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REVISED FINAL

Annual 2024 Groundwater Monitoring and LNAPL Removal Report Terminal 4 Slip 3 Upland Facility Portland, Oregon ECSI No. 272

Prepared for:
Port of Portland

September 25, 2025
32-23011042

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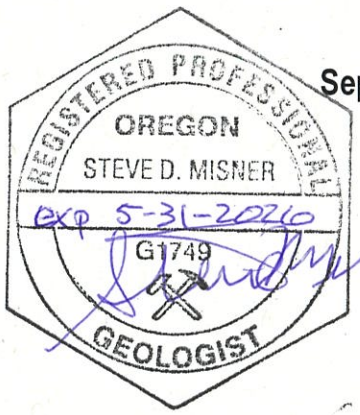

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1.0 Introduction

This annual 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 (the Facility; see Figure 1) during 2024. This work was completed in accordance with the *LNAPL Removal, Groundwater Monitoring, and Contingency Plan* (Monitoring Plan; Blasland, Bouck & Lee, Inc [BBL]/Ash Creek/Newfields, 2005b) and the *Site Closure Evaluation and Recommendation – Groundwater* (Ash Creek, 2009). 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 the *Explanation of Significant Difference* (DEQ, 2004a). 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 the DEQ and the Port of Portland (Port). The groundwater monitoring program was expanded for 2022 in response to comments provided by DEQ on the *Annual 2021 Groundwater Monitoring and LNAPL Removal Report* (Apex Companies, LLC [Apex], revised April 2022) and the U.S. Environmental Protection Agency (EPA) on the *Sufficiency Assessment Report* (Anchor QEA, Geosyntec, Apex, 2022) for the Portland Harbor Superfund Site. Based on the results of the 2022 groundwater monitoring activities provided in the *Revised Annual 2022 Groundwater Monitoring and LNAPL Removal Report* (Apex, 2023), DEQ concurred with the recommendation that further source control monitoring and sampling of wells HC-2 and HC-6S are no longer warranted.

1.1 Scope

The specific tasks that are described in this Report include:

- Conducting semiannual groundwater sampling in May and December 2024 per the modified list of monitoring wells presented in the *Second Semi-Annual 2012 Groundwater Monitoring and LNAPL Removal Report* (Ash Creek/Apex2013). Following review of the *Annual 2015 Groundwater Monitoring and LNAPL Removal Report* (Apex2016), DEQ and the EPA concurred that removal of well BE-3 from the scope for future annual groundwater monitoring events was appropriate (email correspondence dated March 22, 2016). In addition, monitoring well HC-12D was added to the annual sampling program, as this well is screened entirely within the alluvial aquifer. The current monitoring well network sampled on a semiannual basis consists of BE-1, BE-5, HC-5, and HC-12D. The December 2024 annual monitoring event also included collection of groundwater levels from additional monitoring wells (BE-4, HC-10, HC-19, HC-21, HC-23, HC-24, MW-19, and MW-20) for estimating hydraulic gradients and removal of LNAPL from wells in which measurable LNAPL was present.
- Analyzing collected groundwater samples for: C10-C12 aliphatic hydrocarbons and total/dissolved metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, zinc, and vanadium) on a semiannual basis; and diesel- and oil-range petroleum hydrocarbons (TPH-D) and polycyclic aromatic hydrocarbons (PAHs) on an annual basis.

1.2 Report Organization

The report text provides background information on the Facility (Section 2), a summary of field activities and methods (Section 3), the results of the LNAPL removal program (Section 4), and the results of the groundwater monitoring program (Section 5). Supporting information is provided in the tables, figures, and appendices. Appendix A presents the field and quality assurance/quality control (QA/QC) procedures; field notes from the groundwater monitoring event are also included in Appendix A. Appendix B contains the laboratory data QA/QC review and analytical laboratory report. Historical data tables are available in Appendix C. LNAPL thickness and removal volume trend plots are included in Appendix D. Appendix E contains chemical concentration versus time plots. Appendix F contains chemical concentration trend plots for data collected in the past four years.

2.0 Background

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 eastern bank of the Willamette River, near river mile 5. Figure 2 provides a Site vicinity plan showing the boundaries of the Facility in relation to surrounding properties and general site layout. The Facility is generally bounded to the north by Terminal 4 Slip 1 (T4S1), to the west by the Willamette River, to the south by the Toyota Automobile Receiving Area, and to the east by the former Union Pacific Railroad (UPRR) tank farm facility.

The Facility is generally flat at an average elevation of about 35 feet above mean sea level (MSL) relative to the National Geodetic Vertical Datum (NGVD 29). 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

Three primary geologic units were identified by investigation borings at Terminal 4. These units are the Fill Unit (sand fill), the Alluvial Unit, and the Troutdale Formation.

- **Fill Unit.** The fill material consists of brown, medium grained sand. The unit ranges in thickness from more than 40 feet thick on the west near the river to less than 5 feet thick at the eastern boundary of the Slip 3 upland facility.
- **Alluvial Unit.** This unit consists primarily of gray to brown, generally well-sorted silts and sandy silts, and fine-grained sands, with discontinuous lenses of clays and pebble-sized gravels. Gravel layers were encountered in three borings on the east side of the site at the base of the flood plain boundary bluff. The Alluvial Unit varies from less than 20 feet thick at the east side of the Slip 3

area to approximately 160 feet thick near Slip 3. The surface of the Alluvial Unit represents the pre-development ground surface/mudline on the floodplain of the Willamette River. The surface of the Alluvial Unit has an overall slope toward the river but has local mounds and holes. Most notable are elevated areas to the north and south framing a lower area that may represent a historical drainage channel. At the head of Slip 3, the lower elevation area corresponds to the location of the historical NAPL seep. The top of the Alluvial Unit is characterized by a silt layer (varying from a sandy silt to clay). The silt layer varies in thickness from 1 foot to greater than 20 feet with a median value of 3 feet.

- **Troutdale Formation.** Sandy gravel was identified at a depth of about 160 feet bgs in borings conducted at the Slip 1 upland facility. These soils were interpreted to represent the Troutdale Formation. The local thickness of the Troutdale Formation is estimated to be about 100 feet thick (Hart Crowser, 2000).

2.3 Hydrogeology

As discussed above, the top of the Alluvial Unit is characterized by a continuous silt layer. Based on multiple lines of evidence summarized below, the silt layer restricts hydraulic communication between the Fill and Alluvial Units.

- Based on the lithologic logs, NAPL was not observed in the soil column below the silt layer at the top of the Alluvial Unit. Out of more than 100 borings, field indicators of petroleum were observed below the silt layer in only two borings. Additionally, soil chemistry data indicate that TPH was generally not detected in soil below the silt layer.
- Three well pairs (HC-4S/4D, HC-6S/6D, and HC-12S/12D) were installed with a well screened in each of the Fill and Alluvial Units. Evaluation of hydrographs for each well pair together with river levels from the Morrison Bridge gauge (adjusted to Terminal 4) demonstrate the following:
    - Water levels in the Fill Unit are typically about 3 feet higher than the Alluvial Unit (the average difference between the water levels ranges from 2.9 to 3.5 feet in the three well pairs).
    - For the two well pairs farther upland (HC-6 and HC-12), water levels in both units are consistently higher than the river (during flood events, the river elevation likely temporarily exceeds the groundwater elevation). At HC-4, groundwater in the Fill Unit is typically higher than the river but nearly matches the river in the Alluvial Unit.
    - The influence of seasonal/river elevation changes are more pronounced in the Alluvial Unit than the Fill Unit.

The following observations are made based on representative groundwater contouring for the Fill and Alluvial Units for lower and higher river levels:

- Groundwater flow direction overall is toward the river with groundwater contours in both units generally parallel to the shoreline. The gradient steepens closer to the river.
- Groundwater flow direction in the Fill unit has local variations that appear to be influenced by the elevation of the Fill/Alluvial boundary. At the head of Slip 3, the contours are bent, focusing the flow direction to the southeast corner of Slip 3 where the Fill/Alluvial boundary is lower. South of Slip 3, groundwater flow is sometimes focused toward the pre-fill channel.
- Where the Fill/Alluvial boundary is at a higher elevation, the gradient in the Fill Unit is relatively flat and water levels are not significantly influenced by seasonal or river level changes.
- River levels impact groundwater levels in the Fill Unit primarily in areas where the Fill/Alluvial Unit boundary is lower and only when river levels are relatively high.
- Groundwater levels in the Alluvial Unit appear to respond to seasonal/river level changes. Groundwater gradients in the Alluvial Unit are steeper during low river levels.

2.4 Remedial Action Status

The *Consent Judgment* requires remedial action at the Facility consisting of the following elements:

1) Excavation of soil Hot Spots;
2) Manual recovery of LNAPL from groundwater wells;
3) Excavation of riverbank soils;
4) Capping of certain surface soil containing PAHs;
5) Implementation of a Contaminated Media Management Plan (CMMP);
6) Source control actions to address pencil pitch in surface soils; and
7) Compliance monitoring.

This Report presents the status of ongoing items 2 and 7. Item 1 was completed in 2009. Item 3 was completed in 2004 and is identified as the "BEBRA." In fall 2008, the Head of Slip 3 cap was installed, a portion of which overlays the BEBRA. The BEBRA fill and Head of Slip 3 cap each contain an organoclay layer that adsorbs petroleum hydrocarbons. Those organoclay layers are downgradient of the BEBRA monitoring wells. Item 4 will be completed in a future action in association with site development. The CMMP (Item 5) was approved by DEQ as an interim document on March 26, 2019, and it will be updated as phases of upland and riverbank work are completed. The document will continue to be called interim until all aspects of the remedy have been completed. A portion of Item 6 (Head of Slip 3 source control measure) was completed in 2009. The remainder of Item 6 (riverbank and South Slip Bank source control measures) will be addressed in a future action.

3.0 Field Activities

3.1 LNAPL Monitoring Program

The SOW of the *Consent Judgment* (Circuit Court of Oregon, 2004) requires periodic removal of LNAPL from existing wells. LNAPL monitoring and removal was performed in December 2024. The following describes the results of the LNAPL monitoring and removal program for 2024. A more detailed description of the procedures used is provided in Appendix A.

During the LNAPL monitoring event, LNAPL was removed from wells MW-19 and MW-20 by manually draining the skimmers and reinstalling them in the wells. Additional LNAPL was present in the wells following skimmer removal, which was manually removed by hand bailing before the skimmer was reinstalled.

The Slip was also inspected for the presence of sheen in the area of the BEBRA during each LNAPL monitoring event. Notes regarding the presence or absence of sheen in the area of the BEBRA are recorded in the field notes (Appendix A).

The purge water and LNAPL mixture from the gauging events is collected in a Department of Transportation (DOT)-approved 55-gallon drum for temporary storage at the facility. The drum and contents are recycled off-site on an as-needed basis.

3.2 Groundwater Monitoring Activities

The following sections describe the gauging and groundwater monitoring events conducted in May and December 2024 at the Site. Please refer to Appendix A for a detailed discussion of the field and sampling procedures.

3.2.1 Groundwater Level Measurements

Depths to groundwater and LNAPL (if present) were measured in wells HC-5, HC-12D, BE-1, and BE-5 on May 1, 2024. Depths to groundwater and LNAPL (if present) were measured in wells MW-19, MW-20, HC-5, HC-10, HC-12D, HC-19, HC-21, HC-23, HC-24, BE-1, BE-4, and BE-5 during the annual monitoring event on December 3, 2024. Groundwater measurement was not performed at well BE-3 as field staff were unable to open the lock. Water levels were measured for the purpose of determining groundwater elevations and gradients by using an electronic water level indicator. An interface probe was used in wells where LNAPL has historically been observed. Measured depths to groundwater and estimated groundwater elevations are summarized in Table 1. Groundwater elevations are shown on Figure 4 (May 2024) and Figure 5 (December 2024).

3.2.2 Groundwater Sampling

Semi-Annual Monitoring. The 2024 semi-annual groundwater monitoring program consisted of collection of groundwater samples from wells HC-5, HC-12D, BE-1, and BE-5. The 2024 groundwater monitoring events were conducted on May 1 and December 3, 2024. Due to slow recharge in wells BE-1 and BE-5, samples from these wells were collected over the course of the two days in December 2024.

Purging. After the depths to groundwater were measured, the wells were purged using a peristaltic pump and low-flow purging techniques. Based on observations made during previous sampling events, monitoring wells BE-1 and BE-5 (1-inch diameter casing and screen) dewater and recharge very slowly, so the groundwater samples are collected from these wells without purging prior to sample collection.

Sample Collection. After the purging was completed and field parameters stabilized (with the exception of wells BE-1 and BE-5), groundwater samples were collected. Groundwater samples were submitted under chain-of-custody (COC) protocols to Apex Laboratories in Tigard, Oregon for chemical analyses. Samples were collected and handled in accordance with the procedures presented in Appendix A.

Waste Disposal. The purge water generated during the annual groundwater monitoring event is combined with the LNAPL DOT-approved 55-gallon drum for temporary storage at the facility. The drum and contents are recycled off-site on an as-needed basis.

4.0 LNAPL Monitoring Results and Evaluation

4.1 LNAPL Monitoring and Removal

Monitoring and removal of LNAPL was conducted as described in Section 3.1. Table 2 summarizes the LNAPL recovery from the December annual event. Figure 3 presents the total LNAPL recovery by well. Trend plots of LNAPL thickness and recovery versus time and cumulative LNAPL recovery are included in Appendix D.

Approximately 0.75 gallon of LNAPL was removed from the wells during the 2024 event. Individual LNAPL recovered from the wells were approximately: 0.5 gallon from MW-19; and 0.25 gallon from MW-20. LNAPL was not observed in wells HC-5, HC-10, HC-12D, HC-19, HC-21, HC-23, HC-24, BE-1, BE-3, BE-4, or BE-5 during the 2024 monitoring year. LNAPL has not been observed in the wells installed within the BEBRA area (i.e., wells BE-1, BE-3, and BE-5).

No sheen was observed on the water within Slip 3 during either of the 2024 monitoring events.

4.2 Evaluation of LNAPL Results

The *Site Closure Evaluation and Recommendation – Groundwater* (Ash Creek, 2009) specified that LNAPL monitoring/removal will continue as long as the total recovery rate is greater than 50 gallons per year. After the total recovery rate falls below 50 gallons per year, individual wells will continue in the LNAPL monitoring/removal program until: (1) the trend in recovery rate is downward; or (2) the recovery rate is less than 5 gallons per year.

The total recovery rate during the 2024 monitoring was less than 50 gallons per year. To evaluate the ancillary requirements of the monitoring/removal program, the recovery rate trend for individual wells was statistically evaluated as described below.

Mann-Kendall. To evaluate the trends in concentrations or LNAPL recovery in monitoring wells, a Mann-Kendall statistical evaluation was completed on each data set (in accordance with Air Force Center for Environmental Excellence [AFCEE] Long-Term Monitoring Optimization guidance; AFCEE, 2006). The Mann-Kendall test is a non-parametric statistical procedure for analyzing trends in evenly spaced data over time for data sets of sufficient size (typically considered to be at least seven sample points). The Mann-Kendall statistic (S) is used to characterize trends in the data. Positive values indicate an increase in values over time, whereas negative values indicate a decrease in values over time. The strength of the trend is proportional to the magnitude of the Mann-Kendall Statistic (i.e., large magnitudes indicate a strong trend). A confidence in the trend is calculated (using the Kendall probability table) and the confidence level is used together with the Mann-Kendall statistic to define the trend based on the following table:

Mann-Kendall Statistic	Confidence in Trend	Defined Concentration Trend
> 0	> 95%	Increasing Trend
> 0	90% - 95%	Probably Increasing Trend
> 0	< 90%	No Trend
≤ 0	< 90% and COV ≥ 1	No Trend
≤ 0	< 90% and COV < 1	Stable
< 0	90% - 95%	Probably Decreasing Trend
< 0	> 95%	Decreasing Trend

S = Mann-Kendall Statistic

COV = Coefficient of Variation (Ratio of the standard deviation to the mean)

A Mann-Kendall statistical evaluation was completed on the annual LNAPL recovery data from wells in which LNAPL was observed during the annual monitoring event (MW-19, and MW-20) as described above. The results of the Mann-Kendall analysis suggest that LNAPL recovery from the wells MW-19 and MW-20 is decreasing.

Well	Mann-Kendall Statistic	Confidence in Trend	Coefficient of Variation	Concentration Trend
MW-19	-74	100%	1.67	DECREASING
MW-20	-78	100%	1.15	DECREASING

The LNAPL recovery trend plots in Appendix D show that there has been a significant reduction in the volume of LNAPL recovered annually since 2010, and the recovery rate during the last 4 years has trended downward. No monitored wells displayed statistically increasing trends in LNAPL recovery.

5.0 Groundwater Monitoring Results and Evaluation

The following sections present the analytical results of the 2024 groundwater monitoring events and provide a statistical evaluation of the ROD compliance data. Data were also assessed for source control purposes.

5.1 Chemical Analytical Results

Groundwater samples were analyzed for the following constituents:

- Diesel- and heavy-oil-(residual)-range petroleum hydrocarbons (TPH-Dx) using Method Northwest Total Petroleum Hydrocarbons (NWTPH-Dx) with silica gel cleanup (EPA Method 3630M), during the annual monitoring event only;
- PAHs using EPA Method 8270E during the annual monitoring event only;
- C10-C12 aliphatic hydrocarbons using the Northwest Extractible Petroleum Hydrocarbon (NWEPH) method; and
- Total and dissolved metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, vanadium, and zinc) using EPA Method 6020B.

The groundwater analytical results are summarized in Table 3 (ROD compliance constituents) and Table 4 (C10-C12 aliphatic hydrocarbons and metals). The data quality review and complete laboratory reports are included in Appendix B. The analytical results were screened against the ROD Compliance Criteria, which are provided with the data in Table 3. Results for C10-C12 aliphatic hydrocarbons and metals were screened against Portland Harbor ROD Cleanup Levels (PHROD CULs) and are provided in Tables 3 and 4. Figure 6 presents the TPH-Dx results for each sampled well. Historical data tables are included in Appendix C. Plots of chemical concentrations versus time for selected ROD compliance chemicals and wells are included in Appendix E. Results for BE-5 are plotted together with BE-2.

BEBRA Wells (BE-1 and BE-5). Monitoring results for the BEBRA wells were consistent with historical ranges for ROD compliance constituents. No TPH-Dx, PAHs, or C10-C12 aliphatic hydrocarbons were

detected above the laboratory reporting limit in groundwater samples collected from monitoring wells BE-1 or BE-5 during the reporting period with the exception of low detections of naphthalene in the samples collected in December 2024 (0.251 micrograms per liter [µg/L] and 0.0919 µg/L, respectively). Arsenic, copper (December 2024, total only), lead (December 2024, total only), and manganese were detected in one or more samples at concentrations above the PHROD CUL in groundwater samples collected from monitoring well BE-1. Arsenic (May 2024, total only), cadmium, copper, lead (total only), and zinc were detected in one or more samples at concentrations above the PH ROD CUL in groundwater samples collected from monitoring well BE-5.

HC-5. Monitoring results for well HC-5 were consistent with historical ranges. PAH analytes were not detected during the monitoring period. TPH-Dx was detected at a concentration of 7,580 µg/L in the December 2024 monitoring event, which exceeds the ROD Compliance Criterion of 1,000 µg/L. Residual-range hydrocarbons were not detected above the laboratory reporting limit. C10-C12 aliphatic hydrocarbons were not detected above the laboratory reporting limit during the May 2024 reporting period but were detected at a concentration of 45.7 µg/L in the December 2024 monitoring event (which is higher than the PHROD CUL of 2.6 µg/L.). Arsenic, manganese, and zinc were detected in the sample collected in May 2024 at concentrations above the PHROD CUL. Arsenic, copper (total only), lead (total only), manganese, and zinc were detected in the groundwater sample collected in December 2024 at concentrations above the PHROD CUL.

HC-12D. Monitoring results for well HC-12D were consistent with historical ranges. No TPH-Dx, C10-C12 aliphatic hydrocarbons or PAHs were detected in groundwater samples collected during the reporting period. Arsenic, cadmium (total only), lead (total only), and manganese were detected at concentrations above the PHROD CUL in the groundwater samples collected in May and December 2024.

5.2 Evaluation of Annual Groundwater Results

The ROD Compliance Criteria concentrations for the Site, presented with the analytical data in Table 3, were developed for the location where groundwater exits the BEBRA organoclay layer into the Willamette River (the POC). The BEBRA sentinel wells (BE-1 and BE-5) are monitored to provide an assessment of site conditions adjacent to the POC. Well BE-5 was installed in 2009 to replace BE-2, which was destroyed during construction of the Head of Slip 3 cap. The analytical modeling results for data from BE-2 indicated that the data are likely biased high and suggest that chemical concentrations in BE-2 were likely at or below concentrations that meet compliance levels at the POC (Ash Creek, 2009). The compliance criteria for the BEBRA sentinel wells are as follows:

1) Contaminants of concern are below compliance levels for two successive years of monitoring; or
2) If detected above compliance levels in Table 3, concentrations of benzo(a)anthracene (BAA) and benzo(a)pyrene (BAP) are each less than 1 µg/L (a conservative sentinel well equivalent compliance

level determined from modeling; Ash Creek, 2009) and a downward trend is established for four successive years of sampling.

Statistical analysis was performed on the compliance wells (BE-1 and BE-5) and south slip well (HC-5) for evaluation with the ROD Compliance Criteria. Descriptions of the statistical methods and results are presented in the subsections below. Graphical representations of analytical data for the past four years are presented in Appendix F.

After review of the April 2022 data in which EPA Method 8015 was used for the analysis, the decision was made to use the NWEPH method in subsequent sampling events to ensure that all aliphatic hydrocarbons within the C10-C12 range were reported. Reporting limits for the NWEPH method do not meet the PHROD CUL for C10-C12 aliphatic hydrocarbons but, when detected, results reported are more representative of groundwater conditions. Several laboratories were contacted regarding the detection limit issue. The laboratories were consistent that the 2.6 µg/L PHROD CUL is unachievable without substantial modifications to the NWEPH method.

5.2.1 BEBRA Wells

Concentrations of TPH-Dx in well BE-1 have been below compliance levels since the December 2020 monitoring event and have not been detected since the August 2022 monitoring event. Concentrations of BAA and BAP have not been detected since 2007. TPH-Dx in well BE-1 will be carried through for statistical analysis.

TPH-Dx has not been detected in well BE-5 since December 2020 and has not been detected above compliance levels since May 2019. BAA was not detected during this reporting period and has not exceeded compliance criteria since December 2020. BAP was not detected during this reporting period and has not been detected above compliance criteria since December 2021. Both BAA and BAP concentrations were below 1 µg/L. Therefore, BAP and BAA concentrations in well BE-5 will be carried through for statistical evaluation.

Mann-Kendall. The statistical analysis of BAA and BAP in well BE-5 was conducted using the historical data from September 2009 through December 2024. Statistical analysis of TPH-Dx in well BE-1 was conducted using the historical data from June 2005 through December 2024, with the exception of using results from a resampling event from January 2019 in place of the December 2018 data. The results of the Mann-Kendall analysis for wells BE-1 and BE-5 are summarized in the table below.

Well	Constituent	Number of samples	Number of Detects	Number of ND	Mann-Kendall Statistic	Confidence in Trend	Coefficient of Variation	Concentration Trend
BE-1	TPH-Dx	43	24	19	-92	66%	1.53	NO TREND
BE-5	BAA	24	12	12	-142	100%	1.10	DECREASING
	BAP	24	15	9	-142	100%	1.18	DECREASING

Non-detect (ND) = The concentration has been estimated to be one-half the reporting limit for the analyte.

The Mann-Kendall analysis for diesel-range hydrocarbon concentrations for well BE-1 shows no statistically significant trend. Concentration trends for BAA and BAP in well BE-5 have remained in a decreasing trend since the 2022 Groundwater Monitoring Report.

Regression. The ROD Compliance Criteria requires the evaluation of data trends from the last four sampling years. If the data set is abridged to the last four years (December 2020 through December 2024), the Mann-Kendall evaluation cannot be completed due to an insufficient number of data points. Straight-line regressions through this four-year data set (as calculated by the Excel regression function; Appendix F) indicate a negative slope for TPH-Dx in BE-1.

5.2.2 South Slip Compliance Well

Concentrations of TPH-Dx in well HC-5 have been above compliance levels since the December 2020 monitoring event with the exception of the sample collected in June 2023 (338 µg/L). No samples were collected from well HC-5 between February 2018 and December 2020 due to the presence of LNAPL. TPH-Dx in well HC-5 will be carried through for statistical analysis.

Mann-Kendall. The statistical analysis of TPH-Dx in well HC-5 was conducted using the historical data from May 2004 through December 2024. The results of the Mann-Kendall analysis for well HC-5 is summarized in the table below.

Well	Constituent	Number of samples	Number of Detects	Number of ND	Mann-Kendall Statistic	Confidence in Trend	Coefficient of Variation	Concentration Trend
HC-5	TPH-Dx	29	29	0	6	7.5%	3.72	NO TREND

Non-detect (ND) = The concentration has been estimated to be one-half the reporting limit for the analyte.

The Mann-Kendall analysis for diesel-range hydrocarbon concentrations for well HC-5 shows no statistically significant trend.

Regression. A straight-line regression for the last four years of the available data set (December 2020 through December 2024) is presented in Appendix F. The graph indicates a decreasing slope in the data (a vertical logarithmic scale was used due to the magnitude of the TPH concentrations observed in well HC-5 during the plotted time period, and an exponential trend line has been used to perform the regression).

5.2.3 Additional Assessment

As described in Section 1.1, the Port expanded the monitoring and sampling program for 2022 to include analysis for C10-C12 aliphatic hydrocarbons and total/dissolved metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, zinc, and vanadium). The expanded list of analytes will be evaluated in conjunction with porewater data evaluation that is being conducted as part of the in-water design process.

6.0 Conclusions and Recommendations

This section provides conclusions for the 2024 monitoring period and recommendations for additional monitoring.

6.1 LNAPL Monitoring and Removal

LNAPL monitoring and removal was conducted on wells MW-19, MW-20, HC-10, and BE-4 in December 2024. The total 2024 LNAPL removal volume was 0.75 gallons; this volume is below the 50-gallon-per-year criterion for the 12th consecutive year. The total LNAPL recovery from individual wells did not exceed 5 gallons per year. Recovery volumes for wells MW-19, MW-20, HC-10, and BE-4 ranged from <0.01 to 1.3 gallons. Statistical evaluation of LNAPL recovery rates from wells in the LNAPL monitoring program did not indicate a significant trend, with the exception of wells MW-19 and MW-20 which continue to show a decreasing trend. Despite several of the wells showing no statistical trend, all monitoring wells in the LNAPL monitoring program meet the specifications in the *Site Closure Evaluation and Recommendations – Groundwater* report (Ash Creek, 2009) to be removed from the monitoring program, i.e.:

- Total recovery rate is less than 50 gallons per year;
- After the total recovery rate falls below 50 gallons per year, individual wells will continue in the LNAPL monitoring/removal program until: (1) the trend in recovery rate is downward; or (2) the recovery rate is less than 5 gallons per year.

Based on the successful fulfillment of these requirements, LNAPL monitoring is no longer required and the Port recommends proper abandonment of wells MW-19 and MW-20 and terminating the LNAPL monitoring and removal program.

6.2 Conclusions of ROD Compliance Annual Results

Based on the chemical results and statistical evaluation, a summary of the ROD Compliance Criteria by well is presented below:

- BE-5:
    - BAP was detected at a concentration that exceeds compliance levels during the 2019, 2020, and 2021 sampling events but has either not been detected or detected at concentrations less than the compliance criteria during each of the 2022, 2023, and 2024 monitoring events;
    - No BAA or BAP were detected during the 2024 reporting period;
    - Mann-Kendall statistical evaluations indicated decreasing concentration trends for BAA and BAP; and
    - Straight-line regressions on the four most recent years of sampling indicated a decreasing trend for BAA and BAP.
- BE-1:
    - Diesel-range TPH was not detected during the 2024 monitoring period and has not exceeded the compliance levels since the December 2020 monitoring event;
    - Mann-Kendall statistical evaluations indicated no concentration trends for TPH; and
    - BAA and BAP were not detected during the 2024 monitoring period and have not exceeded compliance levels since 2007.
- HC-5:
    - TPH-Dx was detected above compliance levels during the 2024 reporting period;
    - Mann-Kendall statistical evaluations indicated no concentration trends for TPH-Dx;
    - Straight-line regressions on the four most current rounds of sampling indicated a decreasing slope for TPH-Dx;
    - Concentrations of BAA and BAP were not detected in the samples collected since 2020; and
    - The continuous layer of silt/clay at the top of the alluvial unit limits interaction between the groundwater within the Fill and alluvial units. Near HC-5, the fill/alluvial contact is shaped such that groundwater migration to the river is inhibited.

