.18	----	
LW002S	11/13/1998	10:32	29.56	14.47	15.09	----	
LW002S	02/16/1999	13:42	29.56	8.27	21.29	----	
LW002S	05/18/1999	15:45	29.56	10.63	18.93	----	
LW002S	09/21/1999	12:34	29.56	13.95	15.61	----	
LW002S	12/06/1999	15:11	29.56	13.54	16.02	----	
LW002S	02/16/2000	10:38	29.56	11.08	18.48	----	
LW002S	05/23/2000	17:24	29.56	12.29	17.27	----	
LW002S	08/29/2000	14:12	29.56	14.23	15.33	----	
LW002S	11/09/2000	13:04	29.56	15.00	14.56	----	
LW002S	02/12/2001	15:30	29.56	14.52	15.04	----	
LW002S	06/04/2001	12:34	29.56	14.46	15.10	----	
LW002S	08/16/2001	11:45	29.56	15.16	14.40	----	
LW002S	11/28/2001	12:41	29.56	14.90	14.66	----	
LW002S	02/27/2002	14:19	29.56	11.02	18.54	----	
LW002S	03/05/2002	10:59	29.56	11.17	18.39	----	
LW002S	04/05/2002	08:47	29.56	11.33	18.23	----	
LW002S	05/29/2002	00:00	29.56	12.22	17.34	----	
LW002S	06/27/2002	14:56	29.56	13.00	16.56	----	
LW004S	03/31/1997	09:20	30.26	12.77	17.49	----	
LW004S	07/16/1997	07:40	30.26	14.66	15.60	----	
LW004S	10/21/1997	16:25	30.26	16.88	13.38	----	
LW004S	01/27/1998	12:00	30.26	15.13	15.13	----	
LW004S	05/18/1998	17:32	30.26	16.08	14.18	----	
LW004S	08/17/1998	11:07	30.26	17.30	12.96	----	
LW004S	11/13/1998	09:56	30.26	17.96	12.30	----	
LW004S	02/16/1999	13:16	30.26	13.10	17.16	----	
LW004S	05/18/1999	15:03	30.26	15.43	14.83	----	
LW004S	09/21/1999	11:44	30.26	17.61	12.65	----	
LW004S	12/06/1999	14:19	30.26	17.08	13.18	----	
LW004S	02/16/2000	10:31	30.26	15.84	14.42	----	
LW004S	05/23/2000	16:55	30.26	16.71	13.55	----	
LW004S	08/29/2000	13:39	30.26	17.78	12.48	----	
LW004S	11/09/2000	12:53	30.26	18.17	12.09	----	
LW004S	02/12/2001	16:38	30.26	17.08	13.18	----	
LW004S	06/04/2001	12:08	30.26	17.81	12.45	----	
LW004S	08/16/2001	11:14	30.26	18.39	11.87	----	
LW004S	11/28/2001	12:05	30.26	17.84	12.42	----	
LW004S	02/27/2002	14:01	30.26	15.82	14.44	----	
LW004S	03/05/2002	11:35	30.26	15.95	14.31	----	
LW004S	04/05/2002	08:20	30.26	16.02	14.24	----	
LW004S	05/29/2002	00:00	30.26	16.74	13.52	----	
LW004S	06/27/2002	14:39	30.26	16.89	13.37	----	
LW004S	08/26/2002	16:31	30.26	17.68	12.58	----	
LW004S	11/13/2002	08:22	30.26	19.04	11.22	----	
LW004S	02/11/2003	09:31	30.26	16.03	14.23	----	
LW004S	05/08/2003	07:43	30.26	15.75	14.51	----	
LW004S	08/27/2003	13:59	30.26	17.87	12.39	----	
LW004S	10/23/2003	13:18	30.26	18.52	11.74	----	
LW005S	03/25/1997	12:29	30.79	10.57	20.22	----	
LW005S	03/31/1997	11:35	30.79	10.84	19.95	----	
LW005S	07/16/1997	08:53	30.79	12.29	18.50	----	
LW005S	10/21/1997	15:16	30.79	15.00	15.79	----	
LW005S	01/27/1998	13:36	30.79	12.90	17.89	----	
LW005S	05/18/1998	18:05	30.79	14.19	16.60	----	
LW005S	08/17/1998	11:09	30.79	15.54	15.25	----	
LW005S	11/13/1998	10:38	30.79	16.55	14.24	----	
LW005S	02/16/1999	13:16	30.79	10.59	20.20	----	
LW005S	05/18/1999	16:01	30.79	13.12	17.67	----	
LW005S	09/21/1999	12:40	30.79	16.00	14.79	----	
LW005S	12/06/1999	14:47	30.79	15.64	15.15	----	
LW005S	02/16/2000	09:56	30.79	13.54	17.25	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW005S	05/23/2000	17:51	30.79	14.80	15.99	----	
LW005S	08/29/2000	14:37	30.79	16.35	14.44	----	
LW005S	11/09/2000	13:45	30.79	16.98	13.81	----	
LW005S	02/12/2001	15:13	30.79	16.51	14.28	----	
LW005S	06/04/2001	13:23	30.79	16.43	14.36	----	
LW005S	08/16/2001	12:07	30.79	17.03	13.76	----	
LW005S	11/28/2001	13:01	30.79	16.94	13.85	----	
LW005S	02/27/2002	14:39	30.79	13.48	17.31	----	
LW005S	03/05/2002	11:13	30.79	13.62	17.17	----	
LW005S	04/05/2002	08:38	30.79	13.60	17.19	----	
LW005S	05/29/2002	00:00	30.79	14.81	15.98	----	
LW005S	06/27/2002	10:43	30.79	15.15	15.64	----	
LW005S	08/26/2002	17:08	30.79	16.12	14.67	----	
LW005S	11/13/2002	09:22	30.79	17.39	13.40	----	
LW005S	02/11/2003	10:43	30.79	13.95	16.84	----	
LW005S	05/08/2003	08:32	30.79	13.58	17.21	----	
LW005S	08/27/2003	15:07	30.79	16.11	14.68	----	
LW005S	10/23/2003	14:17	30.79	16.92	13.87	----	
LW007S	03/31/1997	11:05	28.10	6.75	21.35	----	
LW007S	07/16/1997	08:05	28.10	8.62	19.48	----	
LW007S	10/21/1997	16:45	28.10	11.26	16.84	----	
LW007S	01/27/1998	12:47	28.10	8.85	19.25	----	
LW007S	05/18/1998	17:48	28.10	10.34	17.76	----	
LW007S	08/17/1998	10:48	28.10	11.85	16.25	----	
LW007S	11/13/1998	10:12	28.10	12.90	15.20	----	Strong gasoline odor
LW007S	02/16/1999	13:53	28.10	6.81	21.29	----	
LW007S	05/18/1999	15:23	28.10	9.14	18.96	----	
LW007S	09/21/1999	12:03	28.10	12.37	15.73	----	
LW007S	12/06/1999	14:27	28.10	12.00	16.10	----	
LW007S	02/16/2000	10:46	28.10	9.60	18.50	----	
LW007S	05/23/2000	17:09	28.10	10.70	17.40	----	
LW007S	08/29/2000	13:53	28.10	12.64	15.46	----	
LW007S	11/09/2000	13:14	28.10	13.36	14.74	----	
LW007S	02/12/2001	15:39	28.10	12.94	15.16	----	
LW007S	06/04/2001	12:17	28.10	12.87	15.23	----	
LW007S	08/16/2001	11:33	28.10	13.58	14.52	----	
LW007S	11/28/2001	12:22	28.10	13.34	14.76	----	
LW007S	02/27/2002	14:15	28.10	9.47	18.63	----	
LW007S	03/05/2002	10:52	28.10	9.62	18.48	----	
LW007S	04/05/2002	08:57	28.10	9.73	18.37	----	
LW007S	05/29/2002	00:00	28.10	10.63	17.47	----	
LW007S	06/27/2002	14:45	28.10	11.36	16.74	----	
LW007S	08/26/2002	17:18	28.10	12.69	15.41	----	
LW007S	11/13/2002	09:16	28.10	13.82	14.28	----	
LW007S	02/11/2003	10:37	28.10	10.18	17.92	----	
LW007S	05/08/2003	08:27	28.10	9.54	18.56	----	
LW007S	08/27/2003	14:58	28.10	12.62	15.48	----	
LW007S	10/23/2003	13:39	28.10	13.45	14.65	----	
LW008S	05/18/1999	14:55	31.28	14.84	16.44	----	
LW008S	09/21/1999	12:24	31.28	16.94	14.34	----	
LW008S	12/06/1999	14:40	31.28	16.63	14.65	----	
LW008S	02/16/2000	10:16	31.28	15.18	16.10	----	
LW008S	05/23/2000	17:42	31.28	15.88	15.40	----	
LW008S	08/29/2000	14:26	31.28	17.06	14.22	----	
LW008S	11/09/2000	13:32	31.28	17.55	13.73	----	
LW008S	02/12/2001	15:58	31.28	17.24	14.04	----	
LW008S	06/04/2001	13:05	31.28	17.14	14.14	----	
LW008S	08/16/2001	12:00	31.28	17.70	13.58	----	
LW008S	11/28/2001	12:57	31.28	17.63	13.65	0.04	
LW008S	02/27/2002	14:37	31.28	15.12	16.16	----	
LW008S	03/05/2002	11:09	31.28	15.26	16.02	----	
LW008S	04/05/2002	08:17	31.28	15.34	15.94	----	
LW008S	05/29/2002	00:00	31.28	15.91	15.37	----	
LW008S	06/27/2002	15:21	31.28	16.21	15.07	----	
LW008S	08/26/2002	16:38	31.28	16.95	14.33	----	
LW008S	11/13/2002	08:50	31.28	17.88	13.40	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW008S	02/11/2003	09:48	31.28	15.57	15.71	----	
LW008S	05/08/2003	08:00	31.28	15.11	16.17	----	
LW008S	08/27/2003	14:25	31.28	16.97	14.31	----	
LW008S	10/23/2003	12:42	31.28	17.54	13.74	----	
LW009S	05/18/1999	14:57	31.04	19.58	11.46	----	Water level appears to be more representative of lower zone
LW009S	09/21/1999	11:36	31.04	dry	----	----	
LW009S	12/06/1999	14:13	31.04	19.64	----	----	Water in endcap
LW009S	02/16/2000	10:24	31.04	19.59	----	----	Water in endcap
LW009S	05/23/2000	16:39	31.04	dry	----	----	
LW009S	08/29/2000	13:28	31.04	dry	----	----	
LW009S	11/09/2000	12:42	31.04	dry	----	----	
LW009S	02/12/2001	16:12	31.04	dry	----	----	
LW009S	06/04/2001	11:50	31.04	dry	----	----	
LW009S	08/16/2001	11:01	31.04	dry	----	----	
LW009S	11/28/2001	11:52	31.04	dry	----	----	
LW009S	02/27/2002	13:48	31.04	dry	----	----	
LW009S	03/05/2002	11:15	31.04	dry	----	----	
LW009S	04/05/2002	08:26	31.04	dry	----	----	
LW009S	05/29/2002	00:00	31.04	dry	----	----	
LW009S	06/27/2002	14:24	31.04	dry	----	----	
LW009S	08/26/2002	16:09	31.04	dry	----	----	
LW009S	11/13/2002	07:49	31.04	dry	----	----	
LW009S	02/11/2003	09:06	31.04	dry	----	----	Recorded DTW of 19.58; well most likely dry
LW009S	05/08/2003	07:11	31.04	dry	----	----	
LW009S	08/27/2003	13:48	31.04	dry	----	----	
LW009S	10/23/2003	12:46	31.04	dry	----	----	
LW010S	05/18/1999	14:59	30.75	17.24	13.51	----	
LW010S	09/21/1999	11:38	30.75	19.13	11.62	----	
LW010S	12/06/1999	14:14	30.75	18.54	12.21	----	
LW010S	02/16/2000	10:26	30.75	17.62	13.13	----	
LW010S	05/23/2000	16:41	30.75	18.25	12.50	----	
LW010S	08/29/2000	13:30	30.75	dry	----	----	
LW010S	11/09/2000	12:45	30.75	dry	----	----	
LW010S	02/12/2001	16:14	30.75	dry	----	----	
LW010S	06/04/2001	11:53	30.75	dry	----	----	
LW010S	08/16/2001	11:03	30.75	dry	----	----	
LW010S	11/28/2001	11:54	30.75	dry	----	----	
LW010S	02/27/2002	13:50	30.75	17.77	12.98	----	
LW010S	03/05/2002	11:32	30.75	17.84	12.91	----	
LW010S	04/05/2002	08:24	30.75	17.82	12.93	----	
LW010S	05/29/2002	00:00	30.75	18.22	12.53	----	
LW010S	06/27/2002	14:28	30.75	18.27	12.48	----	
LW010S	08/26/2002	16:15	30.75	dry	----	----	
LW010S	11/13/2002	08:00	30.75	dry	----	----	
LW010S	02/11/2003	09:20	30.75	17.50	13.25	----	
LW010S	05/08/2003	07:32	30.75	17.68	13.07	----	
LW010S	08/27/2003	13:51	30.75	dry	----	----	
LW010S	10/23/2003	12:51	30.75	dry	----	----	
LW011S	05/18/1999	15:10	29.10	11.47	17.63	----	
LW011S	09/21/1999	11:51	29.10	14.23	14.87	----	
LW011S	12/06/1999	15:05	29.10	14.00	15.10	----	
LW011S	02/16/2000	11:01	29.10	11.94	17.16	----	
LW011S	05/23/2000	11:01	29.10	13.01	16.09	----	
LW011S	08/29/2000	14:55	29.10	14.51	14.59	----	
LW011S	11/09/2000	13:36	29.10	15.48	13.92	0.37	First occurrence of product in well.
LW011S	02/12/2001	15:18	29.10	14.62	14.48	----	
LW011S	06/04/2001	13:12	29.10	14.65	14.45	----	
LW011S	08/16/2001	11:24	29.10	15.46	13.86	0.28	
LW011S	11/28/2001	12:51	29.10	15.10	14.00	----	Trace product
LW011S	02/27/2002	14:59	29.10	11.86	17.24	----	
LW011S	03/05/2002	11:40	29.10	11.96	17.14	----	
LW011S	04/05/2002	08:34	29.10	12.07	17.03	----	
LW011S	05/29/2002	00:00	29.10	13.00	16.10	----	
LW011S	06/27/2002	15:09	29.10	13.40	15.70	----	
LW011S	08/26/2002	16:48	29.10	14.37	14.73	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW011S	11/13/2002	08:54	29.10	15.53	13.57	----	
LW011S	02/11/2003	10:03	29.10	12.46	16.64	----	
LW011S	05/08/2003	08:07	29.10	11.91	17.19	----	
LW011S	08/27/2003	14:36	29.10	14.32	14.78	----	
LW011S	10/23/2003	14:12	29.10	15.12	13.98	----	
LW013S	05/23/2000	16:51	30.17	17.23	12.94	----	
LW013S	08/29/2000	13:37	30.17	18.27	11.90	----	
LW013S	11/09/2000	12:51	30.17	18.75	11.42	----	
LW013S	02/12/2001	16:30	30.17	18.26	11.91	----	
LW013S	06/04/2001	12:06	30.17	18.30	11.87	----	
LW013S	08/16/2001	11:13	30.17	18.81	11.36	----	
LW013S	11/28/2001	12:03	30.17	18.37	11.80	----	
LW013S	02/27/2002	13:58	30.17	16.60	13.57	----	
LW013S	03/05/2002	11:33	30.17	16.68	13.49	----	
LW013S	04/05/2002	08:22	30.17	16.73	13.44	----	
LW013S	05/29/2002	00:00	30.17	17.30	12.87	----	
LW013S	06/27/2002	14:37	30.17	17.38	12.79	----	
LW013S	08/26/2002	16:30	30.17	18.11	12.06	----	
LW013S	11/13/2002	08:14	30.17	19.04	11.13	----	
LW013S	02/11/2003	09:30	30.17	16.57	13.60	----	
LW013S	05/08/2003	07:41	30.17	16.53	13.64	----	
LW013S	08/27/2003	13:57	30.17	18.27	11.90	----	
LW013S	10/23/2003	13:14	30.17	18.81	11.36	----	
LW019S	10/23/2003	11:54	27.72	16.62	11.10	----	
LW020S	10/23/2003	12:14	29.51	14.86	14.65	----	
LW021S	10/23/2003	12:16	30.29	16.57	13.72	----	
LW027S	10/23/2003	12:20	30.59	25.40	5.19	----	
LW028S	10/23/2003	14:26	30.98	dry	----	----	
LW029S	10/23/2003	14:39	31.34	18.88	12.46	----	
LW030S	10/23/2003	14:41	30.08	17.91	12.17	----	
LW031S	10/23/2003	14:30	31.26	18.87	12.39	----	
LW032S	10/23/2003	14:32	30.71	17.02	13.69	----	
LW033S	10/23/2003	14:35	29.89	dry	----	----	
LW034S	10/23/2003	14:24	30.93	16.99	13.94	----	
LW101S	03/31/1997	09:54	29.41	4.51	24.90	----	
LW101S	07/16/1997	09:01	29.41	6.81	22.60	----	
LW101S	10/21/1997	18:01	29.41	7.28	22.13	----	
LW101S	01/27/1998	14:15	29.41	4.10	25.31	----	
LW101S	05/18/1998	18:18	29.41	6.68	22.73	----	
LW101S	08/17/1998	11:21	29.41	8.14	21.27	----	
LW101S	11/13/1998	10:48	29.41	8.61	20.80	----	
LW101S	02/16/1999	14:11	29.41	3.21	26.20	----	
LW101S	05/18/1999	16:17	29.41	6.00	23.41	----	
LW101S	09/21/1999	12:54	29.41	8.60	20.81	----	
LW101S	12/06/1999	14:58	29.41	6.98	22.43	----	
LW101S	02/16/2000	09:44	29.41	4.96	24.45	----	
LW101S	05/23/2000	18:06	29.41	6.83	22.58	----	
LW101S	08/29/2000	14:47	29.41	8.67	20.74	----	
LW101S	11/09/2000	13:56	29.41	9.39	20.02	----	
LW101S	02/12/2001	15:02	29.41	8.02	21.39	----	
LW101S	06/04/2001	13:35	29.41	8.40	21.01	----	
LW101S	08/16/2001	12:20	29.41	9.44	19.97	----	
LW101S	11/28/2001	13:12	29.41	8.58	20.83	----	
LW101S	02/27/2002	14:52	29.41	5.70	23.71	----	
LW101S	06/27/2002	15:32	29.41	7.80	21.61	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW101S	08/26/2002	17:34	29.41	8.85	20.56	----	
LW101S	11/13/2002	09:35	29.41	9.92	19.49	----	
LW101S	02/11/2003	10:59	29.41	5.27	24.14	----	
LW101S	05/08/2003	08:43	29.41	5.40	24.01	----	
LW101S	08/27/2003	15:14	29.41	8.59	20.82	----	
LW102S	03/31/1997	10:01	25.77	1.86	23.91	----	
LW102S	07/16/1997	09:09	25.77	3.91	21.86	----	
LW102S	10/21/1997	17:59	25.77	4.03	21.74	----	
LW102S	01/27/1998	14:07	25.77	1.26	24.51	----	
LW102S	05/18/1998	18:15	25.77	3.57	22.20	----	
LW102S	08/17/1998	11:18	25.77	4.88	20.89	----	
LW102S	11/13/1998	10:45	25.77	5.14	20.63	----	
LW102S	02/16/1999	14:08	25.77	0.45	25.32	----	
LW102S	05/18/1999	16:12	25.77	3.24	22.53	----	
LW102S	09/21/1999	12:52	25.77	5.33	20.44	----	
LW102S	12/06/1999	14:56	25.77	3.67	22.10	----	
LW102S	02/16/2000	09:41	25.77	1.91	23.86	----	
LW102S	05/23/2000	18:03	25.77	3.72	22.05	----	
LW102S	08/29/2000	14:45	25.77	5.40	20.37	----	
LW102S	11/09/2000	13:53	25.77	5.94	19.83	----	
LW102S	02/12/2001	15:00	25.77	4.52	21.25	----	
LW102S	06/04/2001	13:32	25.77	4.93	20.84	----	
LW102S	08/16/2001	12:17	25.77	5.96	19.81	----	
LW102S	11/28/2001	13:10	25.77	5.15	20.62	----	
LW102S	02/27/2002	14:48	25.77	2.14	23.63	----	
LW102S	06/27/2002	15:30	25.77	4.50	21.27	----	
LW102S	08/26/2002	17:39	25.77	5.48	20.29	----	
LW102S	11/13/2002	09:32	25.77	6.50	19.27	----	
LW102S	02/11/2003	10:55	25.77	1.88	23.89	----	
LW102S	05/08/2003	08:40	25.77	2.22	23.55	----	
LW102S	08/27/2003	15:17	25.77	5.24	20.53	----	
LW103S	03/31/1997	09:50	29.07	5.50	23.57	----	
LW103S	07/16/1997	08:59	29.07	6.93	22.14	----	
LW103S	10/21/1997	18:03	29.07	7.08	21.99	----	
LW103S	01/27/1998	14:20	29.07	5.11	23.96	----	
LW103S	05/18/1998	18:21	29.07	6.57	22.50	----	
LW103S	08/17/1998	11:24	29.07	7.80	21.27	----	
LW103S	11/13/1998	10:51	29.07	7.91	21.16	----	
LW103S	02/16/1999	14:14	29.07	4.54	24.53	----	
LW103S	05/18/1999	16:20	29.07	6.20	22.87	----	
LW103S	09/21/1999	12:57	29.07	8.30	20.77	----	
LW103S	12/06/1999	15:00	29.07	6.60	22.47	----	
LW103S	02/16/2000	09:46	29.07	5.50	23.57	----	
LW103S	05/23/2000	18:10	29.07	6.64	22.43	----	
LW103S	08/29/2000	14:50	29.07	8.41	20.66	----	
LW103S	11/09/2000	13:58	29.07	8.78	20.29	----	
LW103S	02/12/2001	15:04	29.07	7.39	21.68	----	
LW103S	06/04/2001	13:37	29.07	7.83	21.24	----	
LW103S	08/16/2001	12:23	29.07	9.07	20.00	----	
LW103S	11/28/2001	13:16	29.07	8.02	21.05	----	
LW103S	02/27/2002	14:50	29.07	5.26	23.81	----	
LW103S	06/27/2002	15:34	29.07	7.42	21.65	----	
LW103S	08/26/2002	17:36	29.07	8.57	20.50	----	
LW103S	11/13/2002	09:37	29.07	9.48	19.59	----	
LW103S	02/11/2003	11:03	29.07	5.65	23.42	----	
LW103S	05/08/2003	08:46	29.07	5.86	23.21	----	
LW103S	08/27/2003	15:15	29.07	8.33	20.74	----	
LW104S	03/31/1997	10:06	26.57	3.55	23.02	----	
LW104S	07/16/1997	08:54	26.57	5.71	20.86	----	
LW104S	10/21/1997	16:22	26.57	5.71	20.86	----	
LW104S	01/27/1998	14:00	26.57	2.84	23.73	----	
LW104S	05/18/1998	18:11	26.57	5.17	21.40	----	
LW104S	08/17/1998	11:15	26.57	6.64	19.93	----	
LW104S	11/13/1998	10:41	26.57	6.72	19.85	----	
LW104S	02/16/1999	14:03	26.57	2.11	24.46	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW104S	05/18/1999	16:08	26.57	4.97	21.60	----	
LW104S	09/21/1999	12:48	26.57	7.18	19.39	----	
LW104S	12/06/1999	14:54	26.57	5.00	21.57	----	
LW104S	02/16/2000	09:39	26.57	3.61	22.96	----	
LW104S	05/23/2000	17:59	26.57	5.61	20.96	----	
LW104S	08/29/2000	14:43	26.57	7.08	19.49	----	
LW104S	11/09/2000	13:51	26.57	7.49	19.08	----	
LW104S	02/12/2001	14:57	26.57	6.28	20.29	----	
LW104S	06/04/2001	13:30	26.57	6.64	19.93	----	
LW104S	08/16/2001	12:15	26.57	7.56	19.01	----	
LW104S	11/28/2001	13:06	26.57	6.30	20.27	----	
LW104S	02/27/2002	14:46	26.57	4.07	22.50	----	
LW104S	06/27/2002	15:27	26.57	6.28	20.29	----	
LW104S	08/26/2002	17:41	26.57	7.13	19.44	----	
LW104S	11/13/2002	09:30	26.57	7.85	18.72	----	
LW104S	02/11/2003	10:51	26.57	3.72	22.85	----	
LW104S	05/08/2003	08:38	26.57	4.94	21.63	----	
LW104S	08/27/2003	15:19	26.57	6.87	19.70	----	
RW1	05/18/1999	15:06	31.46	15.70	15.76	----	
RW1	09/21/1999	11:46	31.46	18.02	13.44	----	
RW1	12/06/1999	14:43	31.46	17.73	13.73	----	
RW1	02/16/2000	10:33	31.46	16.14	15.32	----	
RW1	05/23/2000	17:46	31.46	17.09	14.37	----	
RW1	08/29/2000	14:28	31.46	18.29	13.17	----	
RW1	11/09/2000	12:57	31.46	18.67	12.79	----	
RW1	02/12/2001	16:44	31.46	18.30	13.16	----	
RW1	06/04/2001	13:17	31.46	18.22	13.24	----	
RW1	08/16/2001	10:55	31.46		----	----	Vapor/water recovery system test running - not measured
RW1	11/28/2001	12:02	31.46	18.55	12.91	----	
RW1	02/27/2002	14:03	31.46	16.12	15.34	----	
RW1	03/05/2002	11:38	31.46	16.33	15.13	----	
RW1	04/05/2002	08:27	31.46	16.28	15.18	----	
RW1	05/29/2002	00:00	31.46	17.00	14.46	----	
RW1	06/27/2002	15:16	31.46	17.33	14.13	----	
RW1	08/26/2002	16:40	31.46	18.00	13.46	----	
RW1	11/13/2002	08:26	31.46	18.85	12.61	----	
RW1	02/11/2003	09:34	31.46	16.50	14.96	----	
RW1	05/08/2003	07:46	31.46	16.23	15.23	----	
RW1	08/27/2003	14:04	31.46	18.09	13.37	----	
RW1	10/23/2003	13:23	31.46	18.55	12.91	----	
RW3	12/06/1999	15:24	29.96	14.20	15.76	----	
RW3	02/16/2000	10:37	29.96	11.88	18.08	----	
RW3	05/23/2000	17:26	29.96	13.02	16.94	----	
RW3	08/29/2000	13:42	29.96	14.88	15.08	----	
RW3	11/09/2000	13:03	29.96	15.58	14.38	----	
RW3	02/12/2001	15:28	29.96	15.13	14.83	----	
RW3	06/04/2001	12:30	29.96	15.09	14.87	----	
RW3	08/16/2001	11:44	29.96	15.74	14.22	----	
RW3	11/28/2001	12:40	29.96	15.52	14.44	----	
RW3	02/27/2002	14:26	29.96	11.80	18.16	----	
RW3	03/05/2002	11:02	29.96	11.94	18.02	----	
RW3	04/05/2002	08:44	29.96	12.06	17.90	----	
RW3	05/29/2002	00:00	29.96	13.00	16.96	----	
RW3	06/27/2002	14:59	29.96	13.64	16.32	----	
RW3							Abandoned August 2003
PZ1	05/23/2000	17:47	28.04	14.21	13.83	----	
PZ1	08/29/2000	14:30	28.04	15.33	12.71	----	
PZ1	11/09/2000	12:55	28.04	15.68	12.36	----	
PZ1	02/12/2001	16:42	28.04	15.30	12.74	----	
PZ1	06/04/2001	13:20	28.04	15.29	12.75	----	
PZ1	08/16/2001	11:17	28.04	15.94	12.10	----	
PZ1	11/28/2001	12:09	28.04	15.48	12.56	----	
PZ1	02/27/2002	14:02	28.04	13.28	14.76	----	
PZ1	03/05/2002	11:34	28.04	13.40	14.64	----	
PZ1	04/05/2002	08:32	28.04	13.44	14.60	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
PZ1	05/29/2002	00:00	28.04	14.16	13.88	----	
PZ1	06/27/2002	15:17	28.04	14.50	13.54	----	
PZ1	08/26/2002	16:33	28.04	15.17	12.87	----	
PZ1	11/13/2002	08:42	28.04	15.83	12.21	----	
PZ1	02/11/2003	09:36	28.04	13.58	14.46	----	
PZ1	05/08/2003	07:58	28.04	13.25	14.79	----	
PZ1	08/27/2003	14:20	28.04	15.32	12.72	----	
PZ1	10/23/2003	13:19	28.04	15.75	12.29	----	
PZ2	06/27/2002	15:18	31.97	18.31	13.66	----	
PZ2	08/26/2002	16:34	31.97	18.88	13.09	----	
PZ2	11/13/2002	08:25	31.97	19.40	12.57	----	
PZ2	02/11/2003	09:44	31.97	17.46	14.51	----	
PZ2	05/08/2003	07:45	31.97	17.15	14.82	----	
PZ2	08/27/2003	14:03	31.97	19.02	12.95	----	
PZ2	10/23/2003	13:21	31.97	19.27	12.70	0.06	
PZ3	06/27/2002	15:19	31.12	19.35	11.77	----	
PZ3	08/26/2002	16:35	31.12	19.74	11.38	----	
PZ3	11/13/2002	08:45	31.12	16.87	----	----	
PZ3	02/11/2003	09:40	31.12	19.05	12.07	----	
PZ3	05/08/2003	07:53	31.12	18.95	12.17	----	
PZ3	08/27/2003	14:26	31.12	19.82	11.30	----	
PZ3	10/23/2003	12:39	31.12	dry	----	----	
PZ4	06/27/2002	15:20	28.47	dry	----	----	
PZ4	08/26/2002	16:36	28.47	dry	----	----	
PZ4	11/13/2002	08:48	28.47	16.87	11.60	----	
PZ4	02/11/2003	09:41	28.47	dry	----	----	
PZ4	05/08/2003	07:52	28.47	17.78	10.69	----	
PZ4	08/27/2003	14:27	28.47	dry	----	----	
PZ4	10/23/2003	12:36	28.47	dry	----	----	
OX001S	06/27/2002	15:13	33.38	17.85	15.53	----	
OX001S	08/26/2002	16:45	33.38	18.75	14.63	----	
OX001S	11/13/2002	08:30	33.38	19.92	13.46	----	
OX001S	02/11/2003	09:59	33.38	16.96	16.42	----	
OX001S	05/08/2003	08:04	33.38	16.48	16.90	----	
OX001S	08/27/2003	14:38	33.38	18.76	14.62	----	
OX001S	10/23/2003	14:09	33.38	19.51	13.87	----	
OX002S	06/27/2002	15:12	28.69	13.22	15.47	----	
OX002S	08/26/2002	16:44	28.69	14.26	14.43	----	
OX002S	11/13/2002	08:33	28.81	15.39	13.42	----	New reference elevation September 2002
OX002S	02/11/2003	10:06	28.81	12.39	16.42	----	
OX002S	05/08/2003	08:09	28.81	11.90	16.91	----	
OX002S	08/27/2003	14:33	28.81	14.55	14.26	----	
OX002S	10/23/2003	14:14	28.81	15.22	13.59	0.31	
OX003S	06/27/2002	15:14	30.01	14.65	15.36	----	
OX003S	08/26/2002	16:42	30.01	15.50	14.51	----	
OX003S	11/13/2002	08:31	30.01	16.65	13.36	----	
OX003S	02/11/2003	09:58	30.01	13.78	16.23	----	
OX003S	05/08/2003	08:03	30.01	13.30	16.71	----	
OX003S	08/27/2003	14:40	30.01	15.52	14.49	----	
OX003S	10/23/2003	14:10	30.01	16.22	13.79	----	
OX004S	06/27/2002	15:15	33.42	19.07	14.35	----	
OX004S	08/26/2002	16:39	33.42	19.74	13.68	----	
OX004S	11/13/2002	08:24	33.54	20.73	12.81	----	New reference elevation September 2002
OX004S	02/11/2003	09:38	33.54	18.39	15.15	----	
OX004S	05/08/2003	07:47	33.54	19.07	14.47	----	
OX004S	08/27/2003	14:07	33.54	19.95	13.59	----	
OX004S	10/23/2003	12:43	33.54	dry	----	----	
OX005S	10/23/2003	13:44	30.74	16.15	14.59	----	
OX006S	10/23/2003	13:45	30.92	16.43	14.49	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
OX007S	10/23/2003	13:46	30.68	16.25	14.43	----	
OX008S	10/23/2003	13:47	30.74	16.41	14.33	----	
Deep Wells:							
B2	08/11/1993	10:02	30.31	25.44	4.87	----	Slight sheen, slight to mod solvent-like odor
B2	10/26/1993	13:32	30.31	25.25	5.06	----	
B2	11/17/1993	13:32	30.31	25.23	5.08	----	
B2	12/17/1993	12:59	30.31	23.88	6.43	----	
B2	01/17/1994	13:12	30.31	23.99	6.32	----	
B2	02/18/1994	14:20	30.31	23.73	6.58	----	
B2	03/18/1994	12:59	30.31	23.15	7.16	----	
B2	04/18/1994	14:42	30.31	24.35	5.96	----	
B2	05/18/1994	15:22	30.31	23.12	7.19	----	
B2	06/17/1994	14:54	30.31	22.90	7.41	----	
B2	07/19/1994	09:20	30.31	24.38	5.93	----	
B2	08/17/1994	07:35	30.31	25.22	5.09	----	
B2	09/16/1994	07:27	30.31	25.89	4.42	----	
B2	10/17/1994	09:03	30.31	25.43	4.88	----	
B2	11/21/1994	11:51	30.31	24.56	5.75	----	
B2	12/19/1994	11:10	30.31	21.82	8.49	----	
B2	01/18/1995	11:18	30.31	18.93	11.38	----	
B2	02/21/1995	13:23	30.31	17.12	13.19	----	
B2	03/21/1995	13:05	30.31	20.37	9.94	----	
B2	04/19/1995	12:48	30.31	21.21	9.10	----	
B2	05/19/1995	13:38	30.31	19.30	11.01	----	
B2	07/17/1995	13:55	30.31	22.72	7.59	----	
B2	08/22/1995	07:53	30.31	24.42	5.89	----	
B2	09/22/1995	08:28	30.31	25.28	5.03	----	
B2	11/20/1995	07:57	30.31	22.02	8.29	----	
B2	12/01/1995	08:29	30.31	13.63	16.68	----	
B2	12/19/1995	07:26	30.31	15.57	14.74	----	
B2	01/19/1996	08:38	30.31	16.48	13.83	----	
B2	02/20/1996	10:42	30.31	10.63	19.68	----	
B2	03/19/1996	09:23	30.31	16.61	13.70	----	
B2	04/19/1996	11:53	30.31	16.20	14.11	----	
B2	07/22/1996	14:24	30.31	22.29	8.02	----	
B2	08/20/1996	14:20	30.31	23.43	6.88	----	
B2	09/24/1996	08:11	30.31	24.30	6.01	----	
B2	10/28/1996	11:09	30.31	23.76	6.55	----	
B2	12/13/1996	10:47	30.31	16.70	13.61	----	
B2	03/25/1997	12:02	30.31	15.85	14.46	----	
B2	03/31/1997	09:27	30.31	14.91	15.40	----	
B2	07/16/1997	07:45	30.31	19.91	10.40	----	
B2	10/21/1997	16:30	30.31	23.56	6.75	----	
B2	01/27/1998	12:06	30.31	19.32	10.99	----	
B2	05/18/1998	17:54	30.31	18.80	11.51	----	
B2	08/17/1998	10:23	30.31	24.38	5.93	----	
B2	11/13/1998	10:17	30.31	25.33	4.98	----	
B2	02/16/1999	13:34	30.31	19.64	10.67	----	
B2	05/18/1999	15:50	30.31	19.04	11.27	----	
B2	09/21/1999	12:18	30.31	25.34	4.97	----	
B2	12/06/1999	14:39	30.31	20.25	10.06	----	
B2	02/16/2000	10:56	30.31	20.57	9.74	----	
B2	05/23/2000	17:33	30.31	20.99	9.32	----	
B2	08/29/2000	14:20	30.31	25.38	4.93	----	
B2	11/09/2000	13:29	30.31	25.31	5.00	----	
B2	02/12/2001	15:27	30.31	24.62	5.69	----	
B2	06/04/2001	13:04	30.31	24.84	5.47	----	
B2	08/16/2001	11:58	30.31	26.75	3.56	----	
B2	11/28/2001	12:46	30.31	24.14	6.17	----	
B2	02/27/2002	14:35	30.31	22.90	7.41	----	
B2	06/27/2002	15:07	30.31	20.16	10.15	----	
B2	08/26/2002	17:01	30.31	25.32	4.99	----	
B2	11/13/2002	09:03	30.31	25.28	5.03	----	
B2	02/11/2003	10:14	30.31	23.58	6.73	----	
B2	05/08/2003	08:13	30.31	21.33	8.98	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
B2	08/27/2003	15:32	30.31	24.25	6.06	----	
B2	10/23/2003	14:08	30.31	25.85	4.46	----	
G1A	03/25/1997	11:55	29.72	14.84	14.88	----	
G1A	03/31/1997	09:11	29.72	14.28	15.44	----	
G1A	07/16/1997	07:33	29.72	18.94	10.78	----	
G1A	10/21/1997	16:18	29.72	22.44	7.28	----	
G1A	01/27/1998	11:46	29.72	18.42	11.30	----	
G1A	05/18/1998	17:31	29.72	18.05	11.67	----	
G1A	08/17/1998	10:07	29.72	23.35	6.37	----	
G1A	11/13/1998	09:54	29.72	24.59	5.13	----	
G1A	02/16/1999	13:14	29.72	18.28	11.44	----	
G1A	05/18/1999	14:51	29.72	18.42	11.30	----	
G1A	09/21/1999	11:29	29.72	24.32	5.40	----	
G1A	12/06/1999	14:05	29.72	19.82	9.90	----	
G1A	02/16/2000	10:18	29.72	19.81	9.91	----	
G1A	05/23/2000	16:31	29.72	20.08	9.64	----	Replaced lock and tubing
G1A	08/29/2000	13:13	29.72	24.36	5.36	----	
G1A	11/09/2000	12:32	29.72	24.85	4.87	----	
G1A	02/12/2001	16:01	29.72	24.08	5.64	----	
G1A	06/04/2001	11:40	29.72	24.10	5.62	----	
G1A	08/16/2001	10:52	29.72	25.51	4.21	----	
G1A	11/28/2001	11:32	29.72	23.84	5.88	----	
G1A	02/27/2002	13:39	29.72	21.96	7.76	----	
G1A	06/27/2002	14:17	29.72	19.48	10.24	----	
G1A	08/26/2002	16:06	29.72	24.36	5.36	----	
G1A	11/13/2002	07:35	29.72	24.60	5.12	----	
G1A	02/11/2003	08:59	29.72	22.32	7.40	----	
G1A	05/08/2003	06:58	29.72	20.51	9.21	----	
G1A	08/27/2003	13:36	29.72	24.16	5.56	----	
G1A	10/23/2003	12:37	29.72	25.20	4.52	----	
J2	03/25/1997	12:18	29.65	15.22	14.43	----	
J2	03/31/1997	11:21	29.65	14.38	15.27	----	
J2	07/16/1997	08:24	29.65	19.28	10.37	----	
J2	10/21/1997	17:00	29.65	23.02	6.63	----	
J2	01/27/1998	13:19	29.65	18.69	10.96	----	
J2	05/18/1998	18:00	29.65	18.14	11.51	----	
J2	08/17/1998	10:21	29.65	23.70	5.95	----	
J2	11/13/1998	10:28	29.65	24.64	5.01	----	
J2	02/16/1999	13:40	29.65	19.00	10.65	----	
J2	05/18/1999	15:46	29.65	18.40	11.25	----	
J2	09/21/1999	12:30	29.65	24.73	4.92	----	
J2	12/06/1999	15:08	29.65	19.53	10.12	----	
J2	02/16/2000	11:07	29.65	19.89	9.76	----	
J2	05/23/2000	17:28	29.65	20.33	9.32	----	
J2	08/29/2000	14:15	29.65	24.67	4.98	----	
J2	11/09/2000	13:26	29.65	24.66	4.99	----	
J2	02/12/2001	15:23	29.65	23.92	5.73	----	
J2	06/04/2001	13:02	29.65	24.17	5.48	----	
J2	08/16/2001	11:51	29.65	25.57	4.08	----	
J2	11/28/2001	12:36	29.65	23.45	6.20	----	
J2	02/27/2002	14:31	29.65	22.21	7.44	----	
J2	06/27/2002	15:03	29.65	19.48	10.17	----	
J2	08/26/2002	16:56	29.65	24.67	4.98	----	
J2	11/13/2002	08:59	29.65	24.60	5.05	----	
J2	02/11/2003	10:19	29.65	22.95	6.70	----	
J2	05/08/2003	08:16	29.65	20.65	9.00	----	
J2	08/27/2003	14:48	29.65	24.12	5.53	----	
J2	10/23/2003	13:54	29.65	25.18	4.47	----	
J3	03/25/1997	12:20	29.58	14.70	14.88	----	
J3	03/31/1997	11:25	29.58	14.03	15.55	----	
J3	07/16/1997	08:25	29.58	18.91	10.67	----	
J3	10/21/1997	17:02	29.58	22.37	7.21	----	
J3	01/27/1998	13:21	29.58	18.28	11.30	----	
J3	05/18/1998	17:58	29.58	17.84	11.74	----	
J3	08/17/1998	10:22	29.58	23.12	6.46	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
J3	11/13/1998	10:26	29.58	24.14	5.44	----	
J3	02/16/1999	13:41	29.58	18.32	11.26	----	
J3	05/18/1999	15:48	29.58	18.01	11.57	----	
J3	09/21/1999	12:31	29.58	24.12	5.46	----	
J3	12/06/1999	15:09	29.58	19.31	10.27	----	
J3	02/16/2000	10:07	29.58	19.50	10.08	----	
J3	05/23/2000	17:29	29.58	19.86	9.72	----	
J3	08/29/2000	14:17	29.58	24.05	5.53	----	
J3	11/09/2000	13:27	29.58	24.24	5.34	----	
J3	02/12/2001	15:24	29.58	23.45	6.13	----	
J3	06/04/2001	12:44	29.58	23.62	5.96	----	
J3	08/16/2001	11:50	29.58	24.98	4.60	----	
J3	11/28/2001	12:37	29.58	22.98	6.60	----	
J3	02/27/2002	14:32	29.58	21.52	8.06	----	
J3	06/27/2002	15:04	29.58	19.14	10.44	----	
J3	08/26/2002	16:57	29.58	23.99	5.59	----	
J3	11/13/2002	08:58	29.58	24.10	5.48	----	
J3	02/11/2003	10:20	29.58	22.28	7.30	----	
J3	05/08/2003	08:17	29.58	20.16	9.42	----	
J3	08/27/2003	14:49	29.58	23.60	5.98	----	
J3	10/23/2003	13:56	29.58	24.70	4.88	----	
O	03/25/1997	11:40	32.03	17.01	15.02	----	
O	03/31/1997	08:48	32.03	16.39	15.64	----	
O	07/16/1997	07:05	32.03	21.93	10.10	----	
O	10/21/1997	16:01	32.03	22.23	9.80	----	
O	01/27/1998	11:03	32.03	20.51	11.52	----	
O	05/18/1998	17:14	32.03	20.25	11.78	----	
O	08/17/1998	10:13	32.03	25.42	6.61	----	
O	11/13/1998	09:31	32.03	26.49	5.54	----	
O	02/16/1999	12:45	32.03	20.25	11.78	----	
O	05/18/1999	14:36	32.03	21.23	10.80	----	
O	09/21/1999	11:09	32.03	26.22	5.81	----	
O	12/06/1999	13:48	32.03	21.90	10.13	----	
O	02/16/2000	10:04	32.03	22.21	9.82	----	
O	05/23/2000	16:15	32.03	22.18	9.85	----	
O	08/29/2000	12:56	32.03	26.49	5.54	----	
O	11/09/2000	12:18	32.03	27.01	5.02	----	
O	02/12/2001	15:52	32.03	26.12	5.91	----	
O	06/04/2001	11:22	32.03	26.08	5.95	----	
O	08/16/2001	10:22	32.03	27.58	4.45	----	
O	11/28/2001	11:18	32.03	26.15	5.88	----	
O	02/27/2002	13:15	32.03	24.08	7.95	----	
O	06/27/2002	14:09	32.03	21.29	10.74	----	
O	08/26/2002	15:47	32.03	25.91	6.12	----	
O	11/13/2002	07:21	32.03	26.56	5.47	----	
O	02/11/2003	08:38	32.03	22.81	9.22	----	
O	05/08/2003	06:44	32.03	22.70	9.33	----	
O	08/27/2003	13:23	32.03	26.43	5.60	----	
O	10/23/2003	12:02	32.03	27.11	4.92	----	
R	03/25/1997	11:36	30.47	15.56	14.91	----	
R	03/31/1997	08:43	30.47	14.85	15.62	----	
R	07/16/1997	07:00	30.47	20.37	10.10	----	
R	10/21/1997	15:56	30.47	22.54	7.93	----	
R	01/27/1998	10:57	30.47	18.98	11.49	----	
R	05/18/1998	17:15	30.47	18.73	11.74	----	
R	08/17/1998	10:12	30.47	23.93	6.54	----	
R	11/13/1998	09:35	30.47	25.17	5.30	----	
R	02/16/1999	13:05	30.47	18.79	11.68	----	
R	05/18/1999	14:37	30.47	19.64	10.83	----	
R	09/21/1999	11:15	30.47	24.53	5.94	----	
R	12/06/1999	13:46	30.47	20.33	10.14	----	
R	02/16/2000	10:12	30.47	20.65	9.82	----	
R	05/23/2000	16:17	30.47	20.64	9.83	----	
R	08/29/2000	12:58	30.47	24.97	5.50	----	
R	11/09/2000	12:20	30.47	25.47	5.00	----	
R	02/12/2001	15:54	30.47	24.46	6.01	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
R	06/04/2001	11:36	30.47	24.53	5.94	----	
R	08/16/2001	10:35	30.47	26.02	4.45	----	
R	11/28/2001	11:19	30.47	24.57	5.90	----	
R	02/27/2002	13:17	30.47	22.50	7.97	----	
R	06/27/2002	14:08	30.47	19.75	10.72	----	
R	08/26/2002	15:58	30.47	24.38	6.09	----	
R	11/13/2002	07:22	30.47	25.04	5.43	----	
R	02/11/2003	08:41	30.47	21.22	9.25	----	
R	05/08/2003	06:46	30.47	21.14	9.33	----	
R	08/27/2003	13:25	30.47	24.91	5.56	----	
R	10/23/2003	11:56	30.47	25.60	4.87	----	
LW001D	03/31/1997	11:11	28.31	12.71	15.60	----	
LW001D	07/16/1997	08:12	28.31	17.65	10.66	----	
LW001D	10/21/1997	16:55	28.31	21.29	7.02	----	
LW001D	01/27/1998	13:07	28.31	17.06	11.25	----	
LW001D	05/18/1998	17:39	28.31	16.53	11.78	----	
LW001D	08/17/1998	10:30	28.31	21.82	6.49	----	
LW001D	11/13/1998	10:01	28.31	22.77	5.54	----	
LW001D	02/16/1999	13:21	28.31	17.30	11.01	----	
LW001D	05/18/1999	15:36	28.31	16.76	11.55	----	
LW001D	09/21/1999	12:12	28.31	22.91	5.40	----	
LW001D	12/06/1999	14:34	28.31	18.00	10.31	----	
LW001D	02/16/2000	10:49	28.31	18.16	10.15	----	
LW001D	05/23/2000	17:19	28.31	18.62	9.69	----	
LW001D	08/29/2000	13:59	28.31	22.81	5.50	----	
LW001D	11/09/2000	13:20	28.31	22.98	5.33	----	
LW001D	02/12/2001	15:35	28.31	22.23	6.08	----	
LW001D	06/04/2001	12:23	28.31	22.36	5.95	----	
LW001D	08/16/2001	11:38	28.31	23.73	4.58	----	
LW001D	11/28/2001	12:29	28.31	21.73	6.58	----	
LW001D	02/27/2002	14:17	28.31	20.31	8.00	----	
LW001D	06/27/2002	14:49	28.31	17.81	10.50	----	
LW001D	08/26/2002	17:12	28.31	22.85	5.46	----	
LW001D	11/13/2002	09:08	28.31	22.91	5.40	----	
LW001D	02/11/2003	10:27	28.31	21.11	7.20	----	
LW001D	05/08/2003	08:19	28.31	18.91	9.40	----	
LW001D	08/27/2003	14:50	28.31	22.40	5.91	----	
LW001D	10/23/2003	13:57	28.31	23.51	4.80	----	
LW003D	03/31/1997	11:45	30.80	19.38	11.42	----	Time estimated
LW003D	07/16/1997	08:38	30.80	28.09	2.71	----	
LW003D	10/21/1997	17:07	30.80	23.36	7.44	----	
LW003D	01/27/1998	13:30	30.80	21.66	9.14	----	
LW003D	05/18/1998	17:35	30.80	19.21	11.59	----	
LW003D	08/17/1998	10:24	30.80	24.62	6.18	----	
LW003D	11/13/1998	09:03	30.80	25.56	5.24	----	
LW003D	02/16/1999	13:44	30.80	20.00	10.80	----	
LW003D	05/18/1999	15:58	30.80	19.42	11.38	----	Purged dry at 11:00
LW003D	09/21/1999	10:40	30.80	25.76	5.04	----	
LW003D	12/06/1999	14:45	30.80	20.69	10.11	----	
LW003D	02/16/2000	09:54	30.80	20.98	9.82	----	
LW003D	05/23/2000	14:40	30.80	21.16	9.64	----	Purged dry at 13:10
LW003D	08/29/2000	14:36	30.80	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW003D	11/09/2000		30.80	----	----	----	Well sampled 11/8/00 - water level not representative
LW003D	02/12/2001	15:11	30.80	24.85	5.95	----	
LW003D	06/04/2001	12:35	30.80	25.09	5.71	----	
LW003D	08/16/2001	11:47	30.80	26.43	4.37	----	
LW003D	11/28/2001	12:42	30.80	24.48	6.32	----	
LW003D	02/27/2002	14:20	30.80	23.13	7.67	----	
LW003D	06/27/2002	14:59	30.80	20.55	10.25	----	
LW003D	08/26/2002	17:03	30.80	25.63	5.17	----	
LW003D	11/13/2002	09:20	30.80	25.57	5.23	----	
LW003D	02/11/2003	10:40	30.80	24.03	6.77	----	
LW003D	05/08/2003	08:29	30.80	21.68	9.12	----	
LW003D	08/27/2003	15:04	30.80	25.10	5.70	----	
LW003D	10/23/2003	13:49	30.80	26.18	4.62	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW004D	03/31/1997	09:18	30.17	14.73	15.44	----	
LW004D	07/16/1997	07:42	30.17	19.43	10.74	----	
LW004D	10/21/1997	16:27	30.17	23.02	7.15	----	
LW004D	01/27/1998	11:56	30.17	18.84	11.33	----	
LW004D	05/18/1998	17:33	30.17	18.54	11.63	----	
LW004D	08/17/1998	10:18	30.17	23.81	6.36	----	
LW004D	11/13/1998	09:57	30.17	24.99	5.18	----	
LW004D	02/16/1999	13:17	30.17	18.79	11.38	----	
LW004D	05/18/1999	15:04	30.17	18.77	11.40	----	Completed sampling at 13:40
LW004D	09/21/1999	11:41	30.17	24.78	5.39	----	
LW004D	12/06/1999	14:18	30.17	20.21	9.96	----	
LW004D	02/16/2000	10:30	30.17	20.23	9.94	----	
LW004D	05/23/2000	16:54	30.17	20.55	9.62	----	
LW004D	08/29/2000	13:38	30.17	24.78	5.39	----	
LW004D	11/09/2000	12:52	30.17	25.19	4.98	----	
LW004D	02/12/2001	16:39	30.17	24.71	5.46	----	
LW004D	06/04/2001	12:07	30.17	24.66	5.51	----	
LW004D	08/16/2001	11:15	30.17	26.27	3.90	----	
LW004D	11/28/2001	12:04	30.17	24.41	5.76	----	
LW004D	02/27/2002	14:00	30.17	22.65	7.52	----	
LW004D	03/05/2002	11:36	30.17	22.94	7.23	----	
LW004D	04/05/2002	08:19	30.17	23.75	6.42	----	
LW004D	05/29/2002	00:00	30.17	20.48	9.69	----	
LW004D	06/27/2002	14:41	30.17	20.15	10.02	----	
LW004D	08/26/2002	16:32	30.17	25.02	5.15	----	
LW004D	11/13/2002	08:23	30.17	25.26	4.91	----	
LW004D	02/11/2003	09:32	30.17	23.08	7.09	----	
LW004D	05/08/2003	07:44	30.17	21.21	8.96	----	
LW004D	08/27/2003	14:01	30.17	24.78	5.39	----	
LW004D	10/23/2003	13:16	30.17	25.85	4.32	----	
LW006D	03/25/1997	11:52	30.84	16.51	14.33	----	
LW006D	03/31/1997	09:05	30.84	15.53	15.31	----	Faint odor
LW006D	07/16/1997	07:30	30.84	20.74	10.10	----	
LW006D	10/21/1997	16:16	30.84	24.05	6.79	----	
LW006D	01/27/1998	11:38	30.84	19.94	10.90	----	
LW006D	05/18/1998	17:28	30.84	19.36	11.48	----	
LW006D	08/17/1998	10:05	30.84	24.92	5.92	----	
LW006D	11/13/1998	09:50	30.84	25.94	4.90	----	
LW006D	02/16/1999	13:11	30.84	20.40	10.44	----	
LW006D	05/18/1999	14:53	30.84	19.81	11.03	----	
LW006D	09/21/1999	11:32	30.84	25.92	4.92	----	
LW006D	12/06/1999	14:09	30.84	20.86	9.98	----	
LW006D	02/16/2000	10:20	30.84	21.27	9.57	----	
LW006D	05/23/2000	16:35	30.84	21.64	9.20	----	
LW006D	08/29/2000	13:20	30.84	25.93	4.91	----	
LW006D	11/09/2000	12:35	30.84	26.21	4.63	----	
LW006D	02/12/2001	16:03	30.84	25.37	5.47	----	
LW006D	06/04/2001	11:42	30.84	25.30	5.54	----	
LW006D	08/16/2001	10:54	30.84	26.72	4.12	----	
LW006D	11/28/2001	11:46	30.84	24.92	5.92	----	
LW006D	02/27/2002	13:35	30.84	23.62	7.22	----	
LW006D	06/27/2002	14:19	30.84	20.68	10.16	----	
LW006D	08/26/2002	16:04	30.84	25.79	5.05	----	
LW006D	11/13/2002	07:42	30.84	25.82	5.02	----	
LW006D	02/11/2003	09:01	30.84	24.08	6.76	----	
LW006D	05/08/2003	07:01	30.84	21.97	8.87	----	
LW006D	08/27/2003	13:40	30.84	25.37	5.47	----	
LW006D	10/23/2003	12:31	30.84	26.47	4.37	----	
LW009D	05/18/1999	14:56	30.98	20.02	10.96	----	
LW009D	09/21/1999	11:34	30.98	25.23	5.75	----	
LW009D	12/06/1999	14:11	30.98	21.04	9.94	----	
LW009D	02/16/2000	10:23	30.98	21.17	9.81	----	
LW009D	05/23/2000	16:39	30.98	21.15	9.83	----	
LW009D	08/29/2000	13:27	30.98	25.36	5.62	----	
LW009D	11/09/2000	12:43	30.98	25.96	5.02	----	
LW009D	02/12/2001	16:11	30.98	25.13	5.85	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW009D	06/04/2001	11:49	30.98	25.15	5.83	----	
LW009D	08/16/2001	11:02	30.98	26.57	4.41	----	
LW009D	11/28/2001	11:53	30.98	25.40	5.58	----	
LW009D	02/27/2002	13:47	30.98	22.97	8.01	----	
LW009D	06/27/2002	14:25	30.98	20.38	10.60	----	
LW009D	08/26/2002	16:11	30.98	24.90	6.08	----	
LW009D	11/13/2002	07:48	30.98	25.73	5.25	----	
LW009D	02/11/2003	09:07	30.98	22.03	8.95	----	
LW009D	05/08/2003	07:12	30.98	21.65	9.33	----	
LW009D	08/27/2003	13:47	30.98	25.50	5.48	----	
LW009D	10/23/2003	12:50	30.98	26.22	4.76	----	
LW010D	05/18/1999	15:00	31.12	19.82	11.30	----	
LW010D	09/21/1999	11:37	31.12	25.81	5.31	----	
LW010D	12/06/1999	14:15	31.12	21.18	9.94	----	
LW010D	02/16/2000	10:27	31.12	21.20	9.92	----	
LW010D	05/23/2000	16:42	31.12	21.51	9.61	----	
LW010D	08/29/2000	13:29	31.12	25.86	5.26	----	
LW010D	11/09/2000	12:46	31.12	26.26	4.86	----	
LW010D	02/12/2001	16:15	31.12	25.63	5.49	----	
LW010D	06/04/2001	11:52	31.12	25.62	5.50	----	
LW010D	08/16/2001	11:04	31.12	27.16	3.96	----	
LW010D	11/28/2001	11:55	31.12	25.46	5.66	----	
LW010D	02/27/2002	13:49	31.12	23.58	7.54	----	
LW010D	06/27/2002	14:29	31.12	21.03	10.09	----	
LW010D	08/26/2002	16:17	31.12	25.91	5.21	----	
LW010D	11/13/2002	08:01	31.12	26.17	4.95	----	
LW010D	02/11/2003	09:21	31.12	23.83	7.29	----	
LW010D	05/08/2003	07:33	31.12	22.10	9.02	----	
LW010D	08/27/2003	13:53	31.12	25.74	5.38	----	
LW010D	10/23/2003	13:10	31.12	26.79	4.33	----	
LW011D	05/18/1999	15:09	29.04	18.59	10.45	----	
LW011D	09/21/1999	11:50	29.04	20.76	8.28	----	
LW011D	12/06/1999	15:06	29.04	21.81	7.23	----	
LW011D	02/16/2000	11:02	29.04	20.35	8.69	----	
LW011D	05/23/2000	17:37	29.04	19.50	9.54	----	
LW011D	08/29/2000	14:54	29.04	----	----	----	Well purged dry 8/28; sampled a.m. on 8/29
LW011D	11/09/2000		29.04	----	----	----	Well sampled 11/8/00 - water level not representative
LW011D	02/12/2001	15:16	29.04	23.14	5.90	----	
LW011D	06/04/2001	13:11	29.04	23.35	5.69	----	
LW011D	08/16/2001	11:25	29.04	26.94	2.10	----	
LW011D	11/28/2001	12:53	29.04	24.54	4.50	----	
LW011D	02/27/2002	14:57	29.04	21.80	7.24	----	
LW011D	06/27/2002	15:11	29.04	18.84	10.20	----	
LW011D	08/26/2002	16:47	29.04	22.71	6.33	----	
LW011D	11/13/2002	08:55	29.04	23.87	5.17	----	
LW011D	02/11/2003	10:04	29.04	21.79	7.25	----	
LW011D	05/08/2003	08:08	29.04	19.28	9.76	----	
LW011D	08/27/2003	14:34	29.04	23.35	5.69	----	
LW011D	10/23/2003	14:11	29.04	23.98	5.06	----	
LW012D1	05/18/1999	15:13	30.02	18.45	11.57	----	
LW012D1	09/21/1999	11:54	30.02	24.44	5.58	----	
LW012D1	12/06/1999	14:21	30.02	19.72	10.30	----	
LW012D1	02/16/2000	10:35	30.02	19.89	10.13	----	
LW012D1	05/23/2000	17:00	30.02	20.23	9.79	----	
LW012D1	08/29/2000	13:45	30.02	24.38	5.64	----	
LW012D1	11/09/2000	13:00	30.02	24.66	5.36	----	
LW012D1	02/12/2001	15:57	30.02	23.92	6.10	----	
LW012D1	06/04/2001	12:32	30.02	23.99	6.03	----	
LW012D1	08/16/2001	11:42	30.02	25.39	4.63	----	
LW012D1	11/28/2001	12:38	30.02	23.33	6.69	----	
LW012D1	02/27/2002	14:28	30.02	21.88	8.14	----	
LW012D1	06/27/2002	14:57	30.02	19.58	10.44	----	
LW012D1							Abandoned August 2003
LW012D2	05/18/1999	15:14	29.24	18.23	11.01	----	
LW012D2	09/21/1999	11:53	29.24	24.69	4.55	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW012D2	12/06/1999	14:22	29.24	19.40	9.84	----	
LW012D2	02/16/2000	10:36	29.24	19.90	9.34	----	
LW012D2	05/23/2000	16:59	29.24	20.38	8.86	----	
LW012D2	08/29/2000	13:44	29.24	24.68	4.56	----	
LW012D2	11/09/2000	13:01	29.24	24.56	4.68	----	
LW012D2	02/12/2001	15:56	29.24	23.88	5.36	----	
LW012D2	06/04/2001	12:31	29.24	24.10	5.14	----	
LW012D2	08/16/2001	11:43	29.24	25.43	3.81	----	
LW012D2	11/28/2001	12:39	29.24	23.17	6.07	----	
LW012D2	02/27/2002	14:29	29.24	22.38	6.86	----	
LW012D2	06/27/2002	14:58	29.24	19.44	9.80	----	
LW012D2							Abandoned August 2003
LW014D	05/23/2000	16:50	30.54	21.26	9.28	----	
LW014D	08/29/2000	13:35	30.54	25.68	4.86	----	
LW014D	11/09/2000	12:49	30.54	25.90	4.64	----	
LW014D	02/12/2001	16:20	30.54	25.33	5.21	----	
LW014D	06/04/2001	12:00	30.54	25.37	5.17	----	
LW014D	08/16/2001	11:08	30.54	27.00	3.54	----	
LW014D	11/28/2001	11:56	30.54	25.03	5.51	----	
LW014D	02/27/2002	13:55	30.54	23.57	6.97	----	
LW014D	06/27/2002	14:33	30.54	20.70	9.84	----	
LW014D	08/26/2002	16:26	30.54	25.90	4.64	----	
LW014D	11/13/2002	08:07	30.54	25.76	4.78	----	
LW014D	02/11/2003	09:27	30.54	24.33	6.21	----	
LW014D	05/08/2003	07:38	30.54	21.92	8.62	----	
LW014D	08/27/2003	13:56	30.54	25.32	5.22	----	
LW014D	10/23/2003	13:13	30.54	26.56	3.98	----	
LW015D	05/23/2000	16:49	30.85	21.26	9.59	----	
LW015D	08/29/2000	13:34	30.85	25.54	5.31	----	
LW015D	11/09/2000	12:48	30.85	25.98	4.87	----	
LW015D	02/12/2001	16:18	30.85	25.43	5.42	----	
LW015D	06/04/2001	11:59	30.85	25.41	5.44	----	
LW015D	08/16/2001	11:07	30.85	27.05	3.80	----	
LW015D	11/28/2001	11:55	30.85	25.29	5.56	----	
LW015D	02/27/2002	13:52	30.85	23.42	7.43	----	
LW015D	06/27/2002	14:32	30.85	20.91	9.94	----	
LW015D	08/26/2002	16:25	30.85	25.77	5.08	----	
LW015D	11/13/2002	08:05	30.85	26.04	4.81	----	
LW015D	02/11/2003	09:23	30.85	23.65	7.20	----	
LW015D	05/08/2003	07:37	30.85	21.95	8.90	----	
LW015D	08/27/2003	13:55	30.85	25.58	5.27	----	
LW015D	10/23/2003	13:12	30.85	26.61	4.24	----	
LW016D	05/23/2000	16:48	28.40	18.79	9.61	----	
LW016D	08/29/2000	13:32	28.40	23.07	5.33	----	
LW016D	11/09/2000	12:47	28.40	23.59	4.81	----	
LW016D	02/12/2001	16:17	28.40	22.94	5.46	----	
LW016D	06/04/2001	11:57	28.40	23.00	5.40	----	
LW016D	08/16/2001	11:05	28.40	24.43	3.97	----	
LW016D	11/28/2001	11:57	28.40	22.87	5.53	----	
LW016D	02/27/2002	13:54	28.40	20.94	7.46	----	
LW016D	06/27/2002	14:31	28.40	18.46	9.94	----	
LW016D	08/26/2002	16:23	28.40	23.24	5.16	----	
LW016D	11/13/2002	08:08	28.40	23.45	4.95	----	
LW016D	02/11/2003	09:25	28.40	21.14	7.26	----	
LW016D	05/08/2003	07:36	28.40	19.65	8.75	----	
LW016D	08/27/2003	13:54	28.40	23.08	5.32	----	
LW016D	10/23/2003	13:11	28.40	24.10	4.30	----	
LW017D	08/29/2000	13:21	27.82	22.96	4.86	----	
LW017D	11/09/2000	12:36	27.82	23.17	4.65	----	
LW017D	02/12/2001	16:04	27.82	22.44	5.38	----	
LW017D	06/04/2001	11:44	27.82	22.42	5.40	----	
LW017D	08/16/2001	10:55	27.82	23.80	4.02	----	
LW017D	11/28/2001	11:50	27.82	22.00	5.82	----	
LW017D	02/27/2002	13:37	27.82	19.82	8.00	----	
LW017D	03/05/2002	11:30	27.82	20.46	7.36	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
LW017D	04/05/2002	08:15	27.82	21.34	6.48	----	
LW017D	05/29/2002	00:00	27.82	17.90	9.92	----	
LW017D	06/27/2002	14:20	27.82	17.64	10.18	----	
LW017D	08/26/2002	16:07	27.82	22.67	5.15	----	
LW017D	11/13/2002	07:45	27.82	22.80	5.02	----	
LW017D	02/11/2003	09:03	27.82	20.79	7.03	----	
LW017D	05/08/2003	07:05	27.82	18.82	9.00	----	
LW017D	08/27/2003	13:43	27.82	22.38	5.44	----	
LW017D	10/23/2003	12:34	27.82	23.46	4.36	----	
LW018D	08/29/2000	13:25	27.82	22.79	5.03	----	
LW018D	11/09/2000	12:40	27.82	22.91	4.91	----	
LW018D	02/12/2001	16:10	27.82	22.56	5.26	----	
LW018D	06/04/2001	11:47	27.82	22.28	5.54	----	
LW018D	08/16/2001	11:00	27.82	23.81	4.01	----	
LW018D	11/28/2001	11:51	27.82	22.00	5.82	----	
LW018D	02/27/2002	13:43	27.82	20.44	7.38	----	
LW018D	06/27/2002	14:23	27.82	17.72	10.10	----	
LW018D	08/26/2002	16:13	27.82	21.90	5.92	----	
LW018D	11/13/2002	07:51	27.82	22.71	5.11	----	
LW018D	02/11/2003	09:05	27.82	20.95	6.87	----	
LW018D	05/08/2003	07:10	27.82	18.75	9.07	----	
LW018D	08/27/2003	13:45	27.82	22.41	5.41	----	
LW018D	10/23/2003	12:45	27.82	23.46	4.36	----	
LW020D	10/23/2003	12:15	29.51	24.86	4.65	----	
LW022D	10/23/2003	11:58	32.56	27.72	4.84	----	
LW023D	10/23/2003	12:00	31.41	26.56	4.85	----	
LW024D	10/23/2003	12:23	33.47	28.61	4.86	----	
LW025D	10/23/2003	12:28	35.38	30.50	4.88	----	
LW026D	10/23/2003	12:09	31.49	27.17	4.32	----	
LW027D	10/23/2003	12:21	29.71	25.47	4.24	----	
LW029D	10/23/2003	14:40	31.12	26.46	4.66	----	
LW030D	10/23/2003	14:52	30.06	25.58	4.48	----	
LW032D	10/23/2003	14:33	30.86	26.50	4.36	----	
LW035D	10/23/2003	11:48	33.19	28.33	4.86	----	
OX008D	10/23/2003	13:48	30.84	26.12	4.72	----	
RW2	05/18/1999	15:02	30.68	19.50	11.18	----	
RW2	09/21/1999	11:40	30.68	25.75	4.93	----	
RW2	12/06/1999	14:17	30.68	20.77	9.91	----	
RW2	02/16/2000	10:29	30.68	20.99	9.69	----	
RW2	05/23/2000	16:52	30.68	21.37	9.31	----	
RW2	08/29/2000	13:36	30.68	25.36	5.32	----	Groundwater interim action pumping began 10/5/00 in the lower zone at this well. Pump not running at time of measurement.
RW2	11/09/2000	12:50	30.68	25.83	4.85	----	
RW2	02/12/2001	16:37	30.68	26.40	4.28	----	
RW2	06/04/2001	12:05	30.68	26.26	4.42	----	
RW2	08/16/2001	11:11	30.68	28.98	1.70	----	
RW2	11/28/2001	12:02	30.68	26.86	3.82	----	
RW2	02/27/2002	13:57	30.68	26.02	4.66	----	
RW2	06/27/2002	14:35	30.68	23.68	7.00	----	
RW2	08/26/2002	16:29	30.68	28.26	2.42	----	
RW2	11/13/2002	08:20	30.68	28.50	2.18	----	
RW2	02/11/2003	09:29	30.68	26.96	3.72	----	
RW2	05/07/2003	17:30	30.68	24.80	5.88	----	Date of measurement is day of sampling

