Quarterly Report – Second Quarter 2007
Terminal 4 Slip 3 Upland Facility

Port of Portland
Portland, Oregon 97209

August 2007

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

NEWFIELDS

Quarterly Report – Second Quarter 2007
Terminal 4 Slip 3 Upland Facility

Port of Portland
Portland, Oregon 97209

August 2007

Respectfully submitted,

Michael W. Stevens, P.E.
Associate Engineer, Ash Creek Associates

Amanda L. Spencer, P.E., R.G.
Principal Hydrogeologist, Ash Creek Associates

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

NEWFIELDS

Table of Contents

1. Introduction

This Quarterly Report (Report) describes the results of groundwater monitoring and light non-aqueous phase liquid (LNAPL) monitoring and removal at the Terminal 4 Slip 3 Upland Facility (Facility; see Figure 1) during the second quarter of 2007. This work was completed in accordance with the LNAPL Removal, Groundwater Monitoring, and Contingency Plan for the Facility (Monitoring Plan; BBL/Ash Creek/Newfields, 2005a). The monitoring activities are part of a required remedial action for the Facility defined in the Record of Decision (ROD; Oregon Department of Environmental Quality [DEQ], 2003) and Explanation of Significant Difference (DEQ, 2004). The Monitoring Plan was prepared pursuant to Attachment C (Scope of Work [SOW]) Item II.I of the Consent Judgment (Circuit Court of Oregon, 2004) between DEQ and the Port of Portland (Port).

1.1 Scope

The specific tasks that are described in this Report include:

- Groundwater monitoring conducted in June 2007, including measurement of groundwater levels for estimating hydraulic gradients and collection of groundwater samples for chemical analysis; and
- LNAPL monitoring and recovery from April through June 2007.

1.2 Report Organization

The Report text provides background information about the Facility (Section 2), the results of the LNAPL removal program (Section 3), and the results of the groundwater monitoring program (Section 4). Supporting information is provided in the tables, figures, and appendices. Appendix A is the Field and Quality Assurance/Quality Control (QA/QC) Procedures. Field notes from the groundwater and LNAPL monitoring events are also included in Appendix A. Appendix B is the Data QA/QC Review and Analytical Laboratory Reports.

2. Background

This section summarizes the physical setting and the geology and hydrogeology of the Facility.

2.1 Facility Location and Description

The Facility is part of the Port Marine Terminal 4 located at 11040 North Lombard Street in Portland, Oregon (Figure 1). Terminal 4 encompasses about 260 acres along the east bank of the Willamette River, near river mile 5. Figure 2 provides a Facility Vicinity Plan showing the boundaries of the Facility in relation to surrounding properties and Figure 3 shows a plan of the Facility. The Facility is generally bounded on the north by Terminal 4 Slip 1, on the west by the Willamette River, on the south by the Toyota Automobile Receiving Area, and on the east by the former Union Pacific Railroad tank farm facility.

The Facility is generally flat at an average elevation of about 35 feet above mean sea level (MSL). The river water elevation is typically less than 10 feet above MSL and is subject to a mean tidal range of about 2 feet (Hart Crowser, 2000). Immediately east of the Facility, the ground surface rises at about a 15 percent grade to an elevation of about 100 feet.

2.2 Geology

Lithologic logs and geologic cross-sections indicate that the Facility is underlain by approximately 10 to 30 feet of sandy fill. The sandy fill has been described as fine- to medium-grained sand with some coarse sand and fine gravel, and relatively few fines (BBL/Ash Creek/Newfields, 2005b; Hart Crowser, 2000). The sandy fill is underlain by alluvium. A laterally continuous layer of silt makes up the top of the alluvium. The silt varies in thickness from approximately 2 to 5 feet or more. This silt layer appears to be hummocky with a general slope towards the river; the silt layer rises sharply to the surface beyond the eastern boundary of the Facility and a “mound” in the silt is present in the northwestern portion of the Facility. Below the silt layer, the alluvium is comprised of layers of silt, sandy silt, silty sand, and sand, which do not appear to be laterally continuous for significant distances.

2.3 Hydrogeology

Depth to shallow groundwater in the central portion of the Facility has generally ranged from 12 to 24 feet below ground surface (bgs) during the past 10 years (BBL/Ash Creek/Newfields, 2005b). Potentiometric maps from periodic water level measurements collected during the past 10 years indicate a general site-wide gradient towards the river (BBL/Ash Creek/Newfields, 2005b). However, gradients are highly variable in the center portion of the Facility, often indicating groundwater flow directions away from the river or to the north or south.

Older wells installed at the Facility (designated by “MW”) are screened within both the sandy fill and the alluvial unit (Century West, 1994). Groundwater levels drop below the sandy fill in many of these

wells during the dry season and times when river levels are low (Hart Crowser, 2000). Groundwater levels measured in shallow wells screened only across the sand fill (e.g., HC-16 and HC-23) are several feet higher than in adjacent MW wells, suggesting the silty layer at the top of the alluvial unit acts to separate groundwater above and below (i.e., groundwater is "perched" above the silt layer).

3. LNAPL Monitoring and Removal Program

The SOW of the Consent Judgment requires periodic removal of LNAPL from existing wells. The following describes the results of the LNAPL monitoring and removal program for the second quarter of 2007. A more detailed description of the procedures used is provided in Appendix A.

3.1 LNAPL Monitoring Wells

As of March 2006, the well network for LNAPL removal was reduced to wells MW-19 and MW-20 (Figure 4), as approved by the DEQ in a letter to the Port dated April 6, 2006. To improve the efficiency of LNAPL removal from these two wells, passive skimmers were installed in June 2006. As requested by the DEQ in the April 6, 2006 letter, if wells are encountered during the quarterly groundwater monitoring (discussed in Section 4.0) that have more than 0.1 foot of product, the product will be removed (but the well will remain outside of the regular LNAPL removal program). During the first quarter 2007 groundwater monitoring event an accumulation of more than 1 foot of LNAPL was observed in well MW-17 and product has since been removed from this well during routine site visits, coordinated with the LNAPL removal program.

3.2 LNAPL Monitoring and Removal

The wells included in the LNAPL monitoring network were accessed for LNAPL removal on a schedule that varied from weekly to bi-weekly through the second quarter of 2007. In general, the removal frequency was based on the observations of product during each event. The removal frequency was halved (i.e., from weekly to bi-weekly or from bi-weekly to monthly) when wells contained less than 0.1 gallon of collected product during a monitoring event. When wells were observed to have more than 0.1 gallon of collected product, the monitoring frequency was doubled (i.e., from monthly to bi-weekly or from bi-weekly to weekly).

During each LNAPL monitoring event, the LNAPL was removed from wells MW-19 and MW-20 by draining accumulated product from the skimmers and reinstalling the skimmers in the wells (after adjusting the cables to account for changes in water table elevation). During several events, the volume of LNAPL in the well casings exceeded the storage capacity of the passive skimmers (which is approximately 1 gallon). Any residual product remaining in the well after the skimmers were removed was removed from the well using a peristaltic pump before the skimmer was reinstalled. This manual removal method using the peristaltic pump was also used to remove LNAPL from well MW-17. The results of each LNAPL monitoring event (i.e., product removal volumes) are summarized in Table 1.

During the June 2007 groundwater monitoring event, LNAPL was also observed in wells HC-10, MW-14, MW-15, and BE-4 at thicknesses of more than 0.1 foot. The product in these wells was removed using a peristaltic pump and disposed of with the LNAPL from wells MW-17, MW-19, and MW-20. Approximately 53 gallons of product was removed during the second quarter of 2007 (13.0 gallons from MW-17, 18.6 gallons from MW-19, 13.8 gallons from MW-20, and 7.5 gallons from the other wells combined). More than 90 gallons of product have been removed for the year (72 percent from wells MW-19 and MW-20). The volume of product that accumulates for removal

generally peaks during the wet season when water levels are high, and decreases as water levels fall with the coming of the dry season.

The total volume removed during the second quarter 2007 is higher than the volume removed during the second quarter 2006 (53 gallons in 2007 versus less than 10 gallons in 2006), though much of this is likely attributable to the use of the passive skimmers. Figure 4 shows the quarterly LNAPL removal volume and total volumes of LNAPL removed during 2007 from each of the monitoring wells with LNAPL removal.

The LNAPL was collected in a Department of Transportation (DOT)-approved 55-gallon drum for temporary storage. Full drums were transported to a local oil recycling facility as needed.

3.3 BEBRA Observations

The slip adjacent to the BEBRA bank is inspected for the presence of sheen during each LNAPL monitoring event. Sheens were not observed on water adjacent to the bank during the second quarter 2007; results are tabulated in Table 1.

LNAPL has not been observed in the three wells installed within the BEBRA area (i.e., wells BE-1 through BE-3).

4. Groundwater Monitoring

On June 27, 2007, water levels were measured in the monitoring wells included in the groundwater elevation monitoring network, and between June 27 and 28, 2007, groundwater samples were collected from the monitoring wells included in the groundwater sampling/analysis monitoring network. The groundwater elevation and sampling/analysis well networks are defined in the Monitoring Plan and listed below in Sections 4.1 and 4.2, respectively. Please refer to Appendix A for a detailed discussion of the field and sampling procedures.

4.1 Groundwater Level Measurements

Depths to groundwater and LNAPL (if present) were measured in wells HC-1 through HC-3; HC-4S and HC-4D; HC-5; HC-6S and HC-6D; HC-10; HC-12S and HC-12D; HC-13 (located in the Toyota Automobile Receiving Area); HC-16 through HC-24; and BE-1 through BE-4. Water levels were measured for the purpose of determining groundwater elevations and gradients, and LNAPL was removed from any wells that were observed to have more than 0.1 foot of product (as described in Section 3.2). The wells were opened, and the water levels allowed to equilibrate before measurements were taken. The depth to groundwater was measured to the nearest 0.01 foot using an electronic interface probe. Measured depths to groundwater and estimated groundwater elevations are summarized in Table 2. Groundwater elevations and estimated groundwater elevation contours are shown on Figure 5.

As shown on Figure 5, the presence of the BEBRA-amended fill does not appear to be affecting the groundwater gradient relative to prior conditions. Groundwater contours are comparable to those observed at the Facility prior to the installation of the BEBRA.

4.2 Groundwater Sampling

Groundwater samples were collected from wells HC-2, HC-5, HC-19, HC-21, and BE-1 through BE-3 (in accordance with the Groundwater Monitoring Plan, a sample was not collected from wells HC-24 and BE-4 due to the presence of LNAPL in the wells [0.01 foot in HC-24 and 0.2 foot in BE-4]).

Purging. After depths to groundwater were measured, the wells were purged using a peristaltic pump. Groundwater pH, electrical conductivity, and temperature were measured during purging to assess the effectiveness of the purging. Purging was considered complete either when the water quality parameters (pH, temperature, and specific conductance) stabilized within 10 percent for three consecutive readings or the well was purged dry. Wells BE-1 through BE-3 purged dry and were allowed to recover before sampling. Sampling in these wells was conducted over a period of two days as requested by DEQ in an attempt to collect sufficient volume to complete the chemical analyses for the monitoring program. However, even with the extended sample collection period, well BE-3 had insufficient volumes of water and rates of recovery to fill the full recommended sample volume (which resulted in limiting the availability of laboratory quality control parameters, as described below in Section 4.3).

Sample Collection. After purging was completed, the wells were sampled. Collected groundwater samples were submitted to TestAmerica in Beaverton, Oregon, for chemical analyses. All samples were collected in laboratory-supplied sample containers, marked with identifying information, and maintained under chain-of-custody protocols.

Sample Handling and Storage. Clean sample containers were provided by the analytical laboratory ready for sample collection. Sample jars were fully filled, leaving no headspace. A label was affixed to each sample container and marked with identifying information. Sample containers were stored in a cooled ice chest until transported to the analytical laboratory. Chain-of-custody was maintained and documented at all times.

Decontamination Procedures. Sampling equipment was either disposable or was cleaned before collection of each well sample. Disposable items were replaced between each sampling event. Cleaning of non-disposable items consisted of washing in a detergent (Alconox®) solution, rinsing with tap water, and rinsing with deionized water.

4.3 Chemical Analyses Results

Groundwater samples collected from the monitoring wells were submitted for polynuclear aromatic hydrocarbons (PAHs) using Environmental Protection Agency (EPA) Method 8270C-SIM, and for diesel and heavy oil (residual) petroleum hydrocarbons (TPH-Dx) using Northwest Total Petroleum Hydrocarbons (NWTPH-Dx) Method with silica gel cleanup. Table 3 summarizes the results of the June 2007 groundwater sample analyses, and includes the results from previous groundwater sampling events. For reference, the ROD compliance criteria have been included in the table. Figure 6 presents the results for total petroleum hydrocarbons (TPH) and total PAHs for each sampled well. The data quality review and the laboratory report are included in Appendix B.

In accordance with the Monitoring Plan, silica gel cleanup is completed on samples analyzed for TPH-Dx (using EPA Method 3630M). However, prior to 2006, the analytical laboratory did not complete silica gel cleanup on the samples collected from wells BE-1 through BE-3 due to insufficient sample volume. Subsequent results of diesel-range total petroleum hydrocarbons (TPHd) analyses on samples from these wells (which have included a silica gel cleanup) have shown a significant decrease in concentration, supporting that the earlier results included organic interference.

Due to limited water in wells BE-1 through BE-3, it was very difficult to obtain sufficient sample volumes to complete all of the analyses of the Monitoring Plan. Therefore, it was recommended to and accepted by the DEQ that sample collection would occur over a two-day period following well purging (i.e., the well was purged dry, allowed to recover, sampled dry again, etc., over a two-day period) to maximize the volume of groundwater for sample collection from these wells. In addition, priority was given to completing the TPHd analyses with silica gel cleanup, followed by completing the PAH analyses. For the second quarter 2007 groundwater sampling event, sufficient sample volume was obtained from all three wells to complete all of the analyses of the Monitoring Plan. However, there was not sufficient sample volume in well BE-3 to complete the full data quality assurance analysis for the sample and the reporting limits for PAHs in these samples were raised. As described in the data quality review in Appendix B, the quality of the data is not expected to have been adversely affected. One of the upland samples (HC-21) also had reduced sample volume due to laboratory error and the reporting limits were affected similarly. With the exception of

benzo(a)anthracene and benzo(a)pyrene, the reporting limits were below the ROD compliance criteria.

4.4 Evaluation of Second Quarter 2007 Results

The following two subsections provide an evaluation of, and conclusions from, the results of the second quarter 2007 activities.