The *Site Closure Evaluation and Recommendation – Groundwater* (Ash Creek, 2009) specified the groundwater sampling program in the BEBRA area will be terminated when all of the following are achieved:

1) LNAPL removal has been terminated;

2) Concentrations of chemicals analyzed are below compliance levels at the POC in the BEBRA wells (as discussed in Section 5.2) for a continuous period of at least one year;

3) There is no sheen or LNAPL at the POC; and

4) Concentration trends in monitoring wells are stable or declining for a continuous period of at least three years.

The items above have been achieved, with the exception that the concentrations of TPH-Dx in HC-5 exceeded the ROD Compliance Criteria. However, the TPH-Dx concentrations are stable and exhibit a decreasing trend for the most recent four monitoring events. In addition, BAA and BAP have not been detected in HC-5 since 2020.

6.3 Recommendations

The ROD Compliance Criteria have been achieved for wells at the head of Slip 3. Only TPH in HC-5 has exceeded the ROD criterion in recent sampling, but the regression trend is downward and the geology in the vicinity of HC-5 inhibits groundwater flow to the river. Therefore, the Port recommends the following:

- Terminate the groundwater sampling program.
- Terminate the LNAPL monitoring and removal program and properly abandon wells MW-19 and MW-20.
- Use the Terminal 4 Slip 3 Groundwater Plume Evaluation Report to prepare a groundwater Source Control Evaluation report for Slip 3.

7.0 References

Air Force Center for Environmental Excellence (AFCEE), 2006. *Monitoring and Remediation Optimization System (MAROS) Software User's Guide*. AFCEE, March 2006.

Anchor QEA, LLC; Geosyntec Consultants, Inc; Apex Companies, LLC (Apex), 2022. *Sufficiency Assessment*. March 4, 2022.

Apex Companies, LLC (Apex), 2015. *Annual 2014 Groundwater Monitoring and LNAPL Removal Report, Terminal 4 Slip 3 Upland Facility, Portland, Oregon*. February 13, 2015.

Apex, 2016. *Annual 2015 Groundwater Monitoring and LNAPL Removal Report, Terminal 4 Slip 3 Upland Facility, Portland, Oregon*. February 16, 2016.

Apex, 2022. *Revised Annual 2021 Groundwater Monitoring and LNAPL Removal Report, Terminal 4 Slip 3 Upland Facility, Portland, Oregon*. April 13, 2022.

Apex, 2023. *Revised Annual 2022 Groundwater Monitoring and LNAPL Removal Report, Terminal 4 Slip 3 Upland Facility, Portland, Oregon*. May 31, 2023.

Ash Creek Associates (Ash Creek), 2009. *Site Closure Evaluation and Recommendation – Groundwater, Terminal 4 Slip 3 Upland Facility*. May 14, 2009.

Ash Creek/Apex, 2012. *Second Semi-Annual 2012 Groundwater Monitoring and LNAPL Removal Report*. February 11, 2013.

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

BBL/Ash Creek/Newfields, 2006. *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.

Oregon Department of Environmental Quality (DEQ), 2003. *Record of Decision, Port of Portland Terminal 4 Slip 3 Upland.* April 21, 2003.

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

DEQ, 2004b. *Groundwater Quality Report for the Willamette Basin, Oregon.* Prepared by Water Quality and Laboratory Divisions. March 2004.

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

United States Geological Survey, 1999. *Arsenic in Ground Water of the Willamette Basin, Oregon.* Water-Resources Investigations Report 98-4205, prepared in cooperation with Oregon Water Resources Department. 1999.

Washington State Department of Ecology, 2022. *Natural Background Groundwater Arsenic Concentrations in Washington State: Study Results*. Publication 14-09-044. January 2022.

Table 1
2024 Groundwater and LNAPL Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID (Casing Elevation)	**Date**	**Initial Measurements (feet)**				**LNAPL Removal (gallons)**		**Final LNAPL Thickness (feet)**
		Depth to Water	**Depth to Product**	**LNAPL Thickness**	**Groundwater Elevation ***	**Discrete Event**	**Cumulative**	
MW-19 (30.73)	3-Dec-2024	14.81	14.71	0.10	16.01	0.75	244.71	<0.01
MW-20 (30.73)	3-Dec-2024	17.77	17.55	0.22	13.16	0.25	254.23	<0.01
HC-5 (32.10)	1-May-2024	18.58	NP	0.00	13.52	NA	0.60	0.00
	3-Dec-2024	18.20	NP	0.00	13.90	NA	0.60	0.00
HC-10 (29.30)	3-Dec-2024	15.60	NP	0.00	13.70	NA	46.64	0.00
HC-12D (29.32)	1-May-2024	16.14	NP	0.00	13.18	NA	0.00	0.00
	3-Dec-2024	17.06	NP	0.00	12.26	NA	0.00	0.00
HC-19 (33.05)	3-Dec-2024	17.63	NP	0.00	15.42	NA	0.00	0.00
HC-21 (31.95)	3-Dec-2024	16.25	NP	0.00	15.70	NA	0.00	0.00
HC-23 (32.74)	3-Dec-2024	14.35	NP	0.00	18.39	NA	0.70	0.00
HC-24 (30.04)	3-Dec-2024	11.43	NP	0.00	18.61	NA	0.00	0.00

Please see notes at end of table.

Table 1
2024 Groundwater and LNAPL Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID (Casing Elevation)	**Date**	**Initial Measurements (feet)**				**LNAPL Removal (gallons)**		**Final LNAPL Thickness (feet)**
		Depth to Water	**Depth to Product**	**LNAPL Thickness**	**Groundwater Elevation ***	**Discrete Event**	**Cumulative**	
BE-1								
(19.75)	1-May-2024	6.38	NP	0.00	13.37	NA	0.00	0.00
	3-Dec-2024	6.59	NP	0.00	13.16	NA	0.00	0.00
BE-3								
(17.55)	3-Dec-2024	--	NA	NA	NA	NA	0.00	0.00
BE-4								
(31.16)	3-Dec-2024	15.98	NP	0.00	15.18	NA	12.76	<0.01
BE-5								
(21.12)	1-May-2024	10.14	NP	0.00	10.98	NA	0.00	0.00
	3-Dec-2024	10.15	NP	0.00	10.97	NA	0.00	0.00

Notes:

1. LNAPL = Light non-aqueous phase liquid
2. Passive LNAPL skimmers were installed in wells MW-19 and MW-20 in June 2006; water level measurements were discontinued.
3. NP = No measurable LNAPL at the time of the monitoring event.
4. * Phreatic Elevation = (Casing Elevation - Depth to Water) + S_g * (Product Thickness). S_g = 0.89
5. -- = Not measured or not applicable.
6. NA = Not Applicable. LNAPL removal not required based on initial product thickness measurement.

Table 2
2024 LNAPL Recovery
Terminal 4 Slip 3 Upland Facility
Port of Portland

Wells	MW-15	MW-17	MW-19	**MW-20**	**HC-10**	**BE-4**	**HC-5**	**Total**
Date	**LNAPL Removed (gallons)**							
5/1/2024	n/a	n/a	n/a	n/a	n/a	n/a	0.00	0.00
12/3/2024	n/a	n/a	0.50	0.25	0.00	0.00	0.00	0.75
2024 Total	n/a	n/a	**0.50**	**0.25**	**0.00**	**0.00**	**0.00**	**0.75**

Notes:

1. The current LNAPL recovery program includes wells MW-19, MW-20, HC-5, HC-10, and BE-4.
   (If LNAPL is present at a thickness that is practical for recovery (greater than 0.1 foot), the LNAPL is remove
2. n/a = no gauge data available
3. Wells MW-15 and MW-17 were abandoned in May 2015.

Table 3
2024 Groundwater Analytical Results, Petroleum Hydrocarbons and PAHs
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH (µg/L)		PAHs (µg/L)																			
		Diesel - Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
South Slip 3 Area																							
HC-5	5/1/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/3/2024	**7,580 F-11**	<400	<0.667	<0.334	<0.635	<0.172	<0.172	<0.172	<0.344	<0.172	<0.172	<0.172	<0.344	<0.387	<0.172	<0.688	<0.688	<0.688	<0.688	<0.344	--	<0.344
BEBRA Area																							
BE-1	5/1/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/3/2024	<196	<392	<0.0391	<0.0391	<0.0391	<0.0195	<0.0195	<0.0195	<0.0391	<0.0195	<0.0195	<0.0195	<0.0391	<0.0391	<0.0195	<0.0782	<0.0782	0.251 M-04	<0.0782	<0.0391	--	<0.0391
BE-5	5/1/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/3/2024	<206	<412	<0.0345	<0.0345	<0.0388	<0.0173	<0.0173	<0.0173	<0.0345	<0.0173	<0.0173	<0.0173	<0.0345	<0.0345	<0.0173	<0.0690	<0.0690	0.0919 M-04	<0.0690	<0.0345	--	<0.0345
HC-12D	5/1/2024	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2024 DUP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/3/2024	<208	<417	<0.534	<0.407	<0.407	<0.203	<0.203	<0.203	<0.407	<0.203	<0.203	<0.203	<0.407	<0.420	<0.203	<0.814	<0.814	<0.814	<0.814	<0.407	--	<0.407
	12/3/2024 DUP	<215	<430	<0.593	<0.404	<0.404	<0.202	<0.202	<0.202	<0.404	<0.202	<0.202	<0.202	<0.404	<0.404	<0.202	<0.808	<0.808	<0.808	<0.808	<0.404	--	<0.404
ROD Compliance Criteria		1,000	1,000	520	NA	NA	0.027	0.014	NA	NA	NA	NA	NA	6.16	3.9	NA	NA	NA	620	6.3	NA	NA	NA
Portland Harbor ROD Cleanup Levels		NA	NA	23	NA	0.73	0.0012	0.00012	0.0012	0.4	0.0013	0.0013	0.00012	6.2	3.9	0.0012	NA	2.1	12	6.3	10	NA	NA

Notes:

1. NA = No screening level is established.
2. **Boldface** data represents detected analyte concentrations exceeding compliance criteria; note, this is provided for information purposes only.
3. ROD compliance criteria is for groundwater discharge at the Slip or river and is not applicable to monitoring well data.
4. F-11 = The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
5. M-04 = Due to matrix interference, this analyte cannot be accurately quantified. The reported result may contain a high bias.
6. PAHs = Polycyclic aromatic hydrocarbons.
7. TPH = Total petroleum hydrocarbons.
8. µg/L = Micrograms per liter.
9. < = Constituent not detected above the minimum reporting limit.
10. -- = Value not available

Table 4
2024 Groundwater Analytical Results – C10-C12 Aliphatic Hydrocarbons and Metals (Total and Dissolved)
Terminal 4 Slip 3 Upland Facility
Port of Portland

Sample ID	Sample Date	C10-C12 Aliphatic Hydrocarbons (µg/L)	Metals (µg/L)																	
			Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Vanadium		Zinc	
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
South Slip 3 Area																				
HC-5	5/1/2024	<20.7	**1.98**	**1.44**	<0.200	<0.200	<2.00	<2.00	2.20	<2.00	<0.200	<0.200	**2,410**	**2,130**	<0.0800	<0.0800	2.40	<2.00	**286**	**281**
	12/3/2024	**45.7**	**1.08**	**1.02**	<0.200	<0.200	<2.00	<2.00	**3.22**	<2.00	**0.955**	<0.200	**722**	**804**	<0.0800	<0.0800	2.23	<2.00	**116**	**101**
BEBRA Area																				
BE-1	5/1/2024	<20.5	**11.8**	**10.8**	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	<2.00	<0.200	**3,720**	**3,700**	<0.0800	<0.800	<2.00	<2.00	<4.00	<4.00
	12/3/2024	<20.5	**14.9**	**12.9**	<0.200	<0.200	2.19	<2.00	**3.11**	<2.00	**1.87**	<0.200	**3,460**	**3,340**	<0.0800	<0.0800	8.65	<2.00	12.0	<4.00
BE-5	5/1/2024	<20.6	**1.32**	<1.00	**0.379**	**0.219**	2.50	<2.00	**4.99**	**3.55**	**6.18**	0.266	32.6	18.00	<0.0800	<0.0800	6.09	<2.00	**79.6**	**56.8**
	12/3/2024	<20.6	<1.00	<1.00	**0.275**	**0.247**	<2.00	<2.00	**2.86**	**3.45**	**1.23**	0.337	65.8	121	<0.0800	<0.0800	2.41	2.12	**49.2**	**46.4**
HC-12D	5/1/2024	<20.6	**20.2**	**20.7**	**1.39**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.25**	<0.0200	**12,700**	**12,300**	<0.0800	<0.0800	<2.00	<2.00	4.37 B-02	<4.00
	5/1/2024 DUP	<20.5	**20.0**	**20.5**	**1.18**	<0.200	<2.00	<2.00	<2.00	<2.00	**2.99**	<0.200	**14,000**	**12,900**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/3/2024	<20.5	**15.5**	**16.3**	**0.581**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.01**	<0.200	**15,000**	**15,500**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/3/2024 DUP	<20.5	**14.7**	**16.0**	**0.422**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.04**	<0.200	**16,000**	**14,700**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
Portland Harbor ROD Cleanup Levels		2.6	0.018		0.094		11		2.74		0.54		430		NA		20		36.5	

Notes:

1. < = Analyte was not detected above the minimum reporting limit.
2. µg/L = Micrograms per liter.
3. B-02 = Analyte detected in an associated blank at a level between one-half the MRL and the MRL.
4. **Boldface** data represents detected analyte concentrations exceeding the Portland Harbor ROD.
5. NA = No screening level is established.
6. ROD = Record of Decision from US Environmental Protection Agency Cleanup Levels for the Portland Harbor Superfund Site, Table 17, Groundwater, January 2017 (updated per Errata #2, January 2020).
7. DUP = Field duplicate.

Note: Base map prepared from USGS 7.5-minute quadrangle of Linnton, OR, dated 2020 as provided by USGS.gov.

0 2,000 4,000

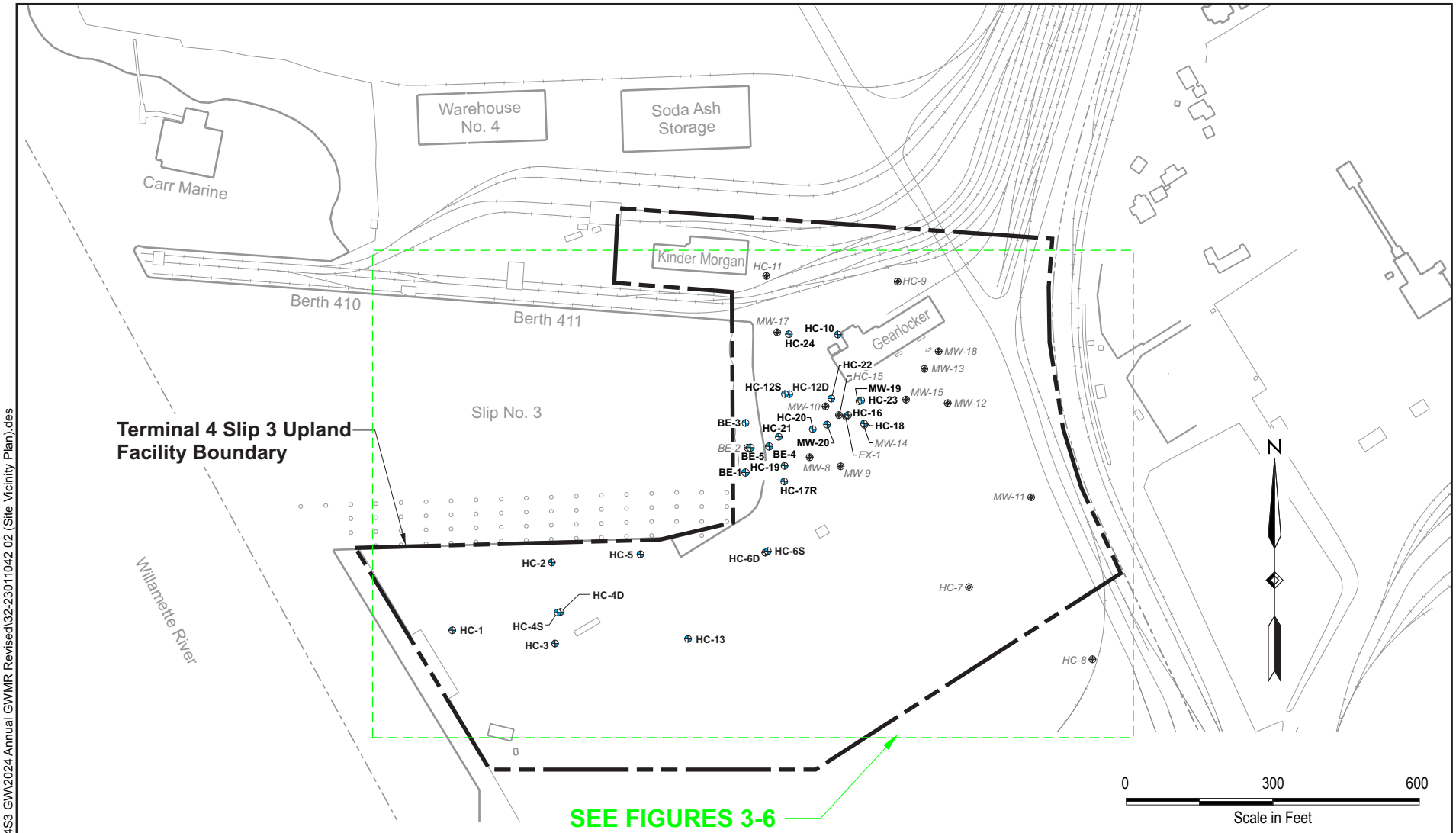
Approximate Scale in Feet

Facility Location Map

Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Apex Companies, LLC 15618 SW 72nd Avenue Tigard, Oregon 97224	Project Number: 32-23011042	Drawn: JP	Approved: SM	Figure 1
	September 2025			

I:\Client\Port of Portland\00-PH905\04 T4\03 T4S3 GW\2024 Annual GWMR Revised\32-23011042 01 (Site Location Map).des



Legend:

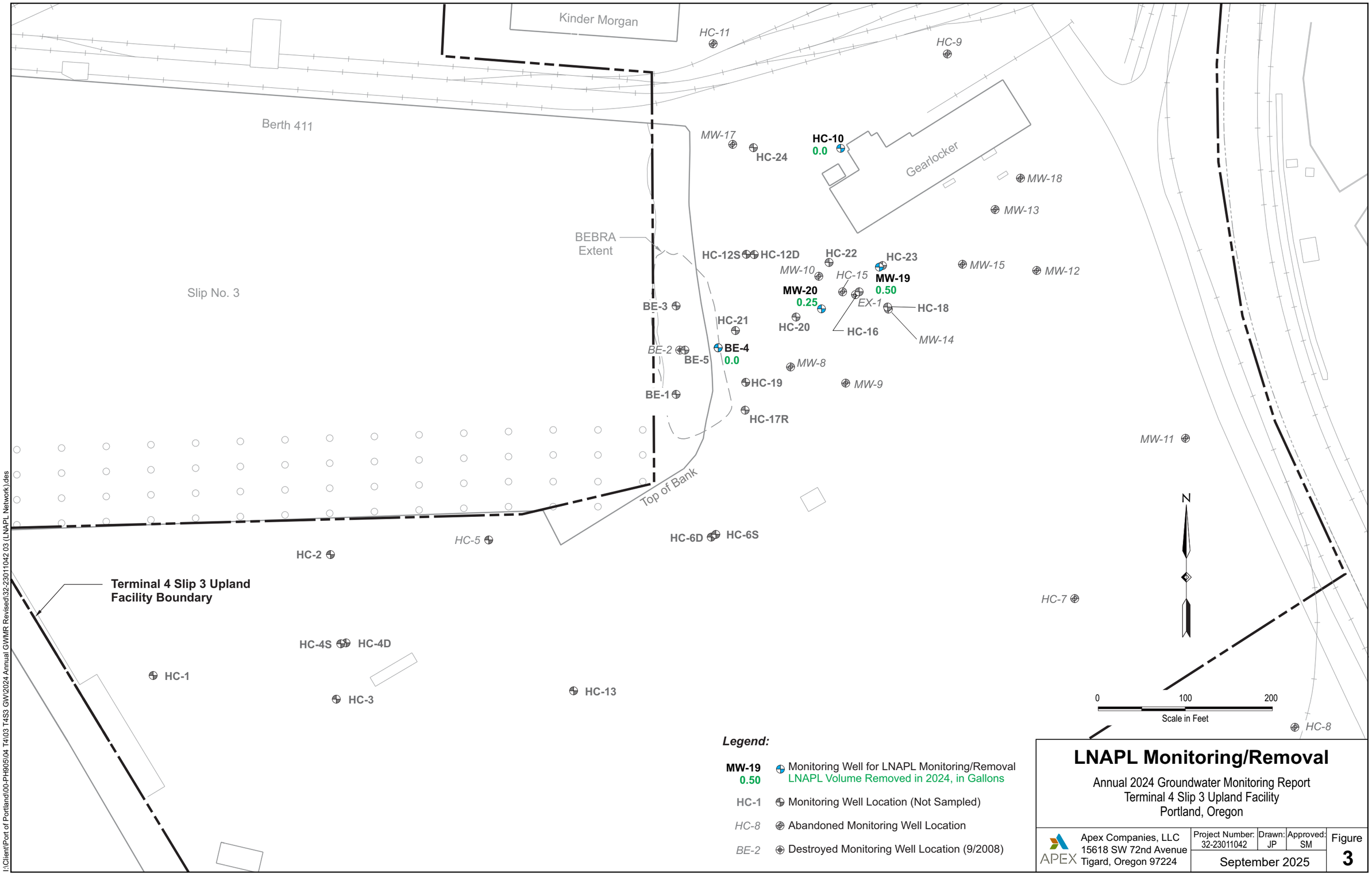
- HC-1 — Monitoring Well Location
- HC-8 — Abandoned Monitoring Well Location
- BE-2 — Destroyed Monitoring Well Location (9/2008)

Site Vicinity Plan

Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

APEX Apex Companies, LLC 15618 SW 72nd Avenue Tigard, Oregon 97224	Project Number: 32-23011042	Drawn: JP	Approved: SM	Figure 2
	September 2025			

I:\Client\Port of Portland\00-PH905\04 T4\03 T4S3 GW\2024 Annual GWMR Revised\32-23011042 02 (Site Vicinity Plan).des



Legend:

MW-19 **0.50**	Monitoring Well for LNAPL Monitoring/Removal LNAPL Volume Removed in 2024, in Gallons
HC-1	Monitoring Well Location (Not Sampled)
HC-8	Abandoned Monitoring Well Location
BE-2	Destroyed Monitoring Well Location (9/2008)

LNAPL Monitoring/Removal

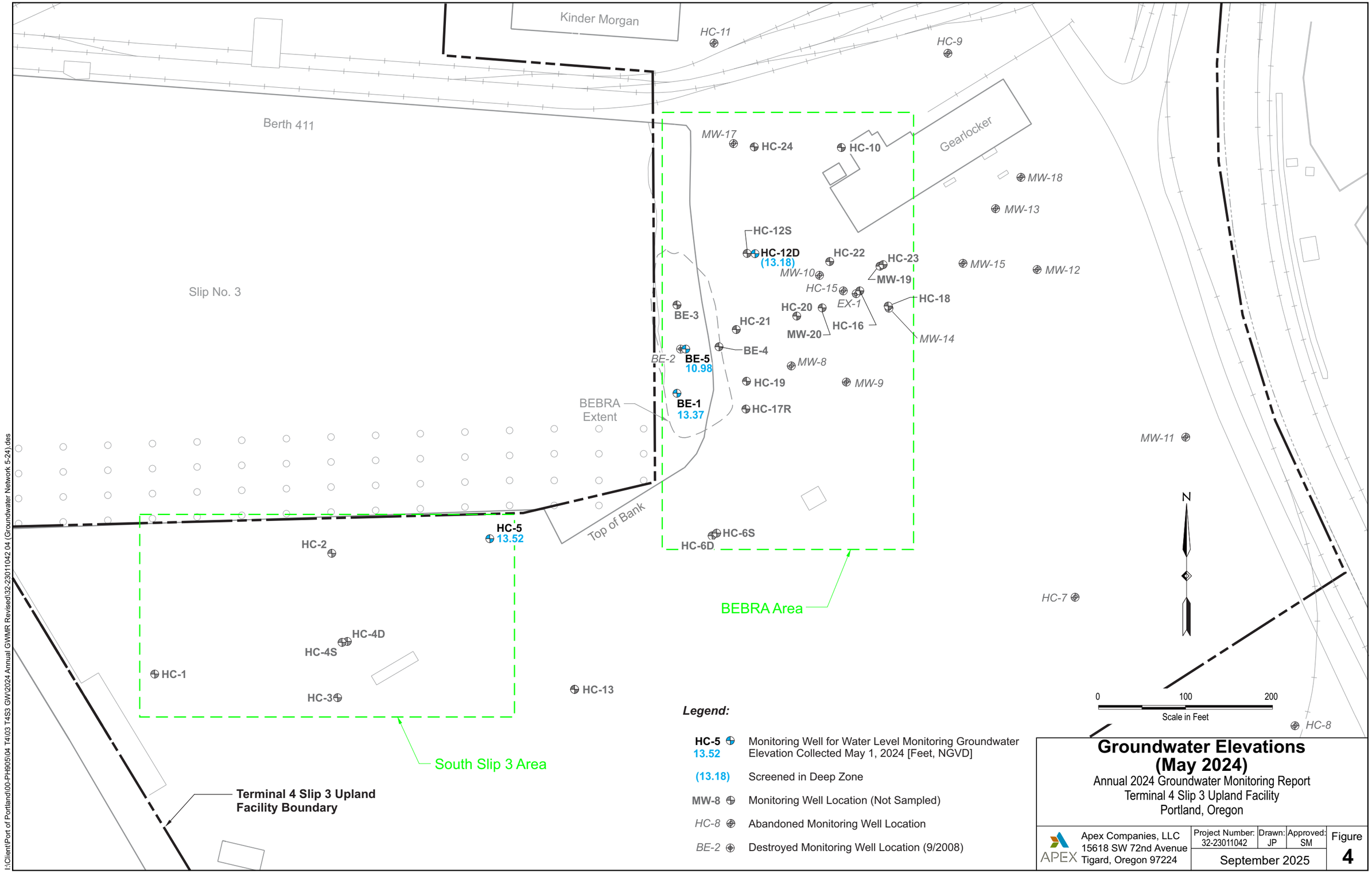
Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:	Figure
32-23011042	JP	SM	3

September 2025

I:\Client\Port of Portland\000-PH905\04 T4\03 T4S3 GW\2024 Annual GWMR Revised\32-23011042 03 (LNAPL Network).des



Legend:

HC-5 13.52	Monitoring Well for Water Level Monitoring Groundwater Elevation Collected May 1, 2024 [Feet, NGVD]
(13.18)	Screened in Deep Zone
MW-8	Monitoring Well Location (Not Sampled)
HC-8	Abandoned Monitoring Well Location
BE-2	Destroyed Monitoring Well Location (9/2008)

Groundwater Elevations (May 2024)

Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

APEX
Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:	Figure
32-23011042	JP	SM	4
September 2025			

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Kinder Morgan

Berth 411

Slip No. 3

Gearlocker

Top of Bank

BEBRA Area

South Slip 3 Area

Terminal 4 Slip 3 Upland Facility Boundary

BEBRA Extent

HC-11

HC-9

MW-17

HC-24 18.61

HC-10 13.70

MW-18

MW-13

HC-12S

HC-12D (12.26)

HC-22

HC-23 18.39

MW-19 (16.01)

MW-15

MW-12

MW-10

HC-15

EX-1

HC-18

MW-14

HC-16

BE-3

HC-21 15.70

HC-20

MW-20 13.16

BE-2

BE-5 10.97

BE-4 15.18

MW-8

MW-9

BE-1 13.16

HC-19 15.42

HC-17R

MW-11

HC-5 13.90

HC-2

HC-6S

HC-6D

HC-7

HC-4D

HC-4S

HC-1

HC-3

HC-13

HC-8

18 16 14 12 10

N

0 100 200

Scale in Feet

Legend:

HC-5 13.90	Monitoring Well for Water Level Monitoring Groundwater Elevation Collected December 6, 2023 [Feet, NGVD]
(12.26)	Not Used for Contours - Screened in Deep Zone
10	Groundwater Elevation Contour in Feet (Dashed Where Inferred)
MW-8	Monitoring Well Location (Not Sampled)
HC-8	Abandoned Monitoring Well Location
BE-2	Destroyed Monitoring Well Location (9/2008)

Groundwater Elevations (December 2024)

Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:	Figure
32-23011042	JP	SM	5

September 2025

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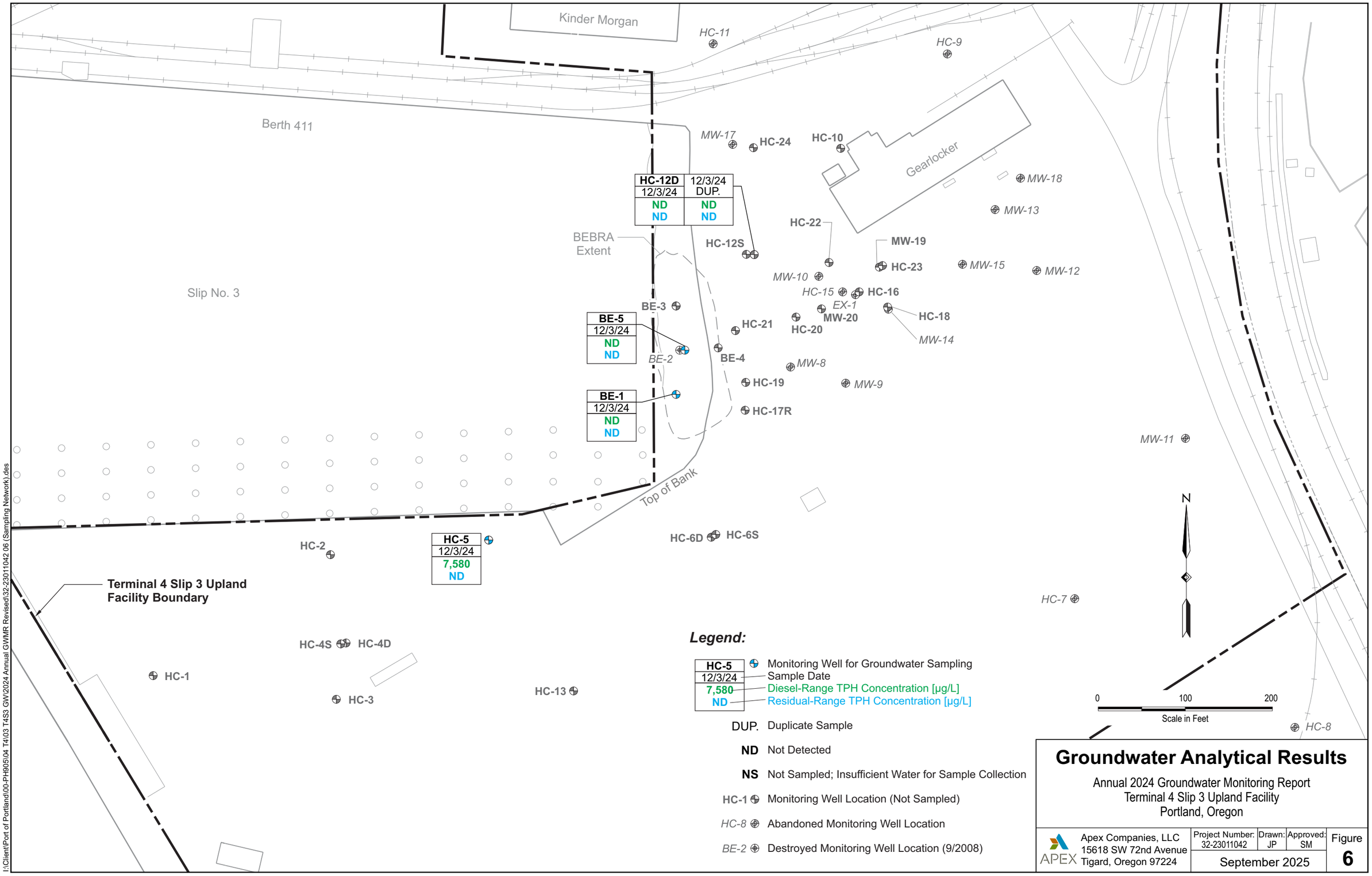

Legend:

HC-5 / 12/3/24 / 7,580 / ND	Monitoring Well for Groundwater Sampling; Sample Date; Diesel-Range TPH Concentration [µg/L]; Residual-Range TPH Concentration [µg/L]
DUP.	Duplicate Sample
ND	Not Detected
NS	Not Sampled; Insufficient Water for Sample Collection
HC-1	Monitoring Well Location (Not Sampled)
HC-8	Abandoned Monitoring Well Location
BE-2	Destroyed Monitoring Well Location (9/2008)

Groundwater Analytical Results

Annual 2024 Groundwater Monitoring Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon

Apex Companies, LLC
15618 SW 72nd Avenue
Tigard, Oregon 97224

Project Number:	Drawn:	Approved:	Figure
32-23011042	JP	SM	6

September 2025

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Appendix A

Field and Quality Assurance/Quality Control Procedures

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 at the Terminal 4 Slip 3 Upland Facility (the 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 Work Plan* (RD/RA Work Plan; Hart Crowser, 2004), as amended (Port, 2004). The monitoring program is described in the *LNAPL Removal, Groundwater Monitoring, and Construction Plan* (Monitoring Plan; BBL/Ash Creek/Newfields, 2005) and the *Site Closure Evaluation and Recommendation – Groundwater* (Ash Creek, 2009). This appendix describes the field sampling procedures and quality assurance/quality control (QA/QC) procedures used during the monitoring and LNAPL removal events.

Field and Sampling Procedures

The scope of work (SOW) includes measuring water elevations, performing groundwater monitoring, and removing LNAPL from selected 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).

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. Measurements were made to the nearest 0.01 foot using an electronic water probe.

Collection of Groundwater Samples from Monitoring Wells

Groundwater monitoring consisted of collecting groundwater samples and measuring groundwater field parameters. Field sampling sheets are included in this appendix.

After groundwater levels were measured, the selected wells were purged using a peristaltic pump and low-flow purging techniques. Wells with measurable thicknesses of LNAPL were not sampled. Purging of the sampled wells was considered complete when the water quality parameters (pH, temperature, and specific conductance) stabilized within 10 percent of the previous readings. BEBRA wells are not purged due to limited water volume. During purging, the purge water characteristics (*e.g.*, color, turbidity, sheens) and purge volumes were documented. After purging was completed, the wells were sampled. Groundwater samples were collected using a low-flow peristaltic pump and disposable tubing. 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. Other groundwater sampling equipment (such as the water level probe) was cleaned prior to use in the first well and after each subsequent well.

LNAPL Monitoring and Removal from Monitoring Wells

Monitoring and removal of LNAPL is conducted on select wells. During each monitoring event, water and product levels were measured in the wells included in the LNAPL program. Each well is monitored for the presence of LNAPL with a product interface probe. Depths to both water and product (if present) were measured and recorded. LNAPL is removed from each monitoring well that is observed to have more than 0.1 foot of accumulated LNAPL. If a removable quantity of LNAPL (>0.1 foot) is observed in any well during the annual monitoring event, then it is added to the list of regularly monitored wells for the next event. The LNAPL was removed with passive skimmers in wells MW-19 and MW-20.

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 below. 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 with more than 0.1 foot of measured LNAPL, the product removal process generally involves removing product with a bailer or by using the suction hose of a 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 LNAPL is preferentially extracted.

Sample Management

Pre-cleaned, certified sample containers were provided by the contract analytical laboratory. 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, 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. 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.

Decontamination Procedures

Personnel Decontamination. The Health and Safety Plan (HASP) 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 by a deionized (DI) water rinse.

Handling of Investigation-Derived Waste

IDW was generated from LNAPL removal and well sampling activities. The IDW generated included LNAPL, purge water, decontamination water, and discarded personal protective supplies. LNAPL, purge water, and decontamination water were placed in DOT-approved drums pending off-site disposal/recycling. Used personal protective equipment (PPE) and trash were collected and disposed of in a waste receptacle.

References

Ash Creek, 2009. *Site Closure Evaluation and Recommendation – Groundwater, Terminal 4 Slip 3 Upland Facility.* May 14, 2009.

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

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

Oregon Department of Environmental Quality (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, 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.

APEX
15618 SW 72nd Ave, Tigard, OR
Tigard, OR 97224
503-924-6357

PROJECT NUMBER 32-23011042 ~~32-22007573~~ QE
FIELD REPORT NUMBER 1
PAGE 1 OF 1
DATE 5-1-24

PROJECT Terminal 4 Slip 3 Upland Facility
LOCATION Portland, OR
CLIENT Port of Portland
ARRIVAL TIME 9:30
DEPARTURE TIME 17 30
CONTRACTOR —
PURPOSE OF OBSERVATIONS Semi-annual Groundwater Monitoring Event
APEX REPRESENTATIVE D. Kolpacki
APEX PROJECT MANAGER S. Misner

9 30: Checked in at the gate house and went to T4S3
945: Port opened the gate to access wells BE-1 & BE-5
1000: opened wells and began well gauging (see Well Gauging Data Sheet)
1040: Visual inspection of BEBRA bank of slip 3 showed no visible product / hydrocarbons
1050: Began ground water monitoring at BE-1. Well quickly dewatered
1105: Began ground water monitoring at BE-5. well dewatered. Made multiple attempts to collect water at BE-1 and BE-5
1145: Began ground water monitoring at HC-12D. A duplicate sample was also collected at this location.
1230: finished sample collection at HC-12D w/ dup-1 sample. Then attempted to collect more water sample at the wells BE-1 and BE-5
1350: Began ground water sampling at well HC-5
1430: Completed sampling of HC-5. Then continued sampling of BE-1 and BE-5
1630: completed sampling of well BE-5.
1655: completed sampling of well BE-1. I then locked the gate to the BE-1 and BE-5 area. I labeled the bucket of purge water, sealed the bucket with a lid and stored the bucket in Building 446. The drums previously used on site had been disposed of.
1730: I left the site for the office.

BY
David Kolpacki
APEX REPRESENTATIVE

WELL GAUGING DATA SHEET

32-23011042

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Client:	Port of Portland	Job Number:	~~32-22007573~~ OK
		Project:	Terminal 4 Slip 3	Date:	5/1/24
		Weather:	55°F, cloudy	Sampler:	D. Kolpacki

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-5	1000	Not Encountered	18.58	~32.1	0	13.5	—
HC-12D	1010	N/A	16.14	~29.3	0	13.2	—
BE-5	1015	N/A	10.14	~21.1	0	11.0	—
BE-1	1020	N/A	6.38	~19.7	0	13.3	—

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	HC-5	Job Number:	32-23011042
		Client:	Port of Portland	Date:	5-1-2024
		Project:	Terminal 4 Slip 3	Sampler:	D Kolpacki
		Weather:	55°, Cloudy	Time In/Out:	1350 / 1430

WELL DATA

Well Depth:	~ 32.1		Well Diameter:	2.0"		Water Height	—
Depth to Water:	18.57		Screened Interval:	—		x Multiplier	—
Water Column Length:	13.5		Depth to Free Product:	—		x Casing Volumes	—
Purge Volume:	5.75 L		Free Product Thickness:	none		= 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:	low-flow		Pump Intake Depth:	29.0		Comments	
Sampling Method:	low flow		Tubing Type:	poly		—	

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	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1402	start				5.73	16.22	534	1.11	209.6		AC, yellow tint
1410		2.0	18.96	0.25	5.71	16.20	546	0.94	213.2		C, yellow tint
1413		2.75	19.20	0.25	5.69	16.28	551	1.29	211.0		C, yellow tint
1416		3.5	18.93	0.23	5.68	16.23	558	3.76	211.1		C, yellow tint
1419		4.25	18.93	0.23	5.69	16.19	563	0.00	212.1		C, yellow tint
1422		5.0	18.93	0.23	5.70	16.26	556	0.00	203.5		C, yellow tint
1425		5.75	18.93	0.23	5.78	16.31	561	0.00	199.2		C, yellow tint

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

SAMPLING DATA

Sample ID:	HC-5	Sampling Flow Rate	0.25		Analytical Laboratory:	Apex Labs	
Sample Time:	1426	Final Depth to Water:	18.70		Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
2 / 1L amber	HCl	C10-C12 aliphatic	yes	(no)			—
1 / 250 mL poly	~~Nitric Acid~~ HNO_3	metals	yes	(no)			—
1 / 250 mL HDPE	~~Nitric Acid~~ HNO_3	dissolved metals	(yes)	no	700 cm², 0.45 µm		—
			yes	no			
			yes	no			

COMMENTS:

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	HC-12D	Job Number:	32-23011042
		Client:	Port of Portland	Date:	5-1-2024
		Project:	Terminal 4 Slip 3	Sampler:	O. K/packi
		Weather:	56° F, cloudy	Time In/Out:	1145 / 1230

WELL DATA

Well Depth:	~29.3		Well Diameter:	2.0"		Water Height	—
Depth to Water:	16.14		Screened Interval:	—		x Multiplier	—
Water Column Length:	13.2		Depth to Free Product:	—		x Casing Volumes	—
Purge Volume:	5.75L		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:	low-flow			Pump Intake Depth:	26.0					Comments	
Sampling Method:	low-flow			Tubing Type:	poly					—	
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	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
1205	- start										
1210		1.25	16.49	0.25	6.46	15.16	717	7.80	22.0		AC, yellow tint
1213		2.00	16.49	0.25	6.46	15.15	751	8.55	10.5		AC, yellow tint
1216		2.75	16.49	0.25	6.47	15.25	766	7.83	5.5		AC, yellow tint
1219		3.5	16.49	0.25	6.48	15.16	775	8.29	2.4		AC, yellow tint
1222		4.25	16.49	0.25	6.49	15.11	779	7.64	0.2		AC, yellow tint
1225		5.0	16.49	0.25	6.49	15.10	782	8.10	-1.0		AC, yello tint
1228		5.75	16.49	0.25	6.50	15.10	783	8.00	-1.8		AC, yellow tint
↳	sample										

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

SAMPLING DATA

Sample ID:	HC-12D	Sampling Flow Rate	0.25	Analytical Laboratory:	Apex	
Sample Time:	1229	Final Depth to Water:	16.14	Did Well Dewater?	No	
# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4/1L amber	HCl	C10-C12 aliphatic	yes (no)			DUP-1
2/250mL HDPE	HNO_3	metals	yes (no)			DUP-1
2/250mL HDPE	HNO_3	diss. metals	(yes) no	700 cm^2 - 0.45 µm		DUP-1
			yes no			
			yes no			

COMMENTS:

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	BE-1	Job Number:	32-23011042
		Client:	Port of Portland	Date:	5-1-24
		Project:	Terminal 4 Slip 3	Sampler:	D Kolpacki
		Weather:	55° F, cloudy	Time In/Out:	1050 / 1655

WELL DATA

Well Depth:	19.7	Well Diameter:	1.0"	Water Height	—
Depth to Water:	6.38	Screened Interval:	—	x Multiplier	—
Water Column Length:	13.3	Depth to Free Product:	—	x Casing Volumes	—
Purge Volume:	N/A	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:	N/A			Pump Intake Depth:		19.5				Comments	
Sampling Method:	low flow			Tubing Type:		poly				grab sample	
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	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
see	note	below									

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

SAMPLING DATA

Sample ID:	BE-1	Sampling Flow Rate	0.25		Analytical Laboratory:	Apex Labs	
Sample Time:	1650	Final Depth to Water:	19.5		Did Well Dewater?	yes	
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
1/1L amber	HCl	C10-C12 aliphatic	yes	(no)			—
1/250mL HDPE	HNO_3	metals	yes	(no)			—
1/250mL HDPE	HNO_3	diss. metals	(yes)	no	700cm², 0.45µm		—
			yes	no			
			yes	no			

COMMENTS:

Not enough water for field parameters - grab sample

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	BE-5	Job Number:	32-2301042
		Client:	Port of Portland	Date:	5-1-24
		Project:	Terminal 4 Slip 3	Sampler:	D. Kolpacki
		Weather:	55° F, cloudy	Time In/Out:	1105 / 1630

WELL DATA

Well Depth:	21.1		Well Diameter:	1.0"		Water Height	—
Depth to Water:	10.14		Screened Interval:	—		x Multiplier	—
Water Column Length:	11.0		Depth to Free Product:	—		x Casing Volumes	—
Purge Volume:	N/A		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:	N/A			Pump Intake Depth:	20.9					Comments	
Sampling Method:	low-flow			Tubing Type:	poly					grab sample	
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	+/-0.5° C	+/-5%	+/- 0.5 ppm	+/-20mV	+/-10%	<-- Stabilization Criteria
See note below				—							

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

SAMPLING DATA

Sample ID:	BE-5	Sampling Flow Rate	0.25		Analytical Laboratory:	Apex Labs	
Sample Time:	1605	Final Depth to Water:	20.9		Did Well Dewater?	yes	
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
2/1L amber	HCl	C10-C12 aliphatic	yes	no			—
1/250 mL HDPE	HNO_3	metals	yes	no			—
1/250mL HDPE	HNO_3	diss. metals	(yes)	no	700 cm^2, 0.45 µm		—
			yes	no			
			yes	no			

COMMENTS:

Not enough water for field parameters - grab sample

APEX
15618 SW 72nd Ave, Tigard, OR
Tigard, OR 97224
503-924-6357

PROJECT NUMBER POR012-0309032-23011042
FIELD REPORT NUMBER 1
PAGE 1 OF 1
DATE 12/3/2024

PROJECT Terminal 4, Slip 3
LOCATION Portland, OR
CLIENT Port of Portland
PURPOSE OF OBSERVATIONS Gauging and GW sampling
APEX REPRESENTATIVE D. Kolpacki

ARRIVAL TIME
DEPARTURE TIME
CONTRACTOR N/A
APEX PROJECT MANAGER S. Misner

- arrived onsite and checked in at the main gate to request they open the gate at the slip.
- The Port opened the gate and I began gauging the wells
- After gauging the wells I began sampling BE1 and BE-5. The wells both dewater quickly. So while they recharge
- I sampled HC-12D and HC-5.
* I observed no noticable sheen at the BEBRA as part of the bank inspection. Photo were taken.
- BE1 and BE-5 will be continued to be sample into tommorrow.
- I locked the gate and left the site.

BY DK
APEX REPRESENTATIVE

APEX

15618 SW 72nd Ave, Tigard, OR
Tigard, OR 97224
503-924-6357

PROJECT NUMBER POR012-0309032-23011042
FIELD REPORT NUMBER 2
PAGE 1 OF 1
DATE 12/4/2024

PROJECT Terminal 4, Slip 3
LOCATION Portland, OR
CLIENT Port of Portland
PURPOSE OF OBSERVATIONS Product removal and GW sampling
APEX REPRESENTATIVE D. Kolpacki

ARRIVAL TIME
DEPARTURE TIME
CONTRACTOR N/A
APEX PROJECT MANAGER S. Misner

- I arrived onsite and checked in at the gate to open the gate, again by the slip.
- While waiting for the port security to open the gate. I removed the skimmers from wells MW-19 and MW-20. I emptied the bailers into a 5 gallon bucket, and cleaned the exterior of the skimmer, I then used a bailer to remove extra free product from the wells until recovery was ~0.1 gallons.
  * Approx. 0.25 gallons of product was removed from MW-20.
  * Approx. 0.50 gallons of product was removed from MW-19.
- the port opened the gate and I continued to sample BE-1 and BE-5.
- I labeled the 5 gallon bucket used for product removal, and stored it in the warehouse. the bucket had a sealed lid and will be emptied into 55 gal drum at later time.
- I was able to complete the sampling of BE-1 and BE-5.
- I locked the gate and left the site.

BY

APEX REPRESENTATIVE

WELL GAGING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Client:	Port of Portland	Job Number:	POR012-0309032-23011042
		Project:	Terminal 4, Slip 3	Date:	12/3/24
		Weather:	40°F, sun	Sampler:	D. Kolpacki

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
BE-1	1200	—	6.59				insufficient water for quality measurement
BE-3	———	———	10. ———	———	———	——→	need different key, unable to unlock
BE-4	1300	—	15.98				LNAPL blebs ✓
BE-5	1210	—	10.15				insufficient water for quality measurements
HC-5	1350		18.20				
HC-10	1330		15.60				
HC-12D	1320		17.06				
HC-19	1310	—	17.63				
HC-21	1315		16.25				
HC-23	1335		14.35	19.54			
HC-24	1325		11.43				
MW-19	1340	~~19.60~~ ~~19.60~~	14.71	14.81			~~16.15~~ ~~top~~ Skimmer
MW-20	1345	17.55	17.77				~~17~~ 1615 top skimmer Skimmer
							0.75" bucket removed MW-20
							~1.0" bucket removed MW-19

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	BE-1	Job Number:	POR012-0309032-23011042
		Client:	Port of Portland	Date:	12/3 - 12/4/24
		Project:	Terminal 4, Slip 3	Sampler:	D. Kolpacki
		Weather:	~40°F	Time In/Out:	—

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	6.59	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:		Pump Intake Depth:		Comments	
Sampling Method:	low-flow	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	+/-3%	+/-3%	+/- 10%	+/-10mV	+/-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	0.2	Analytical Laboratory:	Apex
Sample Time:	1230	Final Depth to Water:	—	Did Well Dewater?	yes

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
8	HCl/HNO_3/None	Multi	~~yes~~ no	0.45 µm	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Grab sample

WELL MONITORING DATA SHEET

Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	BE-5	Job Number:	POR012-0309032-23011042
	Client:	Port of Portland	Date:	12/3 - 12/4/24
	Project:	Terminal 4, Slip 3	Sampler:	D. Kolpacki
	Weather:	~40°F	Time In/Out:	—

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	10.15	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:			Pump Intake Depth:						Comments		
Sampling Method:	low-flow		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	+/-3%	+/-3%	+/- 10%	+/-10mV	+/-10%	<-- Stabilization Criteria

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

SAMPLING DATA

Sample ID:	BE-5	Sampling Flow Rate	0.2	Analytical Laboratory:	Apex
Sample Time:	1245	Final Depth to Water:	—	Did Well Dewater?	yes

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
8	HCl / HNO3 / None	Multi	(yes) no	0.45 µm	—	—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Grab sample

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	HC-5	Job Number:	POR012-0309032-23011042
		Client:	Port of Portland	Date:	12/3/24
		Project:	Terminal 4, Slip 3	Sampler:	D. Kolpacki
		Weather:	~40° F, breezy	Time In/Out:	1600 / 1700

WELL DATA

Well Depth:		Well Diameter:		Water Height	
Depth to Water:	18.19	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:	low-flow	Pump Intake Depth:		Comments	
Sampling Method:	low-flow	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	+/-3%	+/-3%	+/- 10%	+/-10mV	+/-10%	<-- Stabilization Criteria
1605			18.19	0.25	6.35	15.31	663	3.39	-64.7		SC, yellow
1610			18.34	0.25	6.27	15.32	651	2.99	-66.5		SC, yellow
1613			18.33	0.20	6.22	15.33	640	2.91	-67.8		SC, yellow
1616		2.25L	18.33	0.20	6.19	15.41	630	2.82	-67.6		SC, yellow

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

SAMPLING DATA

Sample ID:	HC-5	Sampling Flow Rate	0.20	Analytical Laboratory:	Apex
Sample Time:	1620	Final Depth to Water:	18.33	Did Well Dewater?	No

# Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
8	HCl / HNO_3 / None	multi	yes no	0.45 µm		—
			yes no			
			yes no			
			yes no			
			yes no			
			yes no			

COMMENTS

Labs on tubing after completion (exterior)

WELL MONITORING DATA SHEET

APEX	Apex Companies, LLC 15618 SW 72nd Ave. Portland, OR 97224	Well I.D.	HC-12D	Job Number:	POR012-0309032-23011042
		Client:	Port of Portland	Date:	12/3/24
		Project:	Terminal 4, Slip 3	Sampler:	D. Kolpacki
		Weather:	~40° F, slight breeze	Time In/Out:	1420 / 1550

WELL DATA

Well Depth:			Well Diameter:			Water Height	
Depth to Water:	17.06		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:	Low Flow				Pump Intake Depth:					Comments	
Sampling Method:	Low Flow				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	+/-3%	+/-3%	+/- 10%	+/-10mV	+/-10%	<-- Stabilization Criteria
1420 → start			17.25	0.25							
1425			17.30	0.25	6.49	14.45	663	3.81	-60.9		AC, brown
1428			17.28	0.20	6.45	14.47	845	3.29	-82.5		AC, brown
1431			17.27	0.20	6.43	14.22	931	3.20	-93.0		AC, brown
1434			17.28	0.20	6.43	14.15	995	3.12	-103.5		AC, brown
1437			17.28	0.20	6.39	13.98	1009	3.05	-107.9		AC, brown
1440		~3.5L	17.28	0.20	6.39	13.97	1015	3.00	-111.8		AC, brown

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

SAMPLING DATA

Sample ID:	HC-12D	Sampling Flow Rate	0.20	Analytical Laboratory:	Apex		
Sample Time:	1442	Final Depth to Water:	17.30	Did Well Dewater?	no		
# Containers/Type	Preservative	Analysis/Method	Field Filtered		Filter Size	MS/MSD	Duplicate ID
8 x 2	HCl/HNO3/None	multi	(yes)	no	0.45 µm		DUP-1 (1100)
			yes	no			
			yes	no			
			yes	no			
			yes	no			
			yes	no			

COMMENTS

Appendix B

Data QA/QC Review and Analytical Laboratory Reports

1.0 Introduction

This appendix documents the results of a quality assurance (QA) review of the analytical data for groundwater samples collected during the 2024 groundwater sampling at Terminal 4 Slip 3 Upland Facility. All analyses were performed by Apex Laboratories of Tigard, Oregon. Apex Laboratories is ORELAP certified (ID OR100062) for PAHs by 8270E and diesel/residual range organics with silica gel cleanup by NWTPH-Dx. A copy of the analytical laboratory report summary is included in this appendix, referenced in Table 1 as follows.

Table 1: Analytical Laboratory Reports

Report	Report Date	Sampling Event
A4E0935	May 20, 2024	May 2024 Groundwater Sampling
A4L0918	December 24, 2024	December 2024 Groundwater Sampling

2.0 Data Validation

The QA review outlines the applicable quality control criteria utilized during the data review process, as well as any deviations from those criteria. Examination and validation of the laboratory summary reports include:

- Analytical preparation and quantitation methods
- Analytical method holding times
- Sample handling
- Chain of custody handling
- Detection and reporting limits
- Method blank detections
- Laboratory control samples and surrogates to assess accuracy
- Laboratory control sample duplicates to assess precision.

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

2.1 Data Qualifiers

Any data that is found to have possible bias or error were qualified and flagged. The flags used in the data table are below.

Table 2: Qualifier Flags

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL.
F-11	The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
M-04	Due to matrix interference, this analyte cannot be accurately quantified. The reported result may contain a high bias.

3.0 Analytical Methods

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

- Diesel and residual range organics with silica gel cleanup by Method NWTPH-Dx;
- Polycyclic aromatic hydrocarbons (PAHs) by U.S. Environmental Protection Agency (EPA) Method 8270E Large Volume Injection
- C10-C12 Aliphatic Hydrocarbons by Northwest Extractible Petroleum Hydrocarbons; and
- Metals by EPA Method 6020B (ICPMS)

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.

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 and reporting limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested detection limits set by the EPA or the Oregon Department of Environmental Quality (DEQ). Method detection limits (MDLs) were generally consistent with industry

standards and were below the relevant *Record of Decision* (ROD) cleanup standards with the exception of Arsenic and Cadmium in which the reporting limits were about two five times above the ROD cleanup standards.

Holding Times. Samples were extracted and analyzed within method holding times

Sampling Containers and Preservation. Samples were collected in amber glass and plastic containers provided by the laboratory and were immediately chilled with ice after collection of the sample. Samples to be analyzed for diesel and residual range organics were preserved with hydrochloric acid (HCl). Samples analyzed for metals were preserved with nitric acid. Samples were received by the laboratory in good condition and below 6 degrees Celsius.

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 laboratory control sample duplicate (LCS and LCSD, respectively). Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the same analytes for the LCS and LCSD. The RPD for all LCS and LCSDs were within control limits.