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RW2	08/27/2003	13:57	30.68	27.91	2.77	----	
RW2	10/23/2003	13:30	30.68	28.73	1.95	----	
RIVER_GAUGE	08/11/1993	12:57	28.13	24.90	3.23	----	
RIVER_GAUGE	10/26/1993	13:17	28.13	25.27	2.86	----	
RIVER_GAUGE	11/17/1993	13:21	28.13	24.18	3.95	----	
RIVER_GAUGE	12/17/1993	12:46	28.13	22.48	5.65	----	
RIVER_GAUGE	01/17/1994	12:58	28.13	22.90	5.23	----	
RIVER_GAUGE	02/18/1994	14:10	28.13	22.30	5.83	----	
RIVER_GAUGE	03/18/1994	12:48	28.13	21.70	6.43	----	
RIVER_GAUGE	04/18/1994	14:34	28.13	23.50	4.63	----	
RIVER_GAUGE	05/18/1994	15:14	28.13	21.80	6.33	----	
RIVER_GAUGE	06/17/1994	14:45	28.13	21.32	6.81	----	
RIVER_GAUGE	07/19/1994	09:10	28.13	23.25	4.88	----	
RIVER_GAUGE	08/17/1994	07:26	28.13	24.00	4.13	----	
RIVER_GAUGE	09/16/1994	07:30	28.13	24.66	3.47	----	
RIVER_GAUGE	10/17/1994	08:58	28.13	24.10	4.03	----	
RIVER_GAUGE	11/21/1994	11:43	28.13	23.20	4.93	----	
RIVER_GAUGE	12/19/1994	10:58	28.13	19.95	8.18	----	
RIVER_GAUGE	01/18/1995	11:04	28.13	16.70	11.43	----	
RIVER_GAUGE	02/21/1995	13:14	28.13	14.65	13.48	----	
RIVER_GAUGE	03/21/1995	12:58	28.13	18.90	9.23	----	
RIVER_GAUGE	04/19/1995	12:37	28.13	19.80	8.33	----	
RIVER_GAUGE	05/19/1995	13:22	28.13	17.40	10.73	----	
RIVER_GAUGE	07/17/1995	13:48	28.13	22.00	6.13	----	
RIVER_GAUGE	08/22/1995	07:45	28.13	23.24	4.89	----	
RIVER_GAUGE	09/22/1995	08:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/20/1995	07:50	28.13	20.20	7.93	----	
RIVER_GAUGE	12/01/1995	08:23	28.13	8.45	19.68	----	
RIVER_GAUGE	12/19/1995	07:11	28.13	14.10	14.03	----	
RIVER_GAUGE	01/19/1996	08:29	28.13	14.06	14.07	----	
RIVER_GAUGE	02/20/1996	10:36	28.13	8.00	20.13	----	
RIVER_GAUGE	03/19/1996	09:15	28.13	15.95	12.18	----	
RIVER_GAUGE	04/19/1996	11:45	28.13	13.95	14.18	----	
RIVER_GAUGE	07/22/1996	14:18	28.13	22.00	6.13	----	
RIVER_GAUGE	07/22/1996	15:05	28.13	22.20	5.93	----	
RIVER_GAUGE	08/20/1996	14:09	28.13	22.80	5.33	----	
RIVER_GAUGE	08/20/1996	15:10	28.13	23.00	5.13	----	
RIVER_GAUGE	09/24/1996	07:55	28.13	23.41	4.72	----	
RIVER_GAUGE	09/24/1996	10:15	28.13	24.25	3.88	----	
RIVER_GAUGE	10/28/1996	10:53	28.13	22.95	5.18	----	
RIVER_GAUGE	10/28/1996	12:12	28.13	23.21	4.92	----	
RIVER_GAUGE	12/13/1996	12:09	28.13	14.50	13.63	----	
RIVER_GAUGE	03/25/1997	11:33	28.13	14.60	13.53	----	
RIVER_GAUGE	03/31/1997		28.13	----	----	----	Locked
RIVER_GAUGE	07/16/1997	06:55	28.13	18.73	9.40	----	
RIVER_GAUGE	07/16/1997	07:55	28.13	18.84	9.29	----	
RIVER_GAUGE	07/16/1997	09:14	28.13	18.92	9.21	----	
RIVER_GAUGE	10/21/1997	15:52	28.13	23.38	4.75	----	
RIVER_GAUGE	10/21/1997	16:11	28.13	23.44	4.69	----	
RIVER_GAUGE	10/21/1997	17:55	28.13	23.59	4.54	----	
RIVER_GAUGE	01/27/1998	10:46	28.13	18.20	9.93	----	
RIVER_GAUGE	01/27/1998	12:25	28.13	18.31	9.82	----	
RIVER_GAUGE	01/27/1998	13:56	28.13	17.89	10.24	----	
RIVER_GAUGE	05/18/1998	17:12	28.13	16.97	11.16	----	
RIVER_GAUGE	05/18/1998	17:45	28.13	17.15	10.98	----	
RIVER_GAUGE	08/17/1998	09:58	28.13	23.98	4.15	----	
RIVER_GAUGE	08/17/1998	10:34	28.13	24.15	3.98	----	
RIVER_GAUGE	11/13/1998	09:30	28.13	24.64	3.49	----	
RIVER_GAUGE	11/13/1998	10:05	28.13	24.45	3.68	----	
RIVER_GAUGE	02/16/1999	12:40	28.13	19.36	8.77	----	
RIVER_GAUGE	02/16/1999	13:27	28.13	19.43	8.70	----	
RIVER_GAUGE	05/18/1999	14:33	28.13	17.24	10.89	----	
RIVER_GAUGE	05/18/1999	15:19	28.13	17.30	10.83	----	
RIVER_GAUGE	09/21/1999	11:10	28.13	24.94	3.19	----	
RIVER_GAUGE	09/21/1999	11:59	28.13	25.03	3.10	----	
RIVER_GAUGE	12/06/1999	13:43	28.13	18.24	9.89	----	
RIVER_GAUGE	12/06/1999	14:25	28.13	18.06	10.07	----	