4.4.1 BEBRA Area Groundwater

LNAPL was not observed in any of the wells within the BEBRA area (wells BE-1 through BE-3), but LNAPL (0.2 foot) was observed and removed from the well upgradient of the BEBRA area (well BE-4). Product was removed from wells MW-17, MW-19, and MW-20 on a weekly or bi-weekly schedule as described in Section 3.2. In addition, LNAPL was removed from wells HC-10, MW-14, MW-15, and BE-4 during the second quarter 2007 groundwater monitoring event. A total of approximately 53 gallons of product were removed during the second quarter 2007.

Groundwater elevation measurements demonstrate that the BEBRA-amended fill is not restricting groundwater flow (Figure 5).

The concentrations of TPHd and PAHs in the upland monitoring wells have some variability, being generally lower than historically observed concentrations (well HC-19 had the lowest detected concentrations of TPH since monitoring began). Concentrations were consistent with or lower than those observed during the second quarter 2006.

4.4.2 South Slip Area

During the second quarter 2007 sampling event, all of the analytical results were below the ROD compliance criteria (as listed in Table 3). TPH-Dx and PAHs were not detected in well HC-2 (consistent with previous monitoring events) and well HC-5 had the lowest detected concentrations of TPH since monitoring began.

4.5 Recommendations

The current groundwater monitoring program will continue, with annual sampling of wells HC-2 and HC-5. The sample collection period for the BEBRA wells (wells BE-1 through BE-3) will continue to be extended in order to collect sufficient sample volume to complete both the TPH analysis with a complete silica gel cleanup and PAH analysis from these wells.

The LNAPL removal program will also continue, with the passive skimmers operating in wells MW-19 and MW-20. If product volumes in these wells are observed to exceed the storage capacity of the passive skimmers, a study will be completed to evaluate whether a more aggressive removal program (e.g., an active skimmer) is justified.

Measurement of product thickness in well MW-17 will be completed coincident with the LNAPL removal program, with manual product removal as needed.

5. References

BBL/Ash Creek/Newfields, 2005a. LNAPL Removal, Groundwater Monitoring, and Contingency Plan, Terminal 4 Slip 3 Upland Facility. June 16, 2005.

BBL/Ash Creek/Newfields, 2005b. Quarterly Report – Fourth Quarter 2005, Terminal 4 Slip 3 Upland Facility. February 22, 2006.

Century West, 1994. Remedial Investigation Report, Terminal 4. January 1994.

Circuit Court of Oregon, Multnomah County, 2004. Consent Judgment – State of Oregon v. Port of Portland. October 7, 2004.

DEQ, 2003. Record of Decision, Port of Portland Terminal 4 Slip 3 Upland. April 21, 2003.

DEQ, 2004. Explanation of Significant Difference, Port of Portland Terminal 4 Slip 3 Upland Facility. September 1, 2004.

Hart Crowser, 2000. Remedial Investigation Report, Terminal 4, Slip 3 Upland, Port of Portland, Portland, Oregon. January 21, 2000.

TABLE 1
GROUNDWATER AND PRODUCT LEVEL MONITORING
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

Well ID (Casing Elevation)	Date	Initial Measurements [feet]				Product Removal [gallons]		Final Product Thickness [feet]
		Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	
MW-8								
(31.13)	29-Mar-2007	15.71	NP	0.00	15.42	0.0	0.0	0.00
	27-Jun-2007	19.26	NP	0.00	11.87	0.0	0.0	0.00
MW-14								
(31.32)	29-Mar-2007	17.03	17.01	0.02	14.31	0.0	0.0	0.02
	27-Jun-2007	19.28	18.90	0.38	12.38	2.5	2.5	0.01
MW-15								
(31.57)	29-Mar-2007	15.57	15.22	0.35	16.31	0.25	0.25	0.01
	27-Jun-2007	16.56	16.14	0.42	15.38	2.00	2.25	0.01
MW-17								
(28.40)	29-Mar-2007	17.56	13.66	3.90	14.31	4.00	4.00	0.05
	3-May-2007	16.10	14.74	1.36	13.51	7.50	11.50	0.05
	15-May-2007	15.50	14.75	0.75	13.57	2.00	13.50	0.02
	25-May-2007	15.35	14.79	0.56	13.55	1.00	14.50	0.05
	4-Jun-2007	15.90	15.53	0.37	12.83	0.75	15.25	0.10
	13-Jun-2007	16.11	15.77	0.34	12.59	0.50	15.75	0.04
	19-Jun-2007	16.02	15.84	0.18	12.54	0.25	16.00	0.05
	27-Jun-2007	16.47	16.31	0.16	12.07	1.00	17.00	0.04
MW-19								
(30.73)	5-Jan-2007	Skimmer Installed June 2006				1.30	1.30	--
	9-Jan-2007	--	--	--	--	1.20	2.50	--
	15-Jan-2007	--	--	--	--	1.00	3.50	--
	26-Jan-2007	--	--	--	--	1.10	4.60	--
	31-Jan-2007	--	--	--	--	1.10	5.70	--
	9-Feb-2007	--	--	--	--	1.00	6.70	--
	13-Feb-2007	--	--	--	--	1.00	7.70	--
	28-Feb-2007	--	--	--	--	1.10	8.80	--
	6-Mar-2007	--	--	--	--	1.20	10.00	--
	23-Mar-2007	--	--	--	--	4.00	14.00	--
	29-Mar-2007	--	--	--	--	5.00	19.00	--
	5-Apr-2007	--	--	--	--	0.50	19.50	--
	11-Apr-2007	--	--	--	--	0.40	19.90	--
	16-Apr-2007	--	--	--	--	8.20	28.10	--
	25-Apr-2007	--	--	--	--	0.80	28.90	--
	3-May-2007	--	--	--	--	5.00	33.90	--
	10-May-2007	--	--	--	--	0.90	34.80	--
	15-May-2007	--	--	--	--	0.50	35.30	--
	25-May-2007	--	--	--	--	0.25	35.55	--
	4-Jun-2007	--	--	--	--	0.75	36.30	--
	13-Jun-2007	--	--	--	--	0.20	36.50	--
	19-Jun-2007	--	--	--	--	0.10	36.60	--
	27-Jun-2007	--	--	--	--	1.00	37.60	--
MW-20								
(30.73)	5-Jan-2007	Skimmer Installed June 2006				1.30	1.30	--
	9-Jan-2007	--	--	--	--	1.20	2.50	--
	15-Jan-2007	--	--	--	--	0.00	2.50	--
	26-Jan-2007	--	--	--	--	1.20	3.70	--
	31-Jan-2007	--	--	--	--	1.10	4.80	--
	9-Feb-2007	--	--	--	--	1.00	5.80	--
	13-Feb-2007	--	--	--	--	1.00	6.80	--
	28-Feb-2007	--	--	--	--	1.10	7.90	--
	6-Mar-2007	--	--	--	--	1.00	8.90	--
	23-Mar-2007	--	--	--	--	1.00	9.90	--
	29-Mar-2007	--	--	--	--	4.00	13.90	--
	5-Apr-2007	--	--	--	--	1.00	14.90	--
	11-Apr-2007	--	--	--	--	1.20	16.10	--
	16-Apr-2007	--	--	--	--	2.70	18.80	--
	25-Apr-2007	--	--	--	--	0.30	19.10	--
	3-May-2007	--	--	--	--	4.10	23.20	--
	10-May-2007	--	--	--	--	0.80	24.00	--
	15-May-2007	--	--	--	--	1.20	25.20	--
	25-May-2007	--	--	--	--	0.50	25.70	--
	4-Jun-2007	--	--	--	--	0.50	26.20	--
	13-Jun-2007	--	--	--	--	0.50	26.70	--
	19-Jun-2007	--	--	--	--	0.00	26.70	--
	27-Jun-2007	--	--	--	--	1.00	27.70	--

See Notes on Last Page of Table

TABLE 1
GROUNDWATER AND PRODUCT LEVEL MONITORING
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

Well ID (Casing Elevation)	Date	Initial Measurements [feet]				Product Removal [gallons]		Final Product Thickness [feet]
		Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	
HC-10								
(29.30)	29-Mar-2007	15.91	15.33	0.58	13.91	0.25	0.25	0.08
	27-Jun-2007	17.50	17.03	0.47	12.22	2.00	2.25	0.07
HC-16								
(32.83)	29-Mar-2007	14.66	NP	0.00	18.17	0.0	0.0	0.00
	27-Jun-2007	15.31	NP	0.00	17.52	0.0	0.0	0.00
HC-17R								
(33.61)	29-Mar-2007	16.70	NP	0.00	16.91	0.0	0.0	0.00
	27-Jun-2007	17.29	NP	0.00	16.32	0.0	0.0	0.00
HC-18								
(33.29)	29-Mar-2007	14.65	NP	0.00	18.64	0.0	0.0	0.00
	27-Jun-2007	15.35	NP	0.00	17.94	0.0	0.0	0.00
HC-19								
(33.05)	29-Mar-2007	16.36	NP	0.00	16.69	0.0	0.0	0.00
	27-Jun-2007	17.04	NP	0.00	16.01	0.0	0.0	0.00
HC-20								
(32.26)	29-Mar-2007	14.50	NP	0.00	17.76	0.0	0.0	0.00
	27-Jun-2007	15.15	NP	0.00	17.11	0.0	0.0	0.00
HC-21								
(31.95)	29-Mar-2007	15.09	NP	0.00	16.86	0.0	0.0	0.00
	27-Jun-2007	16.11	NP	0.00	15.84	0.0	0.0	0.00
HC-22								
(31.91)	29-Mar-2007	13.45	NP	0.00	18.46	0.0	0.0	0.00
	27-Jun-2007	14.14	NP	0.00	17.77	0.0	0.0	0.00
HC-23								
(32.74)	29-Mar-2007	14.20	14.19	0.01	18.55	0.0	0.0	0.01
	27-Jun-2007	14.93	14.91	0.02	17.83	0.0	0.0	0.02
HC-24								
(30.04)	29-Mar-2007	12.30	NP	0.00	17.74	0.0	0.0	0.00
	27-Jun-2007	13.74	13.73	0.01	16.31	0.0	0.0	0.01
BE-1								
(19.75)	29-Mar-2007	6.23	NP	0.00	13.52	0.0	0.0	0.00
	27-Jun-2007	6.76	NP	0.00	12.99	0.0	0.0	0.00
BE-2								
(19.69)	29-Mar-2007	8.07	NP	0.00	11.62	0.0	0.0	0.00
	27-Jun-2007	8.55	NP	0.00	11.14	0.0	0.0	0.00
BE-3								
(17.55)	29-Mar-2007	9.44	NP	0.00	8.11	0.0	0.0	0.00
	27-Jun-2007	9.99	NP	0.00	7.56	0.0	0.0	0.00
BE-4								
(31.16)	29-Mar-2007	15.25	15.18	0.07	15.97	0.0	0.0	0.07
	27-Jun-2007	16.51	16.31	0.20	14.83	1.0	1.0	0.01

See Notes on Last Page of Table

TABLE 1
GROUNDWATER AND PRODUCT LEVEL MONITORING
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

Total Product Volume [gallons]				
Date	Event Total	Quarter Cumulative	Annual Cumulative	Bank Sheen
5-Jan-2007	**2.6**	**2.6**	**2.6**	No
9-Jan-2007	**2.4**	**5.0**	**5.0**	No
15-Jan-2007	**1.0**	**6.0**	**6.0**	No
26-Jan-2007	**2.3**	**8.3**	**8.3**	No
31-Jan-2007	**2.2**	**10.5**	**10.5**	No
9-Feb-2007	**2.0**	**12.5**	**12.5**	No
13-Feb-2007	**2.0**	**14.5**	**14.5**	No
28-Feb-2007	**2.2**	**16.7**	**16.7**	No
6-Mar-2007	**2.2**	**18.9**	**18.9**	No
23-Mar-2007	**5.0**	**23.9**	**23.9**	No
29-Mar-2007	**13.5**	**37.4**	**37.4**	No
5-Apr-2007	**1.5**	**1.5**	**38.9**	No
11-Apr-2007	**1.6**	**3.1**	**40.5**	No
16-Apr-2007	**10.9**	**14.0**	**51.4**	No
25-Apr-2007	**1.1**	**15.1**	**52.5**	No
3-May-2007	**16.6**	**31.7**	**69.1**	No
10-May-2007	**1.7**	**33.4**	**70.8**	No [6]
15-May-2007	**3.7**	**37.1**	**74.5**	No
25-May-2007	**1.8**	**38.9**	**76.3**	No
4-Jun-2007	**2.0**	**40.9**	**78.3**	No
13-Jun-2007	**1.2**	**42.1**	**79.5**	No
19-Jun-2007	**0.4**	**42.4**	**79.8**	No
27-Jun-2007	**10.5**	**52.9**	**90.3**	No [6]

Notes:

1. The LNAPL Monitoring Program was reduced in March 2006 to include only wells MW-19 and MW-20, approved by the DEQ in an April 6, 2006 lette
2. Passive product skimmers were installed in wells MW-19 and MW-20 in June 2006 - water level measurements discontinued
3. NA = Not Available/Not Accessible.
4. NP = No Product at the time of the monitoring event.
5. * Phreatic Elevation = (Casing Elevation - Depth to Water) + S_g * (Product Thickness). S_g = 0.89
6. Sheen observed in slip, but away from bank.

TABLE 2
GROUNDWATER ELEVATIONS
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

Monitoring Well	Top of Casing Elevation [feet]	Sample Date	Depth to LNAPL [feet]	Depth to Water [feet]	Product Thickness [feet]	Groundwater Elevation [feet MSL] [1]
HC-1	32.36	3/29/2007	--	24.85	--	7.51
		6/27/2007	--	28.33	--	4.03
HC-2	32.19	3/29/2007	--	24.43	--	7.76
		6/27/2007	--	27.44	--	4.75
HC-3	32.88	3/29/2007	--	25.79	--	7.09
		6/27/2007	--	28.92	--	3.96
HC-4S	32.35	3/29/2007	--	26.08	--	6.27
		6/27/2007	--	26.13	--	6.22
HC-4D	32.18	3/29/2007	--	26.58	--	5.60
		6/27/2007	--	29.53	--	2.65
HC-5	32.10	3/29/2007	--	18.15	--	13.95
		6/27/2007	--	18.59	--	13.51
HC-6S	33.03	3/29/2007	--	18.13	--	14.90
		6/27/2007	--	18.60	--	14.43
HC-6D	32.89	3/29/2007	--	20.42	--	12.47
		6/27/2007	--	21.43	--	11.46
HC-10	29.30	3/29/2007	15.33	15.91	0.58	13.91
		6/27/2007	17.03	17.5	0.47	12.22
HC-12S	29.60	3/29/2007	--	13.45	--	16.15
		6/27/2007	--	13.89	--	15.71
HC-12D	29.32	3/29/2007	--	15.25	--	14.07
		6/27/2007	--	17.03	--	12.29
HC-13	NS	3/29/2007	--	16.73	--	NS
		6/27/2007	--	17.01	--	NS
HC-16	32.83	3/29/2007	--	14.66	--	18.17
		6/27/2007	--	15.31	--	17.52
HC-17R	33.61	3/29/2007	--	16.70	--	16.91
		6/27/2007	--	17.29	--	16.32
HC-18	33.29	3/29/2007	--	14.65	--	18.64
		6/27/2007	--	15.35	--	17.94
HC-19	33.05	3/29/2007	--	16.36	--	16.69
		6/27/2007	--	17.04	--	16.01
HC-20	32.26	3/29/2007	--	14.50	--	17.76
		6/27/2007	--	15.15	--	17.11
HC-21	31.95	3/29/2007	--	15.09	--	16.86
		6/27/2007	--	16.11	--	15.84
HC-22	31.91	3/29/2007	--	13.45	--	18.46
		6/27/2007	--	14.14	--	17.77
HC-23	32.74	3/29/2007	--	14.20	--	18.54
		6/27/2007	14.91	14.93	0.02	17.83
HC-24	30.04	3/29/2007	--	12.30	--	17.74
		6/27/2007	13.73	13.74	0.01	16.31
BE-1	19.75	3/29/2007	--	6.23	--	13.52
		6/27/2007	--	6.76	--	12.99
BE-2	19.69	3/29/2007	--	8.07	--	11.62
		6/27/2007	--	8.55	--	11.14
BE-3	17.55	3/29/2007	--	9.44	--	8.11
		6/27/2007	--	9.99	--	7.56
BE-4	31.16	3/29/2007	15.18	15.25	0.07	15.97
		6/27/2007	16.31	16.51	0.20	14.83

Notes:

1. [1]MSL = Mean sea level.
2. NS = Not surveyed.