Sampling precision is measured through field duplicates. The field duplicate results are compared to the initial result to assess variability in the sample matrix and bias due to sampling procedures. A field duplicate was collected during the May 2024 and December 2024 sampling events from well HC-12D. The field duplicate results were generally within the 30 percent RPD control limit. However, the RPD in May 2024 for cadmium and December 2024 for lead between the primary and duplicate samples exceeded 30 percent (31.7% and 82.1% respectively). The results were within the range of recently detected values.

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 accuracy.

The laboratory assessed for accuracy through the laboratory control sample and the laboratory control sample duplicate. Each LCS/LCSD contained analyte-free water, was spiked with a known concentration of analyte, and expressed as a percent recovery. Those recoveries have certain limits as established by the method or laboratory capabilities. LCS and LCSD percent recoveries were within control limits.

Sample extraction/preparation and instrumentation accuracy is evaluated through surrogate recoveries. A surrogate has similar properties to the analytes of interest but is not included on the analyte list. The surrogate is spiked into samples at a known concentration at the beginning of the extraction or preparation process and is analyzed on instrumentation with the sample. A percent recovery is then calculated from the actual concentration of the surrogate and the result from the instrument. Surrogate recoveries were generally within control limits with the following exceptions.

- The PAH analysis of groundwater collected from HC-12D and the field duplicate in December 2024, using the surrogate acenaphthylene-d8, was recovered below the lower control limit.
- The PAH analysis of groundwater collected from HC-5 and the field duplicate in December 2024, using the surrogate benzo(a)pyrene-d12, was recovered above the upper control limit.
- Verification showed that the true value of the surrogate spikes was approximately 60%, 69%, 130%, and 145% of the expected.
- PAHs were not analyzed in the May 2024 groundwater samples.

Bias. The laboratory is required to run method blanks per the methods used for analysis. The method blank can determine if there is any contamination within the laboratory preparation or analytical procedure.

The laboratory blanks for May and December 2024 were all reported below the detection limits and within recovery limits.

Conclusion. In conclusion, QA objectives were met, and results are acceptable for use.

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Monday, May 20, 2024

Steve Misner
Apex Companies, LLC
15618 SW 72nd Ave
Tigard, OR 97224

RE: A4E0935 - POP T4 - Slip 3 GW - 32-23011042

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4E0935, which was received by the laboratory on 5/2/2024 at 1:30:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: DAuvil@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 4.3 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BE-1	**A4E0935-01**	**Water**	**05/01/24 16:50**	**05/02/24 13:30**
BE-5	**A4E0935-02**	**Water**	**05/01/24 16:05**	**05/02/24 13:30**
DUP-1	**A4E0935-03**	**Water**	**05/01/24 12:00**	**05/02/24 13:30**
HC-5	**A4E0935-04**	**Water**	**05/01/24 14:26**	**05/02/24 13:30**
HC-12D	**A4E0935-05**	**Water**	**05/01/24 12:29**	**05/02/24 13:30**

Apex Laboratories

Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC
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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4E0935-01)				**Matrix: Water**				
Batch: 24E0554								
Arsenic	**11.8**	---	1.00	ug/L	1	05/16/24 18:04	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	05/16/24 18:04	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	05/16/24 18:04	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	05/16/24 18:04	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	05/16/24 18:04	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	05/16/24 18:04	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	05/16/24 18:04	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	05/16/24 18:04	EPA 6020B	
BE-1 (A4E0935-01RE1)				**Matrix: Water**				
Batch: 24E0554								
Manganese	**3720**	---	10.0	ug/L	10	05/17/24 16:16	EPA 6020B	
BE-5 (A4E0935-02)				**Matrix: Water**				
Batch: 24E0554								
Arsenic	**1.32**	---	1.00	ug/L	1	05/16/24 18:10	EPA 6020B	
Cadmium	**0.379**	---	0.200	ug/L	1	05/16/24 18:10	EPA 6020B	
Chromium	**2.50**	---	2.00	ug/L	1	05/16/24 18:10	EPA 6020B	
Copper	**4.99**	---	2.00	ug/L	1	05/16/24 18:10	EPA 6020B	
Lead	**6.18**	---	0.200	ug/L	1	05/16/24 18:10	EPA 6020B	
Manganese	**32.6**	---	1.00	ug/L	1	05/16/24 18:10	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	05/16/24 18:10	EPA 6020B	
Vanadium	**6.09**	---	2.00	ug/L	1	05/16/24 18:10	EPA 6020B	
Zinc	**79.6**	---	4.00	ug/L	1	05/16/24 18:10	EPA 6020B	
DUP-1 (A4E0935-03)				**Matrix: Water**				
Batch: 24E0554								
Arsenic	**20.0**	---	1.00	ug/L	1	05/16/24 18:17	EPA 6020B	
Cadmium	**1.18**	---	0.200	ug/L	1	05/16/24 18:17	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	05/16/24 18:17	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	05/16/24 18:17	EPA 6020B	
Lead	**2.99**	---	0.200	ug/L	1	05/16/24 18:17	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	05/16/24 18:17	EPA 6020B	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DUP-1 (A4E0935-03)				**Matrix: Water**				
Vanadium	ND	---	2.00	ug/L	1	05/16/24 18:17	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	05/16/24 18:17	EPA 6020B	
DUP-1 (A4E0935-03RE1)				**Matrix: Water**				
Batch: 24E0554								
Manganese	**14000**	---	10.0	ug/L	10	05/17/24 16:22	EPA 6020B	
HC-5 (A4E0935-04)				**Matrix: Water**				
Batch: 24E0554								
Arsenic	**1.98**	---	1.00	ug/L	1	05/16/24 18:37	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	05/16/24 18:37	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	05/16/24 18:37	EPA 6020B	
Copper	**2.20**	---	2.00	ug/L	1	05/16/24 18:37	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	05/16/24 18:37	EPA 6020B	
Manganese	**2410**	---	1.00	ug/L	1	05/16/24 18:37	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	05/16/24 18:37	EPA 6020B	
Vanadium	**2.40**	---	2.00	ug/L	1	05/16/24 18:37	EPA 6020B	
Zinc	**286**	---	4.00	ug/L	1	05/16/24 18:37	EPA 6020B	
HC-12D (A4E0935-05)				**Matrix: Water**				
Batch: 24E0563								
Arsenic	**20.2**	---	1.00	ug/L	1	05/15/24 20:26	EPA 6020B	
Cadmium	**1.39**	---	0.200	ug/L	1	05/15/24 20:26	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	05/15/24 20:26	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	05/15/24 20:26	EPA 6020B	
Lead	**1.25**	---	0.200	ug/L	1	05/15/24 20:26	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 20:26	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	05/15/24 20:26	EPA 6020B	
Zinc	**4.37**	---	4.00	ug/L	1	05/15/24 20:26	EPA 6020B	**B-02**
HC-12D (A4E0935-05RE2)				**Matrix: Water**				
Batch: 24E0563								
Manganese	**12700**	---	10.0	ug/L	10	05/16/24 14:41	EPA 6020B	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4E0935-01)				**Matrix: Water**				
Batch: 24E0549								
Arsenic	**10.8**	---	1.00	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	05/15/24 17:18	EPA 6020B (Diss)	
BE-1 (A4E0935-01RE2)				**Matrix: Water**				
Batch: 24E0549								
Manganese	**3700**	---	10.0	ug/L	10	05/16/24 14:54	EPA 6020B (Diss)	
BE-5 (A4E0935-02)				**Matrix: Water**				
Batch: 24E0549								
Arsenic	ND	---	1.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Cadmium	**0.219**	---	0.200	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Copper	**3.55**	---	2.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Lead	**0.266**	---	0.200	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Manganese	**18.0**	---	1.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
Zinc	**56.8**	---	4.00	ug/L	1	05/15/24 17:24	EPA 6020B (Diss)	
DUP-1 (A4E0935-03)				**Matrix: Water**				
Batch: 24E0549								
Arsenic	**20.5**	---	1.00	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4E0935 - 05 20 24 1516

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DUP-1 (A4E0935-03)				**Matrix: Water**				
Vanadium	ND	---	2.00	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	05/15/24 17:30	EPA 6020B (Diss)	
DUP-1 (A4E0935-03RE2)				**Matrix: Water**				
Batch: 24E0549								
Manganese	**12900**	---	10.0	ug/L	10	05/16/24 15:01	EPA 6020B (Diss)	
HC-5 (A4E0935-04)				**Matrix: Water**				
Batch: 24E0549								
Arsenic	**1.44**	---	1.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Manganese	**2130**	---	1.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
Zinc	**281**	---	4.00	ug/L	1	05/15/24 17:36	EPA 6020B (Diss)	
HC-12D (A4E0935-05)				**Matrix: Water**				
Batch: 24E0549								
Arsenic	**20.7**	---	1.00	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	05/15/24 17:42	EPA 6020B (Diss)	
HC-12D (A4E0935-05RE2)				**Matrix: Water**				
Batch: 24E0549								
Manganese	**12300**	---	10.0	ug/L	10	05/16/24 15:07	EPA 6020B (Diss)	

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4E0935 - 05 20 24 1516

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0554 - EPA 3015A							Water					
Blank (24E0554-BLK1)			Prepared: 05/15/24 10:21 Analyzed: 05/16/24 16:58									
EPA 6020B												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Manganese	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Mercury	ND	---	0.0800	ug/L	1	---	---	---	---	---	---	
Vanadium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (24E0554-BS1)			Prepared: 05/15/24 10:21 Analyzed: 05/16/24 17:18									
EPA 6020B												
Arsenic	56.9	---	1.00	ug/L	1	55.6	---	102	80-120%	---	---	
Cadmium	56.8	---	0.200	ug/L	1	55.6	---	102	80-120%	---	---	
Chromium	59.7	---	2.00	ug/L	1	55.6	---	107	80-120%	---	---	
Copper	63.8	---	2.00	ug/L	1	55.6	---	115	80-120%	---	---	
Lead	53.0	---	0.200	ug/L	1	55.6	---	95	80-120%	---	---	
Manganese	60.2	---	1.00	ug/L	1	55.6	---	108	80-120%	---	---	
Mercury	1.01	---	0.0800	ug/L	1	1.11	---	91	80-120%	---	---	
Vanadium	60.7	---	2.00	ug/L	1	55.6	---	109	80-120%	---	---	
Zinc	60.1	---	4.00	ug/L	1	55.6	---	108	80-120%	---	---	
Duplicate (24E0554-DUP1)			Prepared: 05/15/24 10:21 Analyzed: 05/16/24 17:31									
QC Source Sample: Non-SDG (A4D1691-01)												
Arsenic	ND	---	10.0	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Cadmium	ND	---	2.00	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Chromium	ND	---	20.0	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Copper	ND	---	20.0	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Lead	ND	---	2.00	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Manganese	**89.6**	---	10.0	ug/L	10	---	87.3	---	---	3	20%	CONT
Mercury	ND	---	0.800	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Vanadium	ND	---	20.0	ug/L	10	---	ND	---	---	---	20%	CONT, R-04
Zinc	ND	---	40.0	ug/L	10	---	ND	---	---	---	20%	CONT, R-04

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Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0554 - EPA 3015A							**Water**					
Matrix Spike (24E0554-MS1)			Prepared: 05/15/24 10:21 Analyzed: 05/16/24 17:44									
QC Source Sample: Non-SDG (A4D1691-03)												
EPA 6020B												
Arsenic	61.2	---	10.0	ug/L	10	55.6	ND	110	75-125%	---	---	CONT
Cadmium	60.0	---	2.00	ug/L	10	55.6	ND	108	75-125%	---	---	CONT
Chromium	62.5	---	20.0	ug/L	10	55.6	ND	113	75-125%	---	---	CONT
Copper	66.5	---	20.0	ug/L	10	55.6	ND	120	75-125%	---	---	CONT
Lead	54.8	---	2.00	ug/L	10	55.6	ND	99	75-125%	---	---	CONT
Manganese	198	---	10.0	ug/L	10	55.6	133	116	75-125%	---	---	CONT
Mercury	1.12	---	0.800	ug/L	10	1.11	ND	100	75-125%	---	---	CONT
Vanadium	64.7	---	20.0	ug/L	10	55.6	ND	117	75-125%	---	---	CONT
Zinc	65.0	---	40.0	ug/L	10	55.6	ND	117	75-125%	---	---	CONT

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ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4E0935 - 05 20 24 1516

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0563 - EPA 3015A							Water					
Blank (24E0563-BLK1)			Prepared: 05/15/24 11:54 Analyzed: 05/15/24 20:14									
EPA 6020B												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Manganese	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Mercury	ND	---	0.0800	ug/L	1	---	---	---	---	---	---	
Vanadium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	B-02
LCS (24E0563-BS1)			Prepared: 05/15/24 11:54 Analyzed: 05/15/24 20:20									
EPA 6020B												
Arsenic	54.4	---	1.00	ug/L	1	55.6	---	98	80-120%	---	---	
Cadmium	56.1	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	
Chromium	56.9	---	2.00	ug/L	1	55.6	---	102	80-120%	---	---	
Copper	56.3	---	2.00	ug/L	1	55.6	---	101	80-120%	---	---	
Lead	57.4	---	0.200	ug/L	1	55.6	---	103	80-120%	---	---	
Manganese	58.4	---	1.00	ug/L	1	55.6	---	105	80-120%	---	---	
Mercury	1.11	---	0.0800	ug/L	1	1.11	---	100	80-120%	---	---	
Vanadium	56.5	---	2.00	ug/L	1	55.6	---	102	80-120%	---	---	
Zinc	58.6	---	4.00	ug/L	1	55.6	---	106	80-120%	---	---	B-02
Duplicate (24E0563-DUP1)			Prepared: 05/15/24 11:54 Analyzed: 05/15/24 20:32									
QC Source Sample: HC-12D (A4E0935-05)												
EPA 6020B												
Arsenic	**20.4**	---	1.00	ug/L	1	---	20.2	---	---	1	20%	
Cadmium	**1.41**	---	0.200	ug/L	1	---	1.39	---	---	2	20%	
Chromium	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Copper	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Lead	**1.19**	---	0.200	ug/L	1	---	1.25	---	---	5	20%	
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	ND	---	2.00	ug/L	1	---	1.53	---	---	***	20%	
Zinc	ND	---	4.00	ug/L	1	---	4.37	---	---	***	**20%**	Q-05

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0563 - EPA 3015A							**Water**					
Duplicate (24E0563-DUP3)			Prepared: 05/15/24 11:54 Analyzed: 05/16/24 14:48									
QC Source Sample: HC-12D (A4E0935-05RE2)												
EPA 6020B												
Manganese	**13100**	---	10.0	ug/L	10	---	12700	---	---	2	20%	Q-16
Matrix Spike (24E0563-MS1)			Prepared: 05/15/24 11:54 Analyzed: 05/15/24 20:44									
QC Source Sample: Non-SDG (A4E0939-01)												
EPA 6020B												
Arsenic	55.1	---	1.00	ug/L	1	55.6	ND	99	75-125%	---	---	
Cadmium	56.9	---	0.200	ug/L	1	55.6	ND	102	75-125%	---	---	
Chromium	58.1	---	2.00	ug/L	1	55.6	ND	105	75-125%	---	---	
Copper	59.2	---	2.00	ug/L	1	55.6	1.38	104	75-125%	---	---	
Lead	58.6	---	0.200	ug/L	1	55.6	0.736	104	75-125%	---	---	
Manganese	61.1	---	1.00	ug/L	1	55.6	2.50	105	75-125%	---	---	
Mercury	1.13	---	0.0800	ug/L	1	1.11	ND	101	75-125%	---	---	
Vanadium	58.6	---	2.00	ug/L	1	55.6	1.49	103	75-125%	---	---	
Zinc	65.4	---	4.00	ug/L	1	55.6	5.29	108	75-125%	---	---	B-02

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ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4E0935 - 05 20 24 1516

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0549 - Matrix Matched Direct Inject									Water			
Blank (24E0549-BLK1)			Prepared: 05/15/24 10:11 Analyzed: 05/15/24 17:05									
EPA 6020B (Diss)												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Manganese	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Mercury	ND	---	0.0800	ug/L	1	---	---	---	---	---	---	
Vanadium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (24E0549-BS1)			Prepared: 05/15/24 10:11 Analyzed: 05/15/24 17:12									
EPA 6020B (Diss)												
Arsenic	54.3	---	1.00	ug/L	1	55.6	---	98	80-120%	---	---	
Cadmium	56.1	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	
Chromium	56.3	---	2.00	ug/L	1	55.6	---	101	80-120%	---	---	
Copper	56.4	---	2.00	ug/L	1	55.6	---	102	80-120%	---	---	
Lead	57.6	---	0.200	ug/L	1	55.6	---	104	80-120%	---	---	
Manganese	57.3	---	1.00	ug/L	1	55.6	---	103	80-120%	---	---	
Mercury	1.12	---	0.0800	ug/L	1	1.11	---	101	80-120%	---	---	
Vanadium	55.4	---	2.00	ug/L	1	55.6	---	100	80-120%	---	---	
Zinc	57.4	---	4.00	ug/L	1	55.6	---	103	80-120%	---	---	
Duplicate (24E0549-DUP1)			Prepared: 05/15/24 10:11 Analyzed: 05/15/24 17:48									
QC Source Sample: HC-12D (A4E0935-05)												
EPA 6020B (Diss)												
Arsenic	**20.4**	---	1.00	ug/L	1	---	20.7	---	---	1	20%	
Cadmium	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Chromium	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Copper	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	ND	---	2.00	ug/L	1	---	1.19	---	---	***	20%	
Zinc	ND	---	4.00	ug/L	1	---	ND	---	---	---	20%	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24E0549 - Matrix Matched Direct Inject							**Water**					
Duplicate (24E0549-DUP4)			Prepared: 05/15/24 10:11 Analyzed: 05/16/24 15:14									
QC Source Sample: HC-12D (A4E0935-05RE2)												
EPA 6020B (Diss)												
Manganese	**12500**	---	10.0	ug/L	10	---	12300	---	---	2	20%	Q-16
Matrix Spike (24E0549-MS1)			Prepared: 05/15/24 10:11 Analyzed: 05/15/24 17:55									
QC Source Sample: HC-12D (A4E0935-05)												
EPA 6020B (Diss)												
Arsenic	78.0	---	1.00	ug/L	1	55.6	20.7	103	75-125%	---	---	
Cadmium	57.5	---	0.200	ug/L	1	55.6	ND	104	75-125%	---	---	
Chromium	57.8	---	2.00	ug/L	1	55.6	ND	104	75-125%	---	---	
Copper	54.6	---	2.00	ug/L	1	55.6	ND	98	75-125%	---	---	
Lead	55.4	---	0.200	ug/L	1	55.6	ND	100	75-125%	---	---	
Manganese	12200	---	1.00	ug/L	1	55.6	12200	**-6**	**75-125%**	---	---	E, Q-65
Mercury	1.08	---	0.0800	ug/L	1	1.11	ND	98	75-125%	---	---	
Vanadium	58.9	---	2.00	ug/L	1	55.6	1.19	104	75-125%	---	---	
Zinc	57.7	---	4.00	ug/L	1	55.6	ND	104	75-125%	---	---	

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Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24E0554							
A4E0935-01	Water	EPA 6020B	05/01/24 16:50	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
A4E0935-01RE1	Water	EPA 6020B	05/01/24 16:50	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
A4E0935-02	Water	EPA 6020B	05/01/24 16:05	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
A4E0935-03	Water	EPA 6020B	05/01/24 12:00	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
A4E0935-03RE1	Water	EPA 6020B	05/01/24 12:00	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
A4E0935-04	Water	EPA 6020B	05/01/24 14:26	05/15/24 10:21	45mL/50mL	45mL/50mL	1.00
Batch: 24E0563							
A4E0935-05	Water	EPA 6020B	05/01/24 12:29	05/15/24 11:54	45mL/50mL	45mL/50mL	1.00
A4E0935-05RE2	Water	EPA 6020B	05/01/24 12:29	05/15/24 11:54	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 6020B (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24E0549							
A4E0935-01	Water	EPA 6020B (Diss)	05/01/24 16:50	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-01RE2	Water	EPA 6020B (Diss)	05/01/24 16:50	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-02	Water	EPA 6020B (Diss)	05/01/24 16:05	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-03	Water	EPA 6020B (Diss)	05/01/24 12:00	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-03RE2	Water	EPA 6020B (Diss)	05/01/24 12:00	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-04	Water	EPA 6020B (Diss)	05/01/24 14:26	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-05	Water	EPA 6020B (Diss)	05/01/24 12:29	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00
A4E0935-05RE2	Water	EPA 6020B (Diss)	05/01/24 12:29	05/15/24 10:11	45mL/50mL	45mL/50mL	1.00

Apex Laboratories

Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
CONT	The Sample Container provided for this analysis was not provided by Apex Laboratories, and has not been verified as part of the Apex Quality System.
E	Estimated Value. The result is above the calibration range of the instrument.
Q-05	Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
Q-16	Reanalysis of an original Batch QC sample.
Q-65	Spike recovery is estimated due to the high analyte concentration of the source sample.
R-04	Reporting levels elevated due to preparation and/or analytical dilution necessary for analysis.

Apex Laboratories

Darrell Auvil, Client Services Manager

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a “dry weight” basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an “As Received” basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

Darrell Auvil, Client Services Manager

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503-718-2323
ORELAP ID: **OR100062**

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

Apex Laboratories

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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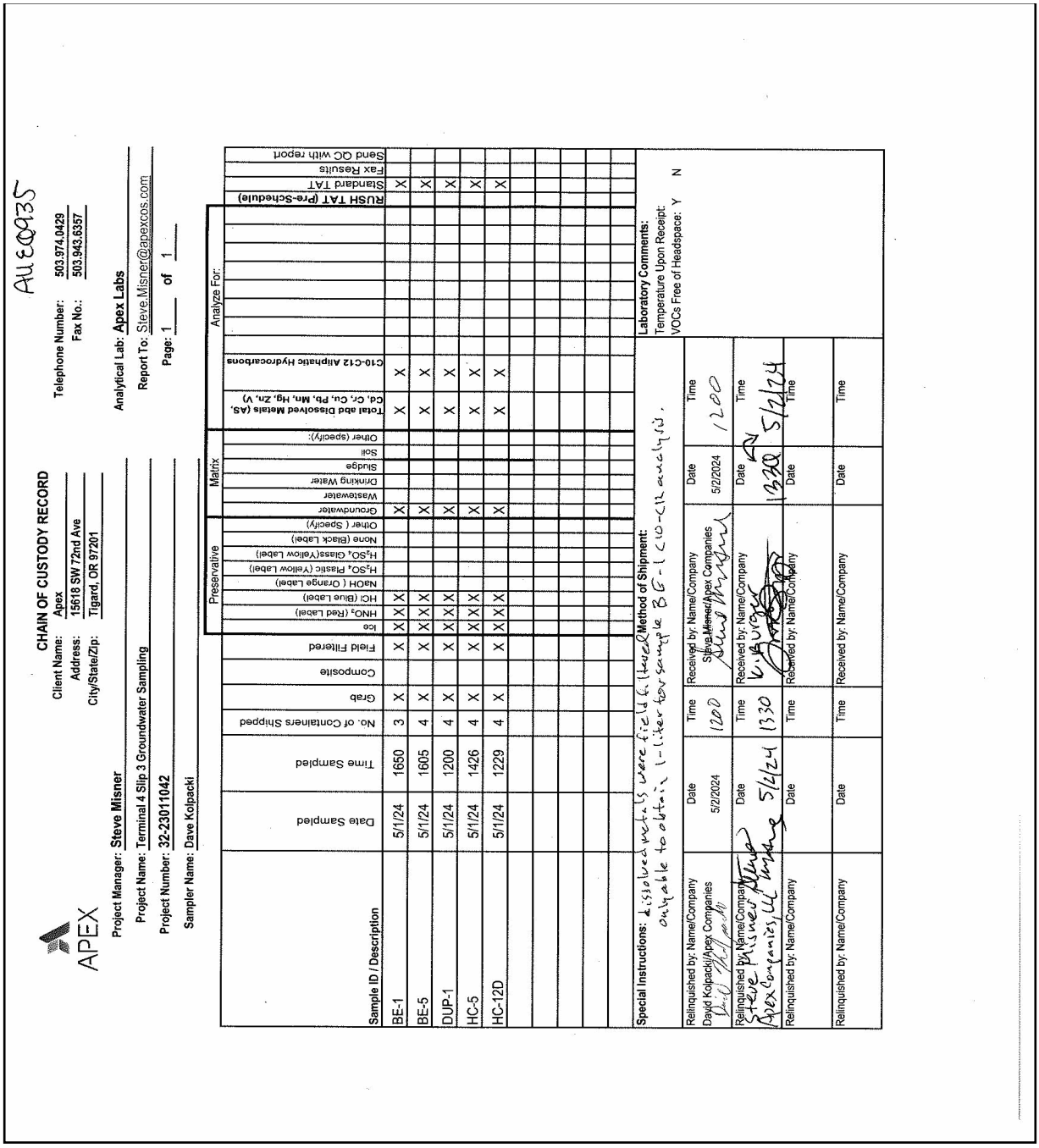
ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**



CHAIN OF CUSTODY RECORD

Client Name: Apex
Address: 15618 SW 72nd Ave
City/State/Zip: Tigard, OR 97201
Telephone Number: 503.974.0429
Fax No.: 503.943.6357

Project Manager: Steve Misner
Project Name: Terminal 4 Slip 3 Groundwater Sampling
Project Number: 32-23011042
Sampler Name: Dave Kolpacki

Analytical Lab: Apex Labs
Report To: Steve.Misner@apexcos.com
Page: 1 of 1

A4E0935

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers Shipped	Grab	Composite	Field Filtered	Preservative: Ice	Preservative: HNO_3 (Red Label)	Preservative: HCl (Blue Label)	Preservative: NaOH (Orange Label)	Preservative: H_2SO_4 Plastic (Yellow Label)	Preservative: H_2SO_4 Glass(Yellow Label)	Preservative: None (Black Label)	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Wastewater	Matrix: Drinking Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: Total abd Dissolved Metals (As, Cd, Cr, Cu, Pb, Mn, Hg, Zn, V)	Analyze For: C10-C12 Aliphatic Hydrocarbons	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
BE-1	5/1/24	1650	3	X		X	X	X	X						X						X	X		X		
BE-5	5/1/24	1605	4	X		X	X	X	X						X						X	X		X		
DUP-1	5/1/24	1200	4	X		X	X	X	X						X						X	X		X		
HC-5	5/1/24	1426	4	X		X	X	X	X						X						X	X		X		
HC-12D	5/1/24	1229	4	X		X	X	X	X						X						X	X		X		

Special Instructions: dissolved metals were field filtered. Method of Shipment: courier
unable to obtain 1-liter for sample BE-1 (12-hr analysis).

Laboratory Comments: Temperature Upon Receipt: N
VOCs Free of Headspace: Y

Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
David Kolpacki/Apex Companies	5/2/2024	1200	Steve Misner/Apex Companies	5/2/2024	1200
Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
Steve Misner/Apex Companies, LLC	5/2/24	1330	K. Avery	5/2/24 1330	
Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time

Apex Laboratories

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4E0935 - 05 20 24 1516**

APEX LABS COOLER RECEIPT FORM

Client: Apex Element WO#: A4E0935

Project/Project #: Terminal 4 Slip 3 Groundwater Sampling 32-23011042 aave for KAB 5/16/24

Delivery Info:

Date/time received: 5/2/24 @ 1330 By: KAB

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 5/2/24 @ 1330 By: KAB

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes Y No _____

Contains USDA Reg. Soils? Yes _____ No X Unsure (email RegSoils) _____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.3						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	IN						

Cooler out of temp? (Y (N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes (No)

Out of temperature samples form initiated? Yes (No)

Sample Inspection: Date/time inspected: 5/3/24 @ 1727 By: KAB

All samples intact? Yes X No ___ Comments: _____

Bottle labels/COCs agree? Yes ___ No X Comments: Sample BE-5 1/2 HCL Ambers reads BE-1, matched by Time aave for KAB 5/16/24

COC/container discrepancies form initiated? Yes ___ No X

Containers/volumes received appropriate for analysis? Yes X No ___ Comments: _____

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments _____

Water samples: pH checked: Yes X No ___ NA ___ pH appropriate? Yes X No ___ NA ___ pH ID: 173172

Comments: _____

Labeled by: KAB Witness: KM Cooler Inspected by: KAB

Form Y-003 R-02 -

Apex Laboratories

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Darrell Auvil, Client Services Manager

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Apex Laboratories
Darrell Auvil
6700 SW Sandburg St
Tigard, OR 97223

RE: A4E0935,
Work Order Number: 2405117

May 21, 2024

Attention Darrell Auvil:

Fremont Analytical, Inc, an Alliance Technical Group company, received 5 sample(s) on 5/7/2024 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Please note, while the appearance of our logo and branding will update, our commitment to accuracy, speed, and customer service remain values celebrated and shared by Alliance Technical Group. Thank you for the opportunity to serve you.