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TABLE A-2
GROUNDWATER LEVEL MEASUREMENTS
QUARTERLY SAMPLING EVENTS, MARCH 1997 - AUGUST 2003
TIME OIL NORTHWEST TERMINAL

Well	Date	Time	Reference Elevation (ft) (a)	DTW (ft) (b)	GW Elevation (ft) (c)	LNAPL Thickness (ft)	NOTES
RIVER_GAUGE	02/16/2000	10:03	28.13	19.18	8.95	----	
RIVER_GAUGE	02/16/2000	10:41	28.13	19.07	9.06	----	
RIVER_GAUGE	05/23/2000	16:12	28.13	19.80	8.33	----	
RIVER_GAUGE	05/23/2000	17:04	28.13	19.94	8.19	----	
RIVER_GAUGE	08/29/2000	12:54	28.13	24.63	3.50	----	
RIVER_GAUGE	08/29/2000	13:49	28.13	24.91	3.22	----	
RIVER_GAUGE	11/09/2000	12:19	28.13	24.26	3.87	----	
RIVER_GAUGE	11/09/2000	13:10	28.13	23.67	4.46	----	
RIVER_GAUGE	02/12/2001	15:45	28.13	23.75	4.38	----	
RIVER_GAUGE	02/12/2001	16:43	28.13	24.00	4.13	----	
RIVER_GAUGE	06/04/2001	11:20	28.13	23.62	4.51	----	
RIVER_GAUGE	06/04/2001	12:15	28.13	23.79	4.34	----	
RIVER_GAUGE	08/16/2001	10:20	28.13	24.83	3.30	----	
RIVER_GAUGE	08/16/2001	11:29	28.13	25.23	2.90	----	
RIVER_GAUGE	11/28/2001	11:16	28.13	22.50	5.63	----	
RIVER_GAUGE	11/28/2001	12:18	28.13	23.13	5.00	----	
RIVER_GAUGE	02/27/2002	13:11	28.13	22.24	5.89	----	
RIVER_GAUGE	02/27/2002	14:12	28.13	22.27	5.86	----	
RIVER_GAUGE	03/05/2002	11:25	28.13	21.42	6.71	----	
RIVER_GAUGE	04/05/2002	08:00	28.13	23.10	5.03	----	
RIVER_GAUGE	05/29/2002	14:07	28.13	17.31	10.82	----	
RIVER_GAUGE	06/27/2002	14:07	28.13	18.31	9.82	----	
RIVER_GAUGE	06/27/2002	14:43	28.13	18.36	9.77	----	
RIVER_GAUGE	08/26/2002	15:45	28.13	24.83	3.30	----	
RIVER_GAUGE	08/26/2002	16:13	28.13	24.85	3.28	----	
RIVER_GAUGE	11/13/2002	07:19	28.13	24.10	4.03	----	
RIVER_GAUGE	11/13/2002	07:54	28.13	24.21	3.92	----	
RIVER_GAUGE	02/11/2003	08:34	28.13	23.70	4.43	----	
RIVER_GAUGE	02/11/2003	09:14	28.13	23.43	4.70	----	
RIVER_GAUGE	05/08/2003	06:40	28.13	20.02	8.11	----	
RIVER_GAUGE	05/08/2003	07:17	28.13	20.00	8.13	----	
RIVER_GAUGE	08/27/2003	13:18	28.13	23.36	4.77	----	
RIVER_GAUGE	08/27/2003	14:15	28.13	23.66	4.47	----	
RIVER_GAUGE	10/23/2003	11:46	28.13	25.00	3.13	----	
RIVER_GAUGE	10/23/2003	13:35	28.13	24.94	3.19	----	

Notes:
NM Not measured.
NA Not available.
-- No measurable product or odor observed.
* Well Point
(a) Reference Elevation (Ref. Elev) is the north side of the top of the 1.25-, 2- or 4-inch well casing, reference elevation surveys were conducted by Zarosinski-Tatone Engineers, Inc., Portland, Oregon. For the river gauge, the reference elevation was measured at a marked location on the south side of the dock on the Willamette River.
(b) Depth to water (DTW) measured from surveyed reference elevation [see note (1)].
(c) Where LNAPL thickness measured, groundwater elevation adjusted to account for the presence of LNAPL in the well using the method in "*Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells* " [Lenhard and Parker 1990; Groundwater 28(1):57-67].

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
2-Methylnaphthalene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Acenaphthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Acenaphthylene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Chrysene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Dibenzofuran	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Fluoranthene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Fluorene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Naphthalene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Pentachlorophenol	(ug/l)	0.52U	0.61	0.65	NT	0.5U	3.9
Phenanthrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT
Pyrene	(ug/l)	NT	NT	NT	0.1U	0.1U	NT

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW013S 10/23/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
2-Methylnaphthalene	(ug/l)	1.6	NT	NT	0.1U	0.11U	46
Acenaphthene	(ug/l)	0.1U	NT	NT	0.84	1.3	0.8
Acenaphthylene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.14	0.12U
Benzo(a)anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(a)pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(b)fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(ghi)perylene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Benzo(k)fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Chrysene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Dibenzo(a,h)anthracene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Dibenzofuran	(ug/l)	0.1U	NT	NT	0.77	0.59	0.57
Fluoranthene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Fluorene	(ug/l)	0.1U	NT	NT	2.5	3.3	2.1
Indeno(1,2,3-cd)pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U
Naphthalene	(ug/l)	4.1	NT	NT	0.1U	0.11U	100
Pentachlorophenol	(ug/l)	0.5U	0.55U	1	NT	NT	NT
Phenanthrene	(ug/l)	0.1U	NT	NT	2	2.3	1.5
Pyrene	(ug/l)	0.1U	NT	NT	0.1U	0.11U	0.12U

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
2-Methylnaphthalene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Acenaphthene	(ug/l)	1.1	0.1U	0.84	0.84	0.1U	0.52
Acenaphthylene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Anthracene	(ug/l)	0.16	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(a)anthracene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(a)pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(b)fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(ghi)perylene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Benzo(k)fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Chrysene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Dibenzo(a,h)anthracene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Dibenzofuran	(ug/l)	0.71	0.1U	0.8	0.82	0.1U	0.38
Fluoranthene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Fluorene	(ug/l)	2.3	0.1U	1.6	1.7	0.1U	0.67
Indeno(1,2,3-cd)pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Naphthalene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.33	0.1U	1.6	1.6	0.1U	0.31
Pyrene	(ug/l)	0.12U	0.1U	0.11U	0.11U	0.1U	0.1U

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	OX001S 10/22/2003 Primary	OX003S 10/22/2003 Primary	OX005S 10/22/2003 Primary	OX006S 10/22/2003 Primary	OX007S 10/22/2003 Primary
2-Methylnaphthalene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Chrysene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	0.1U	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Fluorene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	NT	0.69	130	0.5U	2100	720
Phenanthrene	(ug/l)	0.1U	NT	NT	NT	NT	NT
Pyrene	(ug/l)	0.1U	NT	NT	NT	NT	NT

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TABLE A-3a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CHLORINATED PHENOLS AND PAHS (SW8270-SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX008S 10/22/2003 Primary	OX008S 10/22/2003 Duplicate 1
2-Methylnaphthalene	(ug/l)	NT	NT
Acenaphthene	(ug/l)	NT	NT
Acenaphthylene	(ug/l)	NT	NT
Anthracene	(ug/l)	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT
Chrysene	(ug/l)	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT
Dibenzofuran	(ug/l)	NT	NT
Fluoranthene	(ug/l)	NT	NT
Fluorene	(ug/l)	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT
Naphthalene	(ug/l)	NT	NT
Pentachlorophenol	(ug/l)	260	300
Phenanthrene	(ug/l)	NT	NT
Pyrene	(ug/l)	NT	NT

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1.1U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,4,6-Trichlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,4-Dichlorophenol	(ug/l)	3.1U	3U	3.2U	3U	3U	3U
2,4-Dimethylphenol	(ug/l)	4.4	3U	3.2U	3U	3U	3U
2,4-Dinitrophenol	(ug/l)	26U	25U	27U	25U	25U	25U
2,4-Dinitrotoluene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2,6-Dinitrotoluene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2-Chloronaphthalene	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	3	1U	1.4	1U	1U	1.9
2-Methylphenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
2-Nitroaniline	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
2-Nitrophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
3,3-Dichlorobenzidine	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
3-Nitroaniline	(ug/l)	6.2U	6.1U	6.4U	6U	6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	16U	15U	15U	15U