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

Sample Point	Sample Date	Analyte Concentration in µg/L (ppb)																	
		Total Petroleum Hydrocarbons		Polynuclear Aromatic Hydrocarbons (PAHs)															
		Diesel-Range	Residual-Range	Acenaphthene	Acenaphthylene	Anthracene	BAA	BAP	BBF	BGP	BKF	Chrysene	DAA	Fluoranthene	Fluorene	ICP	Naphthalene	Phenanthrene	Pyrene
South Slip 3 Area																			
HC-2	11/5/1998	--	--	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	5/10/2004	< 250	< 500	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	2/11/2005	120 J	310 J	< 0.021	--	--	0.0053	< 0.021	--	--	--	--	--	0.0084	< 0.021	--	0.14	0.0069	--
	6/2/2005	20 J	< 500	0.0058 J	0.0055 J	0.027	0.0043 J	0.0044 J	0.0056 J	0.0046 J	0.0042 J	0.0049 J	< 0.020	0.0086 J	0.0094 J	0.0052 J	0.026	0.017 J	0.0075 J
	9/15/2005	< 238	< 476	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.196	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098	< 0.098
	12/9/2005	< 236	< 472	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952
	6/28/2006	< 240	< 481	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.189	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943	< 0.0943
	6/27/2007	< 238	< 476	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952
HC-5	11/12/1998	--	--	< 2.5	< 2.5	< 0.5	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	< 0.1	< 2.5	< 0.1	< 0.1	< 0.5	< 0.1
	5/10/2004	**990,000**	< 50,000	< 25	< 25	27.6	**0.742**	< 0.5	< 0.5	< 0.5	< 0.5	1.65	< 1.0	< 25	**86.1**	< 0.5	< 37.5	**43.0**	14.9
	6/10/2004	**102,000**	< 5,000	11.4	< 10	< 10	**0.422**	< 0.25	< 0.25	< 0.5	< 0.25	0.815	< 0.25	< 10	**35.3**	< 0.25	16.8	**17.4**	4.68
	2/11/2005	**26,000 J**	**4,800 J**	0.65	--	--	< 0.02	< 0.02	--	--	--	--	--	0.07	2.9	--	< 0.19	0.28	--
	6/2/2005	**3,200 Y**	< 500	0.26	< 0.064	< 0.37	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.096	2.7	< 0.020	< 0.17	< 0.21	< 0.020
	9/15/2005	**1,510 J**	< 476	0.973	< 0.476	< 0.476	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	**4.21**	< 0.0952	< 0.952	< 0.476	< 0.143
	12/7/2005	**1,940**	< 485	< 0.143	< 0.0952	< 0.238	< 0.0952	< 0.476	< 0.476	< 0.476	< 0.476	< 0.0952	< 0.952	< 0.0952	1.15	< 0.476	< 0.143	< 0.143	< 0.238
	6/28/2006	**2,990**	< 476	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.381	< 0.190	1.10	< 0.190	< 0.190	< 0.190	< 0.190
	6/27/2007	856	< 476	0.835	< 0.288	< 0.192	< 0.192	< 0.192	< 0.192	< 0.192	< 0.192	< 0.192	< 0.385	< 0.192	3.08	< 0.192	0.421	< 0.288	< 0.192
BEBRA Area																			
HC-19	5/10/2004	**10,800**	**1,420**	< 1.5	< 0.5	< 1.25	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5	**4.3**	< 0.5	< 1.75	< 1.0	< 0.5
	2/11/2005	**9,700 J**	**1,800 J**	1.0	--	--	0.014	**0.016**	--	--	--	--	--	0.041	3.1	--	< 0.26	0.054	--
	6/3/2005	510 Y	< 500	0.72	< 0.086	0.21	0.023	**0.034**	0.028	0.025	0.025	0.041	< 0.020	0.076	2.8	0.028	< 0.19	0.17	0.12
	9/15/2005	< 236	< 472	0.961	< 0.476	< 0.476	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	3.48	< 0.0952	< 0.714	< 0.476	< 0.0952
	12/7/2005	< 240	< 481	0.619	< 0.0962	< 0.144	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.192	< 0.0962	2.10	< 0.0962	< 0.385	< 0.0962	0.0908 J
	3/14/2006	211	< 481	0.402	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.204	< 0.102	1.02	< 0.102	< 0.102	< 0.102	< 0.102
	6/28/2006	**3,940**	598	0.939	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.190	< 0.381	< 0.190	2.95	< 0.190	< 0.190	< 0.190	< 0.190
	9/19/2006	< 238	< 476	0.583	< 0.0952	< 0.143	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	1.89	< 0.0952	< 0.143	< 0.0952	< 0.0952
	12/13/2006	610	< 481	0.283	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.192	< 0.0962	0.698	< 0.0962	< 0.0962	< 0.0962	< 0.0962
	3/29/2007	324	< 476	< 0.143	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	0.660	< 0.0952	< 0.0952	< 0.0952	< 0.0952
	6/27/2007	190 J	< 476	0.660	< 0.0962	< 0.192	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.192	< 0.0962	1.87	< 0.0962	< 0.144	< 0.0962	< 0.0962
HC-21	5/10/2004	**1,210**	< 625	1.95	< 0.5	0.966	**1.43**	**1.63**	1.5	1.44	1.5	1.66	< 1.0	3.4	1.28	1.21	< 0.5	4.38	3.6
	2/11/2005	**13,000 J**	**3,200 J**	0.58	--	--	**3.8**	**5.7**	--	--	--	--	--	4.7	0.94	--	0.18	2.3	--
	6/3/2005	430 Y	< 500	0.30	< 0.059	0.24	**0.62**	**0.95**	0.79	0.82	0.56	0.77	0.22	1.2	0.82	1.1	0.13	0.62	1.3
	9/15/2005	179 J	< 476	< 0.485	< 0.485	< 0.485	**0.410**	**0.515**	0.577	0.283	0.470	0.521	< 0.194	0.679	1.87	0.262	< 0.485	< 0.485	0.925
	12/7/2005	652	< 481	0.495	< 0.0962	< 0.240	**0.259**	**0.397**	0.405	0.252	0.375	0.342	< 0.385	0.403	0.808	0.224	0.172	0.334	0.667
	3/14/2006	221	< 481	< 0.102	< 0.102	< 0.153	**0.242**	**0.244**	0.188	0.156 J	0.184	0.208	< 0.204	0.318	< 0.102	0.156	< 0.102	< 0.204	0.298
	6/28/2006	**2,460**	< 476	1.07	< 0.400	0.840	**4.62**	**5.37**	5.67	4.43	4.02	4.61	1.73	**7.33**	0.996	3.97	0.457	3.21	8.31
	9/19/2006	600	< 476	3.74	< 0.476	3.33	**19.6**	**21.5**	20.6	15.2	17.6	19.8	4.64	**25.1**	3.08	14.4	0.759	**14**	25.8
	12/13/2006	**1,210**	< 481	< 0.0952	< 0.0952	< 0.143	**0.135**	**0.174**	0.167	0.133	0.141	0.122	< 0.190	0.184	< 0.0952	0.125	< 0.0952	< 0.190	0.125
	3/29/2007	< 238	< 476	< 0.0952	< 0.0952	< 0.190	**0.145**	**0.202**	0.186	0.166	0.152	0.175	< 0.190	0.315	< 0.0952	0.153	< 0.0952	< 0.0952	0.192
	6/27/2007	390	< 476	0.745	< 0.476	< 0.476	< 0.476	< 0.476	< 0.476	< 0.476	< 0.476	< 0.476	< 0.952	< 0.476	2.06	< 0.476	< 0.476	< 0.476	< 0.476
HC-24	5/10/2004	736	< 500	1.21	< 0.25	< 0.3	< 0.1	**0.118**	0.101	0.101	< 0.1	0.109	< 0.2	0.144	3.51	< 0.1	< 1.5	4.09	0.163
	2/11/2005	**4,500 J**	970 J	1.2	--	--	**0.11**	**0.15**	--	--	--	--	--	0.18	**5.4**	--	< 0.55	1.8	--
	6/6/2005	450 Y	30 J	1.1	< 0.25	0.13	0.021	**0.019 J**	0.019 J	0.015 J	0.018 J	0.022	< 0.020	0.053	**5.0**	0.019 J	< 0.63	2.8	0.071
	9/15/2005	**4,480 J**	536	0.594	< 0.146	< 0.243	**0.288**	**0.370**	0.342	0.247	0.363	0.353	< 0.194	0.427	3.79	0.224	< 0.874	0.698	0.462
	12/7/2005	837	< 481	0.861	< 0.144	< 0.192	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.0962	< 0.192	< 0.0962	2.83	< 0.0962	< 1.06	1.91	< 0.0962
	3/13/2006	706	< 481	0.441	< 0.153	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.102	< 0.204	< 0.102	1.60	< 0.102	< 0.255	1.06	< 0.102
	6/28/2006	**1,020**	< 476	1.99	< 0.377	0.363	**0.996**	**1.10**	1.97 J	0.834	< 0.189 J	0.989	< 0.377	1.49	**6.00**	0.754	< 0.943	4.24	1.34
	9/20/2006	705	< 481	1.49	< 0.481	< 0.481	0.753	0.948	0.935	0.668	0.823	0.82	< 0.962	1.02	**4.35**	0.62	< 0.481	1.00	1.04
	12/13/2006	**1,810**	< 481	2.10	< 0.962	< 0.962	< 0.962	< 0.962	< 0.962	< 0.962	< 0.962	< 0.962	< 1.92	< 0.962	**6.99**	< 0.962	< 1.44	5.73	< 0.962
	3/29/2007	787	< 481	1.01	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	**3.43**	< 0.0952	< 0.524	1.10	< 0.0952
	6/27/2007 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