Sincerely,

Brianna Barnes
Project Manager

CC:
Sub Data

Date: *05/21/2024*

CLIENT: Apex Laboratories
Project: A4E0935
Work Order: 2405117

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2405117-001	BE-1	05/01/2024 4:50 PM	05/07/2024 9:36 AM
2405117-002	BE-5	05/01/2024 4:05 PM	05/07/2024 9:36 AM
2405117-003	DUP-1	05/01/2024 12:00 PM	05/07/2024 9:36 AM
2405117-004	HC-5	05/01/2024 2:26 PM	05/07/2024 9:36 AM
2405117-005	HC-12D	05/01/2024 12:29 PM	05/07/2024 9:36 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2405117**
Date: **5/21/2024**

CLIENT: Apex Laboratories
Project: A4E0935

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Associated LCS is outside of control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Method Detection Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2405117**
Date Reported: **5/21/2024**

Client: Apex Laboratories
Collection Date: 5/1/2024 4:50:00 PM
Project: A4E0935
Lab ID: 2405117-001
Matrix: Water
Client Sample ID: **BE-1**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 43769			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.7	20.5		µg/L	1	05/13/24 13:42:17
Surr: 1-Chlorooctadecane	77.1	50 - 150			%Rec	1	05/13/24 13:42:17
Surr: o-Terphenyl	60.6	50 - 150			%Rec	1	05/13/24 13:42:17

Analytical Report

Work Order: **2405117**
Date Reported: **5/21/2024**

Client: Apex Laboratories
Collection Date: 5/1/2024 4:05:00 PM
Project: A4E0935
Lab ID: 2405117-002
Matrix: Water
Client Sample ID: **BE-5**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 43769			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.9	20.6		µg/L	1	05/13/24 14:04:07
Surr: 1-Chlorooctadecane	118	50 - 150			%Rec	1	05/13/24 14:04:07
Surr: o-Terphenyl	69.3	50 - 150			%Rec	1	05/13/24 14:04:07

Analytical Report

Work Order: **2405117**
Date Reported: **5/21/2024**

Client: Apex Laboratories
Collection Date: 5/1/2024 12:00:00 PM
Project: A4E0935
Lab ID: 2405117-003
Matrix: Water
Client Sample ID: **DUP-1**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 43769			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.6	20.5		µg/L	1	05/16/24 11:14:38
Surr: 1-Chlorooctadecane	56.6	50 - 150			%Rec	1	05/16/24 11:14:38
Surr: o-Terphenyl	72.1	50 - 150			%Rec	1	05/16/24 11:14:38

Analytical Report

Work Order: **2405117**
Date Reported: **5/21/2024**

Client: Apex Laboratories
Collection Date: 5/1/2024 2:26:00 PM
Project: A4E0935
Lab ID: 2405117-004
Matrix: Water
Client Sample ID: **HC-5**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 43769			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.7		µg/L	1	05/16/24 11:36:14
Surr: 1-Chlorooctadecane	54.5	50 - 150			%Rec	1	05/16/24 11:36:14
Surr: o-Terphenyl	73.1	50 - 150			%Rec	1	05/16/24 11:36:14

Analytical Report

Work Order: **2405117**
Date Reported: **5/21/2024**

Client: Apex Laboratories
Collection Date: 5/1/2024 12:29:00 PM
Project: A4E0935
Lab ID: 2405117-005
Matrix: Water
Client Sample ID: **HC-12D**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 43769			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.9	20.6		µg/L	1	05/16/24 11:57:58
Surr: 1-Chlorooctadecane	65.5	50 - 150			%Rec	1	05/16/24 11:57:58
Surr: o-Terphenyl	77.7	50 - 150			%Rec	1	05/16/24 11:57:58

Work Order: 2405117
CLIENT: Apex Laboratories
Project: A4E0935

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-43769**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **5/2/2024**	RunNo: **91662**
Client ID: **MBLKW**	Batch ID: **43769**		Analysis Date: **5/13/2024**	SeqNo: **1911850**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	ND	40.2		0	0						
Surr: 1-Chlorooctadecane	261		401.5		65.1	50	150				

Sample ID: **LCS-43769**	SampType: **LCS**	Units: **µg/L**	Prep Date: **5/2/2024**	RunNo: **91662**
Client ID: **LCSW**	Batch ID: **43769**		Analysis Date: **5/13/2024**	SeqNo: **1911851**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	369	39.6	494.7	0	74.6	22.4	75.1				
Surr: 1-Chlorooctadecane	442		395.7		112	50	150				

Sample ID: **LCSD-43769**	SampType: **LCSD**	Units: **µg/L**	Prep Date: **5/2/2024**	RunNo: **91662**
Client ID: **LCSW02**	Batch ID: **43769**		Analysis Date: **5/13/2024**	SeqNo: **1911852**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	348	39.9	499.2	0	69.7	22.4	75.1	369.3	5.89	20	
Surr: 1-Chlorooctadecane	401		399.3		100	50	150		0		

Sample ID: **2405117-002AMS**	SampType: **MS**	Units: **µg/L**	Prep Date: **5/2/2024**	RunNo: **91662**
Client ID: **BE-5**	Batch ID: **43769**		Analysis Date: **5/16/2024**	SeqNo: **1916284**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	289	39.7	496.7	0	58.3	17.1	108				
Surr: 1-Chlorooctadecane	335		397.4		84.3	50	150				

Sample Log-In Check List

Client Name:	APEX	Work Order Number:	2405117
Logged by:	Morgan Wilson	Date Received:	5/7/2024 9:36:00 AM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	FedEx		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	1.6

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT ORDER

Apex Laboratories

A4E0935

2405117

AHC 5/6/24

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Fremont Analytical
3600 Fremont Avenue N.
Seattle, WA 98103
Phone :(206) 352-3790
Fax: (206) 352-7178

Sample Name: BE-1 **Water** **Sampled: 05/01/24 16:50** (A4E0935-01)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	05/15/24 17:00	05/15/24 16:50	c10-c12 aliphatic ONLY
Containers Supplied:			
(C)1 L Amber Glass - HCL			

1/2 HCL Ambers reads BE-1

Sample Name: BE-5 **Water** **Sampled: 05/01/24 16:05** (A4E0935-02)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	05/15/24 17:00	05/15/24 16:05	c10-c12 aliphatic ONLY
Containers Supplied:			
(C)1 L Amber Glass - HCL			
(D)1 L Amber Glass - HCL			

Sample Name: DUP-1 **Water** **Sampled: 05/01/24 12:00** (A4E0935-03)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	05/15/24 17:00	05/15/24 12:00	c10-c12 aliphatic ONLY
Containers Supplied:			
(C)1 L Amber Glass - HCL			
(D)1 L Amber Glass - HCL			

Sample Name: HC-5 **Water** **Sampled: 05/01/24 14:26** (A4E0935-04)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	05/15/24 17:00	05/15/24 14:26	c10-c12 aliphatic ONLY
Containers Supplied:			
(C)1 L Amber Glass - HCL			
(D)1 L Amber Glass - HCL			

Standard TAT

Released By	Date	Received By	Date
	5/6/24	UPS (Shipper)	
UPS (Shipper)			
			5/7/24 936

SUBCONTRACT ORDER 2405117

Apex Laboratories

A4E0935

Sample Name: HC-12D **Water** **Sampled: 05/01/24 12:29** (A4E0935-05)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	05/15/24 17:00	05/15/24 12:29	c10-c12 aliphatic ONLY
Containers Supplied:			
(C)1 L Amber Glass - HCL			
(D)1 L Amber Glass - HCL			

Standard TAT

Released By	Date	Received By	Date
[illegible] 5/6/24		UPS (Shipper)	
UPS (Shipper)		[illegible]	5/7/24 936
Released By	Date	Received By	Date

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Tuesday, December 24, 2024

Steve Misner
Apex Companies, LLC
15618 SW 72nd Ave
Tigard, OR 97224

RE: A4L0918 - POP T4 - Slip 3 GW - 32-23011042

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4L0918, which was received by the laboratory on 12/4/2024 at 4:43:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: DAuvil@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information					
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.					
(See Cooler Receipt Form for details)					
Cooler #1	1.5	degC	Cooler #2	2.3	degC
Cooler #3	1.3	degC			

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BE-1	**A4L0918-01**	**Water**	**12/03/24 12:30**	**12/04/24 16:43**
BE-5	**A4L0918-02**	**Water**	**12/03/24 12:45**	**12/04/24 16:43**
DUP-1	**A4L0918-03**	**Water**	**12/03/24 11:00**	**12/04/24 16:43**
HC-5	**A4L0918-04**	**Water**	**12/03/24 16:20**	**12/04/24 16:43**
HC-12D	**A4L0918-05**	**Water**	**12/03/24 14:42**	**12/04/24 16:43**

Apex Laboratories

Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4L0918-01)				**Matrix: Water**		**Batch: 24L0639**		
Diesel	ND	---	0.196	mg/L	1	12/17/24 21:04	NWTPH-Dx/SG	
Oil	ND	---	0.392	mg/L	1	12/17/24 21:04	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 92 %*		*Limits: 50-150 %*	*1*	*12/17/24 21:04*	*NWTPH-Dx/SG*	
BE-5 (A4L0918-02)				**Matrix: Water**		**Batch: 24L0639**		
Diesel	ND	---	0.206	mg/L	1	12/17/24 21:28	NWTPH-Dx/SG	
Oil	ND	---	0.412	mg/L	1	12/17/24 21:28	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 94 %*		*Limits: 50-150 %*	*1*	*12/17/24 21:28*	*NWTPH-Dx/SG*	
DUP-1 (A4L0918-03)				**Matrix: Water**		**Batch: 24L0639**		
Diesel	ND	---	0.215	mg/L	1	12/17/24 21:51	NWTPH-Dx/SG	
Oil	ND	---	0.430	mg/L	1	12/17/24 21:51	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 88 %*		*Limits: 50-150 %*	*1*	*12/17/24 21:51*	*NWTPH-Dx/SG*	
HC-5 (A4L0918-04)				**Matrix: Water**		**Batch: 24L0639**		
Diesel	**7.58**	---	0.200	mg/L	1	12/17/24 22:38	NWTPH-Dx/SG	**F-11**
Oil	ND	---	0.400	mg/L	1	12/17/24 22:38	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 94 %*		*Limits: 50-150 %*	*1*	*12/17/24 22:38*	*NWTPH-Dx/SG*	
HC-12D (A4L0918-05)				**Matrix: Water**		**Batch: 24L0639**		
Diesel	ND	---	0.208	mg/L	1	12/17/24 23:25	NWTPH-Dx/SG	
Oil	ND	---	0.417	mg/L	1	12/17/24 23:25	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 92 %*		*Limits: 50-150 %*	*1*	*12/17/24 23:25*	*NWTPH-Dx/SG*	

Apex Laboratories

Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4L0918 - 12 24 24 0956

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4L0918-01)				**Matrix: Water**		**Batch: 24L0142**		**DCNT**
Acenaphthene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Anthracene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Chrysene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Fluoranthene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Fluorene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0195	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0782	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0782	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Naphthalene	**0.251**	---	0.0782	ug/L	1	12/05/24 16:10	EPA 8270E LVI	**M-04**
Phenanthrene	ND	---	0.0782	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Pyrene	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0391	ug/L	1	12/05/24 16:10	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		*Recovery:*	*88 %*	*Limits: 78-134 %*	*1*	*12/05/24 16:10*	*EPA 8270E LVI*	
Benzo(a)pyrene-d12 (Surr)			*118 %*	*80-132 %*	*1*	*12/05/24 16:10*	*EPA 8270E LVI*	
BE-5 (A4L0918-02)				**Matrix: Water**		**Batch: 24L0142**		
Acenaphthene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Anthracene	ND	---	0.0388	ug/L	1	12/05/24 16:42	EPA 8270E LVI	R-02
Benz(a)anthracene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Chrysene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-5 (A4L0918-02)				**Matrix: Water**		**Batch: 24L0142**		
Fluoranthene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Fluorene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0173	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0690	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0690	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Naphthalene	**0.0919**	---	0.0690	ug/L	1	12/05/24 16:42	EPA 8270E LVI	**M-04**
Phenanthrene	ND	---	0.0690	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Pyrene	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0345	ug/L	1	12/05/24 16:42	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		*Recovery:*	*90 %*	*Limits:*	*78-134 %*	*12/05/24 16:42*	*EPA 8270E LVI*	
Benzo(a)pyrene-d12 (Surr)			*119 %*		*80-132 %*	*12/05/24 16:42*	*EPA 8270E LVI*	
DUP-1 (A4L0918-03)				**Matrix: Water**		**Batch: 24L0142**		**DCNT, R-04**
Acenaphthene	ND	---	0.593	ug/L	10	12/05/24 14:33	EPA 8270E LVI	R-02
Acenaphthylene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Anthracene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Chrysene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Fluoranthene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Fluorene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.202	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.808	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.808	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Naphthalene	ND	---	0.808	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Phenanthrene	ND	---	0.808	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Pyrene	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Dibenzofuran	ND	---	0.404	ug/L	10	12/05/24 14:33	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		*Recovery:*	*69 %*	*Limits:*	*78-134 %*	*10*	*12/05/24 14:33*	*EPA 8270E LVI*	*S-05*
Benzo(a)pyrene-d12 (Surr)			*134 %*		*80-132 %*	*10*	*12/05/24 14:33*	*EPA 8270E LVI*	*S-05*

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DUP-1 (A4L0918-03)				**Matrix: Water**		**Batch: 24L0142**		**DCNT, R-04**
HC-5 (A4L0918-04)				**Matrix: Water**		**Batch: 24L0142**		**R-04**
Acenaphthene	ND	---	0.667	ug/L	10	12/05/24 15:05	EPA 8270E LVI	R-02
Acenaphthylene	ND	---	0.344	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Anthracene	ND	---	0.635	ug/L	10	12/05/24 15:05	EPA 8270E LVI	R-02
Benz(a)anthracene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.344	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Chrysene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Fluoranthene	ND	---	0.344	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Fluorene	ND	---	0.387	ug/L	10	12/05/24 15:05	EPA 8270E LVI	R-02
Indeno(1,2,3-cd)pyrene	ND	---	0.172	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.688	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.688	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Naphthalene	ND	---	0.688	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Phenanthrene	ND	---	0.688	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Pyrene	ND	---	0.344	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Dibenzofuran	ND	---	0.344	ug/L	10	12/05/24 15:05	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		*Recovery:*	*81 %*	*Limits:*	*78-134 %*	*12/05/24 15:05*	*EPA 8270E LVI*	*S-05*
Benzo(a)pyrene-d12 (Surr)			*145 %*		*80-132 %*	*12/05/24 15:05*	*EPA 8270E LVI*	*S-05*
HC-12D (A4L0918-05)				**Matrix: Water**		**Batch: 24L0142**		**DCNT, R-04**
Acenaphthene	ND	---	0.534	ug/L	10	12/05/24 15:37	EPA 8270E LVI	R-02
Acenaphthylene	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Anthracene	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Chrysene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HC-12D (A4L0918-05)				**Matrix: Water**			**Batch: 24L0142**	**DCNT, R-04**
Dibenz(a,h)anthracene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Fluoranthene	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Fluorene	ND	---	0.420	ug/L	10	12/05/24 15:37	EPA 8270E LVI	R-02
Indeno(1,2,3-cd)pyrene	ND	---	0.203	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.814	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.814	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Naphthalene	ND	---	0.814	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Phenanthrene	ND	---	0.814	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Pyrene	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Dibenzofuran	ND	---	0.407	ug/L	10	12/05/24 15:37	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		*Recovery:*	*60 %*	*Limits: 78-134 %*	*10*	*12/05/24 15:37*	*EPA 8270E LVI*	*S-05*
Benzo(a)pyrene-d12 (Surr)			*130 %*	*80-132 %*	*10*	*12/05/24 15:37*	*EPA 8270E LVI*	*S-05*

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4L0918-01)				**Matrix: Water**				
Batch: 24L0560								
Arsenic	**14.9**	---	1.00	ug/L	1	12/17/24 02:03	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 02:03	EPA 6020B	
Chromium	**2.19**	---	2.00	ug/L	1	12/17/24 02:03	EPA 6020B	
Copper	**3.11**	---	2.00	ug/L	1	12/17/24 02:03	EPA 6020B	
Lead	**1.87**	---	0.200	ug/L	1	12/17/24 02:03	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 02:03	EPA 6020B	
Vanadium	**8.65**	---	2.00	ug/L	1	12/17/24 02:03	EPA 6020B	
Zinc	**12.0**	---	4.00	ug/L	1	12/17/24 02:03	EPA 6020B	
BE-1 (A4L0918-01RE1)				**Matrix: Water**				
Batch: 24L0560								
Manganese	**3460**	---	10.0	ug/L	10	12/17/24 22:39	EPA 6020B	
BE-5 (A4L0918-02)				**Matrix: Water**				
Batch: 24L0560								
Arsenic	ND	---	1.00	ug/L	1	12/17/24 02:09	EPA 6020B	
Cadmium	**0.275**	---	0.200	ug/L	1	12/17/24 02:09	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/17/24 02:09	EPA 6020B	
Copper	**2.86**	---	2.00	ug/L	1	12/17/24 02:09	EPA 6020B	
Lead	**1.23**	---	0.200	ug/L	1	12/17/24 02:09	EPA 6020B	
Manganese	**65.8**	---	1.00	ug/L	1	12/17/24 02:09	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 02:09	EPA 6020B	
Vanadium	**2.41**	---	2.00	ug/L	1	12/17/24 02:09	EPA 6020B	
Zinc	**49.2**	---	4.00	ug/L	1	12/17/24 02:09	EPA 6020B	
DUP-1 (A4L0918-03)				**Matrix: Water**				
Batch: 24L0560								
Arsenic	**14.7**	---	1.00	ug/L	1	12/17/24 02:14	EPA 6020B	
Cadmium	**0.422**	---	0.200	ug/L	1	12/17/24 02:14	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/17/24 02:14	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	12/17/24 02:14	EPA 6020B	
Lead	**1.04**	---	0.200	ug/L	1	12/17/24 02:14	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 02:14	EPA 6020B	

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Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DUP-1 (A4L0918-03)				**Matrix: Water**				
Vanadium	ND	---	2.00	ug/L	1	12/17/24 02:14	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	12/17/24 02:14	EPA 6020B	
DUP-1 (A4L0918-03RE1)				**Matrix: Water**				
Batch: 24L0560								
Manganese	**16000**	---	10.0	ug/L	10	12/17/24 22:44	EPA 6020B	
HC-5 (A4L0918-04)				**Matrix: Water**				
Batch: 24L0560								
Arsenic	**1.08**	---	1.00	ug/L	1	12/17/24 02:19	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 02:19	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/17/24 02:19	EPA 6020B	
Copper	**3.22**	---	2.00	ug/L	1	12/17/24 02:19	EPA 6020B	
Lead	**0.955**	---	0.200	ug/L	1	12/17/24 02:19	EPA 6020B	
Manganese	**722**	---	1.00	ug/L	1	12/17/24 02:19	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 02:19	EPA 6020B	
Vanadium	**2.23**	---	2.00	ug/L	1	12/17/24 02:19	EPA 6020B	
Zinc	**116**	---	4.00	ug/L	1	12/17/24 02:19	EPA 6020B	
HC-12D (A4L0918-05)				**Matrix: Water**				
Batch: 24L0560								
Arsenic	**15.5**	---	1.00	ug/L	1	12/17/24 02:24	EPA 6020B	
Cadmium	**0.581**	---	0.200	ug/L	1	12/17/24 02:24	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/17/24 02:24	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	12/17/24 02:24	EPA 6020B	
Lead	**1.01**	---	0.200	ug/L	1	12/17/24 02:24	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 02:24	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	12/17/24 02:24	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	12/17/24 02:24	EPA 6020B	
HC-12D (A4L0918-05RE1)				**Matrix: Water**				
Batch: 24L0560								
Manganese	**15000**	---	10.0	ug/L	10	12/17/24 22:49	EPA 6020B	

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BE-1 (A4L0918-01)				**Matrix: Water**				
Batch: 24L0630								
Arsenic	**12.9**	---	1.00	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	12/17/24 23:10	EPA 6020B (Diss)	
BE-1 (A4L0918-01RE1)				**Matrix: Water**				
Batch: 24L0630								
Manganese	**3340**	---	10.0	ug/L	10	12/18/24 23:19	EPA 6020B (Diss)	
BE-5 (A4L0918-02)				**Matrix: Water**				
Batch: 24L0630								
Arsenic	ND	---	1.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Cadmium	**0.247**	---	0.200	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Copper	**3.45**	---	2.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Manganese	**121**	---	1.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Vanadium	**2.12**	---	2.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
Zinc	**46.4**	---	4.00	ug/L	1	12/17/24 23:41	EPA 6020B (Diss)	
BE-5 (A4L0918-02RE1)				**Matrix: Water**				
Batch: 24L0802								
Lead	**0.337**	---	0.200	ug/L	1	12/20/24 23:45	EPA 6020B (Diss)	
DUP-1 (A4L0918-03)				**Matrix: Water**				
Batch: 24L0630								
Arsenic	**16.0**	---	1.00	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DUP-1 (A4L0918-03)				**Matrix: Water**				
Lead	ND	---	0.200	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	12/17/24 23:47	EPA 6020B (Diss)	
DUP-1 (A4L0918-03RE1)				**Matrix: Water**				
Batch: 24L0630								
Manganese	**14700**	---	50.0	ug/L	50	12/18/24 23:29	EPA 6020B (Diss)	
HC-5 (A4L0918-04)				**Matrix: Water**				
Batch: 24L0630								
Arsenic	**1.02**	---	1.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Manganese	**804**	---	1.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
Zinc	**101**	---	4.00	ug/L	1	12/17/24 23:52	EPA 6020B (Diss)	
HC-12D (A4L0918-05)				**Matrix: Water**				
Batch: 24L0630								
Arsenic	**16.3**	---	1.00	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	12/17/24 23:57	EPA 6020B (Diss)	
HC-12D (A4L0918-05RE1)				**Matrix: Water**				
Batch: 24L0630								
Manganese	**15500**	---	50.0	ug/L	50	12/18/24 23:35	EPA 6020B (Diss)	

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0639 - EPA 3510C (Fuels/Acid Ext.) w/SG+Acid									**Water**			
Blank (24L0639-BLK1)			Prepared: 12/17/24 14:15		Analyzed: 12/17/24 19:54							
NWTPH-Dx/SG												
Diesel	ND	---	0.200	mg/L	1	---	---	---	---	---	---	
Oil	ND	---	0.400	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 92 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS (24L0639-BS1)			Prepared: 12/17/24 14:15		Analyzed: 12/17/24 20:17							
NWTPH-Dx/SG												
Diesel	1.05	---	0.200	mg/L	1	1.25	---	84	36-132%	---	---	
Surr: o-Terphenyl (Surr)		*Recovery: 94 %*	*Limits: 50-150 %*		*Dilution: 1x*							
LCS Dup (24L0639-BSD1)			Prepared: 12/17/24 14:15		Analyzed: 12/17/24 20:41							**Q-19**
NWTPH-Dx/SG												
Diesel	1.05	---	0.200	mg/L	1	1.25	---	84	36-132%	0.2	30%	
Surr: o-Terphenyl (Surr)		*Recovery: 96 %*	*Limits: 50-150 %*		*Dilution: 1x*							

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Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0142 - EPA 3511 (Bottle Extraction)							**Water**					
Blank (24L0142-BLK1)			Prepared: 12/05/24 06:26 Analyzed: 12/05/24 10:13									
EPA 8270E LVI												
Acenaphthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Anthracene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Chrysene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
Fluoranthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Fluorene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	
Naphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	
Phenanthrene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	
Pyrene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Carbazole	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Dibenzofuran	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	
Surr: Acenaphthylene-d8 (Surr)			*Recovery: 93 %*		*Limits: 78-134 %*				*Dilution: 1x*			
Benzo(a)pyrene-d12 (Surr)			*108 %*		*80-132 %*				*"*			
LCS (24L0142-BS1)			Prepared: 12/05/24 06:26 Analyzed: 12/05/24 10:45									
EPA 8270E LVI												
Acenaphthene	1.58	---	0.0320	ug/L	1	1.60	---	99	80-120%	---	---	
Acenaphthylene	1.71	---	0.0320	ug/L	1	1.60	---	107	80-124%	---	---	
Anthracene	1.59	---	0.0320	ug/L	1	1.60	---	99	80-123%	---	---	
Benz(a)anthracene	1.64	---	0.0160	ug/L	1	1.60	---	102	80-122%	---	---	
Benzo(a)pyrene	1.79	---	0.0160	ug/L	1	1.60	---	112	80-129%	---	---	
Benzo(b)fluoranthene	1.76	---	0.0160	ug/L	1	1.60	---	110	80-124%	---	---	
Benzo(k)fluoranthene	1.70	---	0.0160	ug/L	1	1.60	---	106	80-125%	---	---	
Benzo(g,h,i)perylene	1.58	---	0.0320	ug/L	1	1.60	---	98	80-120%	---	---	

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0142 - EPA 3511 (Bottle Extraction)								**Water**				
LCS (24L0142-BS1)			Prepared: 12/05/24 06:26		Analyzed: 12/05/24 10:45							
Chrysene	1.55	---	0.0160	ug/L	1	1.60	---	97	80-120%	---	---	
Dibenz(a,h)anthracene	1.54	---	0.0160	ug/L	1	1.60	---	97	80-120%	---	---	
Fluoranthene	1.82	---	0.0320	ug/L	1	1.60	---	114	80-126%	---	---	
Fluorene	1.64	---	0.0320	ug/L	1	1.60	---	102	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.45	---	0.0160	ug/L	1	1.60	---	91	80-121%	---	---	
1-Methylnaphthalene	1.78	---	0.0640	ug/L	1	1.60	---	111	53-148%	---	---	
2-Methylnaphthalene	1.74	---	0.0640	ug/L	1	1.60	---	109	48-150%	---	---	
Naphthalene	1.59	---	0.0640	ug/L	1	1.60	---	99	78-120%	---	---	
Phenanthrene	1.48	---	0.0640	ug/L	1	1.60	---	93	80-120%	---	---	
Pyrene	1.79	---	0.0320	ug/L	1	1.60	---	112	80-125%	---	---	
Carbazole	1.73	---	0.0320	ug/L	1	1.60	---	108	65-141%	---	---	
Dibenzofuran	1.71	---	0.0320	ug/L	1	1.60	---	107	76-121%	---	---	
Surr: Acenaphthylene-d8 (Surr)			*Recovery: 92 %*		*Limits: 78-134 %*				*Dilution: 1x*			
Benzo(a)pyrene-d12 (Surr)			*111 %*		*80-132 %*				*"*			
Matrix Spike (24L0142-MS1)			Prepared: 12/05/24 06:26		Analyzed: 12/05/24 13:27							**DCNT**
QC Source Sample: Non-SDG (A4L0893-02)												
EPA 8270E LVI												
Acenaphthene	1.82	---	0.0347	ug/L	1	1.74	ND	105	80-120%	---	---	
Acenaphthylene	1.83	---	0.0347	ug/L	1	1.74	ND	105	80-124%	---	---	
Anthracene	1.83	---	0.0347	ug/L	1	1.74	ND	105	80-123%	---	---	
Benz(a)anthracene	1.93	---	0.0174	ug/L	1	1.74	ND	111	80-122%	---	---	
Benzo(a)pyrene	1.99	---	0.0174	ug/L	1	1.74	ND	114	80-129%	---	---	
Benzo(b)fluoranthene	2.01	---	0.0174	ug/L	1	1.74	ND	116	80-124%	---	---	
Benzo(k)fluoranthene	2.00	---	0.0174	ug/L	1	1.74	ND	115	80-125%	---	---	
Benzo(g,h,i)perylene	1.49	---	0.0347	ug/L	1	1.74	ND	86	80-120%	---	---	
Chrysene	1.74	---	0.0174	ug/L	1	1.74	ND	100	80-120%	---	---	
Dibenz(a,h)anthracene	1.58	---	0.0174	ug/L	1	1.74	ND	91	80-120%	---	---	
Fluoranthene	2.07	---	0.0347	ug/L	1	1.74	ND	119	80-126%	---	---	
Fluorene	1.94	---	0.0347	ug/L	1	1.74	ND	112	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.43	---	0.0174	ug/L	1	1.74	ND	82	80-121%	---	---	
1-Methylnaphthalene	1.72	---	0.0694	ug/L	1	1.74	ND	99	53-148%	---	---	
2-Methylnaphthalene	1.70	---	0.0694	ug/L	1	1.74	ND	98	48-150%	---	---	
Naphthalene	1.81	---	0.0694	ug/L	1	1.74	ND	105	78-120%	---	---	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4L0918 - 12 24 24 0956