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
4-Chloroaniline	(ug/l)	3.1U	3U	3.2U	3U	3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Methylphenol	(ug/l)	1U	1U	1.1U	1U	1U	1U
4-Nitroaniline	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
4-Nitrophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Acenaphthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Acenaphthylene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Benzoic acid	(ug/l)	10U	10U	11U	10U	10U	10U
Benzyl alcohol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1.1U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	6.3	1U	1.1U	1U	1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U

BZTO104(e)018667

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
Carbazole	(ug/l)	1U	1U	1.1U	1U	1U	1U
Chrysene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dibenzofuran	(ug/l)	1U	1U	1.1U	1U	1U	1U
Diethyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1.1U	1U	1U	1U
Fluoranthene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Fluorene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Hexachlorocyclopentadiene	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U
Hexachloroethane	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Isophorone	(ug/l)	1U	1U	1.1U	1U	1U	1U
Naphthalene	(ug/l)	3.5	1U	2.1	1U	1U	4.4
Nitrobenzene	(ug/l)	1U	1U	1.1U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1.1U	1U	1U	1U
Pentachlorophenol	(ug/l)	5.2U	5.1U	5.3U	5U	5U	5U

BZTO104(e)018668

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1.1U	1U	1U	1U
Phenol	(ug/l)	2.1U	2U	2.1U	2U	2U	2U
Pyrene	(ug/l)	1U	1U	1.1U	1U	1U	1U

BZTO104(e)018669

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,2-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,3-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
1,4-Dichlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2,4,5-Trichlorophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,4,6-Trichlorophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,4-Dichlorophenol	(ug/l)	3.3U	3U	3U	3.3U	3.6U	3.7U
2,4-Dimethylphenol	(ug/l)	3.3U	3U	3U	3.3U	5.4	3.7U
2,4-Dinitrophenol	(ug/l)	27U	25U	25U	28U	30U	30U
2,4-Dinitrotoluene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2,6-Dinitrotoluene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2-Chloronaphthalene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Chlorophenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Methylnaphthalene	(ug/l)	3.1	2.9	1U	1.1U	46	1.2U
2-Methylphenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
2-Nitroaniline	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
2-Nitrophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
3,3-Dichlorobenzidine	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
3-Nitroaniline	(ug/l)	6.6U	6.1U	6U	6.7U	7.1U	7.3U
4,6-Dinitro-2-Methylphenol	(ug/l)	16U	15U	15U	17U	18U	18U

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BZTO104(e)018670

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Chloro-3-methylphenol	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
4-Chloroaniline	(ug/l)	3.3U	3U	3U	3.3U	3.6U	3.7U
4-Chlorophenylphenyl ether	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Methylphenol	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
4-Nitroaniline	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
4-Nitrophenol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Acenaphthene	(ug/l)	1.1U	1U	1.1	1.4	1.2U	1.2
Acenaphthylene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(a)anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(a)pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(b)fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(ghi)perylene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzo(k)fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Benzoic acid	(ug/l)	11U	10U	10U	11U	12U	12U
Benzyl alcohol	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Bis(2-chloroethoxy)methane	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Bis(2-chloroethyl)ether	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Butyl benzyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U

BZTO104(e)018671

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
Carbazole	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Chrysene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Dibenzo(a,h)anthracene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Dibenzofuran	(ug/l)	1.1U	1U	1.5	1.1U	1.2U	1.2U
Diethyl phthalate	(ug/l)	1.1U	1U	NT	1.1U	1.2U	1.2U
Dimethyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Di-n-butyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Di-n-octyl phthalate	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Fluoranthene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Fluorene	(ug/l)	1.1U	1U	3.5	3.8	1.9	2.3
Hexachlorobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Hexachlorobutadiene	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Hexachlorocyclopentadiene	(ug/l)	5.5U	5.1U	5U	5.6U	6U	6.1U
Hexachloroethane	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Isophorone	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Naphthalene	(ug/l)	2.2	3.2	1U	1.1U	100	1.2U
Nitrobenzene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.2U	2U	2U	2.2U	2.4U	2.4U
N-Nitrosodiphenylamine	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U
Pentachlorophenol	(ug/l)	5.5U	900	5U	5.6U	6U	6.1U

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BZTO104(e)018672

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary
Phenanthrene	(ug/l)	1.1U	1U	3.3	2.3	1.3	1.2U
Phenol	(ug/l)	2.2U	2U	2U	2.2U	11	2.4U
Pyrene	(ug/l)	1.1U	1U	1U	1.1U	1.2U	1.2U

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BZTO104(e)018673

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,4,6-Trichlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,4-Dichlorophenol	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
2,4-Dimethylphenol	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
2,4-Dinitrophenol	(ug/l)	25U	27U	27U	25U	26U	26U
2,4-Dinitrotoluene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2,6-Dinitrotoluene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2-Chloronaphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Chlorophenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Methylphenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
2-Nitroaniline	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
2-Nitrophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
3,3-Dichlorobenzidine	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
3-Nitroaniline	(ug/l)	6U	6.6U	6.5U	6.1U	6.2U	6.1U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	16U	16U	15U	15U	15U

BZTO104(e)018674

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
4-Chloroaniline	(ug/l)	3U	3.3U	3.3U	3U	3.1U	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Methylphenol	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
4-Nitroaniline	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
4-Nitrophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Acenaphthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Acenaphthylene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Benzoic acid	(ug/l)	10U	11U	11U	10U	10U	10U
Benzyl alcohol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1.1U	1.7	2.4	2.1	4.9
Butyl benzyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U

BZTO104(e)018675

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary
Carbazole	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Chrysene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dibenzofuran	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Diethyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Fluoranthene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Fluorene	(ug/l)	1U	1.4	1.5	1U	1U	1U
Hexachlorobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Hexachlorocyclopentadiene	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U
Hexachloroethane	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Isophorone	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Naphthalene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Nitrobenzene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1.1U	1.1U	1U	1U	1U
Pentachlorophenol	(ug/l)	5U	5.5U	5.4U	5.1U	5.2U	5.1U

BZTO104(e)018676

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW029S	LW030S	LW030S	LW031S	LW032S	LW034S
	DATE	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Duplicate 1	Primary	Primary	Primary
Phenanthrene	(ug/l)	1U	1.5	1.5	1U	1U	1U
Phenol	(ug/l)	2U	2.2U	2.2U	2U	2.1U	2U
Pyrene	(ug/l)	1U	1.1U	1.1U	1U	1U	1U

BZTO104(e)018677

TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,3-Dichlorobenzene	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U
2,4,5-Trichlorophenol	(ug/l)	33
2,4,6-Trichlorophenol	(ug/l)	5.1U
2,4-Dichlorophenol	(ug/l)	3.1U
2,4-Dimethylphenol	(ug/l)	NT
2,4-Dinitrophenol	(ug/l)	26U
2,4-Dinitrotoluene	(ug/l)	5.1U
2,6-Dinitrotoluene	(ug/l)	5.1U
2-Chloronaphthalene	(ug/l)	1U
2-Chlorophenol	(ug/l)	1U
2-Methylnaphthalene	(ug/l)	1U
2-Methylphenol	(ug/l)	1U
2-Nitroaniline	(ug/l)	5.1U
2-Nitrophenol	(ug/l)	5.1U
3,3-Dichlorobenzidine	(ug/l)	5.1U
3-Nitroaniline	(ug/l)	6.1U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U
4-Chloro-3-methylphenol	(ug/l)	2U
4-Chloroaniline	(ug/l)	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U
4-Methylphenol	(ug/l)	1U
4-Nitroaniline	(ug/l)	5.1U
4-Nitrophenol	(ug/l)	5.1U
Acenaphthene	(ug/l)	1U
Acenaphthylene	(ug/l)	1U
Anthracene	(ug/l)	1U
Benzo(a)anthracene	(ug/l)	1U
Benzo(a)pyrene	(ug/l)	1U
Benzo(b)fluoranthene	(ug/l)	1U
Benzo(ghi)perylene	(ug/l)	1U
Benzo(k)fluoranthene	(ug/l)	1U
Benzoic acid	(ug/l)	10U
Benzyl alcohol	(ug/l)	5.1U
Bis(2-chloroethoxy)methane	(ug/l)	1U
Bis(2-chloroethyl)ether	(ug/l)	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U
Butyl benzyl phthalate	(ug/l)	1U

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW1 10/22/2003 Primary
Carbazole	(ug/l)	1U
Chrysene	(ug/l)	1U
Dibenzo(a,h)anthracene	(ug/l)	1U
Dibenzofuran	(ug/l)	1U
Diethyl phthalate	(ug/l)	1U
Dimethyl phthalate	(ug/l)	1U
Di-n-butyl phthalate	(ug/l)	1U
Di-n-octyl phthalate	(ug/l)	1U
Fluoranthene	(ug/l)	1U
Fluorene	(ug/l)	1U
Hexachlorobenzene	(ug/l)	1U
Hexachlorobutadiene	(ug/l)	2U
Hexachlorocyclopentadiene	(ug/l)	5.1U
Hexachloroethane	(ug/l)	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U
Isophorone	(ug/l)	1U
Naphthalene	(ug/l)	5.1
Nitrobenzene	(ug/l)	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U
N-Nitrosodiphenylamine	(ug/l)	1U
Pentachlorophenol	(ug/l)	350

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TABLE A-3b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW1
	DATE	10/22/2003
	RESULT TYPE	Primary
Phenanthrene	(ug/l)	1U
Phenol	(ug/l)	3.7M
Pyrene	(ug/l)	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	NT	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	NT	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	NT	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	NT	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	12	1U	1U	NT	1U	1.4
1,2-Dibromoethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	3.6	1U	1U	NT	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	NT	1U	1U

BZTO104(e)018682

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	NT	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	NT	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	NT	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	NT	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	NT	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	NT	5U	5U
Acetone	(ug/l)	5U	5U	5U	NT	5U	5U
Acrolein	(ug/l)	50U	50U	50U	NT	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	NT	1U	1U
Benzene	(ug/l)	5.6	1U	1U	NT	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	NT	2U	2U
Bromoform	(ug/l)	1U	1U	1U	NT	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	NT	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	NT	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	NT	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	NT	1U	1U
Chloroform	(ug/l)	1U	1U	1U	NT	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	NT	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	NT	1U	1U
Ethylbenzene	(ug/l)	31	1U	1U	NT	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	NT	5U	5U
Isopropylbenzene	(ug/l)	3.3	1.1	7.1	NT	1U	1U
m,p-Xylene	(ug/l)	40	1U	1U	NT	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	NT	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	1U	1U	NT
Methylene chloride	(ug/l)	2U	2U	2U	NT	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	NT	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
n-Propylbenzene	(ug/l)	4.5	1U	11	NT	1U	1U
o-Xylene	(ug/l)	9.2	1U	1U	NT	1U	1U
sec-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Styrene	(ug/l)	1U	1U	1U	NT	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	NT	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	NT	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Toluene	(ug/l)	2.1	1U	1U	NT	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	NT	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	NT	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	NT	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	NT	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	NT	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	NT	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	2.2	1U	73	1U	1U	540
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	3.3	1U	16	1U	1U	120
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
2-Butanone	(ug/l)	17M	5U	7.5M	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1.6	1U	3.2	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	5U	7M	5.1M	5U	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	2.1	1U	1U	1600
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	29	7.2	14	1U	1U	940
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	42	140	7.6	6.5	7	72
m,p-Xylene	(ug/l)	16	1U	20	1U	1U	2400
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	NT	NT	1U	1U	7.5M
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5.5	5U	5U	5U	5U	190
n-Butylbenzene	(ug/l)	4.3	9	3.7M	2.9M	2.2	8
n-Propylbenzene	(ug/l)	54	94	13	8.9	9.2	110
o-Xylene	(ug/l)	1U	1U	23	1U	1U	770
sec-Butylbenzene	(ug/l)	3.7	19	4.7	4.7	5.1	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	7.4	1	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	72
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1.3	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018690

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	6	5U	5U	5U	5U	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	12	1U	9.8	9.6	1U	18
m,p-Xylene	(ug/l)	1U	1U	1U	1	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	1U	1U	1U	1U	1U
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	3.3	1U	3.5	3.2M	1U	6.1
n-Propylbenzene	(ug/l)	13	1U	25	23	1U	20
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	4	1U	2.5	2.4	1U	6.5
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018693

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	170
1,2-Dibromoethane	(ug/l)	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	31
1,3-Dichlorobenzene	(ug/l)	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U

BZTO104(e)018694

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
2-Butanone	(ug/l)	5U	46M
2-Chlorotoluene	(ug/l)	1U	1U
2-Hexanone	(ug/l)	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U
4-Isopropyltoluene	(ug/l)	1U	3.6
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U
Acetone	(ug/l)	5U	15M
Acrolein	(ug/l)	50U	50U
Acrylonitrile	(ug/l)	1U	1U
Benzene	(ug/l)	1U	4.9
Bromobenzene	(ug/l)	1U	1U
Bromochloromethane	(ug/l)	1U	1U
Bromodichloromethane	(ug/l)	1U	1U
Bromoethane	(ug/l)	2U	2U
Bromoform	(ug/l)	1U	1U
Bromomethane	(ug/l)	1U	1U
Carbon disulfide	(ug/l)	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U
Chlorobenzene	(ug/l)	1U	1U
Chloroethane	(ug/l)	1U	1U
Chloroform	(ug/l)	1U	1U

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TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
Chloromethane	(ug/l)	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U
Dibromochloromethane	(ug/l)	1U	1U
Dibromochloropropane	(ug/l)	5U	5U
Dibromomethane	(ug/l)	1U	1U
Ethylbenzene	(ug/l)	1U	64
Hexachlorobutadiene	(ug/l)	5U	5U
Isopropylbenzene	(ug/l)	1U	34
m,p-Xylene	(ug/l)	1U	62
Methyl iodide	(ug/l)	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	NT
Methylene chloride	(ug/l)	2U	2U
Naphthalene	(ug/l)	5U	13
n-Butylbenzene	(ug/l)	1U	4.7M
n-Propylbenzene	(ug/l)	1U	40
o-Xylene	(ug/l)	1U	90
sec-Butylbenzene	(ug/l)	1U	11
Styrene	(ug/l)	1U	1U
tert-Butylbenzene	(ug/l)	1U	2
Tetrachloroethene	(ug/l)	1U	1U

BZTO104(e)018696

TABLE A-3c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW034S	RW1
	DATE	10/27/2003	10/22/2003
	RESULT TYPE	Primary	Primary
Toluene	(ug/l)	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U
Trichloroethene	(ug/l)	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U
Vinyl Acetate	(ug/l)	5U	5U
Vinyl Chloride	(ug/l)	1U	1U

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TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.7	NT	NT	0.26	0.6	3.5
Gasoline Range Hydrocarbons	(mg/l)	1.2	0.25U	0.25U	NT	2.1	4.6
TPH-Motor Oil Range	(mg/l)	0.5U	NT	NT	0.5U	0.5U	0.5U

BZTO104(e)018698

TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW011S 10/22/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.3	4.4	5.4	4.3	4.4	0.25U
Gasoline Range Hydrocarbons	(mg/l)	2.8	1.1	0.96	24	1.6	0.25U
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-3d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.87	0.86	0.59	3.3	0.25U	5.8
Gasoline Range Hydrocarbons	(mg/l)	0.84	0.89	0.25U	1.8	0.25U	7
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Arsenic	(mg/l)	0.007	0.018	0.006	0.001U	0.008	0.001
Chromium	(mg/l)	0.006	0.005U	0.005U	0.005U	0.005U	0.006
Copper	(mg/l)	0.015	0.002U	0.002	0.006	0.003	0.006
Lead	(mg/l)	0.005	0.001U	0.001U	0.001U	0.001U	0.001U
Nickel	(mg/l)	0.01	0.01U	0.01U	0.03	0.01U	0.01U
Zinc	(mg/l)	0.018	0.006U	0.006U	0.014	0.007	0.009

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BZTO104(e)018701

TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW007S	LW008S	LW011S	LW019S	LW020S	LW021S
	DATE	10/20/2003	10/21/2003	10/22/2003	10/28/2003	10/28/2003	10/28/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Arsenic	(mg/l)	0.012	0.021	0.006	0.046	0.04	0.025
Chromium	(mg/l)	0.005U	0.007	0.005U	0.005U	0.005U	0.005U
Copper	(mg/l)	0.003	0.007	0.002	0.002U	0.002U	0.005
Lead	(mg/l)	0.001U	0.002	0.001U	0.001	0.001U	0.005
Nickel	(mg/l)	0.01U	0.02	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.006U	0.027	0.006U	0.006U	0.01	0.012

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BZTO104(e)018702

TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary	LW032S 10/27/2003 Primary
Arsenic	(mg/l)	0.038	0.002	0.013	0.013	0.001U	0.034
Chromium	(mg/l)	0.005U	0.005U	0.005U	0.005U	0.005U	0.005U
Copper	(mg/l)	0.002	0.002U	0.002U	0.002U	0.002U	0.002U
Lead	(mg/l)	0.002	0.001U	0.001U	0.001U	0.001U	0.001U
Nickel	(mg/l)	0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.008	0.007	0.006U	0.007	0.008	0.008

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BZTO104(e)018703

TABLE A-3e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
PRIORITY POLLUTANT METALS (SW6000-7000 SERIES)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW034S 10/27/2003 Primary	RW1 10/22/2003 Primary
Arsenic	(mg/l)	0.001	0.005
Chromium	(mg/l)	0.005U	0.005U
Copper	(mg/l)	0.002U	0.005
Lead	(mg/l)	0.001U	0.001U
Nickel	(mg/l)	0.01U	0.01U
Zinc	(mg/l)	0.009	0.01

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BZTO104(e)018704

TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B1 10/20/2003 Primary	D 10/23/2003 Primary	J1 10/21/2003 Primary	K 10/21/2003 Primary	LW001S 10/21/2003 Primary	LW004S 10/24/2003 Primary
Chloride	(mg/l)	3	2.4	2.2	NT	3.2	3
Dissolved Oxygen	(mg/l)	1.48	1.66	1.65	2.57	1.64	2.95
pH	(s.u.)	6.51	6.71	6.8	6.37	6.77	6.65
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	285	382	255	250	237	217
Temperature	(c)	15.9	15	17.8	17.3	18.3	15.2
Total Dissolved Solids	(mg/l)	210	260	190	NT	200	140
Turbidity	(ntu)	55	36	0	10	160	100

BZTO104(e)018705

TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW007S 10/20/2003 Primary	LW008S 10/21/2003 Primary	LW011S 10/22/2003 Primary	LW013S 10/23/2003 Primary	LW019S 10/28/2003 Primary	LW020S 10/28/2003 Primary
Chloride	(mg/l)	2.9	4.8	4	NT	1.1	2
Dissolved Oxygen	(mg/l)	1.08	1.03	1.97	5.65	1.72	1.79
pH	(s.u.)	6.77	6.57	6.65	6.38	6.65	6.33
Redox	(mv)	NT	NT	-171	NT	NT	NT
Specific Conductivity	(us)	308	352	300	119	506	445
Temperature	(c)	15.6	19	15.8	14.7	14.4	16.5
Total Dissolved Solids	(mg/l)	220	260	240	NT	140	270
Turbidity	(ntu)	255	44	37	65	10	44

BZTO104(e)018706

TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW021S 10/28/2003 Primary	LW027S 10/28/2003 Primary	LW029S 10/27/2003 Primary	LW030S 10/27/2003 Primary	LW030S 10/27/2003 Duplicate 1	LW031S 10/27/2003 Primary
Chloride	(mg/l)	2.7	1.9	1.8	1.3	1.3	1.7
Dissolved Oxygen	(mg/l)	1.25	1.53	1.44	2.46	2.27	3.10
pH	(s.u.)	6.54	6.62	6.56	6.59	6.59	5.90
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	373	400	112	192	193	187
Temperature	(c)	16.4	14.9	14.7	14.7	14.7	14.7
Total Dissolved Solids	(mg/l)	240	270	91	130	140	140
Turbidity	(ntu)	191	107	59	197	215	43

BZTO104(e)018707

TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW032S 10/27/2003 Primary	LW034S 10/27/2003 Primary	OX001S 10/22/2003 Primary	OX003S 10/22/2003 Primary	OX005S 10/22/2003 Primary	OX006S 10/22/2003 Primary
Chloride	(mg/l)	2.8	2.9	NT	NT	NT	NT
Dissolved Oxygen	(mg/l)	1.65	2.62	1.26	2.14	1.18	2.63
pH	(s.u.)	6.35	6.01	6.57	6.65	6.59	6.67
Redox	(mv)	NT	NT	-184	-95	-179	-187.1
Specific Conductivity	(us)	409	234	317	318	288	352
Temperature	(c)	14.6	15.4	15.9	16.2	16.5	16.3
Total Dissolved Solids	(mg/l)	250	180	NT	NT	NT	NT
Turbidity	(ntu)	113	55	89	47	157	31

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TABLE A-3f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	OX007S 10/22/2003 Primary	OX008S 10/22/2003 Primary	OX008S 10/22/2003 Duplicate 1	RW1 10/22/2003 Primary
Chloride	(mg/l)	NT	NT	NT	7.8
Dissolved Oxygen	(mg/l)	1.76	2.26	2.3	2.65
pH	(s.u.)	6.6	6.65	6.65	6.73
Redox	(mv)	-174.4	160	78	-201
Specific Conductivity	(us)	326	337	337	415
Temperature	(c)	16.1	16.3	16.3	17.5
Total Dissolved Solids	(mg/l)	NT	NT	NT	320
Turbidity	(ntu)	173	35	35	131

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TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXIN AND FURANS (SW8290)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW011S 10/22/2003	OX008S 10/22/2003	RW1 10/22/2003
1,2,3,4,6,7,8-HpCDD	(pg/l)	34761.362J	36.153	124.756
1,2,3,4,6,7,8-HpCDF	(pg/l)	5015.064	7.543J	18.145J
1,2,3,4,7,8,9-HpCDF	(pg/l)	335.279	3.834U	4.331U
1,2,3,4,7,8-HxCDD	(pg/l)	30.589	2.924U	2.808U
1,2,3,4,7,8-HxCDF	(pg/l)	185.273	2.347U	2.152U
1,2,3,6,7,8-HxCDD	(pg/l)	811.768	2.247U	3.039U
1,2,3,6,7,8-HxCDF	(pg/l)	100.956	2.056U	1.885U
1,2,3,7,8,9-HxCDD	(pg/l)	111.191	2.495U	2.397U
1,2,3,7,8,9-HxCDF	(pg/l)	11.372U	2.529U	2.318U
1,2,3,7,8-PeCDD	(pg/l)	5.19U	3.224U	2.939U
1,2,3,7,8-PeCDF	(pg/l)	30.072	2.796U	2.923U
2,3,4,6,7,8-HxCDF	(pg/l)	141.15	2.297U	2.106U
2,3,4,7,8-PeCDF	(pg/l)	23.833J	2.609U	2.727U
2,3,7,8-TCDD	(pg/l)	3.075U	3.459U	4.084U
2,3,7,8-TCDF	(pg/l)	6.882J	3.813U	3.029U
Heptachlorodibenzofuran	(pg/l)	23730.425	33.506	86.297
Heptachlorodibenzo-p-dioxins	(pg/l)	53330.489	57.332	210.738
Hexachlorodibenzofuran	(pg/l)	6012.83	9.192	20.238
Hexachlorodibenzo-p-dioxin	(pg/l)	2768.657	2.247U	19.924
OCDD	(pg/l)	276443.602J	229.507	1225.865
OCDF	(pg/l)	25344.713J	34.621J	119.196

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TABLE A-3g
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - SHALLOW WELLS
DIOXIN AND FURANS (SW8290)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW011S 10/22/2003	OX008S 10/22/2003	RW1 10/22/2003
Pentachlorodibenzofuran	(pg/l)	664.328	2.609U	2.727U
Pentachlorodibenzo-p-dioxin	(pg/l)	143.82	3.224U	6.528
Tetrachlorodibenzofuran	(pg/l)	7.909	3.813U	3.029U
Tetrachlorodibenzo-p-dioxin	(pg/l)	3.075U	3.459U	2.412U
Total TEQ	(pg/l)	855.097	0.7011	2.778

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BZTO104(e)018711

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	B2 10/20/2003	G1A 10/24/2003	J2 10/21/2003	LW001D 10/21/2003	LW003D 10/24/2003	LW004D 10/24/2003
2-Methylnaphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	NT	NT	NT	NT	NT	NT
Anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Chrysene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	NT	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Fluorene	(ug/l)	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	0.5U	0.5U	0.5U	0.5U	0.62	0.5U
Phenanthrene	(ug/l)	NT	NT	NT	NT	NT	NT
Pyrene	(ug/l)	NT	NT	NT	NT	NT	NT

BZTO104(e)018712

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW006D 10/24/2003	LW009D 10/24/2003	LW010D 10/23/2003	LW011D 10/24/2003	LW014D 10/23/2003	LW017D 10/23/2003
2-Methylnaphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthene	(ug/l)	NT	NT	NT	NT	NT	NT
Acenaphthylene	(ug/l)	NT	NT	NT	NT	NT	NT
Anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(a)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(b)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(ghi)perylene	(ug/l)	NT	NT	NT	NT	NT	NT
Benzo(k)fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Chrysene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzo(a,h)anthracene	(ug/l)	NT	NT	NT	NT	NT	NT
Dibenzofuran	(ug/l)	NT	NT	NT	NT	NT	NT
Fluoranthene	(ug/l)	NT	NT	NT	NT	NT	NT
Fluorene	(ug/l)	NT	NT	NT	NT	NT	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	NT	NT	NT	NT	NT
Naphthalene	(ug/l)	NT	NT	NT	NT	NT	NT
Pentachlorophenol	(ug/l)	1.1	0.51U	0.94	0.55U	0.5U	0.51U
Phenanthrene	(ug/l)	NT	NT	NT	NT	NT	NT
Pyrene	(ug/l)	NT	NT	NT	NT	NT	NT

BZTO104(e)018713

TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW018D 10/23/2003	LW020D 10/28/2003	LW022D 10/27/2003	LW023D 10/27/2003	LW024D 10/28/2003	LW025D 10/28/2003
2-Methylnaphthalene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Acenaphthene	(ug/l)	NT	0.1U	1	0.61	0.91	0.45
Acenaphthylene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Anthracene	(ug/l)	NT	0.1U	0.14U	0.11	0.43	0.12U
Benzo(a)anthracene	(ug/l)	NT	0.1U	0.14U	0.16	0.4	0.12U
Benzo(a)pyrene	(ug/l)	NT	0.1U	0.14U	0.33	0.34	0.12U
Benzo(b)fluoranthene	(ug/l)	NT	0.1U	0.14U	0.13	0.18	0.12U
Benzo(ghi)perylene	(ug/l)	NT	0.1U	0.14U	0.15	0.13	0.12U
Benzo(k)fluoranthene	(ug/l)	NT	0.1U	0.14U	0.15	0.27	0.12U
Chrysene	(ug/l)	NT	0.1U	0.14U	0.21	0.4	0.12U
Dibenzo(a,h)anthracene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Dibenzofuran	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Fluoranthene	(ug/l)	NT	0.1U	0.14U	0.36	0.78	0.13
Fluorene	(ug/l)	NT	0.1U	0.35	0.31	0.7	0.57
Indeno(1,2,3-cd)pyrene	(ug/l)	NT	0.1U	0.14U	0.12	0.12	0.12U
Naphthalene	(ug/l)	NT	0.1U	0.14U	0.1U	0.1U	0.12U
Pentachlorophenol	(ug/l)	0.58	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	NT	0.1U	0.14U	0.2	1.2	0.33
Pyrene	(ug/l)	NT	0.1U	0.14U	0.44	0.94	0.16

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	LW026D 10/28/2003	LW027D 10/28/2003	LW029D 10/27/2003	LW030D 10/27/2003	LW032D 10/27/2003	LW035D 10/27/2003
2-Methylnaphthalene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Acenaphthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Acenaphthylene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(a)anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(a)pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(b)fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(ghi)perylene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Benzo(k)fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Chrysene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Dibenzo(a,h)anthracene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Dibenzofuran	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Fluoranthene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Fluorene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Indeno(1,2,3-cd)pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Naphthalene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Pentachlorophenol	(ug/l)	NT	NT	NT	NT	NT	NT
Phenanthrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U
Pyrene	(ug/l)	0.11U	0.11U	0.1U	0.11U	0.11U	0.14U