See Notes on Last Page of Table

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
TERMINAL 4 SLIP 3 UPLAND FACILITY
PORT OF PORTLAND

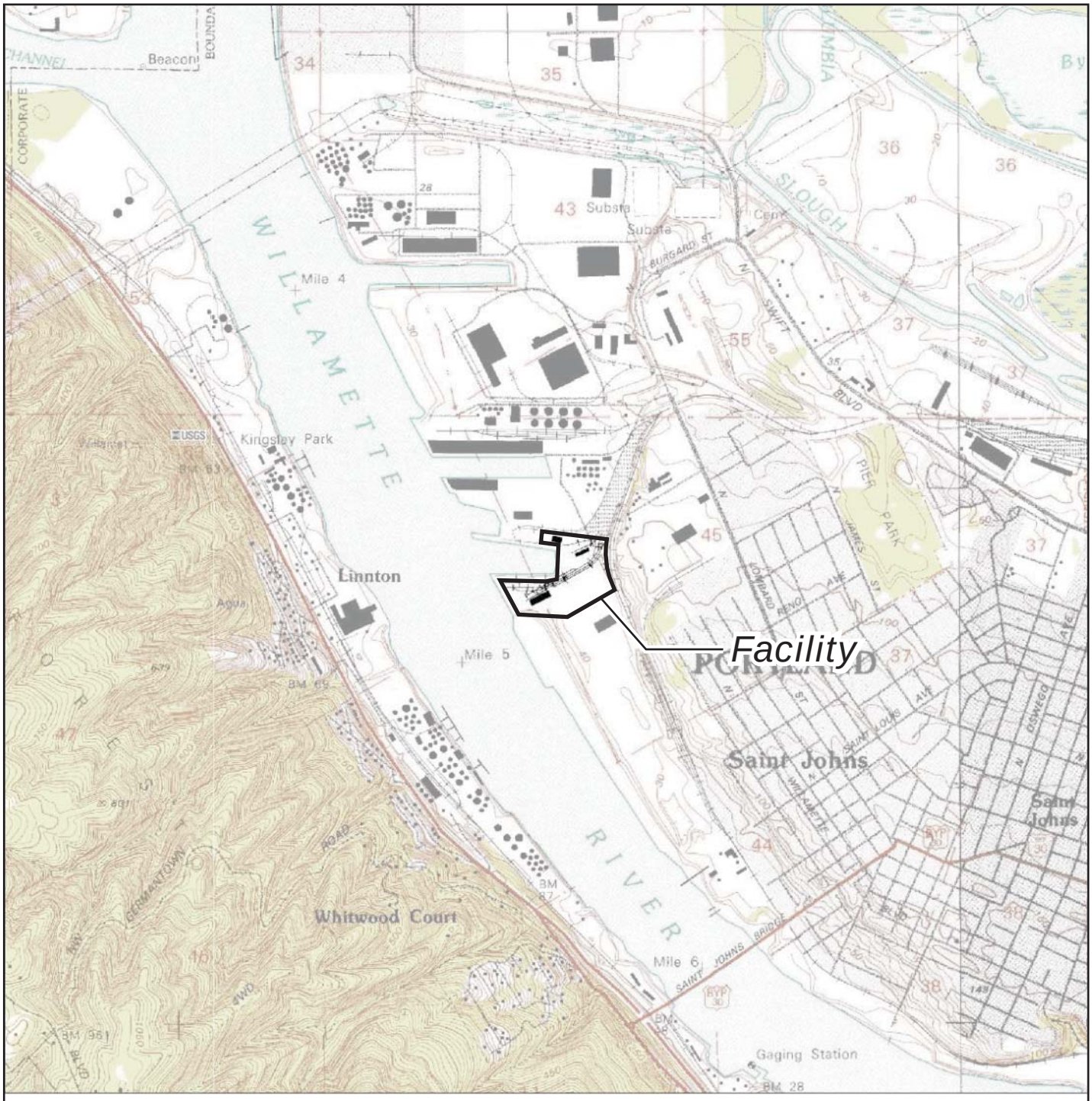
Sample Point	Sample Date	Analyte Concentration in µg/L (ppb)																	
		Total Petroleum Hydrocarbons		Polynuclear Aromatic Hydrocarbons (PAHs)															
		Diesel-Range	Residual-Range	Acenaphthene	Acenaphthylene	Anthracene	BAA	BAP	BBF	BGP	BKF	Chrysene	DAA	Fluoranthene	Fluorene	ICP	Naphthalene	Phenanthrene	Pyrene
BEBRA Area - Continued																			
BE-1	6/6/2005	**3,500 Y***	**2,300 O***	0.31	0.11	0.28	**1.7**	**2.1**	2.0	1.8	1.6	2.2	0.36	3.4	0.16	2.0	0.49	1.4	3.4
	9/15/2005	172 J*	< 515*	0.0575 J	< 0.103	0.0516 J	**0.322**	**0.385**	0.368	0.296	0.370	0.424	< 0.206	0.646	< 0.103	0.251	< 0.103	0.286	0.674
	12/7/2005	430*	< 400*	< 0.200	< 0.200	< 0.200	**0.397**	**0.449**	0.540	0.214	0.459	0.501	< 0.400	0.866	< 0.200	0.169 J	< 0.200	0.461	1.12
	3/13/2006	< 102 J	< 191 J	< 0.333	< 0.333	< 0.333	< 0.333	**0.350**	0.334	< 0.333	< 0.333	< 0.333	< 0.667	0.448	< 0.333	< 0.333	< 0.333	< 0.333	0.431
	6/28/2006	< 312	< 625	< 0.0962	< 0.0962	< 0.0962	**0.112**	**0.133**	0.137	0.105	< 0.0962	0.124	< 0.192	0.181	< 0.0962	< 0.0962	< 0.0962	< 0.0962	0.244
	9/20/2006 1	< 357	< 714	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/14/2006	801	< 476	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	0.298	< 0.0952	< 0.0952	0.503	< 0.0952
	3/30/2007	210	< 250	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0267	< 0.0533	0.0431	0.0423
	6/27/2007	518	< 476	< 0.476	< 0.476	< 0.476	**2.19**	**2.78**	2.61	2.20	2.31	2.49	< 0.952	3.14	< 0.476	1.98	< 0.476	1.34	3.09
BE-2	6/6/2005	660 Y*	290 J*	0.13	0.12	0.25	**1.5**	**2.3**	2.0	2.2	1.6	2.0	0.38	2.8	0.13	2.4	0.077	0.79	3.3
	9/15/2005	**1,150 J***	457*	< 0.500	< 0.500	< 0.500	**0.679**	**0.898**	0.763	0.753	0.839	0.898	< 1.00	1.47	< 0.500	0.592	< 0.500	0.571	1.69
	12/7/2005	**2,610***	**1120***	< 0.200	< 0.200	0.182 J	**0.720**	**0.987**	1.08	0.478	0.952	0.980	< 0.400	1.65	< 0.200	0.373	0.211	0.634	2.31
	3/13/2006	341 J	167 J	< 0.200	< 0.200	< 0.200	**0.849**	**0.995**	0.873	0.709	0.558	0.825	< 0.400	1.60	< 0.200	0.627	< 0.200	0.500	1.66
	6/28/2006	366	< 476	< 0.0943	< 0.0943	< 0.0943	**0.482**	**0.503**	0.527	0.413	0.296	0.506	< 0.189	0.884	< 0.0943	0.342	< 0.0943	0.290	1.12
	9/20/2006	341	< 481	< 0.0962	< 0.0962	< 0.0962	**0.158**	**0.207**	0.190	0.159	0.162	0.187	< 0.192	0.293	< 0.0962	0.132	< 0.0962	0.113	0.36
	12/13/2006	367	< 481	< 0.0952	< 0.0952	< 0.0952	**0.116**	**0.141**	0.126	0.130	0.105	0.127	< 0.190	0.215	< 0.0952	0.106	< 0.0952	< 0.0952	0.215
	3/29/2007	624	< 194	< 0.0392	< 0.0392	< 0.0392	**0.150**	**0.207**	0.183	0.183	0.124	0.194	0.0410	0.276	< 0.0392	0.140	< 0.0588	0.119	0.355
	6/27/2007	**1,440**	555	< 0.190	< 0.190	< 0.190	**0.420**	**0.486**	0.416	0.424	0.404	0.500	< 0.381	0.790	< 0.190	0.352	0.119 J	0.339	0.958
BE-3	6/6/2005	640 Y*	**1,000 O***	0.33	0.16	0.43	**2.8**	**4.2**	3.7	3.8	2.8	3.6	0.79	4.9	0.22	4.1	0.14	1.6	4.9
	9/15/2005	159 J*	< 500*	< 0.100	< 0.100	< 0.100	**0.142**	**0.188**	0.179	0.161	0.175	0.190	< 0.200	0.239	< 0.100	0.128	< 0.100	0.0966 J	0.292
	12/7/2005	< 500*	< 1,000*	< 0.200	< 0.200	< 0.200	**0.302**	**0.342**	0.371	0.170 J	0.350	0.395	< 0.400	0.612	< 0.200	0.130 J	< 0.200	0.288	0.851
	3/13/2006	91.2 J	< 250 J	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.250	< 0.500	0.349	< 0.250	< 0.250	< 0.250	< 0.250	0.393
	6/28/2006	< 258	< 515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 1.03	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515	< 0.515
	9/20/2006	< 240	< 481	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.260	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130	< 0.130
	12/14/2006	522	< 476	< 0.0952	< 0.0952	< 0.0952	**0.147**	**0.193**	0.182	0.173	0.152	0.170	< 0.190	0.223	< 0.0952	0.149	< 0.0952	0.155	0.203
	3/30/2007	417	< 267	< 0.0308	< 0.0308	< 0.0308	**0.0986**	**0.131**	0.122	0.119	0.0868	0.117	0.0316	0.129	< 0.0308	0.0988	< 0.0615	0.0730	0.173
	6/27/2007	**2,270**	310 J	< 0.364	< 0.364	< 0.364	**0.391**	**0.424**	0.370	0.342 J	0.338 J	0.458	< 0.727	0.702	< 0.364	0.290 J	0.364	0.338 J	1.05
BE-4	6/3/2005	590 Y	< 500	1.9	< 0.25	< 0.22	0.012 J	< 0.020	< 0.020	< 0.020	< 0.020	0.034	< 0.020	0.036	3.8	< 0.020	< 0.31	< 0.088	0.084
	9/15/2005	**1,560 J**	< 476	< 0.714	< 0.476	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.19	< 0.0952	0.844	< 0.0952	< 0.476	< 0.190	< 0.0952
	12/7/2005 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/13/2006 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/28/2006 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/20/2006 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2006 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/30/2007 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/27/2007 **	**--**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ROD Compliance Criteria		1,000	1,000	520	--	--	0.027	0.014	--	--	--	--	--	6.16	3.9	--	620	6.3	--

Notes:

1. -- = Data Not Available or Sample Not Analyzed for Listed Analyte.
2. Boldface data represents detected analyte concentrations exceeding compliance criteria; note, this is provided for information purposes only. Only sentinel wells have been installed to date and data is not collected at the point of compliance.
3. * Sample did not include silica gel cleanup due to inadequate sample volume.
4. ** Well not sampled due to presence of LNAPL in well at time of sampling.
5. ROD compliance criteria are included above, however, it is noted that the criteria is for groundwater discharge at the slip or river and is not applicable to the wells monitored during this sampling event.
6. J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
7. O = The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
8. Y = The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
9. Polynuclear Aromatic Hydrocarbons (PAHs)

BAA = Benzo(a)anthracene
BBF = Benzo(b)fluoranthene
BKF = Benzo(k)fluoranthene
BAP = Benzo(a)pyrene
BGP = Benzo(g,h,i)perylene
DAA = Dibenzo(a,h)anthracene
ICP = Indeno(1,2,3-cd)pyrene

[1] Monitoring well BE-1 did not have enough sample volume to analyze for PAHs during the 3rd quarter 2006 sampling event.



Base map prepared from USGS 7.5-minute quadrangles as provided by TerraServer.

0 2,000 4,000

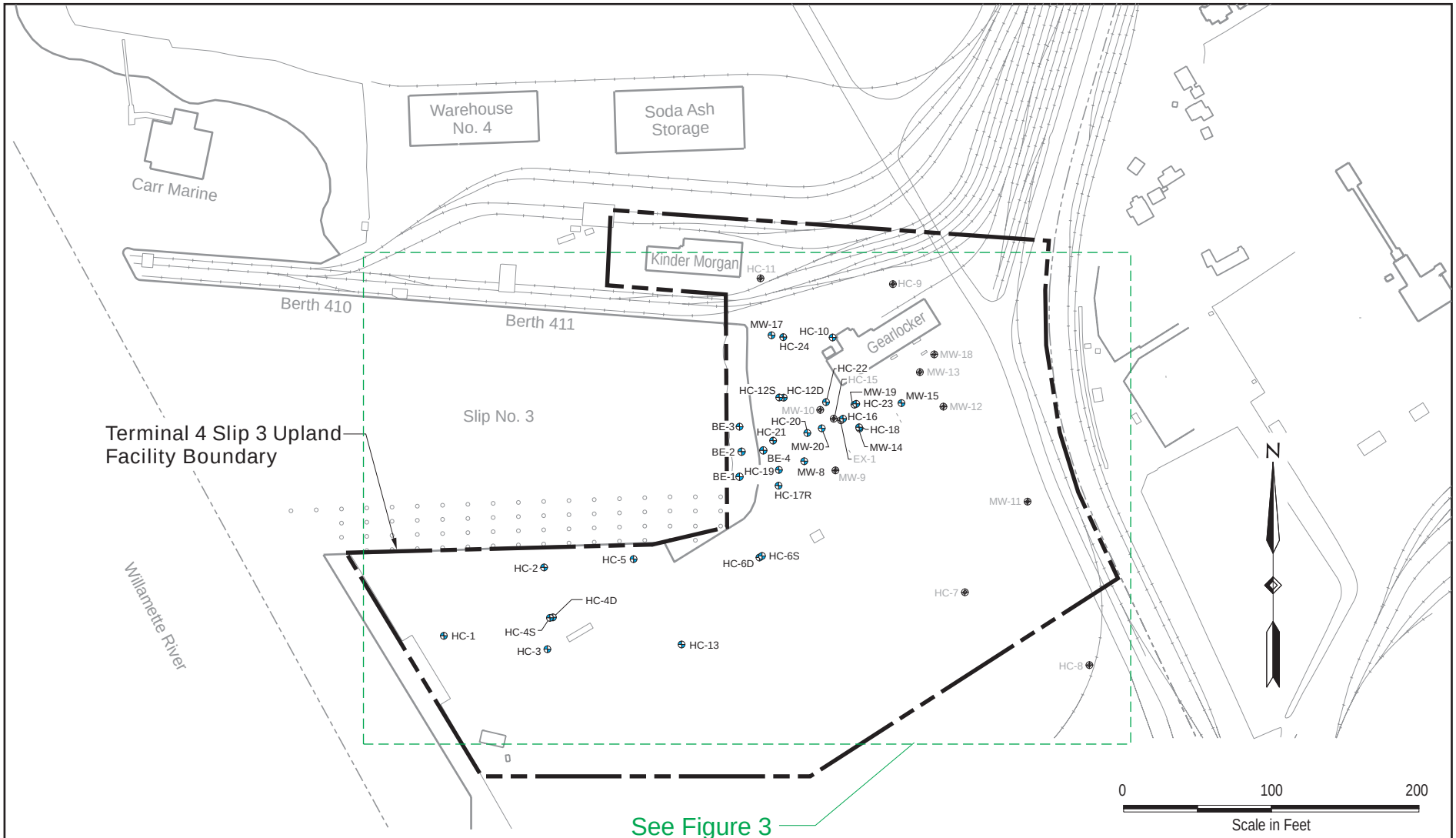
Scale in Feet

N

Facility Location Map

Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number 1007-03	Figure 1
	July 2007	



Legend:

HC-1 ⊕ Monitoring Well Location and Designation

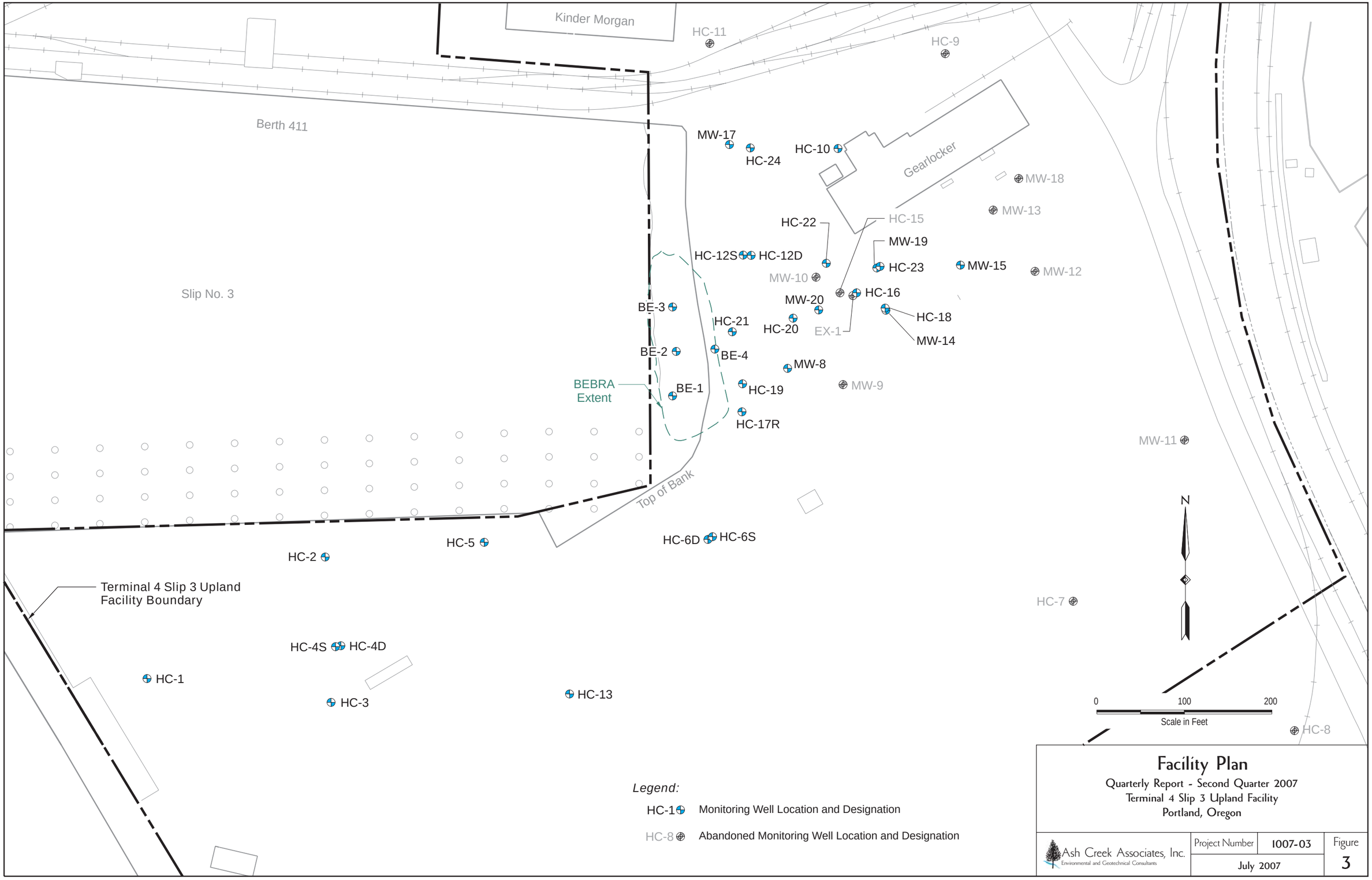
HC-8 ⊕ Abandoned Monitoring Well Location and Designation