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0142 - EPA 3511 (Bottle Extraction)								**Water**				
Matrix Spike (24L0142-MS1)			Prepared: 12/05/24 06:26		Analyzed: 12/05/24 13:27							**DCNT**
QC Source Sample: Non-SDG (A4L0893-02)												
Phenanthrene	1.69	---	0.0694	ug/L	1	1.74	ND	97	80-120%	---	---	
Pyrene	2.02	---	0.0347	ug/L	1	1.74	ND	116	80-125%	---	---	
Carbazole	2.19	---	0.0347	ug/L	1	1.74	ND	126	65-141%	---	---	
Dibenzofuran	1.87	---	0.0347	ug/L	1	1.74	ND	108	76-121%	---	---	
Surr: Acenaphthylene-d8 (Surr)			*Recovery: 88 %*		*Limits: 78-134 %*				*Dilution: 1x*			
Benzo(a)pyrene-d12 (Surr)			*119 %*		*80-132 %*				*"*			
Matrix Spike Dup (24L0142-MSD1)			Prepared: 12/05/24 06:26		Analyzed: 12/05/24 14:00							**DCNT**
QC Source Sample: Non-SDG (A4L0893-02)												
Acenaphthene	1.96	---	0.0360	ug/L	1	1.80	ND	109	80-120%	7	30%	
Acenaphthylene	1.98	---	0.0360	ug/L	1	1.80	ND	110	80-124%	8	30%	
Anthracene	1.89	---	0.0360	ug/L	1	1.80	ND	105	80-123%	3	30%	
Benz(a)anthracene	2.03	---	0.0180	ug/L	1	1.80	ND	112	80-122%	5	30%	
Benzo(a)pyrene	2.13	---	0.0180	ug/L	1	1.80	ND	118	80-129%	7	30%	
Benzo(b)fluoranthene	2.10	---	0.0180	ug/L	1	1.80	ND	116	80-124%	4	30%	
Benzo(k)fluoranthene	2.10	---	0.0180	ug/L	1	1.80	ND	117	80-125%	5	30%	
Benzo(g,h,i)perylene	1.72	---	0.0360	ug/L	1	1.80	ND	95	80-120%	14	30%	
Chrysene	1.85	---	0.0180	ug/L	1	1.80	ND	103	80-120%	6	30%	
Dibenz(a,h)anthracene	1.73	---	0.0180	ug/L	1	1.80	ND	96	80-120%	9	30%	
Fluoranthene	2.20	---	0.0360	ug/L	1	1.80	ND	122	80-126%	6	30%	
Fluorene	2.05	---	0.0360	ug/L	1	1.80	ND	114	77-127%	6	30%	
Indeno(1,2,3-cd)pyrene	1.60	---	0.0180	ug/L	1	1.80	ND	89	80-121%	11	30%	
1-Methylnaphthalene	1.80	---	0.0720	ug/L	1	1.80	ND	100	53-148%	4	30%	
2-Methylnaphthalene	1.78	---	0.0720	ug/L	1	1.80	ND	99	48-150%	5	30%	
Naphthalene	1.83	---	0.0720	ug/L	1	1.80	ND	102	78-120%	1	30%	
Phenanthrene	1.77	---	0.0720	ug/L	1	1.80	ND	98	80-120%	4	30%	
Pyrene	2.12	---	0.0360	ug/L	1	1.80	ND	118	80-125%	5	30%	
Carbazole	2.23	---	0.0360	ug/L	1	1.80	ND	124	65-141%	2	30%	
Dibenzofuran	1.98	---	0.0360	ug/L	1	1.80	ND	110	76-121%	6	30%	
Surr: Acenaphthylene-d8 (Surr)			*Recovery: 89 %*		*Limits: 78-134 %*				*Dilution: 1x*			
Benzo(a)pyrene-d12 (Surr)			*116 %*		*80-132 %*				*"*			

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Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0560 - EPA 3015A												**Water**
Blank (24L0560-BLK1)			Prepared: 12/16/24 09:26 Analyzed: 12/17/24 00:23									
EPA 6020B												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Manganese	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Mercury	ND	---	0.0800	ug/L	1	---	---	---	---	---	---	
Vanadium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (24L0560-BS1)			Prepared: 12/16/24 09:26 Analyzed: 12/17/24 00:28									
EPA 6020B												
Arsenic	54.2	---	1.00	ug/L	1	55.6	---	98	80-120%	---	---	
Cadmium	54.5	---	0.200	ug/L	1	55.6	---	98	80-120%	---	---	
Chromium	53.1	---	2.00	ug/L	1	55.6	---	96	80-120%	---	---	
Copper	55.4	---	2.00	ug/L	1	55.6	---	100	80-120%	---	---	
Lead	54.7	---	0.200	ug/L	1	55.6	---	98	80-120%	---	---	
Manganese	54.8	---	1.00	ug/L	1	55.6	---	99	80-120%	---	---	
Mercury	1.06	---	0.0800	ug/L	1	1.11	---	96	80-120%	---	---	
Vanadium	54.6	---	2.00	ug/L	1	55.6	---	98	80-120%	---	---	
Zinc	54.1	---	4.00	ug/L	1	55.6	---	97	80-120%	---	---	
Duplicate (24L0560-DUP1)			Prepared: 12/16/24 09:26 Analyzed: 12/17/24 01:16									
QC Source Sample: Non-SDG (A4L0893-01)												
Arsenic	**9.11**	---	1.00	ug/L	1	---	9.20	---	---	1	20%	
Cadmium	**0.553**	---	0.200	ug/L	1	---	0.497	---	---	11	20%	
Chromium	**49.8**	---	2.00	ug/L	1	---	46.5	---	---	7	20%	
Copper	**72.2**	---	2.00	ug/L	1	---	68.1	---	---	6	20%	
Lead	**17.2**	---	0.200	ug/L	1	---	14.7	---	---	15	20%	
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	**179**	---	2.00	ug/L	1	---	176	---	---	2	20%	
Zinc	**134**	---	4.00	ug/L	1	---	126	---	---	7	20%	

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0560 - EPA 3015A							**Water**					
Duplicate (24L0560-DUP2)			Prepared: 12/16/24 09:26		Analyzed: 12/17/24 22:18							
QC Source Sample: Non-SDG (A4L0893-01RE1)												
Manganese	**3110**	---	10.0	ug/L	10	---	3060	---	---	2	20%	Q-16
Matrix Spike (24L0560-MS1)			Prepared: 12/16/24 09:26		Analyzed: 12/17/24 01:26							
QC Source Sample: Non-SDG (A4L0893-02)												
EPA 6020B												
Arsenic	58.0	---	1.00	ug/L	1	55.6	4.25	97	75-125%	---	---	
Cadmium	56.8	---	0.200	ug/L	1	55.6	0.143	102	75-125%	---	---	
Chromium	59.2	---	2.00	ug/L	1	55.6	8.69	91	75-125%	---	---	
Copper	63.3	---	2.00	ug/L	1	55.6	14.7	88	75-125%	---	---	
Lead	53.7	---	0.200	ug/L	1	55.6	3.86	90	75-125%	---	---	
Manganese	3290	---	1.00	ug/L	1	55.6	3310	**-46**	**75-125%**	---	---	E, Q-65
Mercury	1.01	---	0.0800	ug/L	1	1.11	ND	91	75-125%	---	---	
Vanadium	120	---	2.00	ug/L	1	55.6	70.0	91	75-125%	---	---	
Zinc	79.3	---	4.00	ug/L	1	55.6	30.2	88	75-125%	---	---	
Matrix Spike Dup (24L0560-MSD1)			Prepared: 12/16/24 09:26		Analyzed: 12/17/24 01:32							
QC Source Sample: Non-SDG (A4L0893-02)												
Arsenic	59.6	---	1.00	ug/L	1	55.6	4.25	100	75-125%	3	20%	
Cadmium	56.6	---	0.200	ug/L	1	55.6	0.143	102	75-125%	0.4	20%	
Chromium	61.1	---	2.00	ug/L	1	55.6	8.69	94	75-125%	3	20%	
Copper	65.7	---	2.00	ug/L	1	55.6	14.7	92	75-125%	4	20%	
Lead	54.6	---	0.200	ug/L	1	55.6	3.86	91	75-125%	2	20%	
Manganese	3340	---	1.00	ug/L	1	55.6	3310	**49**	**75-125%**	2	20%	E, Q-65
Mercury	1.03	---	0.0800	ug/L	1	1.11	ND	93	75-125%	2	20%	
Vanadium	126	---	2.00	ug/L	1	55.6	70.0	101	75-125%	5	20%	
Zinc	83.6	---	4.00	ug/L	1	55.6	30.2	96	75-125%	5	20%	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0630 - Matrix Matched Direct Inject							**Water**					
Blank (24L0630-BLK1)			Prepared: 12/17/24 11:42 Analyzed: 12/17/24 22:54									
EPA 6020B (Diss)												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Chromium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	B-02
Manganese	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Mercury	ND	---	0.0800	ug/L	1	---	---	---	---	---	---	
Vanadium	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	
LCS (24L0630-BS1)			Prepared: 12/17/24 11:42 Analyzed: 12/17/24 23:00									
EPA 6020B (Diss)												
Arsenic	53.9	---	1.00	ug/L	1	55.6	---	97	80-120%	---	---	
Cadmium	53.0	---	0.200	ug/L	1	55.6	---	95	80-120%	---	---	
Chromium	54.2	---	2.00	ug/L	1	55.6	---	98	80-120%	---	---	
Copper	55.5	---	2.00	ug/L	1	55.6	---	100	80-120%	---	---	
Lead	54.5	---	0.200	ug/L	1	55.6	---	98	80-120%	---	---	B-02
Manganese	52.9	---	1.00	ug/L	1	55.6	---	95	80-120%	---	---	
Mercury	1.07	---	0.0800	ug/L	1	1.11	---	96	80-120%	---	---	
Vanadium	54.8	---	2.00	ug/L	1	55.6	---	99	80-120%	---	---	
Zinc	55.0	---	4.00	ug/L	1	55.6	---	99	80-120%	---	---	
Duplicate (24L0630-DUP1)			Prepared: 12/17/24 11:42 Analyzed: 12/17/24 23:15									
QC Source Sample: BE-1 (A4L0918-01)												
EPA 6020B (Diss)												
Arsenic	**12.9**	---	1.00	ug/L	1	---	12.9	---	---	0.5	20%	
Cadmium	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Chromium	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Copper	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	ND	---	2.00	ug/L	1	---	1.03	---	---	***	20%	
Zinc	ND	---	4.00	ug/L	1	---	ND	---	---	---	20%	

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0630 - Matrix Matched Direct Inject							**Water**					
Duplicate (24L0630-DUP2)			Prepared: 12/17/24 11:42 Analyzed: 12/18/24 23:24									
QC Source Sample: BE-1 (A4L0918-01RE1)												
EPA 6020B (Diss)												
Manganese	**3370**	---	10.0	ug/L	10	---	3340	---	---	0.9	20%	Q-16
Matrix Spike (24L0630-MS1)			Prepared: 12/17/24 11:42 Analyzed: 12/17/24 23:20									
QC Source Sample: BE-1 (A4L0918-01)												
EPA 6020B (Diss)												
Arsenic	68.8	---	1.00	ug/L	1	55.6	12.9	101	75-125%	---	---	
Cadmium	53.0	---	0.200	ug/L	1	55.6	ND	95	75-125%	---	---	
Chromium	52.6	---	2.00	ug/L	1	55.6	ND	95	75-125%	---	---	
Copper	53.4	---	2.00	ug/L	1	55.6	ND	96	75-125%	---	---	
Lead	54.0	---	0.200	ug/L	1	55.6	ND	97	75-125%	---	---	B-02
Manganese	3440	---	1.00	ug/L	1	55.6	3340	**178**	**75-125%**	---	---	E, Q-65
Mercury	1.05	---	0.0800	ug/L	1	1.11	ND	95	75-125%	---	---	
Vanadium	57.4	---	2.00	ug/L	1	55.6	1.03	101	75-125%	---	---	
Zinc	55.5	---	4.00	ug/L	1	55.6	ND	100	75-125%	---	---	

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Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
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ANALYTICAL REPORT

Apex Companies, LLC	Project: POP T4 - Slip 3 GW	
15618 SW 72nd Ave	Project Number: 32-23011042	Report ID:
Tigard, OR 97224	Project Manager: Steve Misner	A4L0918 - 12 24 24 0956

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0802 - Matrix Matched Direct Inject									Water			
Blank (24L0802-BLK1)			Prepared: 12/20/24 13:17 Analyzed: 12/20/24 23:35									
EPA 6020B (Diss)												
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
LCS (24L0802-BS1)			Prepared: 12/20/24 13:17 Analyzed: 12/20/24 23:40									
EPA 6020B (Diss)												
Lead	57.6	---	0.200	ug/L	1	55.6	---	104	80-120%	---	---	
Duplicate (24L0802-DUP1)			Prepared: 12/20/24 13:17 Analyzed: 12/20/24 23:56									
QC Source Sample: Non-SDG (A4L1253-06)												
Lead	ND	---	0.200	ug/L	1	---	0.124	---	---	***	20%	
Matrix Spike (24L0802-MS1)			Prepared: 12/20/24 13:17 Analyzed: 12/21/24 00:01									
QC Source Sample: Non-SDG (A4L1253-06)												
EPA 6020B (Diss)												
Lead	52.8	---	0.200	ug/L	1	55.6	0.124	95	75-125%	---	---	

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ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Prep: EPA 3510C (Fuels/Acid Ext.) w/SG+Acid

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24L0639							
A4L0918-01	Water	NWTPH-Dx/SG	12/03/24 12:30	12/17/24 14:15	1020mL/5mL	1000mL/5mL	0.98
A4L0918-02	Water	NWTPH-Dx/SG	12/03/24 12:45	12/17/24 14:15	970mL/5mL	1000mL/5mL	1.03
A4L0918-03	Water	NWTPH-Dx/SG	12/03/24 11:00	12/17/24 14:15	930mL/5mL	1000mL/5mL	1.08
A4L0918-04	Water	NWTPH-Dx/SG	12/03/24 16:20	12/17/24 14:15	1000mL/5mL	1000mL/5mL	1.00
A4L0918-05	Water	NWTPH-Dx/SG	12/03/24 14:42	12/17/24 14:15	960mL/5mL	1000mL/5mL	1.04

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Prep: EPA 3511 (Bottle Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24L0142							
A4L0918-01	Water	EPA 8270E LVI	12/03/24 12:30	12/05/24 06:26	102.36mL/5mL	125mL/5mL	1.22
A4L0918-02	Water	EPA 8270E LVI	12/03/24 12:45	12/05/24 06:26	115.93mL/5mL	125mL/5mL	1.08
A4L0918-03	Water	EPA 8270E LVI	12/03/24 11:00	12/05/24 06:26	99.04mL/5mL	125mL/5mL	1.26
A4L0918-04	Water	EPA 8270E LVI	12/03/24 16:20	12/05/24 06:26	116.21mL/5mL	125mL/5mL	1.08
A4L0918-05	Water	EPA 8270E LVI	12/03/24 14:42	12/05/24 06:26	98.31mL/5mL	125mL/5mL	1.27

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24L0560							
A4L0918-01	Water	EPA 6020B	12/03/24 12:30	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-01RE1	Water	EPA 6020B	12/03/24 12:30	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-02	Water	EPA 6020B	12/03/24 12:45	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-03	Water	EPA 6020B	12/03/24 11:00	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-03RE1	Water	EPA 6020B	12/03/24 11:00	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-04	Water	EPA 6020B	12/03/24 16:20	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-05	Water	EPA 6020B	12/03/24 14:42	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00
A4L0918-05RE1	Water	EPA 6020B	12/03/24 14:42	12/16/24 09:26	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 6020B (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24L0630							

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

SAMPLE PREPARATION INFORMATION

Dissolved Metals by EPA 6020B (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4L0918-01	Water	EPA 6020B (Diss)	12/03/24 12:30	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-01RE1	Water	EPA 6020B (Diss)	12/03/24 12:30	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-02	Water	EPA 6020B (Diss)	12/03/24 12:45	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-03	Water	EPA 6020B (Diss)	12/03/24 11:00	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-03RE1	Water	EPA 6020B (Diss)	12/03/24 11:00	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-04	Water	EPA 6020B (Diss)	12/03/24 16:20	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-05	Water	EPA 6020B (Diss)	12/03/24 14:42	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
A4L0918-05RE1	Water	EPA 6020B (Diss)	12/03/24 14:42	12/17/24 11:42	45mL/50mL	45mL/50mL	1.00
Batch: 24L0802							
A4L0918-02RE1	Water	EPA 6020B (Diss)	12/03/24 12:45	12/20/24 13:17	45mL/50mL	45mL/50mL	1.00

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
DCNT	Sample decanted due to the presence of sediment in water samples, or water in sediment or soil samples. (Note: Decanted aqueous sample bottles are not solvent rinsed.)
E	Estimated Value. The result is above the calibration range of the instrument.
F-11	The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
M-04	Due to matrix interference, this analyte cannot be accurately quantified. The reported result may contain a high bias.
Q-16	Reanalysis of an original Batch QC sample.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-65	Spike recovery is estimated due to the high analyte concentration of the source sample.
R-02	The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
R-04	Reporting levels elevated due to preparation and/or analytical dilution necessary for analysis.
S-05	Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Validated Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a “dry weight” basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an “As Received” basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL).
Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.
-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.
'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
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Decanted Samples:

Soils/Sediments:
Unless TCLP analysis is required or there is notification otherwise for a specific project, all Soil and Sediments containing excess water are decanted prior to analysis in order to provide the most representative sample for analysis.

Water Samples:
Water samples containing solids and sediment may need to be decanted in order to eliminate these particulates from the water extractions. In the case of organics extractions, a solvent rinse of the container will not be performed.

Volatiles Soils (5035s)
Samples that are field preserved by 5035 for volatiles are dry weight corrected using the same dry weight corretion as for normal analyses. In the case of decanted samples, the dry weight may be performed on a decanted sample, while the aliquot for 5035 may not have been treated the same way. If this is a concern, please submit separate containers for dry weight analysis for volatiles can be provided.

All samples decanted in the laboratory are noted in this report with the DCNT qualifier indicating the sample was decanted.

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Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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A4L0918

APEX

CHAIN OF CUSTODY RECORD

Client Name: Apex Companies, LLC
Address: 15618 SW 72nd Ave
City/State/Zip: Tigard, OR 97201
Telephone Number: 503.348.3906
Fax No.: 503.943.6357

Project Manager: Steve Misner
Project Name: Terminal 4, Slip 3
Project Number: 32-23011042
Sampler Name: D. Kolpacki

Analytical Lab: Apex Labs
Report To: Steve.Misner@apexcos.com
Page: 1 of 1

Sample ID / Description	Date Sampled	Time Sampled	No. of Containers	Grab	Composite	Field Filtered	Preservative: Ice	HNO_3 (Red Label)	HCl (Blue Label)	NaOH (Orange Label)	H_2SO_4 Plastic (Yellow Label)	H_2SO_4 Glass (Yellow Label)	None	Other (Specify)	Matrix: Groundwater	Wastewater	Drinking Water	Sludge	Soil	Other (specify):	Analyze For: Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup	Polyaromatic Hydrocarbons (PAHs) by EPA 8270E	Extractable Petroleum Hydrocarbons (Aliphatic hydrocarbons C10-C12) by NWEPH	Total and Dissolved Metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, zinc, and vanadium) by EPA 6020B	RUSH TAT (Pre-Schedule)	Standard TAT	Fax Results	Send QC with report
BE-1	12/3/24	1230	8	X		X	X	X	X				X		X						X	X	X	X		X		
BE-5	12/3/24	1245	8	X		X	X	X	X				X		X						X	X	X	X		X		
DUP-1	12/3/24	1100	8	X		X	X	X	X				X		X						X	X	X	X		X		
HC-5	12/3/24	1620	8	X		X	X	X	X				X		X						X	X	X	X		X		
HC-12D	12/3/24	1442	8	X		X	X	X	X				X		X						X	X	X	X		X		

Special Instructions:
Please sub the Polyaromatic Hydrocarbons (PAHs) by EPA 8270E to Fremont Lab in Seattle, WA

Laboratory Comments:
Temperature Upon Receipt:
VOCs Free of Headspace? Y N

Relinquished by: Name/Company	Date	Time	Received by: Name/Company	Date	Time
Dave Kolpacki / Apex Companies	12/4/24	16:13	Zahra Abidi / Apex Labs	12/4/24	1643

Apex Laboratories

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Apex Companies, LLC	Project: **POP T4 - Slip 3 GW**	
15618 SW 72nd Ave	Project Number: **32-23011042**	**Report ID:**
Tigard, OR 97224	Project Manager: **Steve Misner**	**A4L0918 - 12 24 24 0956**

APEX LABS COOLER RECEIPT FORM

Client: Apex Companies Element WO#: A4L0918

Project/Project #: Terminal 4, Slip 3 32-23011042
AKG for ZA 12/25/24

Delivery Info:

Date/time received: 12/24/24 @ 1643 By: ZA

Delivered by: Apex__Client ✓ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes _____ No ✓

Cooler Inspection Date/time inspected: 12/24/24@ 1643 By: ZA

Chain of Custody included? Yes ✓ No _____

Signed/dated by client? Yes ✓ No _____

Contains USDA Reg. Soils? Yes _____ No ✓ Unsure (email RegSoils) _____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	1.5	2.3	1.3				
Custody seals? (Y/N)	N →						
Received on ice? (Y/N)	Y →						
Temp. blanks? (Y/N)	Y →						
Ice type: (Gel/Real/Other)	Real →						
Condition (In/Out):	In →						

Cooler out of temp? (Y/N) Possible reason why: _____

Green dots applied to out of temperature samples? Yes/No

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 12/24/24 @ 1935 By: ZA

All samples intact? Yes ✓ No ___ Comments: _____

Bottle labels/COCs agree? Yes ✓ No ___ Comments: _____

COC/container discrepancies form initiated? Yes ___ No ✓

Containers/volumes received appropriate for analysis? Yes ✓ No ___ Comments: _____

Do VOA vials have visible headspace? Yes ___ No ___ NA ✓

Comments _____

Water samples: pH checked: Yes ✓ No ___ NA ___ pH appropriate? Yes ✓ No ___ NA ___ pH ID: A23172

Comments: _____

Labeled by: ZA Witness: KAM Cooler Inspected by: ZA

Form Y-003 R-02

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

3600 Fremont Ave N
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Apex Laboratories
Darrell Auvil
6700 SW Sandburg St
Tigard, OR 97223

RE: A4L0918,
Work Order Number: 2412107

December 20, 2024

Attention Darrell Auvil:

Fremont Analytical, Inc, an Alliance Technical Group company, received 5 sample(s) on 12/6/2024 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

All analyses were performed according to our accredited Quality Assurance program. Please contact the laboratory if you should have any questions about the results.

Alliance Technical Group is committed to accuracy, speed, and customer service. Thank you for choosing Alliance Technical Group's Seattle laboratory team for your analytical needs. We appreciate this opportunity to serve you!

Sincerely,

Lyann Rivera
Project Manager

CC:
Sub Data

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.4 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910

Original

Date: *12/20/2024*

CLIENT: Apex Laboratories
Project: A4L0918
Work Order: 2412107

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2412107-001	BE-1	12/03/2024 12:30 PM	12/06/2024 10:08 AM
2412107-002	BE-5	12/03/2024 12:45 PM	12/06/2024 10:08 AM
2412107-003	DUP-1	12/03/2024 11:00 AM	12/06/2024 10:08 AM
2412107-004	HC-5	12/03/2024 4:20 PM	12/06/2024 10:08 AM
2412107-005	HC-12D	12/03/2024 2:42 PM	12/06/2024 10:08 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Original

Case Narrative

WO#: **2412107**

Date: **12/20/2024**

CLIENT: Apex Laboratories
Project: A4L0918

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Associated LCS is outside of control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Method Detection Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2412107**
Date Reported: **12/20/2024**

Client: Apex Laboratories **Collection Date:** 12/3/2024 12:30:00 PM
Project: A4L0918
Lab ID: 2412107-001 **Matrix:** Water
Client Sample ID: **BE-1**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 45970			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.7	20.5		µg/L	1	12/18/24 18:37:28
Surr: 1-Chlorooctadecane	69.2	50 - 150			%Rec	1	12/18/24 18:37:28

Client: Apex Laboratories **Collection Date:** 12/3/2024 12:45:00 PM
Project: A4L0918
Lab ID: 2412107-002 **Matrix:** Water
Client Sample ID: **BE-5**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 45970			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.6		µg/L	1	12/18/24 19:20:53
Surr: 1-Chlorooctadecane	67.5	50 - 150			%Rec	1	12/18/24 19:20:53

Client: Apex Laboratories **Collection Date:** 12/3/2024 11:00:00 AM
Project: A4L0918
Lab ID: 2412107-003 **Matrix:** Water
Client Sample ID: **DUP-1**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 45970			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.6	20.5		µg/L	1	12/18/24 19:42:27
Surr: 1-Chlorooctadecane	69.4	50 - 150			%Rec	1	12/18/24 19:42:27

Analytical Report

Work Order: **2412107**
Date Reported: **12/20/2024**

Client: Apex Laboratories **Collection Date:** 12/3/2024 4:20:00 PM
Project: A4L0918
Lab ID: 2412107-004 **Matrix:** Water
Client Sample ID: **HC-5**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 45970			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	45.7	39.8	20.6		µg/L	1	12/18/24 20:03:58
Surr: 1-Chlorooctadecane	56.8	50 - 150			%Rec	1	12/18/24 20:03:58

Client: Apex Laboratories **Collection Date:** 12/3/2024 2:42:00 PM
Project: A4L0918
Lab ID: 2412107-005 **Matrix:** Water
Client Sample ID: **HC-12D**

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 45970			Analyst: AP
Aliphatic Hydrocarbon (C10-C12)	ND	39.6	20.5		µg/L	1	12/20/24 12:57:57
Surr: 1-Chlorooctadecane	73.6	50 - 150			%Rec	1	12/20/24 12:57:57

Work Order: 2412107
CLIENT: Apex Laboratories
Project: A4L0918

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-45970**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **11/26/2024**	RunNo: **96222**
Client ID: **MBLKW**	Batch ID: **45970**		Analysis Date: **12/9/2024**	SeqNo: **2007579**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Surr: 1-Chlorooctadecane	357		500.0		71.4	50	150				

Sample ID: **LCS-45970**	SampType: **LCS**	Units: **µg/L**	Prep Date: **11/26/2024**	RunNo: **96222**
Client ID: **LCSW**	Batch ID: **45970**		Analysis Date: **12/9/2024**	SeqNo: **2007580**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	308	40.0	625.0	0	49.3	12.8	95.6				
Surr: 1-Chlorooctadecane	385		500.0		77.1	50	150				

Sample ID: **LCSD-45970**	SampType: **LCSD**	Units: **µg/L**	Prep Date: **11/26/2024**	RunNo: **96222**
Client ID: **LCSW02**	Batch ID: **45970**		Analysis Date: **12/9/2024**	SeqNo: **2007581**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	302	40.0	625.0	0	48.3	12.8	95.6	308.2	2.15	20	
Surr: 1-Chlorooctadecane	392		500.0		78.3	50	150		0		

Sample ID: **2412107-001ADUP**	SampType: **DUP**	Units: **µg/L**	Prep Date: **12/10/2024**	RunNo: **96222**
Client ID: **BE-1**	Batch ID: **45970**		Analysis Date: **12/18/2024**	SeqNo: **2012886**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	ND	39.3		0	0			0	0	25	
Surr: 1-Chlorooctadecane	344		491.1		70.0	50	150		0		

Sample Log-In Check List

Client Name:	APEX	Work Order Number:	2412107
Logged by:	Morgan Wilson	Date Received:	12/6/2024 10:08:00 AM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all hold times (except field parameters, pH e.g.) able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