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TABLE A-4a
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CHLORINATED PHENOLS AND PAHS (SW8270SIM)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE	OX008D 10/22/2003
2-Methylnaphthalene	(ug/l)	NT
Acenaphthene	(ug/l)	NT
Acenaphthylene	(ug/l)	NT
Anthracene	(ug/l)	NT
Benzo(a)anthracene	(ug/l)	NT
Benzo(a)pyrene	(ug/l)	NT
Benzo(b)fluoranthene	(ug/l)	NT
Benzo(ghi)perylene	(ug/l)	NT
Benzo(k)fluoranthene	(ug/l)	NT
Chrysene	(ug/l)	NT
Dibenzo(a,h)anthracene	(ug/l)	NT
Dibenzofuran	(ug/l)	NT
Fluoranthene	(ug/l)	NT
Fluorene	(ug/l)	NT
Indeno(1,2,3-cd)pyrene	(ug/l)	NT
Naphthalene	(ug/l)	NT
Pentachlorophenol	(ug/l)	0.62
Phenanthrene	(ug/l)	NT
Pyrene	(ug/l)	NT

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BZTO104(e)018716

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1U	1U	1.1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,4,6-Trichlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,4-Dichlorophenol	(ug/l)	3U	3U	3U	3U	3.3U	3U
2,4-Dimethylphenol	(ug/l)	3U	3U	3U	3U	3.3U	3U
2,4-Dinitrophenol	(ug/l)	25U	25U	25U	25U	27U	25U
2,4-Dinitrotoluene	(ug/l)	5U	5U	5U	5U	5.5U	5U
2,6-Dinitrotoluene	(ug/l)	5U	5U	5U	5U	5.5U	5U
2-Chloronaphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Methylnaphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Methylphenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
2-Nitroaniline	(ug/l)	5U	5U	5U	5U	5.5U	5U
2-Nitrophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
3,3-Dichlorobenzidine	(ug/l)	5U	5U	5U	5U	5.5U	5U
3-Nitroaniline	(ug/l)	6U	6U	6U	6U	6.6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	15U	15U	16U	15U

BZTO104(e)018717

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2U	2U	2.2U	2U
4-Chloroaniline	(ug/l)	3U	3U	3U	3U	3.3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Methylphenol	(ug/l)	1U	1U	1U	1U	1.1U	1U
4-Nitroaniline	(ug/l)	5U	5U	5U	5U	5.5U	5U
4-Nitrophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U
Acenaphthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Acenaphthylene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Benzoic acid	(ug/l)	10U	10U	10U	10U	11U	10U
Benzyl alcohol	(ug/l)	5U	5U	5U	5U	5.5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1U	1U	1.1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2U	2U	2.2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U

BZTO104(e)018718

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Carbazole	(ug/l)	1U	1U	1U	1U	1.1U	1U
Chrysene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dibenzofuran	(ug/l)	1U	1U	1U	1U	1.1U	1U
Diethyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1U	1U	1.1U	1U
Fluoranthene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Fluorene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Hexachlorobutadiene	(ug/l)	2U	2U	2U	2U	2.2U	2U
Hexachlorocyclopentadiene	(ug/l)	5U	5U	5U	5U	5.5U	5U
Hexachloroethane	(ug/l)	2U	2U	2U	2U	2.2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Isophorone	(ug/l)	1U	1U	1U	1U	1.1U	1U
Naphthalene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Nitrobenzene	(ug/l)	1U	1U	1U	1U	1.1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2U	2U	2.2U	2U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1U	1U	1.1U	1U
Pentachlorophenol	(ug/l)	5U	5U	5U	5U	5.5U	5U

BZTO104(e)018719

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1U	1U	1.1U	1U
Phenol	(ug/l)	2U	2U	2U	2U	2.2U	2U
Pyrene	(ug/l)	1U	1U	1U	1U	1.1U	1U

BZTO104(e)018720

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2,4,5-Trichlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,4,6-Trichlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,4-Dichlorophenol	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
2,4-Dimethylphenol	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
2,4-Dinitrophenol	(ug/l)	26U	26U	25U	27U	25U	35U
2,4-Dinitrotoluene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2,6-Dinitrotoluene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2-Chloronaphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Chlorophenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Methylnaphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Methylphenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
2-Nitroaniline	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
2-Nitrophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
3,3-Dichlorobenzidine	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
3-Nitroaniline	(ug/l)	6.1U	6.1U	6U	6.6U	6U	8.5U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	15U	16U	15U	21U

BZTO104(e)018721

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
4-Chloroaniline	(ug/l)	3.1U	3.1U	3U	3.3U	3U	4.2U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Methylphenol	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
4-Nitroaniline	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
4-Nitrophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Acenaphthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Acenaphthylene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(a)anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(a)pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(ghi)perylene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Benzoic acid	(ug/l)	10U	10U	10U	11U	10U	14U
Benzyl alcohol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U	1U	1U	1.5	3.9	1.4U
Butyl benzyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U

BZTO104(e)018722

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Carbazole	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Chrysene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Dibenzofuran	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Diethyl phthalate	(ug/l)	1.4	1U	1U	1.1U	1U	1.4U
Dimethyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Di-n-butyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Di-n-octyl phthalate	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Fluoranthene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Fluorene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Hexachlorobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Hexachlorobutadiene	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Hexachlorocyclopentadiene	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U
Hexachloroethane	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Isophorone	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Naphthalene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Nitrobenzene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2U	2.2U	2U	2.8U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Pentachlorophenol	(ug/l)	5.1U	5.1U	5U	5.5U	5U	7U

BZTO104(e)018723

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U
Phenol	(ug/l)	2U	2U	2U	2.2U	2U	4.1
Pyrene	(ug/l)	1U	1U	1U	1.1U	1U	1.4U

BZTO104(e)018724

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2,4,5-Trichlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,4,6-Trichlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,4-Dichlorophenol	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
2,4-Dimethylphenol	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
2,4-Dinitrophenol	(ug/l)	25U	25U	29U	27U	27U	26U
2,4-Dinitrotoluene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2,6-Dinitrotoluene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2-Chloronaphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Chlorophenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Methylnaphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Methylphenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
2-Nitroaniline	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
2-Nitrophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
3,3-Dichlorobenzidine	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
3-Nitroaniline	(ug/l)	6U	6U	7U	6.6U	6.5U	6.2U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U	15U	17U	16U	16U	16U

BZTO104(e)018725

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Chloro-3-methylphenol	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
4-Chloroaniline	(ug/l)	3U	3U	3.5U	3.3U	3.2U	3.1U
4-Chlorophenylphenyl ether	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Methylphenol	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
4-Nitroaniline	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
4-Nitrophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Acenaphthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Acenaphthylene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(a)anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(a)pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(b)fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(ghi)perylene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzo(k)fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Benzoic acid	(ug/l)	10U	10U	12U	11U	11U	10U
Benzyl alcohol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Bis(2-chloroethoxy)methane	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Bis(2-ethylhexyl)phthalate	(ug/l)	6.8	5.6	1.2U	1.1U	1.1U	1U
Butyl benzyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U

BZTO104(e)018726

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Carbazole	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Chrysene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Dibenzofuran	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Diethyl phthalate	(ug/l)	1U	2U	1.2U	1.1U	1.1U	1U
Dimethyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Di-n-butyl phthalate	(ug/l)	1U	1U	1.4	1.1U	1.1U	1U
Di-n-octyl phthalate	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Fluoranthene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Fluorene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Hexachlorobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Hexachlorobutadiene	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Hexachlorocyclopentadiene	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U
Hexachloroethane	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Isophorone	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Naphthalene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Nitrobenzene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
N-Nitrosodiphenylamine	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Pentachlorophenol	(ug/l)	5U	5U	5.8U	5.5U	5.4U	5.2U

Landau Associates

BZTO104(e)018727

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Phenanthrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U
Phenol	(ug/l)	2U	2U	2.3U	2.2U	2.2U	2.1U
Pyrene	(ug/l)	1U	1U	1.2U	1.1U	1.1U	1U

BZTO104(e)018728

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
1,2,4-Trichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2,4,5-Trichlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,4,6-Trichlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,4-Dichlorophenol	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
2,4-Dimethylphenol	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
2,4-Dinitrophenol	(ug/l)	28U	27U	36U	26U	25U	25U
2,4-Dinitrotoluene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2,6-Dinitrotoluene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2-Chloronaphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Chlorophenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Methylnaphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	7.2J
2-Methylphenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
2-Nitroaniline	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
2-Nitrophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
3,3-Dichlorobenzidine	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
3-Nitroaniline	(ug/l)	6.7U	6.4U	8.6U	6.2U	6U	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	17U	16U	21U	16U	15U	15U

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BZTO104(e)018729

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
4-Bromophenyl-phenylether	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Chloro-3-methylphenol	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
4-Chloroaniline	(ug/l)	3.3U	3.2U	4.3U	3.1U	3U	3U
4-Chlorophenylphenyl ether	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Methylphenol	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
4-Nitroaniline	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
4-Nitrophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Acenaphthene	(ug/l)	1.1U	1.1U	1.4U	1.2	1U	1U
Acenaphthylene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(a)anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(a)pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(b)fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(ghi)perylene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzo(k)fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Benzoic acid	(ug/l)	11U	11U	14U	10U	10U	10U
Benzyl alcohol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Bis(2-chloroethoxy)methane	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Bis(2-chloroethyl)ether	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1.1U	2.2	2.7	1U	1U	1U
Butyl benzyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U

BZTO104(e)018730

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Carbazole	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Chrysene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dibenzo(a,h)anthracene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dibenzofuran	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Diethyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Dimethyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Di-n-butyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Di-n-octyl phthalate	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Fluoranthene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Fluorene	(ug/l)	1.1U	1.1U	1.4U	1.8	1U	1U
Hexachlorobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Hexachlorocyclopentadiene	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	5U
Hexachloroethane	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Isophorone	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Naphthalene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1.8
Nitrobenzene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
N-Nitrosodiphenylamine	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Pentachlorophenol	(ug/l)	5.6U	5.3U	7.1U	5.2U	5U	8.1

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Phenanthrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U
Phenol	(ug/l)	2.2U	2.1U	2.9U	2.1U	2U	2U
Pyrene	(ug/l)	1.1U	1.1U	1.4U	1U	1U	1U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
1,2,4-Trichlorobenzene	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,3-Dichlorobenzene	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2'-Oxybis(1-Chloropropane)	(ug/l)	1U
2,4,5-Trichlorophenol	(ug/l)	5U
2,4,6-Trichlorophenol	(ug/l)	5U
2,4-Dichlorophenol	(ug/l)	3U
2,4-Dimethylphenol	(ug/l)	3U
2,4-Dinitrophenol	(ug/l)	25U
2,4-Dinitrotoluene	(ug/l)	5U
2,6-Dinitrotoluene	(ug/l)	5U
2-Chloronaphthalene	(ug/l)	1U
2-Chlorophenol	(ug/l)	1U
2-Methylnaphthalene	(ug/l)	5.4J
2-Methylphenol	(ug/l)	1U
2-Nitroaniline	(ug/l)	5U
2-Nitrophenol	(ug/l)	5U
3,3-Dichlorobenzidine	(ug/l)	5U
3-Nitroaniline	(ug/l)	6U
4,6-Dinitro-2-Methylphenol	(ug/l)	15U

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TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
4-Bromophenyl-phenylether	(ug/l)	1U
4-Chloro-3-methylphenol	(ug/l)	2U
4-Chloroaniline	(ug/l)	3U
4-Chlorophenylphenyl ether	(ug/l)	1U
4-Methylphenol	(ug/l)	1U
4-Nitroaniline	(ug/l)	5U
4-Nitrophenol	(ug/l)	5U
Acenaphthene	(ug/l)	1U
Acenaphthylene	(ug/l)	1U
Anthracene	(ug/l)	1U
Benzo(a)anthracene	(ug/l)	1U
Benzo(a)pyrene	(ug/l)	1U
Benzo(b)fluoranthene	(ug/l)	1U
Benzo(ghi)perylene	(ug/l)	1U
Benzo(k)fluoranthene	(ug/l)	1U
Benzoic acid	(ug/l)	10U
Benzyl alcohol	(ug/l)	5U
Bis(2-chloroethoxy)methane	(ug/l)	1U
Bis(2-chloroethyl)ether	(ug/l)	2U
Bis(2-ethylhexyl)phthalate	(ug/l)	1U
Butyl benzyl phthalate	(ug/l)	1U

BZTO104(e)018734

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
Carbazole	(ug/l)	1U
Chrysene	(ug/l)	1U
Dibenzo(a,h)anthracene	(ug/l)	1U
Dibenzofuran	(ug/l)	1U
Diethyl phthalate	(ug/l)	1U
Dimethyl phthalate	(ug/l)	1U
Di-n-butyl phthalate	(ug/l)	1U
Di-n-octyl phthalate	(ug/l)	1U
Fluoranthene	(ug/l)	1U
Fluorene	(ug/l)	1U
Hexachlorobenzene	(ug/l)	1U
Hexachlorobutadiene	(ug/l)	2U
Hexachlorocyclopentadiene	(ug/l)	5U
Hexachloroethane	(ug/l)	2U
Indeno(1,2,3-cd)pyrene	(ug/l)	1U
Isophorone	(ug/l)	1U
Naphthalene	(ug/l)	1.3
Nitrobenzene	(ug/l)	1U
N-Nitroso-Di-N-Propylamine	(ug/l)	2U
N-Nitrosodiphenylamine	(ug/l)	1U
Pentachlorophenol	(ug/l)	6.4

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BZTO104(e)018735

TABLE A-4b
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
SEMIVOLATILES (SW8270)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW2
	DATE	10/23/2003
	RESULT TYPE	Duplicate 1
Phenanthrene	(ug/l)	1U
Phenol	(ug/l)	2U
Pyrene	(ug/l)	1U

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BZTO104(e)018736

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1.4
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018737

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
2-Butanone	(ug/l)	5U	6.7M	5U	5U	5U	9.1M
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	7.3M	5U	5.1	64	6.6M
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018738

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	1U	150	1U	1U	1U	1.9
m,p-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	NT	NT	NT
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	10	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	1U	130	1U	1U	1U	1.6
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	1U	17	1U	1U	1U	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	3.5	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018739

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018740

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5U	5U	5U	71	6M	5.2M
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1U	1U	2.9
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018742

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	4.2	12	1U	1U	1U	14
m,p-Xylene	(ug/l)	1U	1U	1U	1U	1U	1.6
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	NT	NT	NT	NT	1.5	1.9M
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	1U	5.4	1U	1U	1U	12
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	2.1	1.3	1U	1U	1U	1.5
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	2.9	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1U	1U	1.6
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018744

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	19	5U	5U	11	7.9	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	40	1U	1U	1U	1U	1U
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1.1
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1M	1U	7	1.4M

BZTO104(e)018746

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	16	2.2	5.6	1U	1U	1U
m,p-Xylene	(ug/l)	1.2	1U	1.6	1U	1U	1U
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	33	1U	1U	1.2	1U	1U
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1.6	1U	1U	1U	1U	1U
n-Propylbenzene	(ug/l)	8.6	1U	2	1U	1U	1U
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	3.3	1.3	1.2	1U	1U	1U
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018747

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW023D	LW024D	LW025D	LW026D	LW027D	LW029D
	DATE	10/27/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Toluene	(ug/l)	1.2	1U	1U	1U	1U	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

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BZTO104(e)018748

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
1,1,1,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,1-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U	2U	2U	2U	2U	2U
1,1,2-Trichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
1,1-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2,3-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,3-Trichloropropane	(ug/l)	3U	3U	3U	3U	3U	3U
1,2,4-Trichlorobenzene	(ug/l)	5U	5U	5U	5U	5U	5U
1,2,4-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	16
1,2-Dibromoethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
1,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,3,5-Trimethylbenzene	(ug/l)	1U	1U	1U	1U	1U	4.4
1,3-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
1,3-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U
1,4-Dichlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
2,2-Dichloropropane	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
2-Butanone	(ug/l)	5U	5U	5U	5U	5U	5U
2-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
2-Hexanone	(ug/l)	5U	5U	5U	5U	5U	5U
4-Chlorotoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Isopropyltoluene	(ug/l)	1U	1U	1U	1U	1U	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U	5U	5U	5U	5U	5U
Acetone	(ug/l)	5.1	5U	7.9M	11	16	5U
Acrolein	(ug/l)	50U	50U	50U	50U	50U	50U
Acrylonitrile	(ug/l)	1U	1U	1U	1U	1U	1U
Benzene	(ug/l)	1U	1U	1U	1.5	1U	3.6
Bromobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Bromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromodichloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Bromoethane	(ug/l)	2U	2U	2U	2U	2U	2U
Bromoform	(ug/l)	1U	1U	1U	1U	1U	1U
Bromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon disulfide	(ug/l)	1U	1U	1U	1U	1U	1U
Carbon tetrachloride	(ug/l)	1U	1U	1U	1U	1U	1U
Chlorobenzene	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroethane	(ug/l)	1U	1U	1U	1U	1U	1U
Chloroform	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018750

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Chloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
cis-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Dibromochloropropane	(ug/l)	5U	5U	5U	5U	5U	5U
Dibromomethane	(ug/l)	1U	1U	1U	1U	1U	1U
Ethylbenzene	(ug/l)	1U	1U	1U	1U	3.8	2.6
Hexachlorobutadiene	(ug/l)	5U	5U	5U	5U	5U	5U
Isopropylbenzene	(ug/l)	1U	1U	2.2	27	43	28
m,p-Xylene	(ug/l)	1U	1U	1U	1U	9.4	4.3
Methyl iodide	(ug/l)	1U	1U	1U	1U	1U	1U
Methyl tert-butyl ether	(ug/l)	1U	1U	1.5	NT	NT	NT
Methylene chloride	(ug/l)	2U	2U	2U	2U	2U	2U
Naphthalene	(ug/l)	5U	5U	5U	5U	5U	5U
n-Butylbenzene	(ug/l)	1U	1U	1U	3	1.7	3.6
n-Propylbenzene	(ug/l)	1U	1U	1U	29	20	35
o-Xylene	(ug/l)	1U	1U	1U	1U	1U	1U
sec-Butylbenzene	(ug/l)	1U	1U	1U	5.6	4.3	5.1
Styrene	(ug/l)	1U	1U	1U	1U	1U	1U
tert-Butylbenzene	(ug/l)	1U	1U	1U	1U	1U	1.2
Tetrachloroethene	(ug/l)	1U	1U	1U	1U	1U	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	O 10/24/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary
Toluene	(ug/l)	1U	1U	1U	1.4	2.5	1U
trans-1,2-Dichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,3-Dichloropropene	(ug/l)	1U	1U	1U	1U	1U	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U	5U	5U	5U	5U	5U
Trichloroethene	(ug/l)	1U	1U	1U	1U	1U	1U
Trichlorofluoromethane	(ug/l)	1U	1U	1U	1U	1U	1U
Vinyl Acetate	(ug/l)	5U	5U	5U	5U	5U	5U
Vinyl Chloride	(ug/l)	1U	1U	1U	1U	1U	1U

BZTO104(e)018752

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
1,1,1,2-Tetrachloroethane	(ug/l)	1U
1,1,1-Trichloroethane	(ug/l)	1U
1,1,2,2-Tetrachloroethane	(ug/l)	1U
1,1,2-Trichloro-1,2,2-trifluoroethane	(ug/l)	2U
1,1,2-Trichloroethane	(ug/l)	1U
1,1-Dichloroethane	(ug/l)	1U
1,1-Dichloroethene	(ug/l)	1U
1,1-Dichloropropene	(ug/l)	1U
1,2,3-Trichlorobenzene	(ug/l)	5U
1,2,3-Trichloropropane	(ug/l)	3U
1,2,4-Trichlorobenzene	(ug/l)	5U
1,2,4-Trimethylbenzene	(ug/l)	17
1,2-Dibromoethane	(ug/l)	1U
1,2-Dichlorobenzene	(ug/l)	1U
1,2-Dichloroethane	(ug/l)	1U
1,2-Dichloropropane	(ug/l)	1U
1,3,5-Trimethylbenzene	(ug/l)	5.1
1,3-Dichlorobenzene	(ug/l)	1U
1,3-Dichloropropane	(ug/l)	1U
1,4-Dichlorobenzene	(ug/l)	1U
2,2-Dichloropropane	(ug/l)	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
2-Butanone	(ug/l)	5U
2-Chlorotoluene	(ug/l)	1U
2-Hexanone	(ug/l)	5U
4-Chlorotoluene	(ug/l)	1U
4-Isopropyltoluene	(ug/l)	1U
4-Methyl-2-Pentanone (MIBK)	(ug/l)	5U
Acetone	(ug/l)	5U
Acrolein	(ug/l)	50U
Acrylonitrile	(ug/l)	1U
Benzene	(ug/l)	3.4
Bromobenzene	(ug/l)	1U
Bromochloromethane	(ug/l)	1U
Bromodichloromethane	(ug/l)	1U
Bromoethane	(ug/l)	2U
Bromoform	(ug/l)	1U
Bromomethane	(ug/l)	1U
Carbon disulfide	(ug/l)	1U
Carbon tetrachloride	(ug/l)	1U
Chlorobenzene	(ug/l)	1U
Chloroethane	(ug/l)	1U
Chloroform	(ug/l)	1U

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TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	RW2 10/23/2003 Duplicate 1
Chloromethane	(ug/l)	1U
cis-1,2-Dichloroethene	(ug/l)	1U
cis-1,3-Dichloropropene	(ug/l)	1U
Dibromochloromethane	(ug/l)	1U
Dibromochloropropane	(ug/l)	5U
Dibromomethane	(ug/l)	1U
Ethylbenzene	(ug/l)	2.7
Hexachlorobutadiene	(ug/l)	5U
Isopropylbenzene	(ug/l)	29
m,p-Xylene	(ug/l)	4.5
Methyl iodide	(ug/l)	1U
Methyl tert-butyl ether	(ug/l)	NT
Methylene chloride	(ug/l)	2U
Naphthalene	(ug/l)	5U
n-Butylbenzene	(ug/l)	3.9
n-Propylbenzene	(ug/l)	36
o-Xylene	(ug/l)	1U
sec-Butylbenzene	(ug/l)	5.4
Styrene	(ug/l)	1U
tert-Butylbenzene	(ug/l)	1.2
Tetrachloroethene	(ug/l)	1U

BZTO104(e)018755

TABLE A-4c
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
VOLATILES (SW8260)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW2
	DATE	10/23/2003
	RESULT TYPE	Duplicate 1
Toluene	(ug/l)	1U
trans-1,2-Dichloroethene	(ug/l)	1U
trans-1,3-Dichloropropene	(ug/l)	1U
trans-1,4-Dichloro-2-butene	(ug/l)	5U
Trichloroethene	(ug/l)	1U
Trichlorofluoromethane	(ug/l)	1U
Vinyl Acetate	(ug/l)	5U
Vinyl Chloride	(ug/l)	1U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	G1A 10/24/2003 Primary	LW004D 10/24/2003 Primary	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	2.2	1.6	1.1	0.25U	0.25U	0.66
Gasoline Range Hydrocarbons	(mg/l)	NT	NT	NT	NT	NT	NT
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary	LW026D 10/28/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.4	2	2.9	2.5	1.3	1.1
Gasoline Range Hydrocarbons	(mg/l)	0.25U	0.54	0.88	0.92	0.43	0.35
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	RW2 10/23/2003 Primary
Diesel Range Hydrocarbons	(mg/l)	0.54	0.25U	0.25U	0.35	3.1	0.73
Gasoline Range Hydrocarbons	(mg/l)	0.25U	0.25U	0.25U	0.25U	0.25U	1.2
TPH-Motor Oil Range	(mg/l)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

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TABLE A-4d
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
TOTAL PETROLEUM HYDROCARBONS (ORDEQ-TPH)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	RW2
	DATE	10/23/2003
	RESULT TYPE	Duplicate 1
Diesel Range Hydrocarbons	(mg/l)	0.72
Gasoline Range Hydrocarbons	(mg/l)	1.2
TPH-Motor Oil Range	(mg/l)	0.5U

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TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Arsenic	(mg/l)	0.002	0.035	0.004	0.006	0.018	0.028
Chromium	(mg/l)	0.005U	0.01	0.005U	0.005	0.006	0.009
Copper	(mg/l)	0.002U	0.007	0.004	0.005	0.004	0.006
Lead	(mg/l)	0.001U	0.003	0.001U	0.036	0.001	0.001U
Nickel	(mg/l)	0.01U	0.08	0.01U	0.01U	0.01U	0.01U
Zinc	(mg/l)	0.006U	0.021	0.006	0.019	0.013	0.017

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BZTO104(e)018761

TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary
Arsenic	(mg/l)	0.016	0.038	0.024	0.005	0.021	0.023
Chromium	(mg/l)	0.008	0.012	0.012	0.016	0.005U	0.15
Copper	(mg/l)	0.005	0.011	0.011	0.015	0.004	0.199
Lead	(mg/l)	0.003	0.002	0.003	0.004	0.001U	0.056
Nickel	(mg/l)	0.01U	0.01U	0.01U	0.02	0.01U	0.14
Zinc	(mg/l)	0.013	0.027	0.024	0.041	0.015	0.4

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TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	LW023D	LW024D	LW025D	LW026D	LW027D	LW029D
	DATE	10/27/2003	10/28/2003	10/28/2003	10/28/2003	10/28/2003	10/27/2003
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
Arsenic	(mg/l)	0.021	0.009	0.032	0.007	0.006	0.004
Chromium	(mg/l)	0.135	0.125	0.31	0.012	0.009	0.019
Copper	(mg/l)	0.201	0.163	0.373	0.016	0.02	0.019
Lead	(mg/l)	0.068	0.058	0.15	0.006	0.014	0.006
Nickel	(mg/l)	0.11	0.11	0.28	0.01	0.01	0.02
Zinc	(mg/l)	0.348	0.327	0.83	0.036	0.047	0.04

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TABLE A-4e
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
PRIORITY POLLUTANT METALS (SW6000-7000)
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary	RW2 10/23/2003 Primary	RW2 10/23/2003 Duplicate 1
Arsenic	(mg/l)	0.01	0.004	0.018	0.019	0.018
Chromium	(mg/l)	0.026	0.063	0.35	0.005U	0.005U
Copper	(mg/l)	0.04	0.082	0.37	0.002U	0.002U
Lead	(mg/l)	0.008	0.018	0.12	0.001U	0.001U
Nickel	(mg/l)	0.03	0.05	0.32	0.01U	0.01U
Zinc	(mg/l)	0.07	0.146	0.93	0.062J	0.008J

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	B2 10/20/2003 Primary	G1A 10/24/2003 Primary	J2 10/21/2003 Primary	LW001D 10/21/2003 Primary	LW003D 10/24/2003 Primary	LW004D 10/24/2003 Primary
Chloride	(mg/l)	3.1	8.4	4.1	2.9	3.6	11
Dissolved Oxygen	(mg/l)	0.56	2.92	3.09	2.51	2	2.57
pH	(s.u.)	6.71	6.64	6.93	7.07	6.33	6.79
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	560	603	457	381	543	523
Temperature	(c)	14.9	14.7	16.1	17.1	13	14.6
Total Dissolved Solids	(mg/l)	250	310	340	330	290	340
Turbidity	(ntu)	39	337	17	19	279	453

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW006D 10/24/2003 Primary	LW009D 10/24/2003 Primary	LW010D 10/23/2003 Primary	LW011D 10/24/2003 Primary	LW014D 10/23/2003 Primary	LW017D 10/23/2003 Primary
Chloride	(mg/l)	2.9	1.2	1.5	5.8	NT	NT
Dissolved Oxygen	(mg/l)	2.86	2.91	5.66	2.8	2.29	3.72
pH	(s.u.)	6.57	6.69	6.48	6.48	6.56	6.47
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	375	255	164	376	238	434
Temperature	(c)	14.7	14.9	17.9	13.3	14.2	15.8
Total Dissolved Solids	(mg/l)	250	160	120	290	NT	NT
Turbidity	(ntu)	79	292	108	651	691	418

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW018D 10/23/2003 Primary	LW020D 10/28/2003 Primary	LW022D 10/27/2003 Primary	LW023D 10/27/2003 Primary	LW024D 10/28/2003 Primary	LW025D 10/28/2003 Primary
Chloride	(mg/l)	NT	5.6	1.7	2.4	2.2	12
Dissolved Oxygen	(mg/l)	4.38	2.04	4.51	0.35	0.57	2.68
pH	(s.u.)	6.53	6.62	6.65	6.78	6.87	6.55
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	425	347	498	547	494	290
Temperature	(c)	17.9	15.8	17.2	15.8	16.9	18.1
Total Dissolved Solids	(mg/l)	NT	220	280	330	340	210
Turbidity	(ntu)	999	782	999	999	999	999

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TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	LW026D 10/28/2003 Primary	LW027D 10/28/2003 Primary	LW029D 10/27/2003 Primary	LW030D 10/27/2003 Primary	LW032D 10/27/2003 Primary	LW035D 10/27/2003 Primary
Chloride	(mg/l)	18	24	30	7.3	2.7	3.2
Dissolved Oxygen	(mg/l)	2.65	1.07	3.36	1.96	5.75	0.58
pH	(s.u.)	6.8	6.84	6.69	6.65	6.80	6.51
Redox	(mv)	NT	NT	NT	NT	NT	NT
Specific Conductivity	(us)	509	329	569	426	436	526
Temperature	(c)	19	15	16	13.8	15.8	14.9
Total Dissolved Solids	(mg/l)	300	240	370	270	270	240
Turbidity	(ntu)	199	489	431	999	999	999

BZTO104(e)018768

TABLE A-4f
PHASE II AND III REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS - DEEP WELLS
CONVENTIONALS AND FIELD PARAMETERS
FOURTH QUARTERLY SAMPLING EVENT, OCTOBER 2003
TIME OIL NORTHWEST TERMINAL

PERIOD: From 10/20/2003 thru 10/28/2003 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE DATE RESULT TYPE	O 10/24/2003 Primary	OX008D 10/22/2003 Primary	R 10/24/2003 Primary	RW2 10/23/2003 Primary	RW2 10/23/2003 Duplicate 1
Chloride	(mg/l)	NT	NT	NT	5.2	4.9
Dissolved Oxygen	(mg/l)	3.07	1.24	3.62	2.37	2.15
pH	(s.u.)	6.62	7	6.75	6.52	6.53
Redox	(mv)	NT	-208	NT	NT	NT
Specific Conductivity	(us)	467	406	644	392	392
Temperature	(c)	14.9	15.5	15.5	13.8	13.8
Total Dissolved Solids	(mg/l)	NT	NT	NT	230	250
Turbidity	(ntu)	384	330	426	88	71

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TABLE A-5
KEY TO FOOTNOTES AND ANALYTICAL DATA QUALIFIERS

Footnotes:

NA = Not analyzed.