Facility Vicinity Plan

Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1007-03	Figure
July 2007		2



Facility Plan

Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc. Environmental and Geotechnical Consultants	Project Number 1007-03	Figure 3
	July 2007	

Kinder Morgan

Berth 411

Slip No. 3

Gearlocker

BEBRA Extent

Top of Bank

Terminal 4 Slip 3 Upland Facility Boundary

MW-17
13 [17]

HC-10
2.0 [2.3]

HC-24
0.0 [0.0]

HC-22
0.0 [0.0]

MW-19
18.6 [37.6]

HC-12S HC-12D

HC-23
0.0 [0.0]

MW-15
2.0 [2.3]

MW-20
13.8 [27.7]

HC-21
0.0 [0.0]

HC-18
0.0 [0.0]

HC-20
0.0 [0.0]

HC-16
0.0 [0.0]

MW-14
2.5 [2.5]

BE-3
0.0 [0.0]

BE-4
1.0 [1.0]

BE-2
0.0 [0.0]

MW-8
0.0 [0.0]

HC-19
0.0 [0.0]

BE-1
0.0 [0.0]

HC-17R
0.0 [0.0]

HC-5

HC-6D HC-6S

HC-2

HC-4S HC-4D

HC-1

HC-3

HC-13

N

0 100 200
Scale in Feet

Legend:

MW-19
18.6 [37.6]
Monitoring Well for LNAPL Monitoring/Removal
LNAPL Volume Removed in Second Quarter 2007, in Gallons
[Total Accumulated LNAPL Volume Removed 2007, in Gallons]

HC-1
Monitoring Well Location and Designation

LNAPL Monitoring/Removal

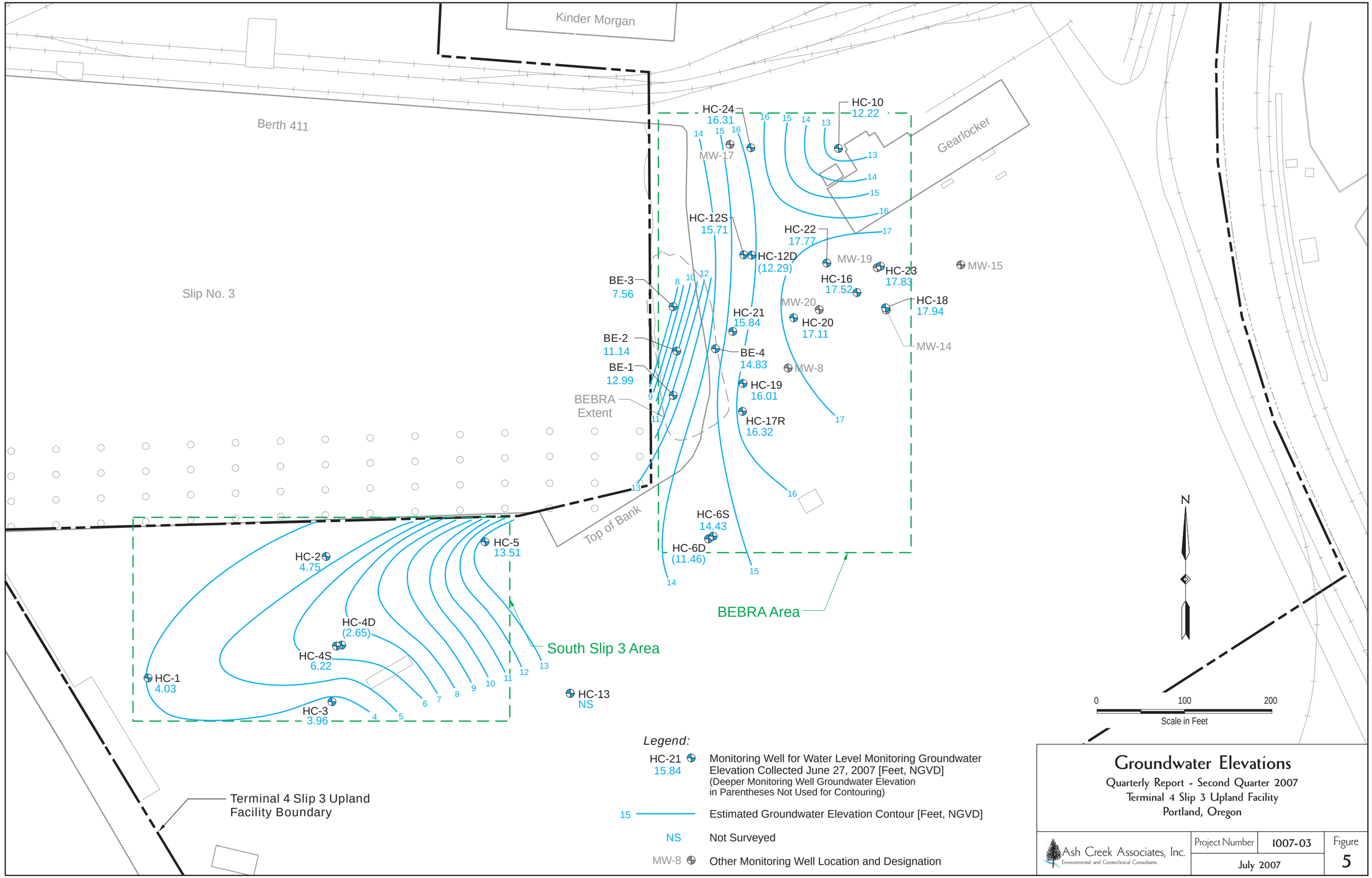
Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number 1007-03

July 2007

Figure 4



Legend:

HC-21 15.84	Monitoring Well for Water Level Monitoring Groundwater Elevation Collected June 27, 2007 [Feet, NGVD] (Deeper Monitoring Well Groundwater Elevation in Parentheses Not Used for Contouring)
15	Estimated Groundwater Elevation Contour [Feet, NGVD]
NS	Not Surveyed
MW-8	Other Monitoring Well Location and Designation

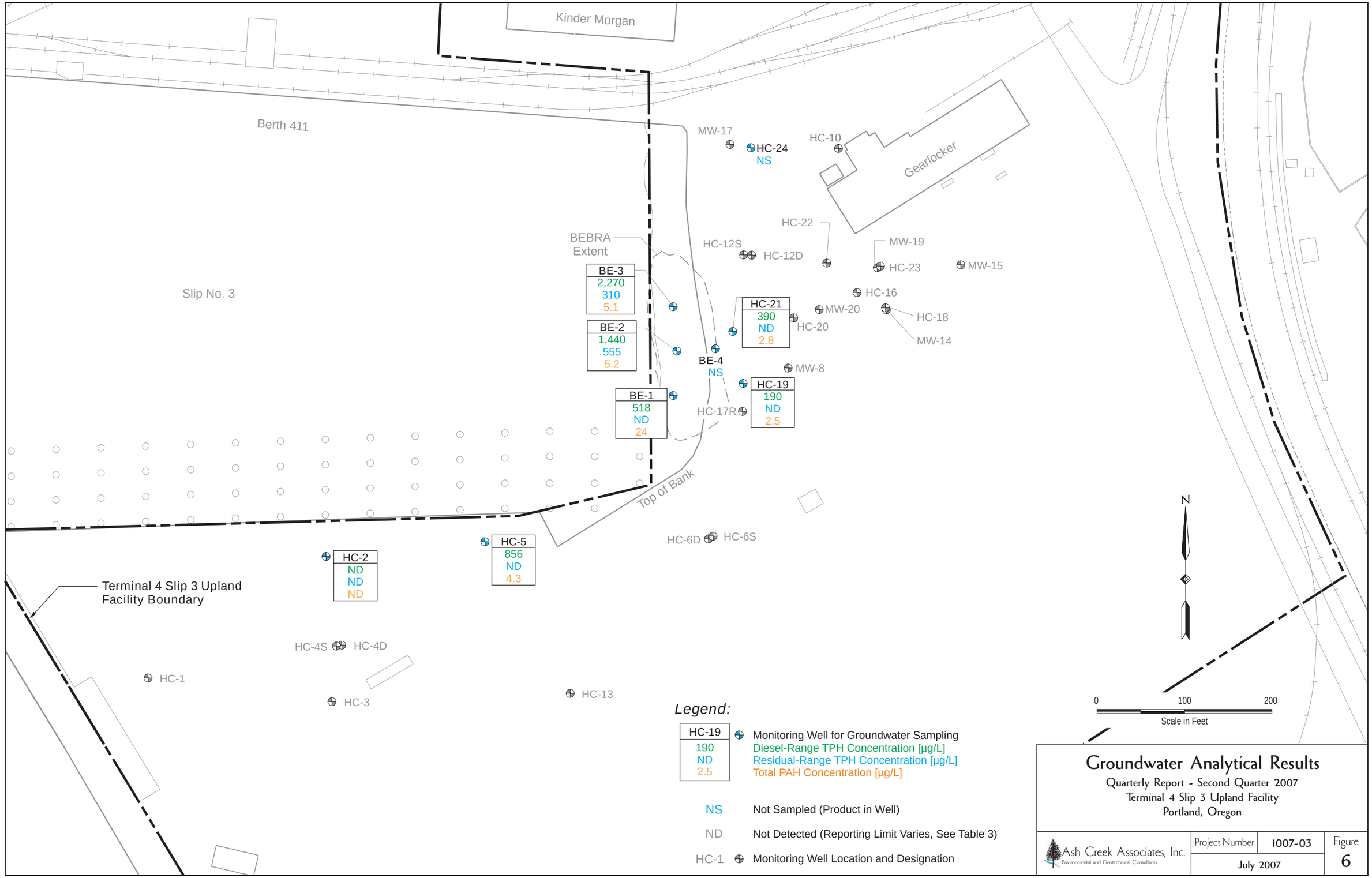
Groundwater Elevations

Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number 1007-03
July 2007

Figure 5



Legend:

HC-19 190 ND 2.5	Monitoring Well for Groundwater Sampling Diesel-Range TPH Concentration [µg/L] Residual-Range TPH Concentration [µg/L] Total PAH Concentration [µg/L]
NS	Not Sampled (Product in Well)
ND	Not Detected (Reporting Limit Varies, See Table 3)
HC-1	Monitoring Well Location and Designation

Groundwater Analytical Results

Quarterly Report - Second Quarter 2007
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1007-03	Figure
July 2007		6

Appendix A

Field and Quality Assurance/ Quality Control Procedures

1. Introduction

The Port of Portland (Port) is required to conduct groundwater and light non-aqueous phase liquid (LNAPL) monitoring in association with the remedial action of the Terminal 4 Slip 3 Upland Facility (Facility), as outlined in the Record of Decision (ROD; Department of Environmental Quality [DEQ], 2003), Explanation of Significant Difference (DEQ, 2004), and Consent Judgment (Circuit Court of Oregon, 2004). The specific implementation of the remedial action is described in the Remedial Design/Remedial Action (RD/RA) Work Plan (Hart Crowser, 2004), as amended (Port of Portland, 2004). The monitoring program is described in the LNAPL Removal, Groundwater Monitoring, and Construction Plan (BBL/Ash Creek/Newfields, June 2005). This appendix describes the field sampling procedures and quality assurance/quality control (QA/QC) procedures that were used during the quarterly monitoring and LNAPL removal events.

2. Field and Sampling Procedures

The scope of work includes measuring water elevations, performing groundwater monitoring, and removal of LNAPL from impacted monitoring wells. The field and sampling procedures include the following:

- Measurement of water levels in monitoring wells;
- Collection of groundwater samples from monitoring wells;
- Removal of LNAPL from monitoring wells;
- Sample management (e.g., containers, storage, and shipment);
- Decontamination procedures; and
- Handling of investigation-derived waste (IDW).

2.1 Measurement of Water Levels in Monitoring Wells

Water levels in the wells were measured and recorded for the purpose of determining the groundwater gradient and elevations. The wells were first opened and the water levels allowed to equilibrate before the measurements were taken. All measurements were made to the nearest 0.01 foot using an electronic water probe.

2.2 Collection of Groundwater Samples from Monitoring Wells

Groundwater monitoring consisted of collecting groundwater samples and measuring groundwater field parameters.

After groundwater levels were measured, the selected wells were purged using a peristaltic pump. Purging was considered complete when the water quality parameters (pH, temperature, and specific conductance) stabilized within 10 percent of the previous readings or when the well purged dry (as occurs with the BEBRA wells BE-1 through BE-3). During purging, the purge water characteristics

(e.g., color, turbidity, sheens) and purge volumes were documented. After purging was completed, the wells were sampled. All groundwater samples were collected using a low-flow peristaltic pump and disposable tubing (volatile organics were not included in the sampling program). Field parameters (pH, specific conductance, and temperature) were measured upon completion of sampling activities. Purge water was placed in labeled drums pending disposal.

Equipment Cleaning. Clean tubing was used for the peristaltic pump for each collected groundwater sample to prevent cross-contamination. All other groundwater sampling equipment (such as the water level probe) was cleaned prior to use in the first well and after each subsequent well.