Item Information

Item #	Temp ºC
Sample	3.2

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT ORDER

Apex Laboratories

A4L0918

ACC 12/4/24 KN 2412107

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Alliance Technical Group
3600 Fremont Avenue N.
Seattle, WA 98103
Phone :(206) 352-3790
Fax: (206) 352-7178

Sample Name: BE-1 **Water** **Sampled: 12/03/24 12:30** (A4L0918-01)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/17/24 17:00	12/17/24 12:30	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Sample Name: BE-5 **Water** **Sampled: 12/03/24 12:45** (A4L0918-02)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/17/24 17:00	12/17/24 12:45	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Sample Name: DUP-1 **Water** **Sampled: 12/03/24 11:00** (A4L0918-03)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/17/24 17:00	12/17/24 11:00	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Sample Name: HC-5 **Water** **Sampled: 12/03/24 16:20** (A4L0918-04)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/17/24 17:00	12/17/24 16:20	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Standard TAT *WATCH HOLD TIMES*

Released By	Date	Received By	Date
[illegible]	12/5/24	UPS (Shipper)	
UPS (Shipper)		[illegible]	12/6/24 10:08
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Apex Laboratories

A4L0918

2412107

Sample Name: HC-12D | **Water** | **Sampled: 12/03/24 14:42** | (A4L0918-05)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/17/24 17:00	12/17/24 14:42	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Standard TAT

WATCH HOLD TIME

Released By	Date	Received By	Date
	12/5/24	UPS (Shipper)	
UPS (Shipper)			
Released By	Date	Received By	Date
			12/6/24 10:08

Appendix C

Historical Data Tables

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-1	8/27/2003	29.93	22.35	21.69	0.66	8.17	0.50	0.50	0.04
MW-1	9/3/2003	29.93	21.98	21.81	0.17	8.10	0.25	0.75	0.00
MW-1	9/11/2003	29.93	21.84	21.82	0.02	8.11	0.01	0.76	0.00
MW-1	9/17/2003	29.93	22.00	21.92	0.08	8.00	0.01	0.77	0.00
MW-1	9/30/2003	29.93	21.88	21.81	0.07	8.11	0.01	0.78	0.01
MW-1	10/14/2003	29.93	21.03	21.00	0.03	8.93	0.01	0.79	0.01
MW-1	10/29/2003	29.93	21.93	21.85	0.08	8.07	0.25	1.04	0.00
MW-1	11/13/2003	29.93	21.95	21.93	0.02	8.00	0.01	1.05	0.00
MW-1	11/26/2003	29.93	21.84	21.83	0.01	8.10	0.01	1.06	0.00
MW-1	12/24/2003	29.93	21.05	21.04	0.01	8.89	0.01	1.07	0.01
MW-1	1/21/2004	29.93	20.92	20.89	0.03	9.04	0.01	1.08	0.01
MW-1	2/25/2004	29.93	21.39	20.57	0.82	9.27	0.50	1.58	0.01
MW-1	3/10/2004	29.93	21.22	20.91	0.31	8.99	0.15	1.73	0.01
MW-1	3/24/2004	29.93	21.45	20.90	0.55	8.97	0.30	2.03	0.01
Well Abandoned									
MW-2	8/27/2003	30.05	19.73	19.17	0.56	10.82	0.50	0.50	0.02
MW-2	9/3/2003	30.05	19.41	19.29	0.12	10.75	0.10	0.60	0.01
MW-2	9/11/2003	30.05	19.44	19.38	0.06	10.66	0.10	0.70	0.01
MW-2	9/17/2003	30.05	19.59	19.49	0.10	10.55	0.10	0.80	0.02
MW-2	9/30/2003	30.05	19.46	19.38	0.08	10.66	0.10	0.90	0.01
MW-2	10/14/2003	30.05	19.71	19.56	0.15	10.47	0.10	1.00	0.01
MW-2	10/29/2003	30.05	19.69	19.55	0.14	10.48	0.25	1.25	0.00
MW-2	11/13/2003	30.05	19.65	19.63	0.02	10.42	0.01	1.26	0.00
MW-2	11/26/2003	30.05	19.51	19.50	0.01	10.55	0.01	1.27	0.00
MW-2	12/24/2003	30.05	18.47	18.34	0.13	11.70	0.01	1.28	0.02
MW-2	12/30/2003	30.05	18.50	18.40	0.10	11.64	0.10	1.38	0.03
Well Abandoned									
MW-3	1/9/2004	30.05	18.30	17.95	0.35	12.06	0.10	0.10	0.01
MW-3	1/15/2004	30.05	18.19	17.88	0.31	12.14	0.10	0.20	0.01
MW-3	1/21/2004	30.05	18.10	17.95	0.15	12.08	0.10	0.30	0.01
MW-3	1/29/2004	30.05	18.20	17.70	0.50	12.30	0.20	0.50	0.01
MW-3	2/3/2004	30.05	18.20	17.71	0.49	12.29	0.20	0.70	0.01
MW-3	2/12/2004	30.05	18.34	17.81	0.53	12.18	0.30	1.00	0.02
MW-3	2/18/2004	30.05	18.30	17.84	0.46	12.16	0.30	1.30	0.00
MW-3	2/25/2004	30.05	17.98	17.85	0.13	12.19	0.10	1.40	0.00
MW-3	3/3/2004	30.05	18.10	18.00	0.10	12.04	0.01	1.41	0.00
MW-3	3/10/2004	30.05	18.15	18.03	0.12	12.01	0.03	1.44	0.00
MW-3	3/18/2004	30.05	18.45	18.12	0.33	11.89	0.20	1.64	0.01
MW-3	3/24/2004	30.05	18.60	18.15	0.45	11.85	0.25	1.89	0.01
MW-3	4/1/2004	30.05	18.55	18.00	0.55	11.99	0.30	2.19	0.01
MW-3	8/27/2003	30.09	20.85	20.82	0.03	9.27	0.01	2.20	0.00
MW-3	9/3/2003	30.09	20.91	20.89	0.02	9.20	0.01	2.21	0.01
MW-3	9/11/2003	30.09	20.94	20.92	0.02	9.17	0.01	2.22	0.01
MW-3	9/17/2003	30.09	21.04	21.00	0.04	9.09	0.01	2.23	0.01
MW-3	9/30/2003	30.09	19.89	19.85	0.04	10.24	0.01	2.24	0.01
MW-3	10/14/2003	30.09	21.95	21.83	0.12	8.25	0.01	2.25	0.01
MW-3	10/29/2003	30.09	21.02	21.00	0.02	9.09	0.01	2.26	0.00
MW-3	11/13/2003	30.09	21.07	21.06	0.01	9.03	0.01	2.27	0.00
MW-3	11/26/2003	30.09	21.00	20.99	0.01	9.10	0.01	2.28	0.00
MW-3	12/24/2003	30.09	19.85	19.84	0.01	10.25	0.01	2.29	0.00
MW-3	1/21/2004	30.09	19.32	19.28	0.04	10.81	0.01	2.30	0.01
MW-3	2/25/2004	30.09	19.15	19.13	0.02	10.96	0.00	2.30	0.02
MW-3	3/24/2004	30.09	19.86	19.80	0.06	10.28	0.00	2.30	0.06
Well Abandoned									
MW-8	8/27/2003	31.13	20.38	--	0.00	10.75	0.00	0.00	0.00
MW-8	9/3/2003	31.13	20.45	--	0.00	10.68	0.00	0.00	0.00
MW-8	9/11/2003	31.13	Not Accessible						
MW-8	9/17/2003	31.13	Not Accessible						
MW-8	9/30/2003	31.13	Not Accessible						
MW-8	10/14/2003	31.13	Not Accessible						
MW-8	10/29/2003	31.13	Not Accessible						
MW-8	11/13/2003	31.13	21.15	--	0.00	9.98	0.00	0.00	0.00
MW-8	11/26/2003	31.13	21.05	--	0.00	10.08	0.00	0.00	0.00
MW-8	12/24/2003	31.13	19.18	--	0.00	11.95	0.00	0.00	0.00
MW-8	1/21/2004	31.13	18.70	--	0.00	12.43	0.00	0.00	0.00
MW-8	2/25/2004	31.13	15.69	--	0.00	15.44	0.00	0.00	0.00
MW-8	3/24/2004	31.13	16.66	--	0.00	14.47	0.00	0.00	0.00
MW-8	1/14/2005	31.13	20.60	--	0.00	10.53	0.00	0.00	0.00
MW-8	1/28/2005	31.13	20.25	20.23	0.02	10.90	0.00	0.00	0.02
MW-8	2/25/2005	31.13	20.52	--	0.00	10.61	0.00	0.00	0.00
MW-8	3/25/2005	31.13	20.88	20.88	0.00	10.25	0.00	0.00	0.00
MW-8	4/30/2005	31.13	20.20	--	0.00	10.93	0.00	0.00	0.00
MW-8	5/31/2005	31.13	19.40	--	0.00	11.73	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-8	6/24/2005	31.13	19.67	--	0.00	11.46	0.00	0.00	0.00
MW-8	7/29/2005	31.13	20.22	--	0.00	10.91	0.00	0.00	0.00
MW-8	8/26/2005	31.13	20.67	--	0.00	10.46	0.00	0.00	0.00
MW-8	9/24/2005	31.13	21.10	--	0.00	10.03	0.00	0.00	0.00
MW-8	10/21/2005	31.13	21.25	--	0.00	9.88	0.00	0.00	0.00
MW-8	11/28/2005	31.13	20.89	--	0.00	10.24	0.00	0.00	0.00
MW-8	1/3/2006	31.13	17.45	--	0.00	13.68	0.00	0.00	0.00
MW-8	2/17/2006	31.13	15.35	--	0.00	15.78	0.00	0.00	0.00
MW-8	9/19/2006	31.13	21.06	--	0.00	10.07	0.00	0.00	0.00
MW-8	12/13/2006	31.13	18.73	--	0.00	12.40	0.00	0.00	0.00
MW-8	3/29/2007	31.13	15.71	--	0.00	15.42	0.00	0.00	0.00
MW-8	6/27/2007	31.13	19.26	--	0.00	11.87	0.00	0.00	0.00
MW-8	9/18/2007	31.13	20.99	--	0.00	10.14	0.00	0.00	0.00
MW-8	12/6/2007	31.13	--	--	--	--	--	0.00	--
MW-8	3/10/2008	31.13	17.19	17.19	0.00	13.94	0.00	0.00	0.00
MW-8	6/12/2008	31.13	16.92	--	0.00	14.21	0.00	0.00	0.00
MW-8	9/8/2008	31.13	20.53	--	0.00	10.60	0.00	0.00	0.00
MW-8	12/29/2008	31.13	Unable to Gauge; Under Large Puddle of Water						
MW-8	3/10/2009	31.13	19.70	--	0.00	11.43	0.00	0.00	0.00
MW-8	6/4/2009	31.13	18.41	--	0.00	12.72	0.00	0.00	0.00
MW-8	9/9/2009	31.13	21.05	--	0.00	10.08	0.00	0.00	0.00
MW-8	12/15/2009	31.13	Unable to Gauge; Under Large Puddle of Water						
MW-8	3/11/2010	31.13	18.83	--	0.00	12.30	0.00	0.00	0.00
MW-8	6/8/2010	31.13	15.71	--	0.00	15.42	0.00	0.00	0.00
MW-8	9/16/2010	31.13	20.28	20.27	0.01	10.86	0.00	0.00	0.00
MW-8	12/15/2010	31.13	15.59	--	0.00	15.54	0.00	0.00	0.00
MW-8	6/9/2011	31.13	14.84	--	0.00	16.29	0.00	0.00	0.00
MW-8	12/1/2011	31.13	20.06	--	0.00	11.07	0.00	0.00	0.00
MW-8	6/11/2012	31.13	15.62	--	0.00	15.51	0.00	0.00	0.00
MW-8	12/19/2012	31.13	15.42	--	0.00	15.71	0.00	0.00	0.00
MW-8	12/17/2013	31.13	20.73	--	0.00	10.40	0.00	0.00	0.00
MW-8	12/11/2014	31.13	19.59	--	0.00	11.54	0.00	0.00	0.00
Well Abandoned May 14, 2015									
MW-10	8/27/2003	30.18	18.72	18.68	0.04	11.50	0.01	0.01	0.04
MW-10	9/3/2003	30.18	18.83	18.75	0.08	11.42	0.01	0.02	0.02
MW-10	9/11/2003	30.18	19.12	19.04	0.08	11.13	0.01	0.03	0.01
MW-10	9/17/2003	30.18	19.22	19.15	0.07	11.02	0.01	0.04	0.01
MW-10	9/30/2003	30.18	19.18	19.12	0.06	11.05	0.01	0.05	0.01
MW-10	10/14/2003	30.18	19.77	19.71	0.06	10.46	0.01	0.06	0.01
MW-10	10/29/2003	30.18	19.37	19.31	0.06	10.86	0.01	0.07	0.00
MW-10	11/13/2003	30.18	19.35	19.32	0.03	10.86	0.01	0.08	0.00
MW-10	11/26/2003	30.18	19.20	19.19	0.01	10.99	0.01	0.09	0.00
MW-10	12/24/2003	30.18	16.38	--	0.00	13.80	0.00	0.09	0.00
MW-10	1/21/2004	30.18	16.04	--	0.00	14.14	0.00	0.09	0.00
MW-10	2/25/2004	30.18	14.18	--	0.00	16.00	0.00	0.09	0.00
MW-10	3/24/2004	30.18	14.35	--	0.00	15.83	0.00	0.09	0.00
Well Abandoned									
MW-13	8/27/2003	31.49	18.74	--	0.00	12.75	0.00	0.09	0.00
MW-13	9/3/2003	31.49	18.79	--	0.00	12.70	0.00	0.09	0.00
MW-13	9/11/2003	31.49	19.18	--	0.00	12.31	0.00	0.09	0.00
MW-13	9/17/2003	31.49	19.25	--	0.00	12.24	0.00	0.09	0.00
MW-13	9/30/2003	31.49	19.01	--	0.00	12.48	0.00	0.09	0.00
MW-13	10/14/2003	31.49	19.52	--	0.00	11.97	0.00	0.09	0.00
MW-13	10/29/2003	31.49	19.40	--	0.00	12.09	0.00	0.09	0.00
MW-13	11/13/2003	31.49	19.65	--	0.00	11.84	0.00	0.09	0.00
MW-13	11/26/2003	31.49	19.50	--	0.00	11.99	0.00	0.09	0.00
MW-13	12/24/2003	31.49	17.97	--	0.00	13.52	0.00	0.09	0.00
MW-13	1/21/2004	31.49	17.47	--	0.00	14.02	0.00	0.09	0.00
MW-13	2/25/2004	31.49	14.61	--	0.00	16.88	0.00	0.09	0.00
MW-13	3/24/2004	31.49	15.91	--	0.00	15.58	0.00	0.09	0.00
Well Abandoned									
MW-14	8/27/2003	31.32	22.23	17.36	4.87	13.42	0.25	0.25	0.10
MW-14	9/3/2003	31.32	21.05	19.99	1.06	11.21	0.10	0.35	0.20
MW-14	9/11/2003	31.32	21.31	20.21	1.10	10.99	0.01	0.36	0.10
MW-14	9/17/2003	31.32	21.42	20.33	1.09	10.87	1.00	1.36	0.11
MW-14	9/30/2003	31.32	23.11	19.71	3.40	11.24	1.50	2.86	0.19
MW-14	10/14/2003	31.32	23.01	19.70	3.31	11.26	1.50	4.36	0.14
MW-14	10/29/2003	31.32	20.60	20.58	0.02	10.74	0.01	4.37	0.00
MW-14	11/13/2003	31.32	20.79	20.73	0.06	10.58	0.10	4.47	0.00
MW-14	11/26/2003	31.32	20.46	20.15	0.31	11.14	0.10	4.57	0.02
MW-14	12/10/2003	31.32	20.51	20.42	0.09	10.89	0.10	4.67	0.01
MW-14	12/24/2003	31.32	19.05	--	0.00	12.27	0.00	4.67	0.00
MW-14	1/21/2004	31.32	17.20	17.19	0.01	14.13	0.01	4.68	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-14	2/25/2004	31.32	15.51	15.47	0.04	15.85	0.00	4.68	0.04
MW-14	3/24/2004	31.32	14.97	14.90	0.07	16.41	0.00	4.68	0.07
MW-14	1/14/2005	31.32	21.60	20.00	1.60	11.14	0.01	4.69	1.60
MW-14	1/21/2005	31.32	--	--	--	--	0.00	4.69	--
MW-14	1/28/2005	31.32	20.27	19.00	1.27	12.18	0.01	4.70	0.00
MW-14	2/4/2005	31.32	--	19.55	--	--	0.01	4.71	0.00
MW-14	2/11/2005	31.32	19.62	19.61	0.01	11.71	0.01	4.72	0.01
MW-14	2/18/2005	31.32	19.64	19.64	0.00	11.68	0.01	4.73	0.00
MW-14	2/25/2005	31.32	20.03	20.03	0.00	11.29	0.01	4.74	0.00
MW-14	3/25/2005	31.32	20.32	20.32	0.00	11.00	0.00	4.74	0.00
MW-14	4/30/2005	31.32	--	--	--	--	0.00	4.74	--
MW-14	5/13/2005	31.32	19.25	--	0.00	12.07	0.00	4.74	0.00
MW-14	5/31/2005	31.32	18.80	18.80	0.00	12.52	0.00	4.74	0.00
MW-14	6/24/2005	31.32	18.75	18.70	0.05	12.61	0.00	4.74	0.00
MW-14	7/29/2005	31.32	19.92	--	0.00	11.40	0.00	4.74	0.00
MW-14	8/26/2005	31.32	--	--	--	--	0.00	4.74	--
MW-14	9/24/2005	31.32	20.52	--	0.00	10.80	0.00	4.74	0.00
MW-14	10/21/2005	31.32	20.70	--	0.00	10.62	0.00	4.74	0.00
MW-14	11/28/2005	31.32	20.20	--	0.00	11.12	0.00	4.74	0.00
MW-14	1/3/2006	31.32	17.98	--	0.00	13.34	0.00	4.74	0.00
MW-14	2/17/2006	31.32	--	15.65	--	--	0.00	4.74	--
MW-14	9/19/2006	31.32	20.43	--	0.00	10.89	0.00	4.74	0.00
MW-14	12/13/2006	31.32	18.38	--	0.00	12.94	0.00	4.74	0.00
MW-14	3/29/2007	31.32	17.03	17.01	0.02	14.31	0.00	4.74	0.02
MW-14	6/27/2007	31.32	19.28	18.90	0.38	12.38	2.50	7.24	0.01
MW-14	9/18/2007	31.32	20.46	20.41	0.05	10.90	0.00	7.24	0.05
MW-14	12/6/2007	31.32	15.75	15.75	0.00	15.57	0.00	7.24	0.00
MW-14	3/10/2008	31.32	17.55	17.55	0.00	13.77	0.00	7.24	0.02
MW-14	6/12/2008	31.32	15.85	15.80	0.05	15.51	0.00	7.24	0.05
MW-14	9/8/2008	31.32	Well inadvertantly not gauged during groundwater monitoring event.						
MW-14	12/29/2008	31.32	13.51	13.50	0.01	17.82	0.00	7.24	0.01
MW-14	3/10/2009	31.32	19.02	19.01	0.01	12.31	0.00	7.24	0.01
MW-14	6/4/2009	31.32	18.26	18.26	0.00	13.06	0.00	7.24	0.00
MW-14	9/9/2009	31.32	20.61	20.60	0.00	10.71	0.00	7.24	0.01
MW-14	12/15/2009	31.32	Unable to Gauge; Under Large Puddle of Water						
MW-14	3/11/2010	31.32	18.08	NP	0.00	13.24	0.00	7.24	0.00
MW-14	6/8/2010	31.32	17.07	NP	0.00	14.25	0.00	7.24	0.00
MW-14	9/16/2010	31.32	19.63	NP	0.00	11.69	0.00	7.24	0.00
MW-14	12/13/2010	31.32	15.16	NP	0.00	16.16	0.00	7.24	0.00
MW-14	6/9/2011	31.32	14.99	NP	0.00	16.33	0.00	7.24	0.00
MW-14	12/1/2011	31.32	19.68	NP	0.00	11.64	0.00	7.24	0.00
MW-14	6/11/2012	31.32	16.48	NP	0.00	14.84	0.00	7.24	0.00
MW-14	12/19/2012	31.32	11.89	11.89	0.00	19.43	0.00	7.24	0.00
MW-14	12/17/2013	31.32	20.14	NP	0.00	11.18	0.00	7.24	0.00
MW-14	12/11/2014	31.32	17.38	NP	0.00	13.94	0.00	7.24	0.00
Well Abandoned May 14, 2015									
MW-15	8/27/2003	31.57	19.83	16.23	3.60	14.94	0.00	0.00	0.00
MW-15	9/3/2003	31.57	17.16	16.41	0.75	15.08	0.50	0.50	0.04
MW-15	9/11/2003	31.57	16.98	16.63	0.35	14.90	0.10	0.60	0.02
MW-15	9/17/2003	31.57	17.07	16.77	0.30	14.77	0.30	0.90	0.02
MW-15	9/30/2003	31.57	17.00	16.71	0.29	14.83	0.40	1.30	0.03
MW-15	10/14/2003	31.57	17.74	17.31	0.43	14.21	0.30	1.60	0.02
MW-15	10/29/2003	31.57	17.98	17.50	0.48	14.02	0.50	2.10	0.01
MW-15	11/13/2003	31.57	18.42	18.13	0.29	13.41	0.10	2.20	0.00
MW-15	11/19/2003	31.57	18.10	17.92	0.18	13.63	0.20	2.40	0.02
MW-15	11/26/2003	31.57	18.07	17.88	0.19	13.67	0.10	2.50	0.00
MW-15	12/3/2003	31.57	17.19	17.12	0.07	14.44	0.01	2.51	0.02
MW-15	12/10/2003	31.57	18.20	18.10	0.10	13.46	0.10	2.61	0.01
MW-15	12/24/2003	31.57	15.74	15.59	0.15	15.96	0.01	2.62	0.02
MW-15	1/9/2004	31.57	15.86	15.66	0.20	15.89	0.10	2.72	0.00
MW-15	1/21/2004	31.57	15.30	15.22	0.08	16.34	0.01	2.73	0.01
MW-15	2/3/2004	31.57	15.69	15.60	0.09	15.96	0.00	2.73	0.09
MW-15	2/18/2004	31.57	14.56	14.53	0.03	17.04	0.00	2.73	0.03
MW-15	2/25/2004	31.57	14.11	14.10	0.01	17.47	0.00	2.73	0.01
MW-15	3/24/2004	31.57	14.72	NP	0.00	16.85	0.00	2.73	0.00
MW-15	1/14/2005	31.57	18.25	17.50	0.75	13.99	0.10	2.83	0.10
MW-15	1/21/2005	31.57	17.70	17.15	0.55	14.36	0.50	3.33	0.10
MW-15	1/28/2005	31.57	17.39	17.17	0.22	14.38	0.05	3.38	0.06
MW-15	2/4/2005	31.57	17.38	17.21	0.17	14.34	0.15	3.53	0.01
MW-15	2/11/2005	31.57	17.20	17.09	0.11	14.47	0.05	3.58	0.09
MW-15	2/18/2005	31.57	17.23	17.11	0.12	14.45	0.05	3.63	0.04
MW-15	2/25/2005	31.57	17.42	17.35	0.07	14.21	0.00	3.63	0.07
MW-15	3/4/2005	31.57	17.61	17.51	0.10	14.05	0.20	3.83	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-15	3/11/2005	31.57	17.55	17.53	0.02	14.04	0.00	3.83	0.02
MW-15	3/25/2005	31.57	18.05	17.99	0.06	13.57	0.00	3.83	0.06
MW-15	4/14/2005	31.57	17.22	17.14	0.08	14.42	0.00	3.83	0.08
MW-15	4/30/2005	31.57	17.00	16.84	0.16	14.71	0.25	4.08	0.01
MW-15	5/13/2005	31.57	16.61	16.54	0.07	15.02	0.00	4.08	0.07
MW-15	5/31/2005	31.57	16.38	16.30	0.08	15.26	0.00	4.08	0.08
MW-15	6/24/2005	31.57	16.50	16.29	0.21	15.26	0.25	4.33	0.01
MW-15	7/8/2005	31.57	16.51	16.40	0.11	15.16	0.25	4.58	0.00
MW-15	7/15/2005	31.57	16.51	16.45	0.06	15.11	0.00	4.58	0.06
MW-15	7/29/2005	31.57	16.79	16.72	0.07	14.84	0.00	4.58	0.07
MW-15	8/26/2005	31.57	17.43	17.39	0.04	14.18	0.00	4.58	0.04
MW-15	9/24/2005	31.57	18.05	17.96	0.09	13.60	0.00	4.58	0.09
MW-15	10/21/2005	31.57	18.58	18.50	0.08	13.06	0.00	4.58	0.08
MW-15	11/28/2005	31.57	17.65	17.45	0.20	14.10	0.05	4.63	0.00
MW-15	12/14/2005	31.57	17.19	17.10	0.09	14.46	0.00	4.63	0.09
MW-15	1/3/2006	31.57	16.15	15.98	0.17	15.57	0.50	5.13	0.03
MW-15	1/17/2006	31.57	15.19	15.10	0.09	16.46	0.00	5.13	0.09
MW-15	1/23/2006	31.57	15.01	14.95	0.06	16.61	0.00	5.13	0.06
MW-15	2/17/2006	31.57	14.35	14.30	0.05	17.26	0.00	5.13	0.05
MW-15	9/19/2006	31.57	18.61	18.01	0.60	13.49	1.30	6.43	0.01
MW-15	12/13/2006	31.57	16.30	15.87	0.43	15.65	1.00	7.43	0.00
MW-15	3/29/2007	31.57	15.57	15.22	0.35	16.31	0.25	7.68	0.01
MW-15	6/27/2007	31.57	16.56	16.14	0.42	15.38	2.00	9.68	0.01
MW-15	9/18/2007	31.57	18.26	18.25	0.01	13.32	0.00	9.68	0.01
MW-15	12/6/2007	31.57	17.76	17.48	0.28	14.06	0.30	9.98	0.00
MW-15	3/10/2008	31.57	15.86	15.35	0.51	16.16	0.00	9.98	0.51
MW-15	3/14/2008	31.57	15.56	15.15	0.41	16.37	0.75	10.73	0.01
MW-15	6/13/2008	31.57	16.28	15.73	0.55	15.78	0.66	11.39	0.00
MW-15	9/8/2008	31.57	17.67	17.66	0.01	13.91	0.26	11.65	0.00
MW-15	12/29/2008	31.57	Unable to Gauge; Under Large Puddle of Water						
MW-15	3/10/2009	31.57	16.35	16.29	0.06	15.27	0.00	11.65	0.06
MW-15	6/4/2009	31.57	17.14	16.18	0.96	15.28	0.00	11.65	0.00
MW-15	7/13/2009	31.57	19.06	18.02	1.04	13.44	1.50	13.15	0.02
MW-15	8/10/2009	31.57	17.92	17.63	0.29	13.91	0.25	13.40	0.01
MW-15	9/9/2009	31.57	18.48	18.35	0.13	13.21	0.20	13.60	0.00
MW-15	10/15/2009	31.57	19.34	19.29	0.05	12.27	0.00	13.60	0.05
MW-15	11/18/2009	31.57	18.7	18.66	0.04	12.91	0.00	13.60	0.04
MW-15	12/15/2009	31.57	18.45	17.83	0.62	13.67	0.64	14.24	0.00
MW-15	1/13/2010	31.57	16.65	16.24	0.41	15.28	0.33	14.57	0.00
MW-15	1/21/2010	31.57	16.21	15.91	0.30	15.63	0.30	14.87	0.00
MW-15	1/26/2010	31.57	16.06	15.91	0.15	15.64	0.30	15.17	0.00
MW-15	2/5/2010	31.57	15.92	15.83	0.09	15.73	0.00	15.17	0.09
MW-15	3/2/2010	31.57	16.17	15.90	0.27	15.64	0.30	15.47	0.00
MW-15	3/12/2010	31.57	15.81	15.67	0.14	15.88	0.30	15.77	0.01
MW-15	3/25/2010	31.57	15.70	15.65	0.05	15.91	0.00	15.77	0.05
MW-15	4/2/2010	31.57	15.89	15.84	0.05	15.72	0.00	15.77	0.05
MW-15	4/9/2010	31.57	15.57	15.57	0.00	16.00	0.00	15.77	0.00
MW-15	4/16/2010	31.57	15.72	15.52	0.20	16.03	0.50	16.27	0.00
MW-15	4/23/2010	31.57	15.94	15.85	0.09	15.71	0.00	16.27	0.09
MW-15	5/4/2010	31.57	15.89	15.83	0.06	15.73	0.00	16.27	0.06
MW-15	6/8/2010	31.57	15.61	15.55	0.06	16.01	0.00	16.27	0.06
MW-15	7/9/2010	31.57	15.78	15.53	0.25	16.01	0.25	16.52	0.01
MW-15	7/23/2010	31.57	15.85	15.76	0.09	15.80	0.00	16.52	0.09
MW-15	8/6/2010	31.57	16.19	15.92	0.27	15.62	0.25	16.77	0.00
MW-15	8/19/2010	31.57	16.23	16.15	0.08	15.41	0.00	16.77	0.08
MW-15	8/27/2010	31.57	16.40	16.22	0.18	15.33	0.25	17.02	0.07
MW-15	9/17/2010	31.57	16.74	16.62	0.12	14.94	0.25	17.27	0.00
MW-15	10/8/2010	31.57	17.30	17.23	0.07	14.33	0.00	17.27	0.07
MW-15	11/11/2010	31.57	17.19	17.10	0.09	14.46	0.00	17.27	0.09
MW-15	12/15/2010	31.57	15.85	15.64	0.21	15.91	0.50	17.77	0.04
MW-15	12/21/2010	31.57	15.60	15.47	0.13	16.09	0.50	18.27	0.02
MW-15	12/30/2010	31.57	15.45	15.32	0.13	16.24	0.50	18.77	0.02
MW-15	1/6/2011	31.57	15.23	15.19	0.04	16.38	0.05	18.82	0.01
MW-15	1/13/2011	31.57	14.66	14.62	0.04	16.95	0.00	18.82	0.04
MW-15	1/19/2011	31.57	14.99	14.94	0.05	16.62	0.00	18.82	0.05
MW-15	1/28/2011	31.57	14.76	14.72	0.04	16.85	0.00	18.82	0.04
MW-15	2/9/2011	31.57	15.05	14.98	0.07	16.58	0.00	18.82	0.07
MW-15	2/23/2011	31.57	15.14	15.05	0.09	16.51	0.00	18.82	0.09
MW-15	3/9/2011	31.57	14.42	14.40	0.02	17.17	0.00	18.82	0.02
MW-15	3/29/2011	31.57	14.46	14.43	0.03	17.14	0.00	18.82	0.03
MW-15	4/21/2011	31.57	14.16	14.15	0.01	17.42	0.00	18.82	0.01
MW-15	5/6/2011	31.57	14.19	14.18	0.01	17.39	0.00	18.82	0.01
MW-15	6/9/2011	31.57	14.45	14.45	0.00	17.12	0.00	18.82	0.00
MW-15	7/7/2011	31.57	14.80	14.75	0.05	16.81	0.00	18.82	0.05