NM = Not measured.

U = Indicates compound was analyzed for, but was not detected at the reported sample detection limit.

UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.

M = Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.

J = Data validation flag indicating the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

R = The sample results are rejected due to serious deficiencies in the ability to analyze the samples and meet quality control criteria. The presence or absence of the analyte cannot be verified.

[ ] = Detected constituent.

(a) The laboratory reported that hydrocarbon patterns that eluted in the gas range were detected; however the elution patterns do not match available standards.

(b) The laboratory reported that these samples have a pattern in the mineral spirits and diesel standard pattern range that does not resemble the standard patterns. This could possibly be a weathered mixture of mineral spirits and diesel.

(c) The laboratory reported that these samples have a pattern in the diesel and motor oil range that do not resemble the diesel or motor oil standard pattern. This could possibly be a weathered fuel.

(d) The laboratory reported that these samples show a pattern in the diesel range that does not resemble the diesel standard pattern. This could possibly be a weathered diesel.

(e) The laboratory reported that these samples show a pattern in the gas and diesel range that does not resemble either of the typical peak patterns for these standards.

(f) These results are questionable because of laboratory blank contamination within this data set and the lack of PCP detections in these wells historically. However, the results were not qualified because the method blank contamination could not be linked directly to the sample results.

APPENDIX B

Groundwater Interim Action Recovery Summary

TABLE 2-4
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			
Monitoring Period	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	Comments
Fourth Quarter 2000																
October 2000	439,003			0.35									0			Mass removal calculated using 11/00 PCP concentration.
November 2000	305,601	11/9/2000	95	0.24									467,478	11/7/2000	ND (a)	
December 2000	348,720	12/20/2000	39	0.11									497,656	12/6/2000	5.89	
														12/20/2000	9.73	
Quarterly Totals	*1,093,324*			*0.70*				*0.00*					*965,134*			
First Quarter 2001																
January 2001	416,140	1/18/2001	38.8	0.13									239,207	1/18/2001	14.3	
February 2001	335,008	2/13/2001	30	0.08									184,192			
March 2001	332,963	3/7/2001	ND (b)	0.03									517,332	3/7/2001	ND (b)	
Quarterly Totals	*1,084,111*			*0.25*				*0.00*					*940,731*			
Second Quarter 2001																
April 2001	377,931			0.04									275,519			
May 2001	344,252	5/22/2001	12.3	0.04									195,522	5/22/2001	5.29	
June 2001	361,846	6/4/2001	0.68	0.04									563,853			
Quarterly Totals	*1,084,029*			*0.11*				*0.00*					*1,034,894*			
Third Quarter 2001																
July 2001	351,509			0.01									559,015			
August 2001	486,123	8/13/2001	5	0.02									66,876			
Quarterly Totals	*837,632*			*0.03*				*0.00*					*625,891*			
Fourth Quarter 2001																
October 2001	393,168	10/11/2001	ND (a)	0.01									484,158	10/11/2001	ND (a)	
November 2001	319,798			0.01									118,786	11/1 & 11/15/01	ND (a)	
December 2001	361,058	12/6/2001	ND (c)	0.01									717,769	12/6/2001	ND (c)	
Quarterly Totals	*680,856*			*0.02*				*0.00*					*836,555*			
First Quarter 2002																
January 2002	331,224			0.02	1,812			0.01					340,688			Recovered groundwater from HRW-1 from January 22-29. Re-initiated groundwater recovery from HRW-1 on February 28.
February 2002	282,480	2/27/2002	8.6	0.02	58			0.00					437,943			HRW-1 mass removal estimates for January and February are based on the March 12 sampling event.
March 2002	280,814			0.02	40,294	3/12/2002	786	0.26					234,816			RW-2 mass removal estimates for January and March are based on February 27 sampling event.
Quarterly Totals	*894,518*			*0.06*	*42,164*			*0.28*					*1,013,447*			
Second Quarter 2002																
April 2002	292,099			0.19	74,996	4/5/2002	94	0.06					391,263	4/5/02	34.4	
														4/22/02	9.33	RW-2 mass removal estimates for April and May are based on June 27 sampling event.
May 2002	310,584			0.20	23,427	5/29/2002	452	0.09					247,440			
June 2002	272,393	6/27/2002	76	0.17	25,484	6/25/2002	410	0.09					307,810			
Quarterly Totals	*875,076*			*0.56*	*123,907*			*0.23*					*946,513*			
Third Quarter 2002																
July 2002	272,771			0.08	51,111			0.18					188,300	7/24/2002	2.09	
August 2002	270,746	8/27/2002	36	0.08	7								301,613	8/20/2002	9.15	HRW-1 shut down on July 24 due to dry pumping conditions and potential biofouling of the well. HRW-1 mass removal rate estimate based on June 2002 data.
September 2002	143,662			0.04	0				110,000	9/23/2002	47.0		369,469	9/23/2002	11.8	RW-2 temporarily shut down on September 25. Water being intercepted from SDM-1 and pumped to treatment system beginning on September 16.
Quarterly Totals	*687,179*			*0.21*	*51,118*			*0.18*					*859,382*			RW-2 mass removal rates based on August 27 sampling event. Total Volume pumped from SDM-1 estimated based on throughout of WWTP and volume recovered from RW-2; Flowmeter to be installed for SDM-1 in October 2002.
Fourth Quarter 2002																
October 2002	177,937			0.06	0				Not metered				112,129	10/3/2002	8.84	
November 2002	275,033	11/13/2002	37	0.09	0				95,157				399,747			The storage tank gauge was moved to groundwater sump SDM-1 on November 1.
December 2002	418,846			0.13	0				124,894				507,766			
Quarterly Totals	*871,816*			*0.27*	*0*			*0.00*				*0.00*	*1,019,642*			RW-2 mass removal rates based on November 13 sampling event.

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TABLE 2-4
GROUNDWATER INTERIM ACTION OPERATIONAL HISTORY
UPPER AND LOWER WATER-BEARING ZONES
TIME OIL NORTHWEST TERMINAL

	RW-2 Discharge				HRW-1 Discharge				SDM-1 Discharge				Treatment System Discharge			
Monitoring Period	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Pumped (gal)	Sample Date	PCP Concentration (µg/L)	Estimated PCP Mass Removal (lb)	Volume of Water Treated (gal)	Sample Date	Discharge PCP Concentration (µg/L)	Comments
First Quarter 2003																
January 2003	417,646			0.12	0				166,663			0.38	574,451	1/15/2003	11.6	
February 2003	398,299	2/11/2003	33	0.11	0				192,395	2/13/2003	290	0.43	483,579			
March 2003	458,160			0.13	0				210,400			0.47	624,807			SDM-1 mass removal rates based on February 13 sampling event.
Quarterly Totals	*1,140,149*			*0.35*	*51,118*			*0.00*	*95,157*			*1.28*	*1,371,258*			RW-2 mass removal rates based on February 11 sampling event.
Second Quarter 2003																
April 2003	445,275			0.04	0				55,037			0.00	481,816	4/9/2003	22.2	
May 2003	455,994	5/7/2003	12	0.05	0	Not Analyzed			0	5/7/2003	0.93	0.00	469,079			
June 2003	385,658			0.04	4,175				89,243			0.00	446,127			RW-2 mass removal rates based on April 8, 2003 sampling event.
Quarterly Totals	*1,286,927*			*0.13*	*4,175*			*0.00*	*144,280*			*0.00*	*1,397,022*			
Third Quarter 2003																
July 2003	330,738	7/28/2003	<5.0	0.01	30,104	7/28/2003	370	0.09	128,562	7/28/2003	409	0.44	441,023	7/11/2003	87.4	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
														7/30/2003	8.6	
August 2003	366,307	8/27/2003	10	0.03	7,388			0.02	119,831	8/27/2003	120	0.41	397,748	8/4/2003	<5.0	
														8/6/2003	<5.0	HRW-1 mass removal rates based on July 28 sampling event.
														8/11/2003	<4.76	
														8/13/2003	<4.83	SDM-1 mass removal rates based on July 28 sampling event.
														8/18/2003	<4.75	
														8/20/2003	<5.16	RW-2 mass removal rates based on August 27 sampling event.
														8/25/2003	23.8	
														8/27/2003	36.5	
September 2003	262,403			0.02	0			0.00	87,439			0.09	479,703	9/3/2003	19.3	
														9/5/2003	19.6	
														9/9/2003	7.09	
														9/23/2003	16.9	
														9/29/2003	5.96	
Quarterly Totals	*959,448*			*0.07*	*37,492*			*0.12*	*335,832*			*0.94*	*1,318,474*			
Fourth Quarter 2003																
October 2003	298,092	10/23/2003	8.1	0.02					74,025	10/20/2003	43	0.03	350,921	10/6/2003	<4.75	Multiple treatment system discharge samples collected and analyzed due to upset concentration (87.4 ug/L) reported for July 11, 2003 sampling event. Additional discharge samples in response to request from City of Portland.
														10/13/2003	<4.76	
														10/20/2003	<4.84	
														10/30/2003	<5.19	
November 2003	216,630			0.01					45,472			0.02	216,711	11/3/2003	<4.73	
														11/10/2003	<4.78	SDM-1 mass removal rates based on October 20 sampling event.
														11/17/2003	<4.84	
														11/21/2003	<4.79	RW-2 mass removal rates based on October 23 sampling event.
December 2003	367,462			0.02					95,504			0.03	488,055	12/1/2003	<4.79	
														12/15/2003	<4.92	
														12/29/2003	30.40	
														12/30/2003	31.10	
Quarterly Totals	*882,184*			*0.06*				*0.00*	*215,001*			*0.08*	*1,055,687*			
Grand Totals	***12,377,249***			***2.83***	***309,974***			***0.80***	***790,270***			***2.30***	***13,384,630***			

ND = Not Detected.

(a) PCP not detected above the detection limit of 5 µg/L; concentration-dependent calculations based on half the detection limit
(b) PCP not detected above the detection limit of 25 µg/L; concentration-dependent calculations based on half the detection limit
(c) PCP not detected above the detection limit of 5.25 µg/L; concentration-dependent calculations based on half the detection limit

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APPENDIX C

Measurement and Evaluation Procedures

APPENDIX C
MEASUREMENT AND EVALUATION PROCEDURES

This appendix discusses the procedures for conducting groundwater level and product (where observed) measurements during the quarterly groundwater events and the method used to evaluate the groundwater elevations.

MEASUREMENT PROCEDURES

Groundwater level measurements and the check for the presence of product were conducted using an electronic oil-water interface probe. Measurements were taken from the top of the PVC well casing at a marked survey point or at the north side of the casing, and recorded to the nearest 0.01 ft. Measurements in the Willamette River were taken from a surveyed PK nail with washer located on the south side of the dock. Surveyed reference elevations for each water level measurement location, obtained by a licensed land surveyor (ZTec Engineers, Inc., Portland, Oregon), are shown in Table A-2 of this report.

Water level measurements for the quarterly event were obtained over about a 2.5-hour period beginning at about 2.5 hours after a predicted mean river stage, based on predictions for the St. Johns station on the Willamette River. The timing for water level measurements was scheduled to estimate a mean water level elevation or elevation minimally influenced by river stage, and to reduce the time-dependent variation between wells screened in the same water-bearing zone. The timing of the water level measurements was based on average time lag calculations presented in the additional groundwater investigation technical memorandum (Landau Associates 1998), aquifer test report (Landau Associates 1999), and previous quarterly measurements.

GROUNDWATER LEVEL EVALUATION METHODS

For evaluation purposes, the groundwater level measurements were converted from depth-to-water readings to groundwater elevations using the survey information for each location. At locations where product was observed, the groundwater elevations were adjusted to account for the presence of product using the method defined by Lenhard and Parker (1990). Groundwater elevations for the upper and lower zones were contoured using GIS/Key or manually in conjunction with the evaluations conducted to evaluate the capture zone of the groundwater interim action for the upper and lower zones.

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GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the shallow wells using a peristaltic pump attached to dedicated polyethylene tubing immediately following purging. The deep wells were sampled with disposable bailers, with the following exceptions: the sample from RW-2 was collected from the in-line sampling port on the groundwater interim action system, and the sample from the groundwater intercept system at SDM-1 was collected from the discharge line at the output into Tank 16804. Wells were purged using a peristaltic pump or a centrifugal purge pump. Purging continued until at least 3 casing volumes of water had been removed and specific conductance and temperature had stabilized or until the well purged dry. Four replicate measurements of field parameters (pH, conductivity, dissolved oxygen, turbidity, and temperature) were collected at each well during sampling. To prevent degassing of volatile organic compounds during sampling, the pumping rate was maintained below about 100 milliliters per minute. All sampling was conducted in accordance with the Phase I/II RI/FS work plan (Landau Associates 1996) and appropriate provisions of the revised quality assurance project plan and project health and safety plan (Landau Associates 2001). A more detailed description of groundwater sampling procedures is provided in the Phase II RI report (Landau Associates 2000).

REFERENCES

Landau Associates. 2001. *Work Plan, Phase III Remedial Investigation, Time Oil Northwest Terminal, Portland, Oregon.* June 18.

Landau Associates. 2000. Report: *Phase II Remedial Investigation, Time Oil Co. Northwest Terminal.* Prepared for: Time Oil Co., Seattle, Washington. April 6.

Landau Associates. 1999. *Aquifer Test Report, Time Oil Northwest Terminal, Portland, Oregon.* Prepared for: Time Oil Co., Seattle, Washington. December 20.

Landau Associates. 1998. Technical Memorandum: *Additional Groundwater Investigation, January-February 1998, Time Oil Northwest Terminal, Portland, Oregon.* Prepared for: Oregon Department of Environmental Quality, Portland, Oregon. July 28.

Landau Associates. 1996. *Work Plan, Phases I and II, Remedial Investigation/Feasibility Study, Time Oil Co. Northwest Terminal.* Prepared for: Time Oil Co., Seattle, Washington. May 10.

Lenhard and Parker. 1990. "Estimation of Free Hydrocarbon Volume from Fluid Levels in Monitoring Wells. *Groundwater.* 28(1):57-57.

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APPENDIX D

Summary of Modifications to Quarterly Groundwater Analysis Program

APPENDIX D
SUMMARY OF MODIFICATIONS TO QUARTERLY GROUNDWATER ANALYSIS PROGRAM

A summary of modifications to the quarterly groundwater monitoring program for the Time Oil Northwest Terminal in Portland, Oregon is presented below by the date of first implementation. A reference list for the modifications is attached.

- ***Second Quarter 1998*** (Landau Associates 1998; DEQ 1998):
  - Annual sampling of east property wells LW-101S, LW-102S, LW-103S, and LW-104S
  - Elimination of 2-chloroethylvinylether from the volatile analyte list
  - Reduction of the suite of metals analyses to include only arsenic, chromium, copper, lead, nickel, and zinc
  - Quarterly analysis of only metals in well K and only chlorinated phenols and metals in well H
  - Elimination of PCB analysis
  - Annual analysis for major ions; quarterly analysis for chloride and dissolved oxygen.
- ***First Quarter 1999*** (Landau Associates 1999; Urbanowicz, K., 12 February 1999, personal communication):
  - Analysis of polycyclic aromatic hydrocarbons (PAHs) using analytical techniques that provide lower detection limits at upper zone wells LW-2S, LW-7S and LW-101S and at lower zone wells G1A, O, and LW-4D for the first quarter 1999 event only
  - Elimination of sampling at well J3.
- ***Second Quarter 2000*** (Landau Associates 2000a; DEQ 2000):
  - Elimination of dioxin/furan analyses.
- ***Third Quarter 2000*** (Landau Associates 2000b; Roick 2000):
  - Reduction of sampling frequency of wells H, L, and LW-5S from quarterly to annually.
- ***Second Quarter 2001*** (Landau Associates 2001a, 2001b; Roick 2001):
  - Reduction of the list of chlorinated phenols being analyzed by EPA Method 8040 to pentachlorophenol (PCP) only using EPA Method 8270 SIM
  - Reduction of the frequency of total petroleum hydrocarbon (TPH) analysis from quarterly to annually at upper zone wells J1 and LW-1S; lower zone wells B2, J2, LW-1D; and deep sand unit well LW-12D2. In addition, TPH analysis was eliminated for the following wells: upper zone wells D, L, LW-5S, LW-101S through -104S, and lower zone well LW-3D.

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REFERENCES
(Modifications to Quarterly Groundwater Analysis Program)

DEQ. 2000. Letter: *Dioxin/Furans Groundwater Analysis, Time Oil Northwest Terminal.* From Thomas E. Roick, Oregon Department of Environmental Quality, to Kevin Murphy, Time Oil Co. May 18.

DEQ. 1998. Letter: *Groundwater Quality Sampling, Time Oil Co. Northwest Terminal.* From Karla Urbanowicz, Oregon Department of Environmental Quality, to Kevin Murphy, Time Oil Co. May 15.

Landau Associates. 2001a. Letter: *Recommendation for Reduction of Analyses, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. January 30.

Landau Associates. 2001b. Letter: *Recommendation for Reduction of TPH Analyses, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. May 17.

Landau Associates. 2000a. Letter: *Discontinuing Dioxin/Furan Analyses, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. May 16.

Landau Associates. 2000b. Letter: *Recommended Reduction of Wells for Quarterly Monitoring, Time Oil Northwest Terminal, Portland, Oregon.* To Tom Roick, Oregon Department of Environmental Quality. August 9.

Landau Associates. 1999. Letter: *Time Oil Northwest Terminal, Portland, Oregon.* To Karla Urbanowicz, Oregon Department of Environmental Quality. January 21.

Landau Associates. 1998. Letter: *Time Oil Northwest Terminal, Portland, Oregon.* To Karla Urbanowicz, Oregon Department of Environmental Quality. May 4.

Roick, T.E. 2001. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Reduction of Total Petroleum Hydrocarbon Analysis, Time Oil Co. Northwest Terminal.* May 30.

Roick, T.E. 2000. E-mail message from Thomas E. Roick, Oregon Department of Environmental Quality, to Rebekah Brooks, Landau Associates. Re: *Time Oil Groundwater Monitoring.* August 15.

Urbanowicz, K. 12 February 1999. Personal communication (telephone conversation with Rebekah Brooks, Landau Associates, Edmonds, Washington). Re: *Approval of Additional Modification to Groundwater Sampling and Analysis Program, Time Oil Northwest Terminal, Portland, Oregon.* Karla Urbanowicz, Oregon Department of Environmental Quality, Portland, Oregon.

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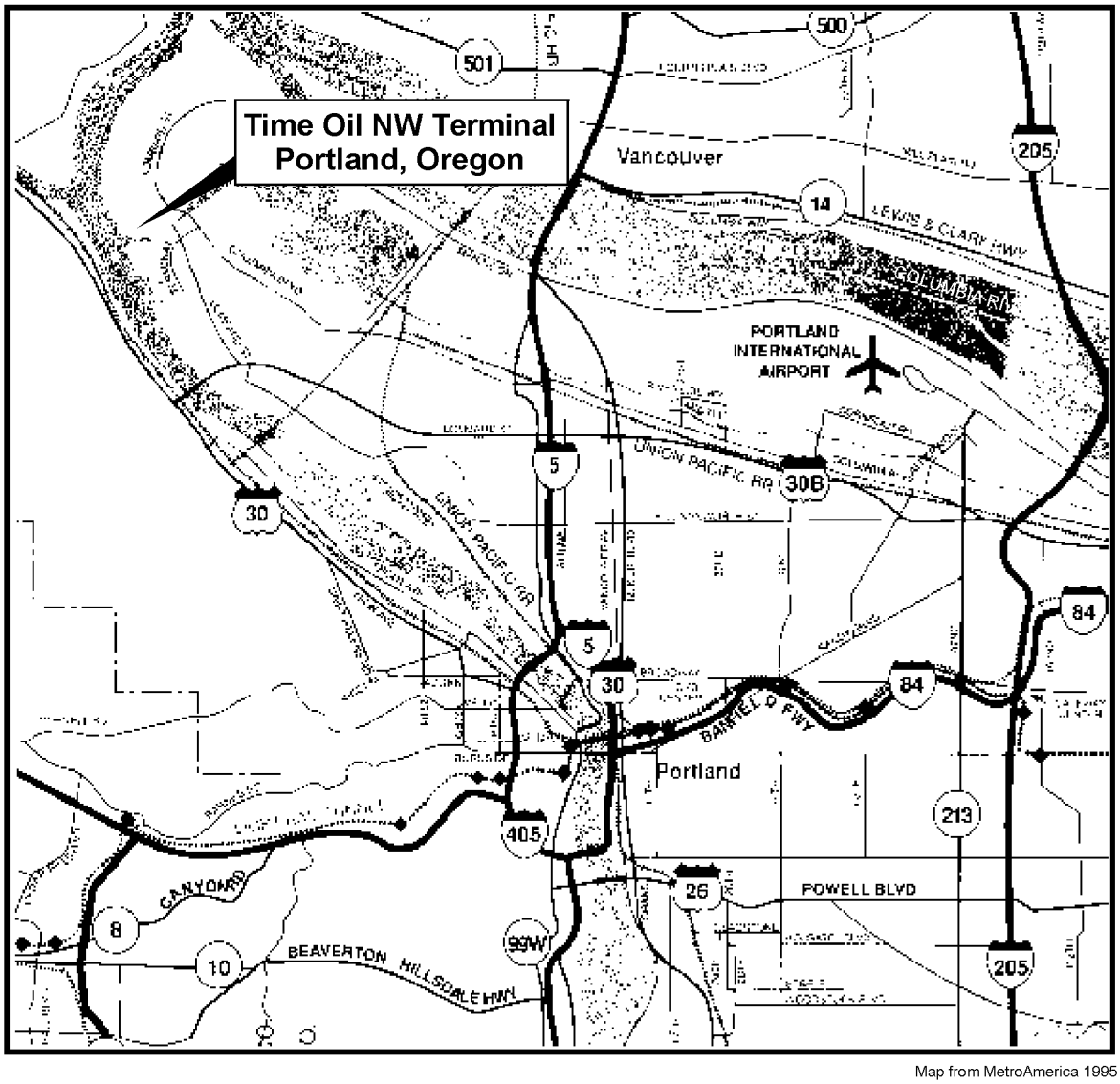
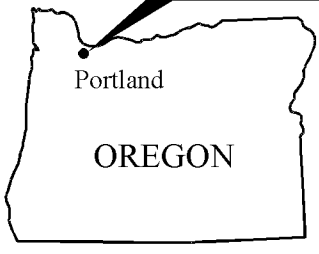


Map from MetroAmerica 1995

SITE LOCATION
(see enlarged map area above)



0 2 4
Approximate Scale in Miles

Time Oil | T:\2311001\Vicinity Map.cdr (C) 05/10/2002

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Time Oil NW Terminal Portland, Oregon	**Vicinity Map**	Figure 1

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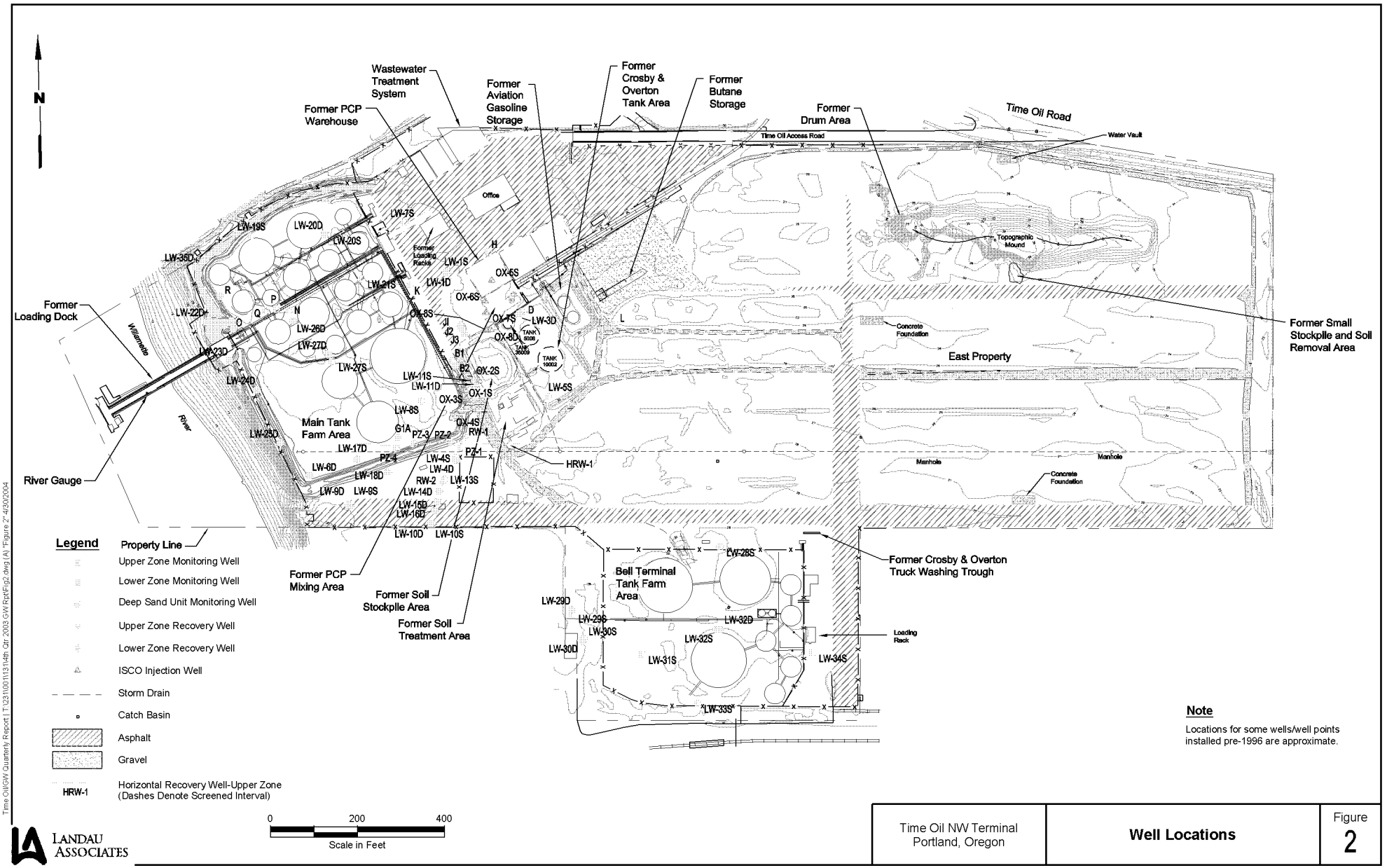

Note

Locations for some wells/well points installed pre-1996 are approximate.