Duplicate Sample. For QA/QC purposes, a duplicate sample was collected from one well (HC-19) for chemical analysis. Sample containers for the primary and duplicate samples were alternately filled with water from the well.

2.3 LNAPL Monitoring and Removal from Monitoring Wells

After February 17, 2006, only wells MW-19 and MW-20 have been included in the regular LNAPL monitoring program, as approved by the DEQ in an April 6, 2006 letter to the Port. On June 9, 2006, passive product skimmers were installed in these two wells to maximize the efficiency of the product collection (as a result, the volume of product removed is recorded as opposed to the previous practice of recording the product thicknesses). As a result of the product observed in well MW-17 during the first quarter 2007 groundwater monitoring event, product recovery was also completed in this well through the second quarter 2007.

During the quarterly groundwater monitoring event, the water and product levels were measured in the other wells previously included in the LNAPL program (MW-8, MW-14, MW-15, MW-17, MW-19, MW-20, HC-10, HC-16 through HC-24, and BE-1 through BE-4). Each well was monitored for the presence of LNAPL with a product interface probe. Depths to both water and product (if present) were measured and recorded. LNAPL was removed from each monitoring well that was observed to have more than 0.1 foot of accumulated LNAPL (which included wells HC-10, MW-14, MW-15, MW-17, MW-19, and MW-20 during the second quarter 2007 monitoring event). The LNAPL was generally removed with passive skimmers in wells MW-19 and MW-20, and with a peristaltic pump (coupled with an interface probe to allow discrete removal of the LNAPL with a minimum amount of water) in the remaining wells.

Passive Skimmer Product Removal. After June 9, 2006, passive product skimmers (Keck 4-4L passive recovery canisters) have been used to collect and remove product from wells MW-19 and MW-20. The passive skimmers are maintained so that the water/LNAPL interface is within the 2-foot intake screen of the skimmer. The skimmers are manually removed from the well, drained (through the drain valve), and reinstalled in the well. If residual LNAPL remains in the well after the removal of the skimmer (i.e., the volume of LNAPL in the well was larger than the storage capacity of the skimmer), then the remaining LNAPL is removed as described above. The depth to water is measured in the well and the length of the cable support for each skimmer is adjusted as necessary to reinstall in the wells.

Manual Product Removal. For wells HC-10, MW-14, MW-15, and MW-17, the product removal process involved the suction hose of the pump being lowered into the well together with the interface probe (attached to the hose so that the interface point of the probe coincides with the opening of the

hose) to allow the operator to judge the depth of the suction hose relative to the oil-water interface and manipulate the depth of the hose so that the floating product is preferentially extracted.

Product Storage and Disposal. The collected LNAPL is transferred to a Department of Transportation (DOT)-approved 55-gallon drum for temporary storage. Full drums will be transported to a local oil recycling facility by a subcontractor.

2.4 Sample Management

Pre-cleaned, certified sample containers were provided by the contract analytical laboratory (TestAmerica, formerly North Creek Analytical). A sample label was affixed to each sample container and was marked with a unique sample number, date of collection, project number, and sampler's initials. Chain-of-custody (COC) was maintained and documented at all times. Sample custody seals and packing materials for filled sample containers were provided by the analytical laboratory. The filled, labeled, and sealed containers were placed in a cooler on ice and carefully packed to eliminate the possibility of container breakage.

Samples were packaged by the field personnel and transported as low-concentration environmental samples. The samples were delivered to the laboratory within 48 hours of the time of collection. Shipments were accompanied by the COC form identifying the contents. The original form accompanied the shipment; copies were retained by the sampler for the sampling office records.

2.5 Decontamination Procedures

Personnel Decontamination. The Health and Safety Plan for the Facility identifies the appropriate level of protection for the type of work and expected field conditions involved in this project. In general, clothing and other protective equipment can be removed from the investigation area. Field personnel should thoroughly wash their hands and faces at the end of each day and before taking any work breaks.

Sampling Equipment Decontamination. To prevent cross-contamination between sampling events, clean, dedicated sampling equipment (e.g., groundwater sampling tubing) was used for each sampling event and was discarded after use. Cleaning of non-disposable items consisted of washing in a detergent (Alconox®) solution, rinsing with tap water, followed with a deionized water rinse.

2.6 Handling of Investigation-Derived Waste

IDW was generated from well sampling activities, including purge water, decontamination water, and discarded personal protective supplies. Generated IDW water was retained with the collected LNAPL pending disposal at a local oil recycling facility. Disposal is completed by a subcontractor.

Other wastes, such as used personal protective equipment (PPE) and trash, were collected and disposed of in a waste receptacle.

3. References

BBL/Ash Creek/Newfields, 2005. LNAPL Removal, Groundwater Monitoring, and Construction Plan. June 2005.

Hart Crowser, 2004. Remedial Design/Remedial Action Work Plan, Terminal 4, Slip 3 Upland Facility. September 27, 2004.

Port of Portland, 2004. Letter to DEQ, Terminal 4 Slip 3 Upland Facility, Response to Comments/Work Plan Addendum, Remedial Design/Remedial Action Work Plan. October 7, 2004.

WELL GAGING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

		Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:	T453	Sampler:	APS/AKF
Weather:	Ptly Sunny	Time In/Out:	850/

WATER LEVEL DATA

Well I.D.	Time	Depth to Free Product (feet)	Depth to Water (feet)	Depth to Well Bottom (feet)	Product Thickness (feet)	Water Column Height (feet)	Notes/Other Remarks
HC-1	9:58		28.33	/		/	
HC-4S	9:59		26.13				
HC-4D	10:02		29.53				
HC-3	1004		28.92				
HC-2	1007		27.44				
HC-5	1009		18.59				
HC-6D	1011		21.43				
HC-6S	1013		18.60				
HC-17R	1016		17.29				
HC-19	1018		17.04				
MW-8	1022		19.26				
HC-20	1025		15.15				
HC-16	1027		15.31				
HC-18	1032		15.35				
MW-14	1037	~18.90	19.28				(Pump) ✓ casing is broken. Very viscous produ
MW-15	1048	16.14	16.56				(Pump) ✓
HC-23	1051	14.91	14.93				
MW-19		Skimmer					Skimmer
MW-20		Skimmer					Skimmer
HC-22	1056	—	14.14				
HC-21	1058		16.11				
BE-4	1106	~~16.89~~ 16.31 AKF	16.51				(Pump) redid depth to product
HC-12S	1115		~~13.89~~				
HC-12D	1117		17.03				
MW-17	1122	16.31	16.47				(Pump)
HC-24	1124	13.73	13.74				
HC-10	1128	17.03	17.59				(Pump)
BE-3	1135		9.99	12.23			
BE-2	1137		8.55	12.37			Again, wrong
BE-1	1140		6.76	9.74			
HC-13	1153		17.01				A1012-Parking Slip#

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	BE-3	Job Number:	1007
Client:	Port of Pow	Date:	6/27/07
Project:		Sampler:	APS/AKP
Weather:		Time In/Out:	

WELL DATA

Well Depth:	12.23	Well Diameter:	3/4"	Water Height	—
Depth to Water:	9.99	Screened Interval:	—	x Multiplier	
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bailer	Pump Intake Depth:	—
Sampling Method:	Bailer	Tubing Type:	—

Comments:

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	BE-3	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1250	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 1 L Ambers	HCl (1)	PAHs, TPHd, 8	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

well sampled immediately; well dry after ~25% of a liter.
Liter finished 6/28/07 ~1500, ~1/4 of 2L filled

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	BE-1	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:		Sampler:	
Weather:		Time In/Out:	1411/

WELL DATA

Well Depth:	9.74	Well Diameter:	3/4"	Water Height	
Depth to Water:	6.76	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Bailer	Pump Intake Depth:		Comments	
Sampling Method:	Bailer	Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	BE-1	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1411	Final Depth to Water:		Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2x1L Amber	HCl (1)	PAHs, TPHd, co	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

well sampled immediately; well dry after ~25% of liter
liter finished 6/28/07 ~1600

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	HC-19	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:	T453	Sampler:	
Weather:		Time In/Out:	1610/1644

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	17.04	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic	Pump Intake Depth:		Comments
Sampling Method:	Peristaltic	Tubing Type:		

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1613					6.38	17.98	444	4.42	-24.9		CI
1616					6.35	17.92	382	1.33	-41.9		SC
1619					6.21	17.52	365	0.89	-39.4		SC
1622					6.16	17.67	350	0.69	-39.4		C
1625					6.14	17.52	348	0.58	-40.7		C
1628					6.13	17.36	343	0.50	-43.2		C

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	HC-19	Sampling Flow Rate	—	Analytical Laboratory:	—
Sample Time:	1630	Final Depth to Water:	17.45	Did Well Dewater?	—

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1L Amber	HCl	TPHd, o	yes (no)	—		HC-19Dup.
1L Amber	—	PAHs	yes (no)	—		HC-19Dup.
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	BE-2	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:		Sampler:	APS/AKF
Weather:		Time In/Out:	

WELL DATA

Well Depth:	12.37	Well Diameter:	3/4"	Water Height	—
Depth to Water:	8.55	Screened Interval:	—	x Multiplier	
Water Column Length:	—	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	—	Free Product Thickness:	—	= Purge Volume	—

Water Height Multipliers (gal): 1-inch = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gallon = 3.785 liters

PURGING DATA

Purge Method:	Bailer	Pump Intake Depth:	
Sampling Method:	Bailer	Tubing Type:	

Comments:

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1405	2L				7.43	18.61	1,798	3.38	39.3	—	Clear

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	BE-2	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1310	Final Depth to Water:	~ 12.00	Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2x 1L	HCl (1)	PAHs, TPHd, ro	yes (no)	—	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Well bailed fully, almost dry

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	HC-21	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:	T453-1007	Sampler:	
Weather:		Time In/Out:	1650 / 1712

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	16.11	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic	Pump Intake Depth:	
Sampling Method:	Peristaltic	Tubing Type:	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1654					6.33	18.50	250	4.34	59.7		VC
1657					6.09	18.20	249	1.48	53.2		C
1700					6.01	17.82	250	0.92	53.5		SC
1703					5.99	17.88	251	0.85	51.7		C

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	HC-21	Sampling Flow Rate		Analytical Laboratory:	
Sample Time:	1705	Final Depth to Water:	~~1710~~ AR2 17.02	Did Well Dewater?	

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1L Amber	HCl	TPHd, ro	yes (no)			
1L Amber	-	PAHs	yes (no)			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	HC-2	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:	T453	Sampler:	
Weather:		Time In/Out:	1445/1515

WELL DATA

Well Depth:	~~27.44~~ AKF	Well Diameter:	2"	Water Height	
Depth to Water:	27.44	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic	Pump Intake Depth:	—	Comments	
Sampling Method:	Peristaltic	Tubing Type:	—	—	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1445					6.66	16.41	472	2.20	56.2		CI
1448					6.21	17.03	467	1.13	55.2		CI
1451					6.05	17.37	465	0.91	60.1		SC
1454					5.97	17.41	463	0.79	66.6		SC
1457					5.93	17.20	461	0.68	71.5		AC

Clarity: VC = very cloudy, CI = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	HC-2	Sampling Flow Rate	—	Analytical Laboratory:	TA
Sample Time:	~~1440~~ AKF 1500	Final Depth to Water:	27.48	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 L Amber	—	PAHs	yes (no)	—	—	
1 L Amber	HCl	TPH d, o	yes (no)	—	—	
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

WELL MONITORING DATA SHEET

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Well I.D.	HC-5	Job Number:	1007
Client:	Port of Portland	Date:	6/27/07
Project:	T453	Sampler:	
Weather:		Time In/Out:	1516 / 1540

WELL DATA

Well Depth:		Well Diameter:	2"	Water Height	
Depth to Water:	18.59	Screened Interval:		x Multiplier	
Water Column Length:		Depth to Free Product:		x Casing Volumes	
Purge Volume:		Free Product Thickness:		= Purge Volume	
Water Height Multipliers (gal)	1-inch = 0.041	2-inch = 0.162	4-inch = 0.653	1 gallon = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic	Pump Intake Depth:		Comments	
Sampling Method:	Peristaltic	Tubing Type:			

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (ppm)	ORP (mV)	Turbidity (NTUs)	Clarity/Color Other Remarks
					+/-0.1	+/-10%	+/-3%	+/- 0.2 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1521					6.31	17.88	890	4.74	82.8		C
1524					6.45	17.35	882	1.24	-104.5		C
1527					6.46	17.74	879	0.74	-112.5		C
1530					6.47	17.74	881	0.61	-116.8		C
1533											

Clarity: VC = very cloudy, Cl = Cloudy, SC = slightly cloudy, AC = almost clear, C = clear

SAMPLING DATA

Sample ID:	HC-5	Sampling Flow Rate	—	Analytical Laboratory:	TA
Sample Time:	1535	Final Depth to Water:	18.72	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1L Amber	HCl	TPHd, ro	yes (no)	—		
1L Amber	—	PAHs	yes (no)	—		
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

9615 SW Allen Boulevard, Suite 106
Portland, Oregon 97005-4814
wwwashcreekassociates.com
Portland (503) 924-4704
Vancouver (360) 567-3977
Fax (503) 924-4707

PROJECT NUMBER 1007
FIELD REPORT NUMBER 1
PAGE 1 OF 1
DATE 6/27/07

PROJECT	T453	ARRIVAL TIME	~9:00 AM
LOCATION	Portland	DEPARTURE TIME	1720
CLIENT	Port of Portland	WEATHER	Pt ly cloudy
PURPOSE OF OBSERVATIONS	Groundwater Monitoring		
ASH CREEK REPRESENTATIVE	A. Schmidt / A. Finn	ASH CREEK PROJECT MANAGER	M. Stevens
CONTRACTOR	—	PERMIT NO.	—
CONTRACTOR REP.	—	JOB PHONE	—

Arrived @ 900 AM Briefly around Ashleigh the site & began venting wells.
1158 - Began water levels.
1250 - Finished water levels -> Sampled harvests
1200 - Break time.
1750 - Sampling BE-3 after recirculating batches

1600 - Returned to continue vacuum wells BE-1 & BE-3
1720 - Left site.

Still need to do product pump & flush BE-1 & BE-3.