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Time Oil NW Terminal Portland, Oregon	**Well Locations**	Figure 2

Time Oil/GW Quarterly Report \ T:\23\100\N13\14th Qtr 2003 GW Rpt\Fig2.dwg (A) "Figure 2" 4/30/2004

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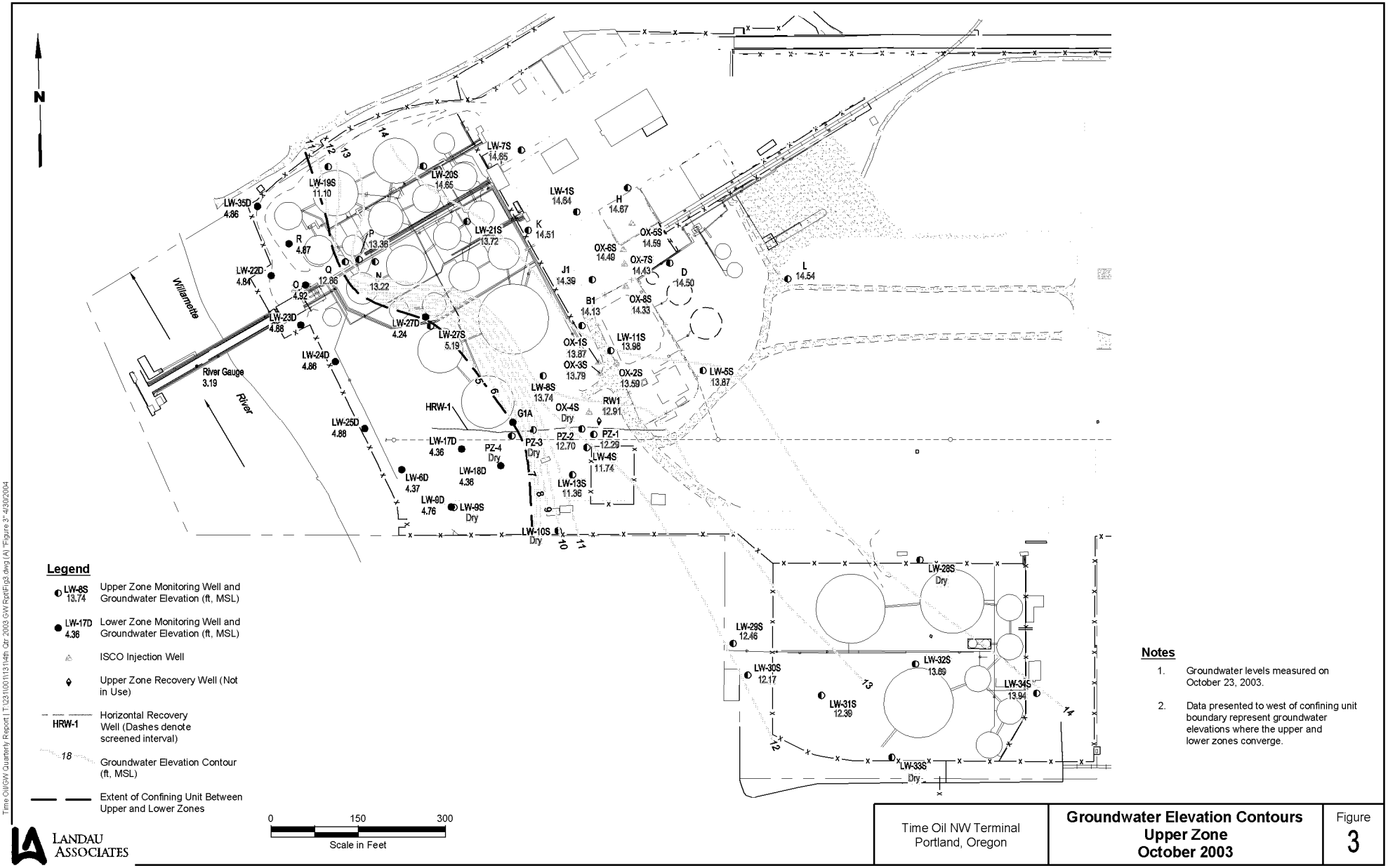

Legend

- LW-8S 13.74 — Upper Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- LW-17D 4.36 — Lower Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- ISCO Injection Well
- Upper Zone Recovery Well (Not in Use)
- HRW-1 — Horizontal Recovery Well (Dashes denote screened interval)
- 18 — Groundwater Elevation Contour (ft, MSL)
- Extent of Confining Unit Between Upper and Lower Zones

0 150 300
Scale in Feet

Notes

1. Groundwater levels measured on October 23, 2003.
2. Data presented to west of confining unit boundary represent groundwater elevations where the upper and lower zones converge.

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Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Upper Zone October 2003**	Figure 3

Time Oil\GW Quarterly Report\ T:\23\100\N13\14th Qtr 2003 GW Rpt\Fig3.dwg (A) "Figure 3" 4/30/2004

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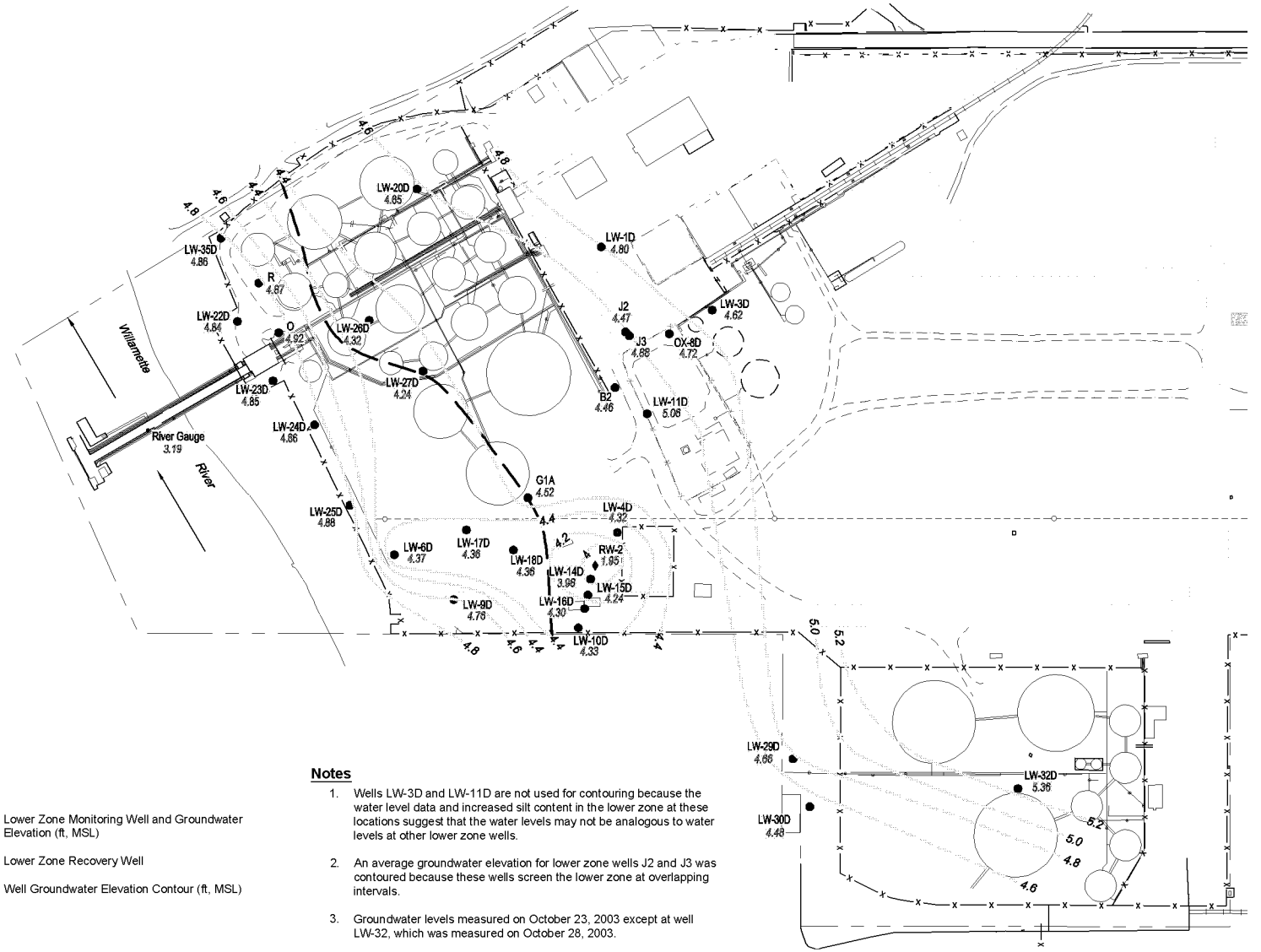

Legend

- G1A — Lower Zone Monitoring Well and Groundwater Elevation (ft, MSL)
- Lower Zone Recovery Well
- 7.8 — Well Groundwater Elevation Contour (ft, MSL)

Notes

1. Wells LW-3D and LW-11D are not used for contouring because the water level data and increased silt content in the lower zone at these locations suggest that the water levels may not be analogous to water levels at other lower zone wells.
2. An average groundwater elevation for lower zone wells J2 and J3 was contoured because these wells screen the lower zone at overlapping intervals.
3. Groundwater levels measured on October 23, 2003 except at well LW-32, which was measured on October 28, 2003.

0 150 300
Scale in Feet

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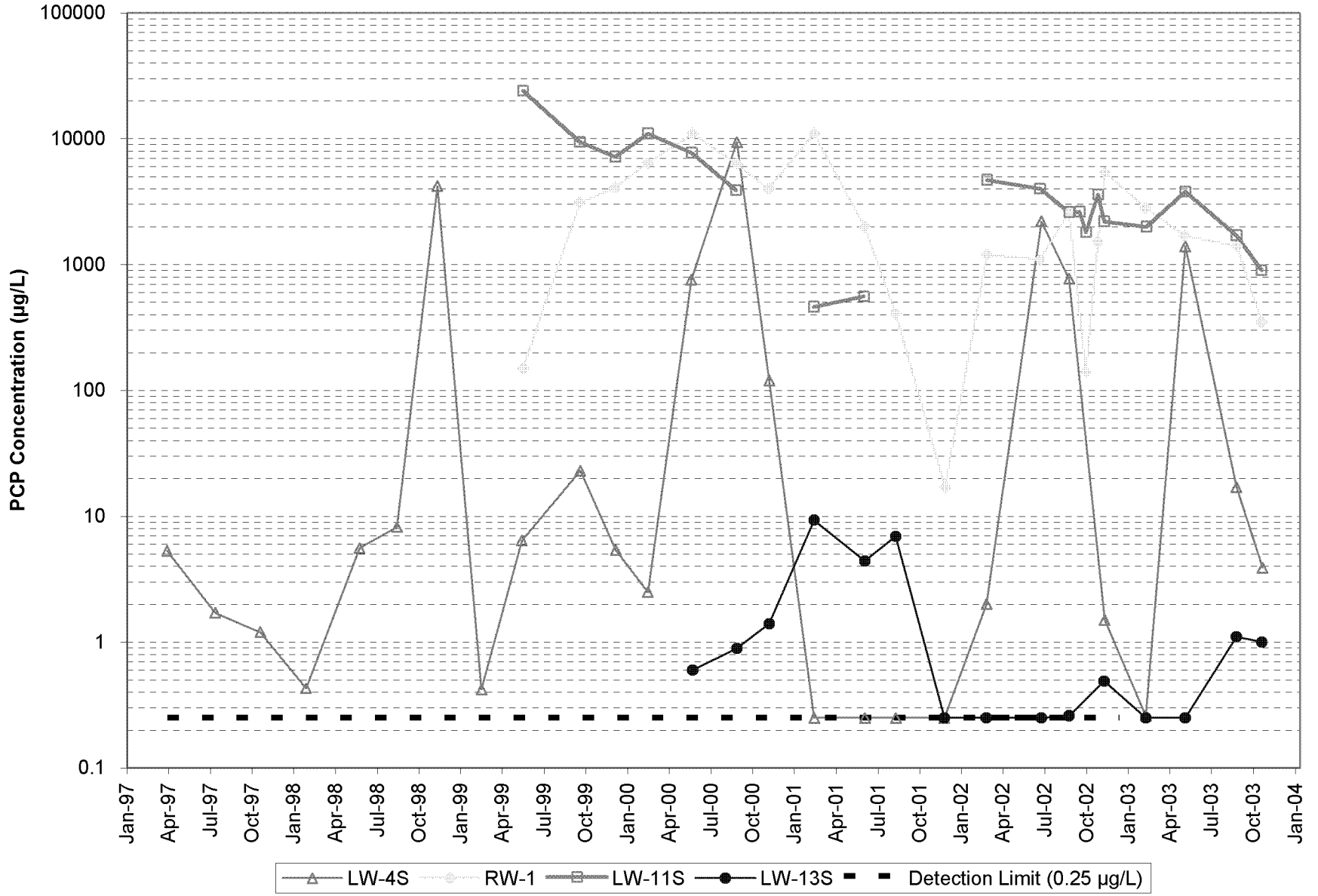
Time Oil NW Terminal Portland, Oregon	**Groundwater Elevation Contours Lower Zone October 2003**	Figure 4

Time Oil/GW Quarterly Report | T:\231\001\131\4th Qtr 2003 GW Rpt\Fig4.dwg (A) "Figure 4" 4/30/2004

BZTO104(e)018783

Source: S:\SHEETS\timeoil\ph2ri\PLOTS2002-2003-2004.xls Log PCP vs. Time-Shallow



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Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Upper Zone Wells
April 1997 – October 2003**

Figure
5

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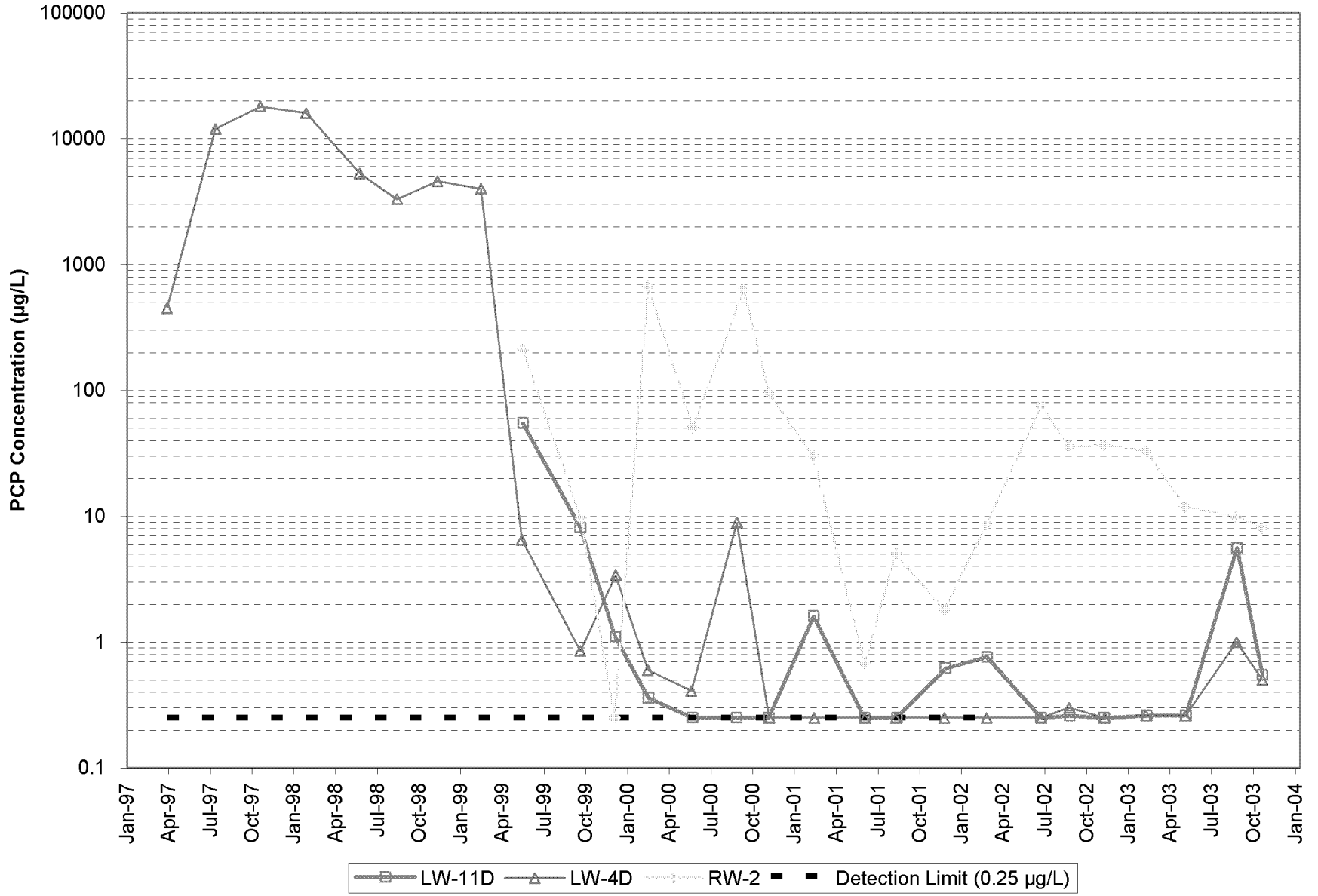

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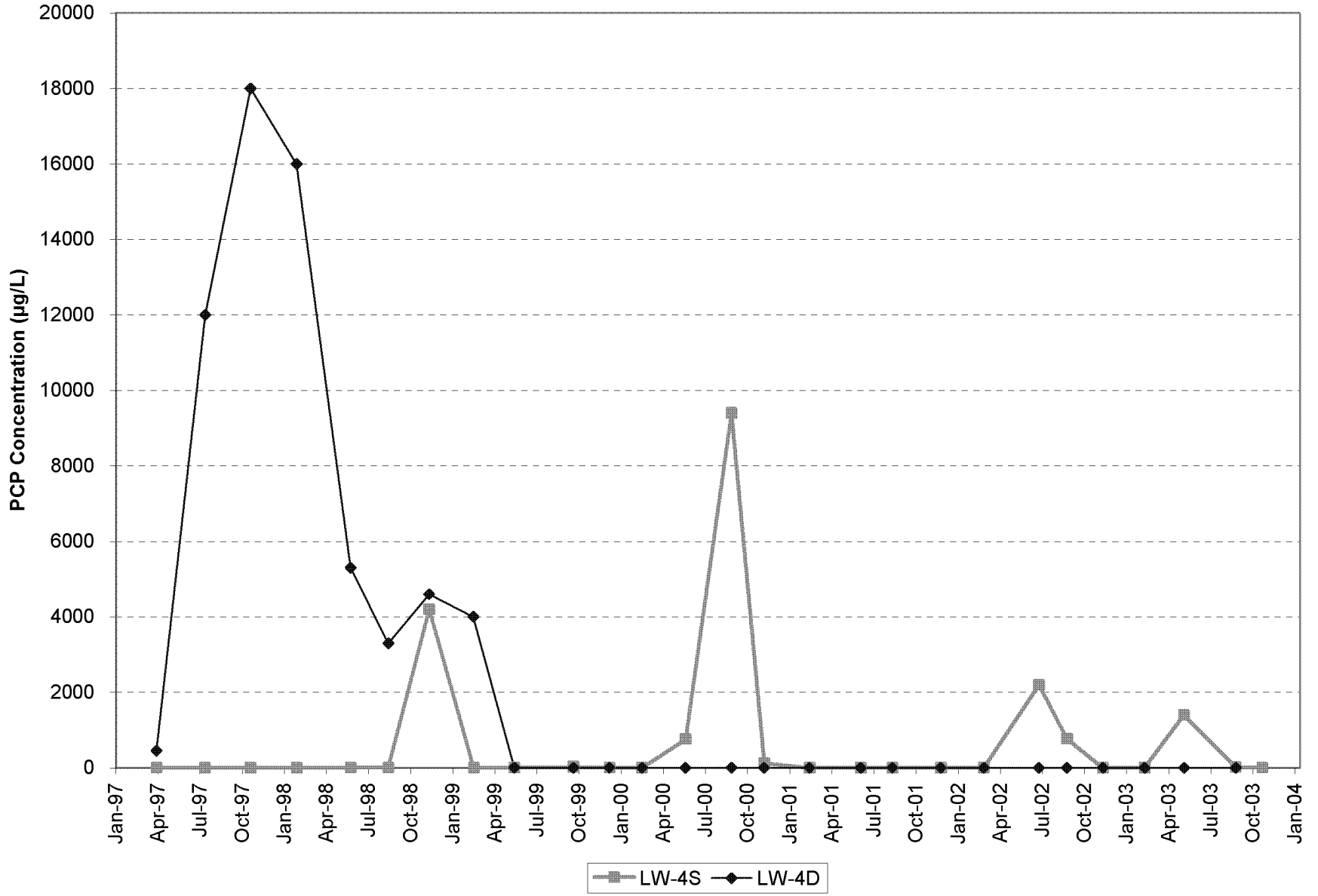
Time Oil NW Terminal
Portland, Oregon

**PCP Concentrations,
Selected Lower Zone Wells
April 1997 – October 2003**

Figure
6



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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations, Wells LW-4S and LW-4D, April 1997 – October 2003**	Figure 7

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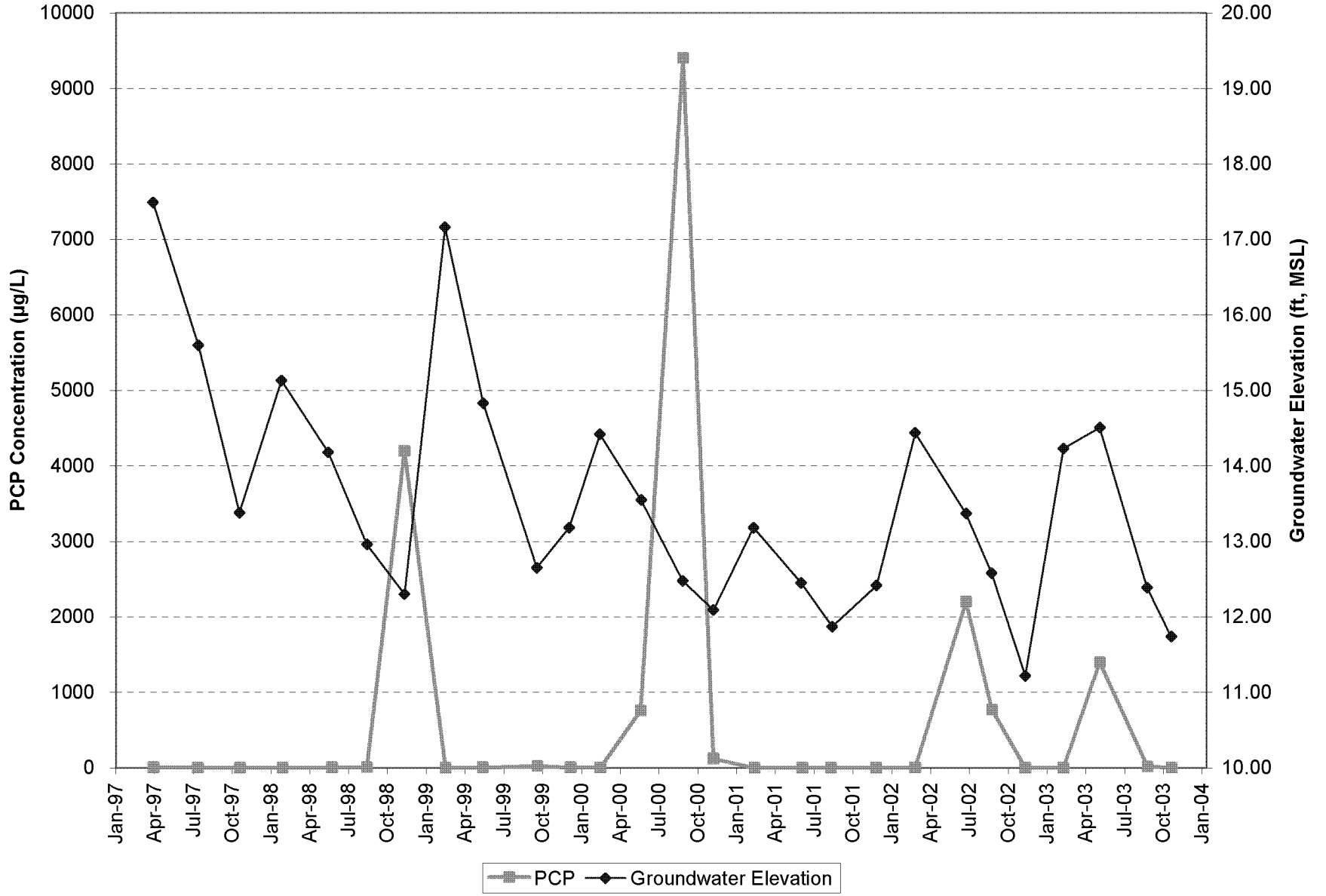

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Time Oil NW Terminal Portland, Oregon	**PCP Concentrations and Groundwater Elevations, LW-4S April 1997 – October 2003**	Figure 8