BY

Andrew Schmidt
ASH CREEK ASSOCIATES REPRESENTATIVE

REVIEWED BY

ASH CREEK ASSOCIATES PROJECT MANAGER

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants
9615 SW Allen Boulevard, Suite 106
Portland, Oregon 97005-4814
wwwashcreekassociates.com
Portland (503) 924-4704
Vancouver (360) 567-3977
Fax (503) 924-4707

PROJECT NUMBER 1007
FIELD REPORT NUMBER 2
PAGE 1 OF 1
DATE 6/28/07

PROJECT	T453	ARRIVAL TIME	1000 AM
LOCATION	Portland	DEPARTURE TIME	
CLIENT	Port of Portland	WEATHER	Rain
PURPOSE OF OBSERVATIONS	Sample BE-1 & BE-3, Product removal		
ASH CREEK REPRESENTATIVE	A. Schmidt	ASH CREEK PROJECT MANAGER	A. Stevens
CONTRACTOR	—	PERMIT NO.	—
CONTRACTOR REP.	—	JOB PHONE	—

10:00 - BE-1 & BE-3

±11:00 - Got pump/hose from Michael

11:29 - Finished bailing MW-14 ~2.5 gallons H_2O + Product
Final DTP: 20.05
DTW: 20.06

11:56 - Finished purging MW-15 ~2 gallons H_2O + Product
Final DTP: 18.28
DTW 18.29

1200 - Finished BE-4 @ 1157
Final DTP: 16.91
DTW 16.92

1304 - Finished MW-17 @ 1304
DTP: 16.52
DTW: 16.56
- 1 gallon H_2O + Prod. purged

1334 - Finished MW-10 ~2 gallons of H_2O + Prod.
DTP: 17.12
DTW 17.19

- MW-19 emptied @ 1418
DTP: 18.19
DTW: 18.25
~1 gallon H_2O emptied
- Skimmer not adjusted

- MW-20 emptied @
DTP: 18.54
DTW: 18.61

- 1 gallon H_2O + Prod. purged
- Skimmer not adjusted
- ~1 gallon H_2O removed.

*Skimmer slip

- Leaving @ 1610
Got 2 in out of
BE-1 & 3 + 0.25
out of 3.

Dry.

BY

A. Schmidt

ASH CREEK ASSOCIATES REPRESENTATIVE

REVIEWED BY

ASH CREEK ASSOCIATES PROJECT MANAGER

Appendix B

Data QA/QC Review and Analytical Laboratory Reports

Appendix B – Data QA/QC Review

This appendix documents the results of a quality assurance (QA) review of the analytical data for groundwater samples collected during the second quarter 2007 groundwater sampling event. TestAmerica in Beaverton, Oregon, performed the analyses. A copy of the analytical laboratory report summary is included in this appendix.

The QA review included examination and validation of the laboratory summary report, including:

- Analytical methods;
- Detection limits;
- Sample holding times;
- Custody records;
- Surrogates, spikes, and blanks; and
- Duplicates.

The QA review did not include a review of raw data.

Analytical Methods and Detection Limits

Chemical analyses on all collected water samples consisted of the following:

- Total Petroleum Hydrocarbons as Diesel (TPHd) Extended by method NWTPH-Dx with silica gel cleanup; and
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270-SIM.

Quality Assurance Objectives and Review

The general QA objectives for this project were to develop and implement procedures for obtaining and evaluating data of a quality that is suitable for comparison to regulatory compliance criteria. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody (COC) procedures.

Quality Assurance Objectives and Review

The general QA objectives for this project were to develop and implement procedures for obtaining and evaluating data of a quality that is suitable for comparison to regulatory compliance criteria. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken COC procedures.

Reporting limits and analytical results were compared to action levels for each parameter in the media of concern. Precision, accuracy, representativeness, completeness, and comparability parameters used to indicate data quality are defined below.

Reporting Limits. Detection limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested detection limits by the Environmental Protection Agency (EPA) or the Department of Environmental Quality (DEQ). In some cases, the detection limit may be raised due to high concentrations of analytes in the samples or matrix interferences (observed in each sample for various PAH constituents) or because of limited sample volume (such as for the PAH analyses of sample BE-3). Detection limits were generally consistent with industry standards and all method reporting limits were below the relevant Record of Decision (ROD) cleanup standards except for benzo(a)anthracene and benzo(a)pyrene.

Heavy oil-range petroleum hydrocarbons were detected in sample BE-3 at concentrations that were above the method detection limit (MDL) but below the laboratory's method reporting limit (MRL). Similarly, diesel-range petroleum hydrocarbons were detected in samples HC-19 and HC-19dup, and several PAHs were detected in samples BE-2 (naphthalene) and BE-3 (benzo(ghi)perylene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, and phenanthrene) at concentrations below the MRL. The detections from these samples are flagged as estimated values as they are of limited reliability.

Reporting limits were reviewed and are generally acceptable for this project. Reporting limits for individual samples varied based on the magnitude of the chemical impact.

Holding Times. All samples were analyzed within the holding times specified for the requested analyses.

Precision. Precision measures the reproducibility of data under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average values. Analytical precision is measured through a batch laboratory control sample and duplicate (LCS and LCSD, respectively). Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the LCS and LCDS. All of the LCS/LCSD results were within acceptable ranges.

Accuracy. Accuracy is the measure of error between the reported test results and the true sample concentration. "Perfect" accuracy is 100 percent recovery. True sample concentration is never known due to analytical limitations, variability, and error. Consequently, accuracy is inferred from the recovery data from spiked samples. The laboratory performed sufficient spike samples of a similar matrix (i.e., water) to allow the computation of the accuracy. The accuracy

measurements were carried out in accordance with SW-846 method requirements. All surrogate spike results were within acceptable ranges.

The field-collected duplicate sample of HC-19 (labeled as HC-19 DUP) had similar detected concentrations of compounds (TPH and PAHs) as compared to the original sample. The average percent difference between the original and duplicate sample was on the order of 7 to 19 percent, depending on the analyte. Differences likely result from matrix differences and the inherent variability in the samples. This variability is similar to or less than that observed previously, and the sample variability did not compromise the usability of the data.

Representativeness. Representativeness is a measure of how closely the results reflect the actual concentration of the chemical parameters in the medium sampled. Sampling procedures, as well as sample-handling protocols for storage, preservation, and transportation, are designed to preserve the representativeness of the samples collected. Laboratory method blanks are run in accordance with established laboratory protocols.

All samples for this project were received by the laboratory in good condition and in the proper, laboratory-supplied containers. No target compounds were detected in the laboratory method blanks. Samples from BE-1 and HC-21 did not have adequate sample volume to analyze directly for both TPH and PAHs (due to poor well recovery and laboratory error, respectively), and therefore the analysis for PAHs was completed on the sample extract prepared for the TPH analysis. It is not expected that this would adversely affect the quality of the data, but quality control parameters for these two samples are limited.

Completeness. Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness of the data is the number of acceptable data points divided by the total number of data points multiplied by 100. The completeness goal is essentially that a sufficient amount of valid data can be generated to allow for the evaluation of the site investigation.

No data collected during the site investigation were rejected for this project; therefore, the completeness for this phase of the project is 100 percent.

Comparability. Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Based on this QA review, the quality of the data collected during this site investigation is similar to that of previously collected data and is, therefore, comparable.

Conclusion. In conclusion, the overall QA objectives have been met, and the data (as qualified) are of adequate quality for use in this project. The laboratory also noted that the TPH analyses did not have a distinct diesel pattern (most closely resembling heavily weathered diesel).

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

July 25, 2007

Mike Stevens
Ash Creek Associates, Inc.
9615 SW Allen Blvd. Suite 106
Beaverton, OR 97005

RE: POP-T4S3

Enclosed are the results of analyses for samples received by the laboratory on 06/29/07 12:00. The following list is a summary of the Work Orders contained in this report, generated on 07/25/07 13:13.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PQF1140	POP-T4S3	1007

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BE-1	PQF1140-01	Water	06/27/07 14:11	06/29/07 12:00
BE-2	PQF1140-02	Water	06/27/07 14:05	06/29/07 12:00
BE-3	PQF1140-03	Water	06/27/07 12:50	06/29/07 12:00
BE-3	PQF1140-04	Water	06/28/07 16:00	06/29/07 12:00
HC-19	PQF1140-05	Water	06/27/07 16:30	06/29/07 12:00
HC-19dup	PQF1140-06	Water	06/27/07 16:30	06/29/07 12:00
HC-21	PQF1140-07	Water	06/27/07 17:05	06/29/07 12:00
HC-2	PQF1140-08	Water	06/27/07 15:00	06/29/07 12:00
HC-5	PQF1140-09	Water	06/27/07 15:35	06/29/07 12:00

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

Analytical Case Narrative

TestAmerica - Portland, OR

PQF1140

1.0 DESCRIPTION OF CASE
Nine water samples were received on June 29th, 2007 at a temperature of 4.3 °C.

2.0 PREPARATIONS AND ANALYSIS
Sample #7 (HC-21) was to be extracted and analyzed for PAHs by EPA 8270 modified in SIM mode. Due to laboratory error the sample was misplaced and unavailable for extraction/analysis. The same sample was extracted and analyzed for diesel range hydrocarbons by NW-TPH-Dx method. This extract was then analyzed for PAHs by 8270 SIM.

Additionally, sample #1 (BE-1) did not have a sample for extraction and analysis for PAHs provided. We also ran the NW-TPH-Dx extract on that sample for PAHs by 8270 SIM. Only limited quality control parameters are available for this PAH screen of NW-Dx extracts.

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of this report.

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method with Acid/Silica Gel Cleanup

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-01 (BE-1)		**Water**			**Sampled: 06/27/07 14:11**					
Diesel Range Organics	NWTPH-Dx	**0.518**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 16:35	07/03/07 11:00	**Q9**
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*89.5%*		*50 - 150 %*	"			"	
PQF1140-02 (BE-2)		**Water**			**Sampled: 06/27/07 14:05**					
Diesel Range Organics	NWTPH-Dx	**1.44**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 16:35	07/03/07 13:32	**Q9**
Heavy Oil Range Hydrocarbons	"	**0.555**	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*91.9%*		*50 - 150 %*	"			"	
PQF1140-03 (BE-3)		**Water**			**Sampled: 06/27/07 12:50**					
Diesel Range Organics	NWTPH-Dx	**2.27**	*0.144*	0.236	mg/l	1x	7070020	07/02/07 18:20	07/03/07 12:18	**Q9**
Heavy Oil Range Hydrocarbons	"	**0.310**	*0.270*	0.472	"	"	"	"	"	**J**
Surrogate(s): 1-Chlorooctadecane			*79.9%*		*50 - 150 %*	"			"	
PQF1140-05 (HC-19)		**Water**			**Sampled: 06/27/07 16:30**					
Diesel Range Organics	NWTPH-Dx	**0.190**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 18:20	07/03/07 12:37	**J**
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*90.2%*		*50 - 150 %*	"			"	
PQF1140-06 (HC-19dup)		**Water**			**Sampled: 06/27/07 16:30**					
Diesel Range Organics	NWTPH-Dx	**0.153**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 18:20	07/03/07 12:56	**J**
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*95.3%*		*50 - 150 %*	"			"	
PQF1140-07 (HC-21)		**Water**			**Sampled: 06/27/07 17:05**					
Diesel Range Organics	NWTPH-Dx	**0.390**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 18:20	07/03/07 13:15	**Q9**
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*73.2%*		*50 - 150 %*	"			"	
PQF1140-08 (HC-2)		**Water**			**Sampled: 06/27/07 15:00**					
Diesel Range Organics	NWTPH-Dx	ND	*0.146*	0.238	mg/l	1x	7070020	07/02/07 18:20	07/03/07 12:56	
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*85.9%*		*50 - 150 %*	"			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

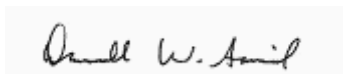
Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method with Acid/Silica Gel Cleanup

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-09 (HC-5)		**Water**			**Sampled: 06/27/07 15:35**					
Diesel Range Organics	NWTPH-Dx	**0.856**	*0.146*	0.238	mg/l	1x	7070020	07/02/07 18:20	07/03/07 13:15	**Q9**
Heavy Oil Range Hydrocarbons	"	ND	*0.273*	0.476	"	"	"	"	"	
Surrogate(s): 1-Chlorooctadecane			*87.5%*		*50 - 150 %*	*"*			*"*	

TestAmerica - Portland, OR



Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

Polynuclear Aromatic Hydrocarbon Screen (Semi-Quantitative) by EPA 8270SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-01 (BE-1)		**Water**			**Sampled: 06/27/07 14:11**					
Acenaphthene	EPA 8270m	ND	-----	0.476	ug/l	1x	7070020	07/02/07 18:20	07/16/07 20:03	
Acenaphthylene	"	ND	-----	0.476	"	"	"	"	"	
Anthracene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (a) anthracene	"	**2.19**	-----	0.476	"	"	"	"	"	
Benzo (a) pyrene	"	**2.78**	-----	0.476	"	"	"	"	"	
Benzo (b) fluoranthene	"	**2.61**	-----	0.476	"	"	"	"	"	
Benzo (ghi) perylene	"	**2.20**	-----	0.476	"	"	"	"	"	
Benzo (k) fluoranthene	"	**2.31**	-----	0.476	"	"	"	"	"	
Chrysene	"	**2.49**	-----	0.476	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	0.952	"	"	"	"	"	
Fluoranthene	"	**3.14**	-----	0.476	"	"	"	"	"	
Fluorene	"	ND	-----	0.476	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**1.98**	-----	0.476	"	"	"	"	"	
Naphthalene	"	ND	-----	0.476	"	"	"	"	"	
Phenanthrene	"	**1.34**	-----	0.476	"	"	"	"	"	
Pyrene	"	**3.09**	-----	0.476	"	"	"	"	"	
PQF1140-07 (HC-21)		**Water**			**Sampled: 06/27/07 17:05**					**N1**
Acenaphthene	EPA 8270m	**0.745**	-----	0.476	ug/l	1x	7070020	07/02/07 18:20	07/17/07 00:04	
Acenaphthylene	"	ND	-----	0.476	"	"	"	"	"	
Anthracene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (a) anthracene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (a) pyrene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	0.476	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	0.476	"	"	"	"	"	
Chrysene	"	ND	-----	0.476	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	0.952	"	"	"	"	"	
Fluoranthene	"	ND	-----	0.476	"	"	"	"	"	
Fluorene	"	**2.06**	-----	0.476	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	-----	0.476	"	"	"	"	"	
Naphthalene	"	ND	-----	0.476	"	"	"	"	"	
Phenanthrene	"	ND	-----	0.476	"	"	"	"	"	
Pyrene	"	ND	-----	0.476	"	"	"	"	"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name: **POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number: 1007	Report Created:
Beaverton, OR 97005	Project Manager: Mike Stevens	07/25/07 13:13

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-02 (BE-2)		**Water**			**Sampled: 06/27/07 14:05**					**RL3**
Acenaphthene	EPA 8270m	ND	*0.0952*	0.190	ug/l	2x	7070058	07/03/07 17:40	07/16/07 15:59	
Acenaphthylene	"	ND	*0.0952*	0.190	"	"	"	"	"	
Anthracene	"	ND	*0.0952*	0.190	"	"	"	"	"	
Benzo (a) anthracene	"	**0.420**	*0.0952*	0.190	"	"	"	"	"	
Benzo (a) pyrene	"	**0.486**	*0.0952*	0.190	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.416**	*0.0952*	0.190	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.424**	*0.0952*	0.190	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.404**	*0.0952*	0.190	"	"	"	"	"	
Chrysene	"	**0.500**	*0.0952*	0.190	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.190*	0.381	"	"	"	"	"	
Fluoranthene	"	**0.790**	*0.0952*	0.190	"	"	"	"	"	
Fluorene	"	ND	*0.0952*	0.190	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.352**	*0.0952*	0.190	"	"	"	"	"	
Naphthalene	"	**0.119**	*0.0952*	0.190	"	"	"	"	"	**J**
Phenanthrene	"	**0.339**	*0.0952*	0.190	"	"	"	"	"	
Pyrene	"	**0.958**	*0.0952*	0.190	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*77.8%*		*25 - 125 %*	"			"	
Pyrene-d10			*82.5%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*78.7%*		*10 - 125 %*	"			"	
PQF1140-04 (BE-3)		**Water**			**Sampled: 06/28/07 16:00**					**RL4**
Acenaphthene	EPA 8270m	ND	*0.182*	0.364	ug/l	1x	7070058	07/03/07 17:40	07/16/07 16:33	
Acenaphthylene	"	ND	*0.182*	0.364	"	"	"	"	"	
Anthracene	"	ND	*0.182*	0.364	"	"	"	"	"	
Benzo (a) anthracene	"	**0.391**	*0.182*	0.364	"	"	"	"	"	
Benzo (a) pyrene	"	**0.424**	*0.182*	0.364	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.370**	*0.182*	0.364	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.342**	*0.182*	0.364	"	"	"	"	"	**J**
Benzo (k) fluoranthene	"	**0.338**	*0.182*	0.364	"	"	"	"	"	**J**
Chrysene	"	**0.458**	*0.182*	0.364	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.364*	0.727	"	"	"	"	"	
Fluoranthene	"	**0.702**	*0.182*	0.364	"	"	"	"	"	
Fluorene	"	ND	*0.182*	0.364	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.290**	*0.182*	0.364	"	"	"	"	"	**J**
Naphthalene	"	ND	*0.182*	0.364	"	"	"	"	"	
Phenanthrene	"	**0.338**	*0.182*	0.364	"	"	"	"	"	**J**
Pyrene	"	**1.05**	*0.182*	0.364	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*75.7%*		*25 - 125 %*	"			"	
Pyrene-d10			*100%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*88.4%*		*10 - 125 %*	"			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name: **POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number: 1007	Report Created:
Beaverton, OR 97005	Project Manager: Mike Stevens	07/25/07 13:13

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-05 (HC-19)		**Water**			**Sampled: 06/27/07 16:30**					
Acenaphthene	EPA 8270m	**0.660**	*0.0481*	0.0962	ug/l	1x	7070058	07/03/07 17:40	07/16/07 17:07	
Acenaphthylene	"	ND	*0.0962*	0.0962	"	"	"	"	"	
Anthracene	"	ND	*0.192*	0.192	"	"	"	"	"	**RL1**
Benzo (a) anthracene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Chrysene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Fluorene	"	**1.87**	*0.0481*	0.0962	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Naphthalene	"	ND	*0.144*	0.144	"	"	"	"	"	**RL1**
Phenanthrene	"	ND	*0.0962*	0.0962	"	"	"	"	"	
Pyrene	"	ND	*0.0962*	0.0962	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*69.4%*		*25 - 125 %*	"			"	
Pyrene-d10			*94.6%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*95.3%*		*10 - 125 %*	"			"	
PQF1140-06 (HC-19dup)		**Water**			**Sampled: 06/27/07 16:30**					
Acenaphthene	EPA 8270m	**0.614**	*0.0481*	0.0962	ug/l	1x	7070058	07/03/07 17:40	07/16/07 17:41	
Acenaphthylene	"	ND	*0.0962*	0.0962	"	"	"	"	"	
Anthracene	"	ND	*0.144*	0.144	"	"	"	"	"	**RL1**
Benzo (a) anthracene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Chrysene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Fluoranthene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Fluorene	"	**1.65**	*0.0481*	0.0962	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Naphthalene	"	ND	*0.144*	0.144	"	"	"	"	"	**RL1**
Phenanthrene	"	ND	*0.0962*	0.0962	"	"	"	"	"	
Pyrene	"	ND	*0.0481*	0.0962	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*69.3%*		*25 - 125 %*	"			"	
Pyrene-d10			*92.8%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*101%*		*10 - 125 %*	"			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name: **POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number: 1007	Report Created:
Beaverton, OR 97005	Project Manager: Mike Stevens	07/25/07 13:13

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PQF1140-08 (HC-2)		**Water**			**Sampled: 06/27/07 15:00**					
Acenaphthene	EPA 8270m	ND	*0.0476*	0.0952	ug/l	1x	7070058	07/03/07 17:40	07/16/07 18:16	
Acenaphthylene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Anthracene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Chrysene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.0952*	0.190	"	"	"	"	"	
Fluoranthene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Fluorene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Naphthalene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Phenanthrene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Pyrene	"	ND	*0.0476*	0.0952	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*71.5%*		*25 - 125 %*	"			"	
Pyrene-d10			*105%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*92.0%*		*10 - 125 %*	"			"	
PQF1140-09 (HC-5)		**Water**			**Sampled: 06/27/07 15:35**					**RL3**
Acenaphthene	EPA 8270m	**0.835**	*0.0962*	0.192	ug/l	2x	7070058	07/03/07 17:40	07/16/07 18:55	
Acenaphthylene	"	ND	*0.288*	0.288	"	"	"	"	"	**RL1**
Anthracene	"	ND	*0.192*	0.192	"	"	"	"	"	
Benzo (a) anthracene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Benzo (a) pyrene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Chrysene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	*0.192*	0.385	"	"	"	"	"	
Fluoranthene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Fluorene	"	**3.08**	*0.0962*	0.192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Naphthalene	"	**0.421**	*0.0962*	0.192	"	"	"	"	"	
Phenanthrene	"	ND	*0.288*	0.288	"	"	"	"	"	
Pyrene	"	ND	*0.0962*	0.192	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*			*90.6%*		*25 - 125 %*	"			"	
Pyrene-d10			*80.8%*		*23 - 150 %*	"			"	
Benzo (a) pyrene-d12			*60.1%*		*10 - 125 %*	"			"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

QC Batch: 7070020 **Water Preparation Method: EPA 3510 Fuels**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7070020-BLK1)								**Extracted: 07/02/07 16:35**						
Diesel Range Organics	NWTPH-Dx	ND	0.153	0.250	mg/l	1x	--	--	--	--	--	--	07/03/07 11:59	
Heavy Oil Range Hydrocarbons	"	ND	0.286	0.500	"	"	--	--	--	--	--	--	"	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 79.6%*			*Limits: 50-150%*	"							*07/03/07 11:59*	
LCS (7070020-BS1)								**Extracted: 07/02/07 16:35**						
Diesel Range Organics	NWTPH-Dx	2.57	0.153	0.250	mg/l	1x	--	2.58	99.8%	(50-150)	--	--	07/03/07 12:18	
Heavy Oil Range Hydrocarbons	"	1.82	0.286	0.500	"	"	--	1.56	116%	"	--	--	"	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 72.6%*			*Limits: 50-150%*	"							*07/03/07 12:18*	
LCS Dup (7070020-BSD1)								**Extracted: 07/02/07 16:35**						
Diesel Range Organics	NWTPH-Dx	2.50	0.153	0.250	mg/l	1x	--	2.58	96.9%	(50-150)	2.92%	(50)	07/03/07 12:37	
Heavy Oil Range Hydrocarbons	"	1.87	0.286	0.500	"	"	--	1.56	120%	"	2.95%	"	"	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 76.6%*			*Limits: 50-150%*	"							*07/03/07 12:37*	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

QC Batch: 7070020 **Water Preparation Method: EPA 3510 Fuels**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7070020-BLK1)								**Extracted: 07/02/07 16:35**						
Acenaphthene	EPA 8270m	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	07/16/07 19:29	
Acenaphthylene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name: **POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number: 1007	Report Created:
Beaverton, OR 97005	Project Manager: Mike Stevens	07/25/07 13:13

QC Batch: 7070058 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (7070058-BLK1)							**Extracted: 07/03/07 17:40**							
Acenaphthene	EPA 8270m	ND	0.0500	0.100	ug/l	1x	--	--	--	--	--	--	07/13/07 23:15	
Acenaphthylene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.100	0.200	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0500	0.100	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 109%*			*Limits: 25-125%*	"							*07/13/07 23:15*	
Pyrene-d10		*119%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*112%*			*10-125%*	"							"	
LCS (7070058-BS1)							**Extracted: 07/03/07 17:40**							
Acenaphthene	EPA 8270m	2.69	0.0500	0.100	ug/l	1x	--	2.50	107%	(26-135)	--	--	07/13/07 23:46	
Benzo (a) pyrene	"	2.79	0.0500	0.100	"	"	--	"	112%	(38-137)	--	--	"	
Pyrene	"	2.77	0.0500	0.100	"	"	--	"	111%	(33-133)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 115%*			*Limits: 25-125%*	"							*07/13/07 23:46*	
Pyrene-d10		*116%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*117%*			*10-125%*	"							"	
LCS Dup (7070058-BSD1)							**Extracted: 07/03/07 17:40**							
Acenaphthene	EPA 8270m	2.60	0.0500	0.100	ug/l	1x	--	2.50	104%	(26-135)	3.13%	(60)	07/14/07 00:17	
Benzo (a) pyrene	"	2.75	0.0500	0.100	"	"	--	"	110%	(38-137)	1.47%	"	"	
Pyrene	"	2.65	0.0500	0.100	"	"	--	"	106%	(33-133)	4.47%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 98.5%*			*Limits: 25-125%*	"							*07/14/07 00:17*	
Pyrene-d10		*107%*			*23-150%*	"							"	
Benzo (a) pyrene-d12		*110%*			*10-125%*	"							"	

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Ash Creek Associates, Inc.	Project Name:	**POP-T4S3**	
9615 SW Allen Blvd. Suite 106	Project Number:	1007	Report Created:
Beaverton, OR 97005	Project Manager:	Mike Stevens	07/25/07 13:13

Notes and Definitions

Report Specific Notes:

J	-	Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
N1	-	See case narrative.
Q9	-	Hydrocarbon pattern most closely resembles weathered diesel.
RL1	-	Reporting limit raised due to sample matrix effects.
RL3	-	Reporting limit raised due to high concentrations of non-target analytes.
RL4	-	Reporting limit raised due to insufficient sample volume.

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Portland, OR

Darrell Auvil, Project Manager

TestAmerica
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: RQFIND

CLIENT: Ash Creek Associates

REPORT TO: Mike Stevens
ADDRESS: 9615 SW Allen Blvd, Suite 106, Beaverton, OR 97005
PHONE: 503.924.4704 FAX: 503.924.4707

INVOICE TO: ← SAME

P.O. NUMBER: 1007

PROJECT NAME: Port of Portland - T453
PROJECT NUMBER: 1007
SAMPLED BY: A. Schmidt / A. Fines

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: (10) STD | 7 | 5 | 4 | 3 | 2 | 1 | < 1

Petroleum Hydrocarbon Analyses: (5) STD | 4 | 3 | 2 | 1 | < 1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

PRESERVATIVE: HCl

REQUESTED ANALYSES: TPHd + Residual Range (Silica Gel Clean-up); PAHs 8270 SIM

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	TPHd + Residual Range	PAHs 8270 SIM	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
1	BE-1	6/27/07	1411	X	X? → don't have enough volume?			TPHd	
2	BE-2	6/27/07	1405	x	x			w/ Silica gel Clean up	
3	BE-3	6/27/07	1250	x					
4	BE-3	6/28/07	1600		X				
5	HC-19	6/27/07	1630	x	x				
6	HC-19 DUP	6/27/07	1630	x	x				
7	HC-21	6/27/07	1705	x	x				
8	HC-2	6/27/07	1500	x	x				
9	HC-5	6/27/07	1535	x	x				
10									

RELEASED BY: A. Schmidt		DATE: 6/29/07	RECEIVED BY: Helga Descalzo		DATE: 6/29
PRINT NAME: A. Schmidt	FIRM: Ash Creek	TIME: 1145	PRINT NAME: Helga Descalzo	FIRM: THP	TIME: 1200
RELEASED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

TEMP: 4.3 2.3

COC REV 09/2004

PAGE OF

TestAmerica Sample Receipt Checklist

Received by: *(section A)* Date: 6/29 Time: 1200 Initials: HSD

Unpacked by: *(section B)* Date: 6/29 Initials: SM

Logged-in by: Date: 6/29 Initials: SM

Work Order No.: PQF1140

Client: Ashcroft

Project: POP-T453

Cooler ID(s): 086 178

***ESI Clients *(see Section C)*

Cooler Temperature (IR): 2.3 4.3 °C plastic (glass) NA *(oil/air samples, ESI client)*

Temperature out of range:
- ___ *No Ice*
- ___ *Ice Melted*
- ___ *W/in 4 Hours*
- ___ *Other:*

A

Custody Seals: (#____)

Signature: Y N Dated:_____

X None

Container Type:
- 2 #Cooler(s)
- ____#Box(s)
- ____None (___#Other:_____)

Coolant Type:
- X Gel Ice
- ____Loose Ice
- ____None

Packing Material:
- ____Bubble Bags
- X Styrofoam Cubbies
- ____None (____Other:_____)

Received from:
- ____TA Courier
- ____Senvoy
- ____UPS
- ____Fed Ex
- X Client
- ____TDP
- ____DHL
- ____SDS
- ____Mid-Valley
- ____GS/TA
- ____GS/Senvoy
- ____Other:_____

B

Sample Status:

(If N circled, see NOD)

General:			
Intact?	Y	N	
# Containers Match COC?	Y	N	none given
IDs Match COC?	Y	N	
For Analyses Requested:			
Correct Type & Preservation?	Y	N	
Adequate Volume?	Y	(N)	
Within Hold Time?	Y	N	
Volatiles:			
VOAs Free of Headspace?	Y	N	NA
TB on COC? not provided	Y	N	NA
Metals:			
HNO3 Preserved?	Y	N	NA

C

***ESI Clients Only:

Temperature Blank: _____°C not provided

All preserved bottles checked Y N NA *(voas/soils/all unp.)*

All preserved accordingly? Y N *(see NOD)* NA *(voas/soils/all unp.)*

Army Corp: Geiger (ticks/min): ____ ____ ____ ____

Temperatures (IR): _____°C _____°C _____°C _____°C

(left) (middle) (right) (air)

Project Managers:

Comments:_____

*PM Reviewed:*_____ *(Initial/Date)*