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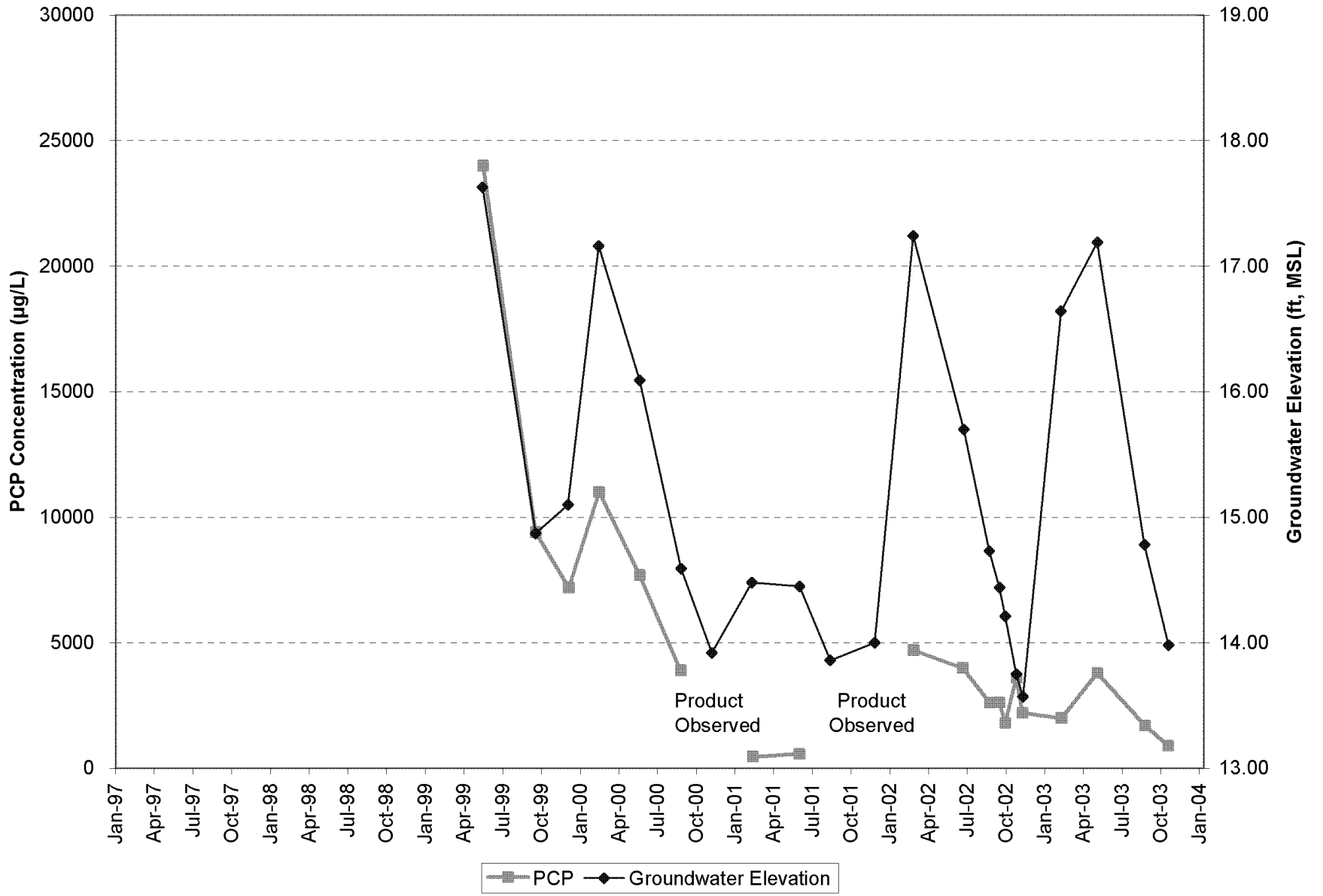

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Time Oil NW Terminal
Portland, Oregon

PCP Concentrations and Groundwater Elevations, LW-11S
April 1997 – October 2003

Figure
9

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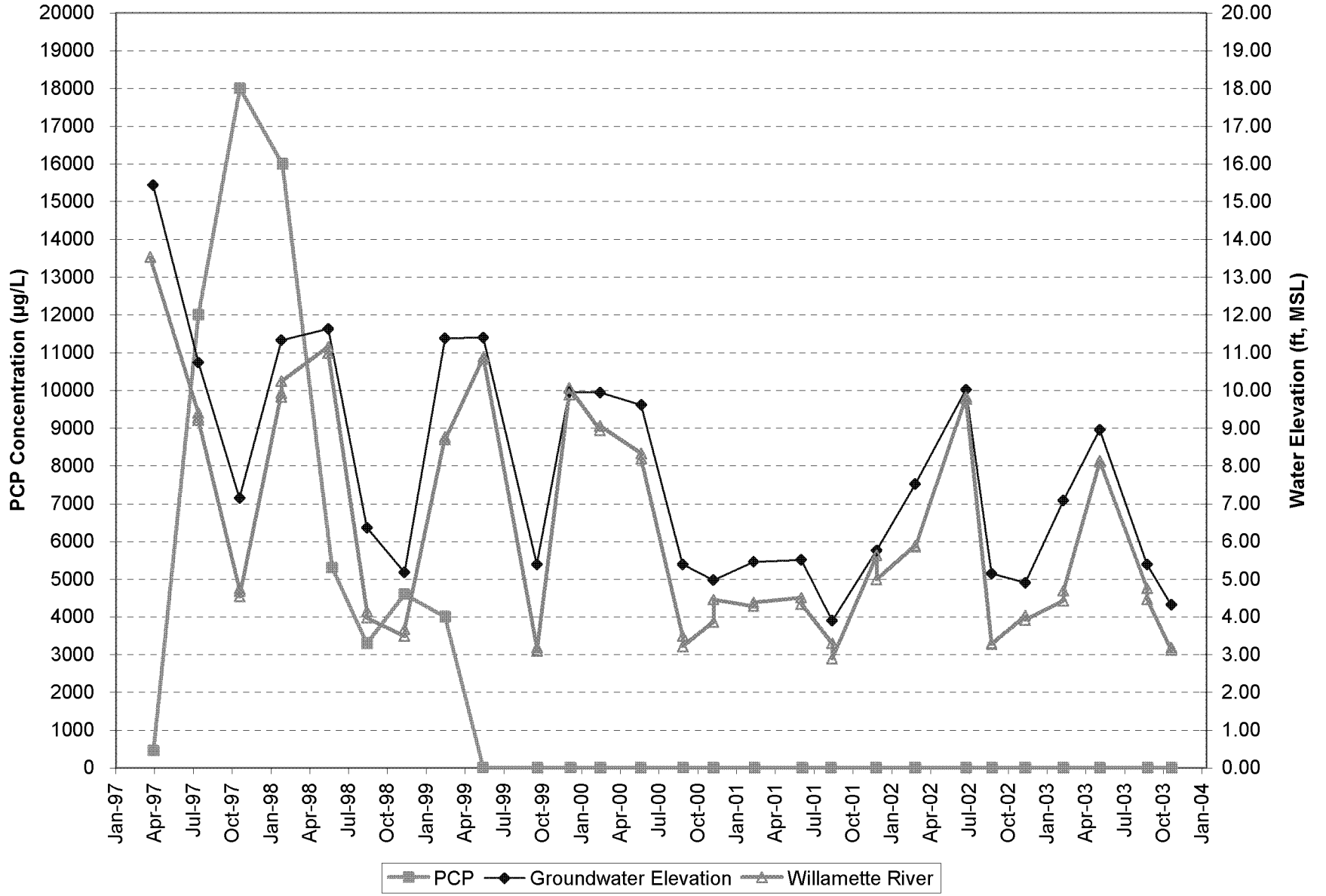

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Time Oil NW Terminal
Portland, Oregon

PCP Concentrations, Groundwater Elevations, and River Stage, LW-4D
April 1997 – October 2003

Figure
10

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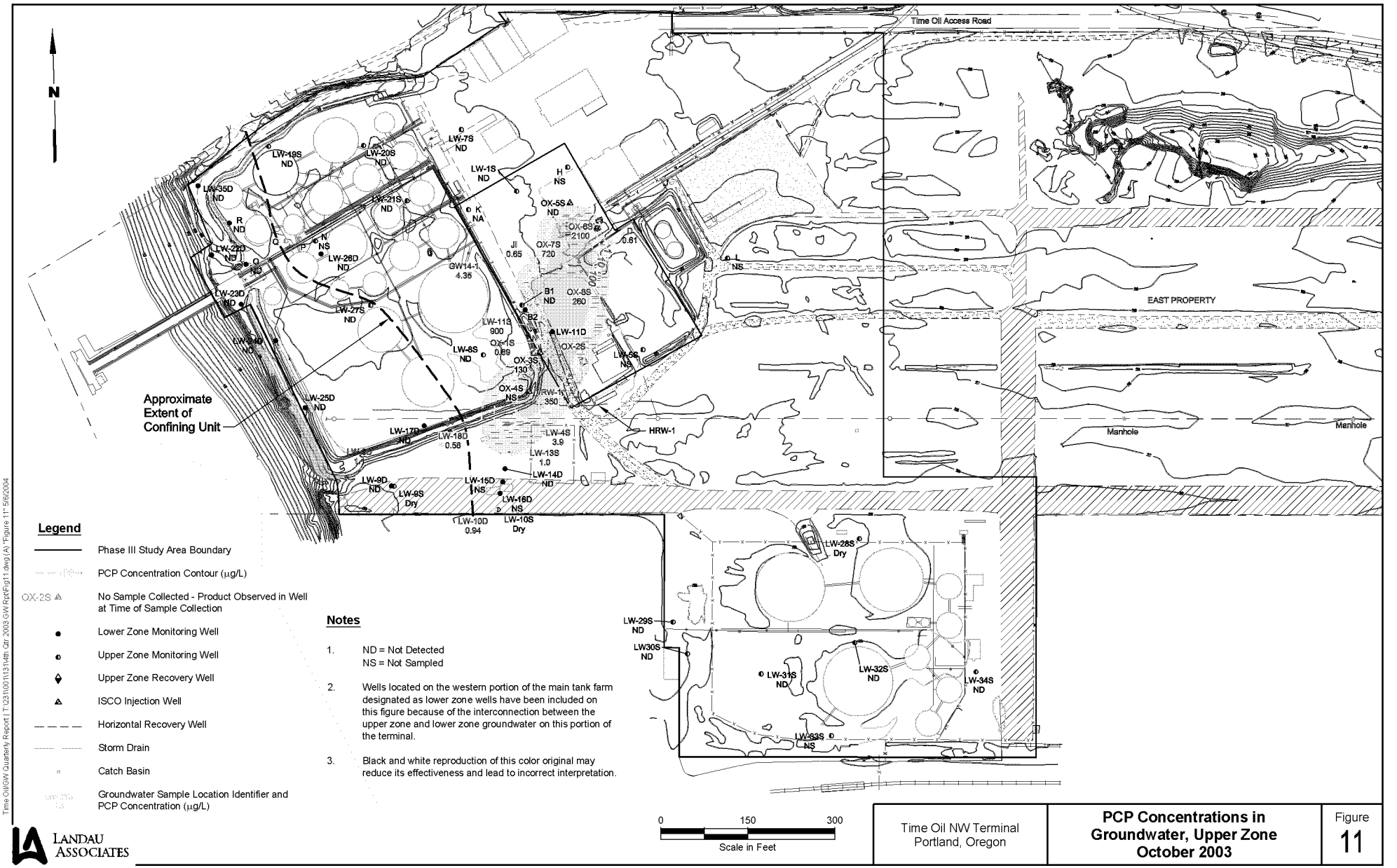

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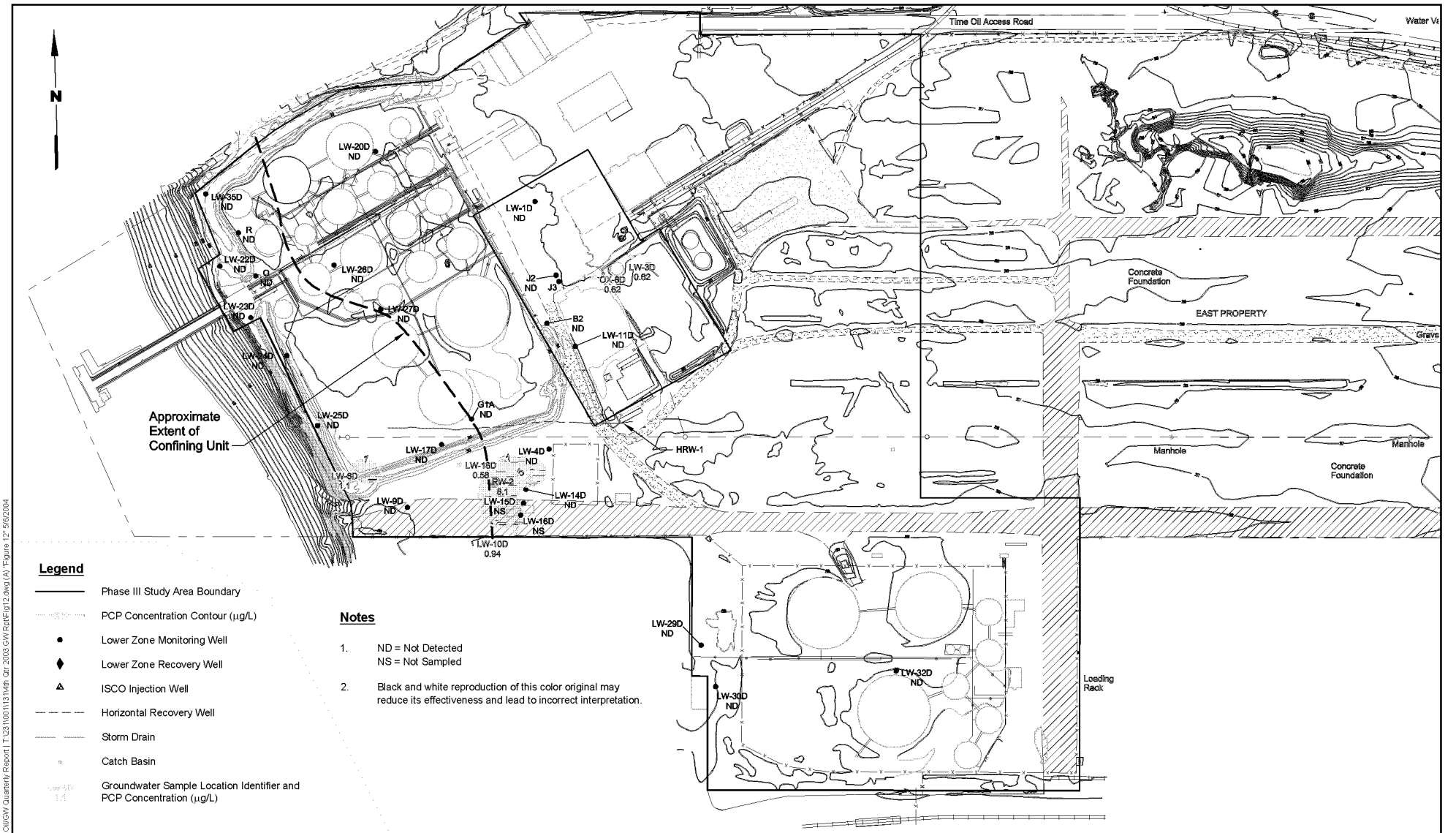

Time Oil\GW Quarterly Report\ T:\23\100\13\14th Qtr 2003 GW Rpt\Fig12.dwg (A) "Figure 12" 5/6/2004

LANDAU ASSOCIATES

Time Oil NW Terminal Portland, Oregon	**PCP Concentrations in Groundwater, Lower Zone October 2003**	Figure **12**

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LANDAU ASSOCIATES

June 18, 2004

Oregon Department of Environmental Quality
Northwest Region Portland Office
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

RECEIVED JUN 2 1 2004

Attn: Mr. Thomas Roick, Project Manager - Lower Willamette Section

RE: RESPONSE TO WORK PLAN COMMENTS
***IN SITU* CHEMICAL OXIDATION INTERIM REMEDIAL ACTION**
TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

In a letter dated May 24, 2004, Kevin Murphy of Time Oil Co. (Time Oil) received comments from Tom Roick of the Oregon Department of Environmental Quality (DEQ) related to a *Work Plan – In Situ Chemical Oxidation Interim Remedial Action* (work plan) prepared by Landau Associates. The work plan, which provided details related to the proposed methods to conduct an *in situ* chemical oxidation (ISCO) injection program at the Time Oil Northwest Terminal in Portland, was submitted to the DEQ and dated May 11, 2004. On behalf of Time Oil, Landau Associates has prepared this correspondence to supplement the work plan and address the comments presented in the May 24, 2004 correspondence from DEQ. The DEQ comments (italicized type) and the associated responses are provided below:

1. *Section 1.2. While target cleanup concentrations for the interim remedial action (IRAM) have not been established, criteria for determining when treatment will be ended (e.g., 70 % reduction), or at least an estimated number of injection events that will likely be employed should be provided.*

   We estimate that a minimum of 2 to 3 injection events will be performed for the interim remedial action. A determination of when to cease additional injection events will be developed based on several factors, including the identification of appropriate risk-based cleanup levels for the site, a cost-benefit analysis of the ISCO injection program, and an evaluation of the groundwater monitoring data to determine the potential effects of the ISCO injection events on the nature and extent of the contaminant plume.

2. *Section 2.2. Please comment on the potential for in situ chemical oxidation (ISCO) to influence lower zone groundwater quality and the need to monitor lower zone wells in the treatment area (e.g., OX-8D).*

   The ISCO pilot test injections were completed in September 2002. In relation to the pilot study injection points, the nearest lower zone groundwater monitoring wells are LW-4D and LW-11D. According to the quarterly groundwater monitoring data collected since the pilot study injection

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event, the concentration of PCP in LW-4D has ranged from non-detectable to 1 microgram per liter (µg/L) and the concentration of PCP in LW-11D has ranged from non-detectable to 5.6 µg/L. Based on these results, we believe that the current quarterly and semi-annual sampling schedule for lower zone groundwater monitoring wells is sufficient for determining the potential for ISCO to influence the lower zone groundwater quality. In future evaluations of the effectiveness of ISCO, we will include the lower zone groundwater data for monitoring wells located in the vicinity of the ISCO injection area.

3. *Section 4.0. Time Oil must update the previous pilot study Water Pollution Control Facility (WPCF) approval from DEQ's Water Quality Program for this application.*

   On behalf of Time Oil, Landau Associates submitted an updated Underground Injection Control (UIC) Registration Form to Barbara Priest of the Oregon Department of Environmental Quality Water Control Division. The submittal was dated June 4, 2004.

4. *Section 4.2.2. If the manifold piping in the former pentachlorophenol (PCP)-mixing area excavation cannot be used for injection in the upgradient source area, consider adding push-probe injection points in this area.*

   We are prepared to utilize push-probe injection points in the former PCP mixing area in the event that the lateral manifold piping (MPLINE01, MPLINE02E, MPLINE02W, MPLINE03E, MPLINE03W, and MPLINE04) prove to be ineffective in delivering the Fenton's reagent solutions to the upper zone aquifer.

5. *Section 4.2 2. Since migration/accumulation of PCP in the vicinity of the storm water pipe is a primary concern, pending results of the first treatment, the need to focus additional injection points in that area should be considered.*

   We agree with this recommendation. We will be evaluating the concentration of PCP in the groundwater infiltrating into the storm water pipe, as represented by the analysis of the water being collected in the storm water manhole (SDM-1; see quarterly progress reports for location), from which water is pumped into the wastewater treatment system located on site. The water samples from SDM-1 will be collected in conjunction with the post-injection groundwater sampling events and, based on the data compiled, additional injection points may be proposed near the storm water pipe.

6. *Section 4.2.3. What is ISOTEC's experience or strategy for the spatial timing of the injection locations, i.e., downgradient points first? Random distribution? Consider injecting in downgradient and peripheral locations first to minimize potential "pushing" of the plume due to the injected volume.*

   On a daily basis during the injection event, ISCO injections will be conducted at points beginning on the downgradient portion of the plume and moving toward the upgradient portion of the plume. Efforts will be made to not inject at adjacent injection points to minimize the volume of ISCO solutions being injected in a given area. In addition, the total volume of fluids to be injected during the entire injection event is approximately 5%, by volume, of the total upper zone groundwater volume into which the solutions are being injected. Further clarification of the volume injected at each point is provided in our response to Comment #9 below.

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7. *Section 4.2.4 and 7.0. It will be advantageous to conduct the next quarterly groundwater sampling shortly after the first injection event to evaluate potential adverse impacts on water quality. Well LW13S, at the downgradient edge of the upper zone PCP plume, should be analyzed for the full suite of analytical methods during future quarterly sampling events.*

   A quarterly groundwater sampling event was completed during the week of June 6, 2004. We anticipate completing the first injection event in July 2004. As outlined in the work plan, we are scheduled to monitor groundwater within 2 weeks following the injection event. The post-injection monitoring event will include the collection of samples from upper zone groundwater monitoring wells OX-1S through 8S, LW-11S, and RW-1.

   We will also collect groundwater samples from monitoring well LW-13S in future quarterly sampling events for analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), priority pollutant metals, ferrous iron, total dissolved solids (TDS), chloride, and selenium.

8. *Section 4.2.4 and Figure 5. The eastern extent of the PCP plume has never been very well defined. Now that the soil stockpile is removed, Time Oil should consider a monitoring point due east of the upper zone PCP plume, e.g., east of OX-2S where no monitoring points are currently located.*

   We agree with this recommendation and plan on installing an upper zone groundwater monitoring well approximately 40 ft east of OX-2S and 100 ft west of LW-5S. The monitoring well will be installed in July 2004.

9. *Section 6.1. The data evaluation and discussion of contaminant reductions in groundwater should account for dilution from water injections during the treatment process, versus the ISCO reaction.*

   The potential effects on groundwater due to the dilution from the water injected during the injection events will be accounted for in future evaluations. However, in discussing the injection methods further with the contractor (ISOTEC) scheduled to complete the initial injection event, we will likely reduce the total volume injected at each point during the injection event to less than 100 gallons, instead of the 500 gallons proposed in the work plan. The volume of water injected during the event will be documented and referenced in future evaluations.

10. *Section 6.1. The data evaluation should discuss whether the analytical data demonstrate complete mineralization of the PCP (i.e., PCP breakdown products – tetrachlorophenol, trichlorophenol, dichlorophenol, chlorophenol, tetrachlorocatechol, tetrachlorogydroquinone, and others – are not present at increased concentrations).*

    The PCP breakdown products will be included in future evaluations to determine if complete mineralization is occurring.

Currently, we are scheduled to conduct the initial ISCO injection event in July 2004, pending receipt of authorization to proceed from DEQ – including satisfactory responses from Northwest Region and Water Quality Control offices. Following the receipt of final authorization, we will proceed with the ISCO injection at the Time Oil Northwest Terminal. Kevin Murphy of Time Oil will no longer be an employee of Time Oil as of June 18, 2004, therefore we would request that any further correspondence

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related to the ISCO events be sent to Walter Sprague of Time Oil (same address as Mr. Murphy) and a copy of any correspondence be distributed to Martin Powers of Landau Associates. We look forward to working with you on this ISCO injection project.

LANDAU ASSOCIATES, INC.

Martin T. Powers, P.E.
Senior Associate Engineer

MTP/ rgm

cc: W. Sprague – Time Oil
P. Dost – Schwabe
M. Tischuk - Hanson
R. Brooks – Landau Associates

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RECEIVED JUL 1 2 2004

LANDAU ASSOCIATES

July 9, 2004

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

RE: TIME OIL NORTHWEST TERMINAL
PORTLAND, OREGON

Dear Mr. Roick:

On behalf of Time Oil, attached is the April through June 2004 quarterly report for Time Oil Northwest Terminal RI/FS.

LANDAU ASSOCIATES, INC.

Rebekah Brooks
Project Manager

RB/tam
7/9/04 \\Edmdata\wproc\231\TRANSMIT FAX\Quarterly Rpt_Ltr doc
Enclosure

cc: Mr. Walter Sprague, Time Oil Co.
Ms. Patricia Dost, Schwabe Williamson & Wyatt
Mr. Mike Tischuk, Beazer East, Inc.

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QUARTERLY REPORT TO DEQ
TIME OIL - NORTHWEST TERMINAL
April through June, 2004

SUMMARY OF WORK PERFORMED

- Prepared and submitted the January - March 2004 quarterly report to DEQ.

- Continued operation of the groundwater interim action in the lower zone at RW-2 at an average flow rate of 7.7 gpm. Continued operation of groundwater recovery in the upper zone at the groundwater intercept system at the east-west trending storm drain line at an average flow rate of 2.37 gpm from May 24th through June 29th. The flow meter for the storm drain (SDM-1) was not functioning from April 1st through May 24th. HRW-1 did not operate during April 1st through April 30th because it was dry due to low water level conditions. HRW-1 operated intermittently from April 30th through June at an average rate of 0.27 gpm. A total of approximately 16.9 million gallons of groundwater have been treated and discharged from the interim action system, with a total of about 1.1 million gallons treated during this quarter.

- Continued review of the system operations performance for the groundwater interim action system at RW-2 and HRW-1, the groundwater intercept system at SDM-1, and the onsite wastewater treatment plant (WWTP). In addition, we continued to monitor the groundwater elevation in the upper zone to determine when groundwater recovery could be resumed at HRW-1. Based on the observed groundwater elevation, the pump in HRW-1 was restarted on April 30, 2004.

- Collected effluent samples from the WWTP throughout the quarter to evaluate the treatment system efficiency. On April 22, 2004 a WWTP effluent sample was collected which indicated that the concentration of pentachlorophenol (PCP) was 194 micrograms per liter (µg/L), which exceeded the permitted limit of 40 µg/L for PCP. The upset condition was reported to the City of Portland and minor changes were made to the WWTP to improve the aeration of the water prior to effluent. Subsequent effluent samples have been verified as meeting the discharge permit limits.

- Completed the *Phase III Remedial Investigation (RI)I Report* and submitted to DEQ for review on April 30, 2004.

- Began preparation of a work plan for performance of the terminal-wide human health and ecological risk assessments.

- Conducted the second quarter 2004 groundwater monitoring event June 7 through 10, 2004. Continued the sampling frequency recommended in our February 2, 2004 letter to DEQ, as approved by DEQ in an email from Tom Roick on February 3, 2004. Formal approval will occur after thorough review by DEQ.

- Completed preparation of the *Fourth Quarter 2003 Groundwater Monitoring and Groundwater Interim Action Status Report* and submitted to DEQ.

- Continued preparation of the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Prepared a work plan for implementation of the *in situ* chemical oxidation (ISCO) technique as an interim remedial action for upper zone soil and groundwater. Final approval of the work plan from DEQ is pending and the first full-scale ISCO event is scheduled to commence on July 12, 2004.

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- Received DEQ's comments on the *ISCO Interim Remedial Action Work Plan* and submitted a response letter to DEQ on its comments. At DEQ's request, the response to comments will be incorporated into the work plan.

- Sampled the ISCO monitoring wells as part of the second quarter 2004 event to document baseline groundwater conditions prior to implementation of the interim remedial action.

- Submitted the (Underground Injection Control) UIC application for the ISCO injection event to Barbara Priest at DEQ, Water Quality. Received approval of the application from DEQ on June 18, 2004.

- Continued passive product recovery in well Q using a product sock. The product socks were removed from wells LX-2S and PZ-2 because product was not observed at these locations during the second quarter 2004 monitoring event. Continued temporary storage of the spent product socks in a 55-gallon drum in a designated location at the terminal pending disposal.

- Continued passive product recovery in well LW-21S using a passive bailer. The bailer was removed from well LW-27S because product was not observed at this location during the second quarter 2004 monitoring event. The product is temporarily being stored in a 55-gallon drum in a designated location at the terminal pending disposal.

RESULTS COLLECTED

- Influent/effluent samples from the WWTP for April through June, 2004. With the exception of the analytical result from the April 22, 2004 effluent sample, PCP and other constituent concentrations (e.g., BTEX) were less than the permitted maximum discharge limits identified in the industrial wastewater discharge permit. The data results will be presented in the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

- Final groundwater data for the first quarter 2004 groundwater sampling event. Data results will be presented in the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Status Report.*

PROBLEMS ENCOUNTERED AND STEPS TO RESOLVE

- As referenced above, an effluent sample collected from the WWTP on April 22, 2004 reportedly exhibited a concentration of PCP (194 µg/L) in excess of the permitted limit (40 µg/L). Modifications were made to improve performance of the WWTP, and subsequent samples collected on May 6, May 13, May 19, May 27, June 3, June 9, and June 15, 2004 were analyzed for PCP and reported to be below the 40 µg/L discharge permit limit.

WORK TO BE PERFORMED NEXT QUARTER

- Prepare and submit quarterly report to DEQ.

- Continue implementation of the groundwater interim action in the lower zone at RW-2. Continue to operate the groundwater intercept system at the storm drain (SDM-1). Continue groundwater treatment and discharge to POTW. Continue review of the system operations performance for the

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groundwater interim action system at RW-2, HRW-1, SDM-1 and the onsite wastewater treatment system.

- Continue to monitor the effluent from the WWTP.
- Complete preparation of the *First Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Report* and submit to DEQ.
- Prepare the *Second Quarter 2004 Groundwater Monitoring and Groundwater Interim Action Report.*
- Conduct the third quarter 2004 groundwater monitoring event in August 2004.
- Conduct the first ISCO injection event in mid-July 2004.
- Complete preparation of the risk assessment work plan and submit to DEQ.

NEW TIME OIL PROJECT MANAGER

- Time Oil is in the process of selecting a new project manager for this site. For now, please direct correspondence and other communications to Walter Sprague, Time Oil Co., 2737 W. Commodore Way, Seattle WA; (206) 285-2400 Ext 505; wsprague@timeoil.com.

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