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-15	8/3/2011	31.57	15.28	15.21	0.07	16.35	0.00	18.82	0.07
MW-15	9/8/2011	31.57	16.03	15.98	0.05	15.58	0.00	18.82	0.05
MW-15	10/3/2011	31.57	16.45	16.13	0.32	15.40	0.25	19.07	0.01
MW-15	11/10/2011	31.57	17.11	17.02	0.09	14.54	0.00	19.07	0.09
MW-15	12/1/2011	31.57	16.57	16.56	0.01	15.01	0.00	19.07	0.01
MW-15	1/16/2012	31.57	16.88	16.88	0.00	14.69	0.00	19.07	0.00
MW-15	1/25/2012	31.57	16.22	16.13	0.09	15.43	0.00	19.07	0.09
MW-15	3/3/2012	31.57	16.06	15.98	0.08	15.58	0.00	19.07	0.08
MW-15	3/14/2012	31.57	Well under large puddle.						
MW-15	3/22/2012	31.57	15.53	15.46	0.07	16.10	0.00	19.07	0.07
MW-15	3/29/2012	31.57	Well under large puddle.						
MW-15	4/5/2012	31.57	15.38	15.11	0.27	16.43	0.13	19.20	0.00
MW-15	4/13/2012	31.57	15.15	15.05	0.10	16.51	0.00	19.20	0.10
MW-15	4/23/2012	31.57	15.01	15.00	0.01	16.57	0.00	19.20	0.01
MW-15	5/14/2012	31.57	15.15	14.90	0.25	16.64	0.25	19.45	0.01
MW-15	5/25/2012	31.57	15.03	15.02	0.01	16.55	0.00	19.45	0.01
MW-15	6/12/2012	31.57	15.11	15.10	0.01	16.47	0.00	19.45	0.01
MW-15	7/3/2012	31.57	15.26	15.21	0.05	16.35	0.00	19.45	0.05
MW-15	8/23/2012	31.57	16.04	15.95	0.09	15.61	0.00	19.45	0.09
MW-15	9/24/2012	31.57	16.95	16.50	0.45	15.02	0.50	19.95	0.02
MW-15	10/8/2012	31.57	17.16	16.95	0.21	14.60	0.25	20.20	0.00
MW-15	11/14/2012	31.57	17.14	17.08	0.06	14.48	0.00	20.20	0.06
MW-15	12/19/2012	31.57	Well under large puddle.						
MW-15	1/4/2013	31.57	15.22	15.04	0.18	16.51	0.2	20.40	0.01
MW-15	1/18/2013	31.57	15.32	15.18	0.14	16.37	0.75	21.15	0.01
MW-15	1/31/2013	31.57	15.48	15.37	0.11	16.19	0.1	21.25	0.01
MW-15	3/6/2013	31.57	15.78	15.60	0.18	15.95	0.5	21.75	0.01
MW-15	4/3/2013	31.57	15.15	15.13	0.02	16.44	0.00	21.75	0.02
MW-15	5/6/2013	31.57	16.4	16.38	0.02	15.19	0.00	21.75	0.02
MW-15	6/12/2013	31.57	16.26	16.23	0.03	15.34	0.00	21.75	0.03
MW-15	7/16/2013	31.57	16.88	16.65	0.23	14.89	0.40	22.15	0.02
MW-15	8/26/2013	31.57	18.35	18.10	0.25	13.44	0.80	22.95	0.00
MW-15	9/25/2013	31.57	18.65	18.60	0.05	12.96	0.00	22.95	0.05
MW-15	10/31/2013	31.57	18.4	18.26	0.14	13.29	0.00	22.95	0.05
MW-15	11/27/2013	31.57	18.45	18.40	0.05	13.16	0.00	22.95	0.05
MW-15	12/17/2013	31.57	18.57	18.52	0.05	13.04	0.00	22.95	0.05
MW-15	12/11/2014	31.57	17.65	16.5	1.15	14.94	1.25	24.20	0.00
Well Abandoned May 14, 2015									
MW-16	8/27/2003	31.24	18.43	18.21	0.22	13.01	0.25	0.25	0.00
MW-16	9/3/2003	31.24	18.21	18.20	0.01	13.04	0.01	0.26	0.01
MW-16	9/11/2003	31.24	18.28	18.27	0.01	12.97	0.01	0.27	0.00
MW-16	9/17/2003	31.24	18.31	18.30	0.01	12.94	0.01	0.28	0.00
MW-16	9/30/2003	31.24	18.23	18.21	0.02	13.03	0.01	0.29	0.00
MW-16	10/14/2003	31.24	18.31	NP	0.00	12.93	0.00	0.29	0.00
MW-16	10/29/2003	31.24	18.34	18.32	0.02	12.92	0.01	0.30	0.00
MW-16	11/13/2003	31.24	18.37	18.36	0.01	12.88	0.01	0.31	0.00
MW-16	11/26/2003	31.24	18.23	18.20	0.03	13.04	0.01	0.32	0.00
MW-16	12/24/2003	31.24	17.41	--	0.00	13.83	0.00	0.32	0.00
MW-16	1/21/2004	31.24	17.04	17.03	0.01	14.21	0.01	0.33	0.00
MW-16	2/25/2004	31.24	17.08	17.07	0.01	14.17	0.00	0.33	0.01
MW-16	3/24/2004	31.24	18.61	18.60	0.01	12.64	0.00	0.33	0.01
Well Abandoned									
MW-17	8/27/2003	28.40	18.00	17.48	0.52	10.86	0.50	0.50	0.01
MW-17	9/3/2003	28.40	17.85	17.61	0.24	10.76	0.10	0.60	0.01
MW-17	9/11/2003	28.40	18.07	17.98	0.09	10.41	0.01	0.61	0.00
MW-17	9/17/2003	28.40	18.20	18.05	0.15	10.33	0.01	0.62	0.00
MW-17	9/30/2003	28.40	18.18	18.00	0.18	10.38	0.01	0.63	0.00
MW-17	10/14/2003	28.40	18.60	18.52	0.08	9.87	0.01	0.64	0.01
MW-17	10/29/2003	28.40	18.56	18.51	0.05	9.88	0.01	0.65	0.00
MW-17	11/13/2003	28.40	18.74	18.71	0.03	9.69	0.01	0.66	0.01
MW-17	11/26/2003	28.40	18.68	18.66	0.02	9.74	0.01	0.67	0.01
MW-17	12/24/2003	28.40	17.31	17.29	0.02	11.11	0.01	0.68	0.01
MW-17	1/21/2004	28.40	15.68	--	0.00	12.72	0.00	0.68	0.00
MW-17	2/25/2004	28.40	16.30	14.17	2.13	14.00	1.50	2.18	0.01
MW-17	3/10/2004	28.40	15.80	14.85	0.95	13.45	0.15	2.33	0.01
MW-17	3/24/2004	28.40	15.12	15.03	0.09	13.36	0.00	2.33	0.09
MW-17	1/14/2005	28.40	19.50	17.75	1.75	10.46	0.10	2.43	0.35
MW-17	1/21/2005	28.40	18.55	17.75	0.80	10.56	1.10	3.53	0.10
MW-17	1/28/2005	28.40	18.01	17.78	0.23	10.59	0.20	3.73	0.05
MW-17	2/4/2005	28.40	18.02	17.86	0.16	10.52	0.15	3.88	0.07
MW-17	2/11/2005	28.40	17.81	17.68	0.13	10.71	0.05	3.93	0.07
MW-17	2/18/2005	28.40	17.86	17.74	0.12	10.65	0.05	3.98	0.05
MW-17	2/25/2005	28.40	17.99	17.91	0.08	10.48	0.00	3.98	0.08

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Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-17	3/4/2005	28.40	18.15	18.05	0.10	10.34	0.15	4.13	0.03
MW-17	3/11/2005	28.40	18.03	18.00	0.03	10.40	0.00	4.13	0.03
MW-17	3/25/2005	28.40	18.33	18.26	0.07	10.13	0.00	4.13	0.07
MW-17	4/14/2005	28.40	17.82	17.74	0.08	10.65	0.00	4.13	0.08
MW-17	4/30/2005	28.40	17.54	17.46	0.08	10.93	0.00	4.13	0.08
MW-17	5/31/2005	28.40	16.74	16.66	0.08	11.73	0.00	4.13	0.08
MW-17	6/24/2005	28.40	16.85	16.78	0.07	11.61	0.00	4.13	0.07
MW-17	7/29/2005	28.40	17.52	17.42	0.10	10.97	0.00	4.13	0.10
MW-17	8/26/2005	28.40	17.97	17.90	0.07	10.49	0.00	4.13	0.07
MW-17	9/24/2005	28.40	18.56	18.50	0.06	9.89	0.00	4.13	0.06
MW-17	10/21/2005	28.40	18.90	18.82	0.08	9.57	0.00	4.13	0.08
MW-17	11/28/2005	28.40	18.40	18.30	0.10	10.09	0.00	4.13	0.10
MW-17	1/3/2006	28.40	16.10	16.01	0.09	12.38	0.00	4.13	0.09
MW-17	2/17/2006	28.40	15.22	13.65	1.57	14.58	1.50	5.63	0.05
MW-17	3/3/2006	28.40	14.79	13.90	0.89	14.40	0.75	6.38	0.05
MW-17	9/19/2006	28.40	18.86	18.18	0.68	10.15	0.80	7.18	0.05
MW-17	12/13/2006	28.40	17.11	15.34	1.77	12.87	1.60	8.78	0.03
MW-17	3/29/2007	28.40	17.56	13.66	3.90	14.31	4.00	12.78	0.05
MW-17	5/3/2007	28.40	16.10	14.74	1.36	13.51	7.50	20.28	0.05
MW-17	5/15/2007	28.40	15.50	14.75	0.75	13.57	2.00	22.28	0.02
MW-17	5/25/2007	28.40	15.35	14.79	0.56	13.55	1.00	23.28	0.05
MW-17	6/4/2007	28.40	15.90	15.53	0.37	12.83	0.75	24.03	0.10
MW-17	6/13/2007	28.40	16.11	15.77	0.34	12.59	0.50	24.53	0.04
MW-17	6/19/2007	28.40	16.02	15.84	0.18	12.54	0.25	24.78	0.05
MW-17	6/27/2007	28.40	16.47	16.31	0.16	12.07	1.00	25.78	0.04
MW-17	7/9/2007	28.40	16.75	16.66	0.09	11.73	0.00	25.78	0.09
MW-17	7/25/2007	28.40	17.01	16.87	0.14	11.51	0.10	25.88	0.10
MW-17	8/9/2007	28.40	17.42	17.24	0.18	11.14	0.15	26.03	0.10
MW-17	8/22/2007	28.40	17.66	17.57	0.09	10.82	0.00	26.03	0.09
MW-17	9/7/2007	28.40	17.97	17.90	0.07	10.49	0.00	26.03	0.07
MW-17	9/14/2007	28.40	17.84	17.70	0.14	10.68	0.50	26.53	0.01
MW-17	9/18/2007	28.40	18.23	18.19	0.04	10.21	0.00	26.53	0.04
MW-17	10/4/2007	28.40	18.50	18.46	0.04	9.94	0.00	26.53	0.04
MW-17	10/11/2007	28.40	18.55	18.51	0.04	9.89	0.00	26.53	0.04
MW-17	10/24/2007	28.40	18.65	18.60	0.05	9.79	0.00	26.53	0.05
MW-17	11/8/2007	28.40	18.77	18.72	0.05	9.67	0.00	26.53	0.05
MW-17	11/21/2007	28.40	18.71	18.65	0.06	9.74	0.00	26.53	0.06
MW-17	12/7/2007	28.40	17.79	17.50	0.29	10.87	0.40	26.93	0.06
MW-17	12/21/2007	28.40	17.40	16.96	0.44	11.39	0.40	27.33	0.00
MW-17	1/3/2008	28.40	16.00	15.19	0.81	13.12	1.00	28.33	0.04
MW-17	1/18/2008	28.40	15.80	14.48	1.32	13.77	1.50	29.83	0.01
MW-17	1/24/2008	28.40	14.96	14.39	0.57	13.95	0.90	30.73	0.00
MW-17	1/31/2008	28.40	14.97	14.57	0.40	13.79	0.75	31.48	0.00
MW-17	2/6/2008	28.40	14.81	14.27	0.54	14.07	1.00	32.48	0.00
MW-17	2/15/2008	28.40	14.62	13.98	0.64	14.35	1.00	33.48	0.00
MW-17	2/29/2008	28.40	15.00	14.45	0.55	13.89	0.75	34.23	0.00
MW-17	3/10/2008	28.40	15.18	14.81	0.37	13.55	0.00	34.23	0.37
MW-17	3/12/2008	28.40	15.25	14.79	0.46	13.56	0.50	34.73	0.00
MW-17	3/21/2008	28.40	15.35	15.03	0.32	13.33	0.40	35.13	0.00
MW-17	4/11/2008	28.40	15.63	15.32	0.31	13.05	0.79	35.92	0.00
MW-17	4/17/2008	28.40	15.53	15.34	0.19	13.04	0.26	36.18	0.00
MW-17	4/24/2008	28.40	15.57	15.48	0.09	12.91	0.13	36.31	0.00
MW-17	5/2/2008	28.40	15.54	15.35	0.19	13.03	0.50	36.81	0.01
MW-17	5/8/2008	28.40	15.54	15.42	0.12	12.97	0.20	37.01	0.00
MW-17	5/14/2008	28.40	15.61	15.50	0.11	12.89	0.50	37.51	0.00
MW-17	5/30/2008	28.40	14.76	14.54	0.22	13.84	0.40	37.91	0.00
MW-17	6/13/2008	28.40	14.45	14.20	0.25	14.17	0.40	38.31	0.00
MW-17	6/25/2008	28.40	15.01	14.84	0.17	13.54	0.21	38.52	0.00
MW-17	7/11/2008	28.40	15.85	15.73	0.12	12.66	0.10	38.62	0.00
MW-17	7/28/2008	28.40	16.68	16.62	0.06	11.77	0.00	38.62	0.06
MW-17	8/13/2008	28.40	17.27	17.12	0.15	11.26	0.13	38.75	0.00
MW-17	8/27/2008	28.40	17.48	17.42	0.06	10.97	0.00	38.75	0.06
MW-17	9/8/2008	28.40	17.73	17.68	0.05	10.71	0.00	38.75	0.05
MW-17	9/18/2008	28.40	18.00	17.95	0.05	10.44	0.00	38.75	0.05
MW-17	9/30/2008	28.40	17.17	17.12	0.05	11.27	0.00	38.75	0.05
MW-17	10/16/2008	28.40	18.46	18.40	0.06	9.99	0.00	38.75	0.06
MW-17	10/30/2008	28.40	18.60	18.56	0.04	9.84	0.00	38.75	0.04
MW-17	11/14/2008	28.40	18.53	18.46	0.07	9.93	0.00	38.75	0.07
MW-17	11/26/2008	28.40	18.36	18.27	0.09	10.12	0.00	38.75	0.09
MW-17	12/16/2008	28.40	18.44	18.36	0.08	10.03	0.00	38.75	0.08
MW-17	12/29/2008	28.40	18.23	18.04	0.19	10.34	0.13	38.88	0.00
MW-17	1/15/2009	28.40	16.49	15.62	0.87	12.68	0.40	39.28	0.01
MW-17	1/23/2009	28.40	16.22	15.82	0.40	12.54	0.40	39.68	0.01
MW-17	1/29/2009	28.40	16.19	15.96	0.23	12.41	0.26	39.94	0.00

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Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-17	2/4/2009	28.40	16.15	15.94	0.21	12.44	0.40	40.34	0.01
MW-17	2/12/2009	28.40	16.34	16.22	0.12	12.17	0.26	40.60	0.00
MW-17	2/19/2009	28.40	16.65	16.57	0.08	11.82	0.00	40.60	0.08
MW-17	3/10/2009	28.40	16.61	16.49	0.12	11.90	0.13	40.73	0.00
MW-17	3/27/2009	28.40	16.69	16.58	0.11	11.81	0.13	40.86	0.00
MW-17	4/16/2009	28.40	16.64	16.55	0.09	11.84	0.00	40.86	0.09
MW-17	5/14/2009	28.40	16.27	16.15	0.12	12.24	0.07	40.93	0.00
MW-17	6/4/2009	28.40	15.79	15.73	0.06	12.66	0.00	40.93	0.00
MW-17	7/13/2009	28.40	17.26	17.14	0.12	11.25	0.13	41.06	0.01
MW-17	8/10/2009	28.40	17.90	17.84	0.06	10.55	0.00	41.06	0.06
MW-17	9/9/2009	28.40	18.52	18.47	0.05	9.92	0.00	41.06	0.05
MW-17	10/15/2009	28.40	18.79	18.73	0.06	9.66	0.00	41.06	0.06
MW-17	11/18/2009	28.40	18.34	18.32	0.02	10.08	0.00	41.06	0.02
MW-17	12/15/2009	28.40	17.43	17.31	0.12	11.08	0.16	41.22	0.00
MW-17	1/13/2010	28.40	16.80	15.54	1.26	12.72	1.33	42.55	0.00
MW-17	1/21/2010	28.40	--	16.83	--	--	0.80	43.35	--
MW-17	1/26/2010	28.40	15.74	15.07	0.67	13.26	0.70	44.05	0.00
MW-17	2/5/2010	28.40	15.60	15.53	0.07	12.86	0.00	44.05	0.07
MW-17	3/2/2010	28.40	16.85	14.92	1.93	13.27	2.10	46.15	0.00
MW-17	3/12/2010	28.40	16.06	15.13	0.93	13.17	1.00	47.15	0.00
MW-17	3/25/2010	28.40	16.10	15.25	0.85	13.06	1.00	48.15	0.21
MW-17	4/2/2010	28.40	16.63	16.12	0.51	12.22	0.25	48.40	0.01
MW-17	4/9/2010	28.40	15.63	14.94	0.69	13.38	0.50	48.90	0.00
MW-17	4/16/2010	28.40	14.79	14.79	0.00	13.61	0.00	48.90	0.00
MW-17	4/23/2010	28.40	16.30	15.22	1.08	13.06	1.00	49.90	0.02
MW-17	5/4/2010	28.40	15.91	15.31	0.60	13.02	0.40	50.30	0.00
MW-17	6/8/2010	28.40	14.43	13.80	0.63	14.53	0.75	51.05	0.02
MW-17	7/9/2010	28.40	16.02	14.75	1.27	13.51	1.00	52.05	0.00
MW-17	7/23/2010	28.40	16.24	15.58	0.66	12.75	0.50	52.55	0.02
MW-17	8/6/2010	28.40	16.45	16.08	0.37	12.28	0.50	53.05	0.01
MW-17	8/19/2010	28.40	16.73	16.48	0.25	11.89	0.25	53.30	0.01
MW-17	8/27/2010	28.40	16.77	16.69	0.08	11.70	0.00	53.30	0.01
MW-17	9/17/2010	28.40	17.27	17.13	0.14	11.25	0.50	53.80	0.01
MW-17	10/8/2010	28.40	17.48	17.43	0.05	10.96	0.00	53.80	0.05
MW-17	11/11/2010	28.40	17.20	16.88	0.32	11.48	0.40	54.20	0.02
MW-17	12/15/2010	28.40	16.81	14.18	2.63	13.93	2.50	56.70	0.01
MW-17	12/21/2010	28.40	15.39	14.20	1.19	14.07	1.25	57.95	0.01
MW-17	12/30/2010	28.40	14.87	13.83	1.04	14.46	1.00	58.95	0.01
MW-17	1/6/2011	28.40	14.46	13.74	0.72	14.58	0.75	59.70	0.03
MW-17	1/13/2011	28.40	14.41	13.83	0.58	14.51	0.75	60.45	0.01
MW-17	1/19/2011	28.40	13.50	13.10	0.40	15.26	0.50	60.95	0.00
MW-17	1/28/2011	28.40	13.66	12.96	0.70	15.36	0.75	61.70	0.02
MW-17	2/9/2011	28.40	14.75	13.95	0.80	14.36	1.50	63.20	0.02
MW-17	2/23/2011	28.40	14.80	14.75	0.05	13.64	0.00	63.20	0.00
MW-17	3/9/2011	28.40	14.05	13.32	0.73	15.00	0.40	63.60	0.01
MW-17	3/29/2011	28.40	14.97	13.06	1.91	15.13	2.50	66.10	0.02
MW-17	4/21/2011	28.40	14.04	12.65	1.39	15.60	1.20	67.30	0.02
MW-17	5/6/2011	28.40	14.01	13.02	0.99	15.27	0.50	67.80	0.02
MW-17	6/9/2011	28.40	12.58	12.05	0.53	16.29	0.50	68.30	0.01
MW-17	7/7/2011	28.40	14.06	14.05	0.01	14.35	0.00	68.30	0.01
MW-17	8/3/2011	28.40	14.79	14.44	0.35	13.92	0.50	68.80	0.01
MW-17	9/8/2011	28.40	16.32	16.22	0.10	12.17	0.00	68.80	0.10
MW-17	10/3/2011	28.40	17.08	16.83	0.25	11.54	0.50	69.30	0.02
MW-17	11/10/2011	28.40	17.65	17.57	0.08	10.82	0.00	69.30	0.80
MW-17	12/1/2011	28.40	17.07	17.05	0.02	11.35	0.00	69.30	0.02
MW-17	1/6/2012	28.40	16.82	16.78	0.04	11.62	0.00	69.30	0.04
MW-17	1/25/2012	28.40	15.70	15.49	0.21	12.89	0.30	69.60	0.01
MW-17	3/3/2012	28.40	16.52	15.57	0.95	12.73	1.00	70.60	0.06
MW-17	3/14/2012	28.40	15.81	14.85	0.96	13.44	0.75	71.35	0.01
MW-17	3/22/2012	28.40	14.99	14.05	0.94	14.25	0.50	71.85	0.01
MW-17	3/29/2012	28.40	14.22	13.64	0.58	14.70	0.50	72.35	0.02
MW-17	4/5/2012	28.40	13.44	12.92	0.52	15.42	0.25	72.60	0.01
MW-17	4/13/2012	28.40	13.30	13.21	0.09	15.18	0.00	72.60	0.09
MW-17	4/23/2012	28.40	13.75	13.09	0.66	15.24	0.50	73.10	0.01
MW-17	5/14/2012	28.40	13.85	13.05	0.80	15.26	0.50	73.60	0.02
MW-17	5/25/2012	28.40	13.16	13.15	0.01	15.25	0.00	73.60	0.01
MW-17	6/12/2012	28.40	14.16	13.40	0.76	14.92	0.75	74.35	0.01
MW-17	7/3/2012	28.40	14.04	13.69	0.35	14.67	0.25	74.60	0.01
MW-17	8/23/2012	28.40	16.50	16.21	0.29	12.16	0.25	74.85	0.01
MW-17	9/24/2012	28.40	17.25	17.05	0.20	11.33	0.25	75.10	0.00
MW-17	10/8/2012	28.40	17.47	17.44	0.03	10.96	0.00	75.10	0.03
MW-17	11/14/2012	28.40	16.95	16.91	0.04	11.49	0.00	75.10	0.04
MW-17	12/20/2012	28.40	15.45	13.51	1.94	14.68	2.00	77.10	0.01
MW-17	1/4/2013	28.40	15.11	13.59	1.52	14.64	1.75	78.85	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-17	1/18/2013	28.40	14.80	14.01	0.79	14.30	0.75	79.60	0.01
MW-17	1/31/2013	28.40	15.01	14.49	0.52	13.85	0.40	80.00	0.01
MW-17	3/6/2013	28.40	15.82	15.33	0.49	13.02	0.80	80.80	0.01
MW-17	4/3/2013	28.40	16.25	16.15	0.10	12.24	0.50	81.30	0.01
MW-17	5/6/2013	28.40	16.17	16.04	0.13	12.35	0.20	81.50	0.01
MW-17	6/12/2013	28.40	16.39	16.04	0.35	12.32	0.50	82.00	0.00
MW-17	7/16/2013	28.40	16.97	16.73	0.24	11.64	0.20	82.20	0.01
MW-17	8/26/2013	28.40	17.78	17.59	0.19	10.79	0.10	82.30	0.01
MW-17	9/25/2013	28.40	18.13	18.11	0.02	10.29	0.00	82.30	0.02
MW-17	10/31/2013	28.40	18.00	17.93	0.07	10.46	0.00	82.30	0.07
MW-17	11/27/2013	28.40	18.01	17.87	0.14	10.51	0.10	82.40	0.01
MW-17	12/17/2013	28.40	17.92	17.85	0.07	10.54	0.00	82.40	0.07
MW-17	1/27/2014	28.40	18.08	18.00	0.08	10.39	0.00	82.40	0.00
MW-17	2/27/2014	28.40	16.90	16.59	0.31	11.78	0.20	82.60	0.03
MW-17	3/26/2014	28.40	15.78	14.91	0.87	13.39	1.00	83.60	0.02
MW-17	4/15/2014	28.40	16.03	14.93	1.10	13.35	0.50	84.10	0.01
MW-17	5/9/2014	28.40	15.60	14.40	1.20	13.87	1.75	85.85	0.00
MW-17	6/30/2014	28.40	15.90	15.60	0.30	12.77	0.50	86.35	0.00
MW-17	7/16/2014	28.40	14.95	14.45	0.50	13.90	0.50	86.85	0.00
MW-17	8/4/2014	28.40	17.21	16.81	0.40	11.55	0.30	87.15	0.00
MW-17	9/30/2014	28.40	15.49	15.45	0.04	12.95	0.00	87.15	0.00
MW-17	10/27/2014	28.40	15.61	15.51	0.10	12.88	0.00	87.15	0.00
MW-17	11/24/2014	28.40	18.40	17.55	0.85	10.76	1.00	88.15	0.00
MW-17	12/11/2014	28.40	16.66	16.48	0.18	11.90	0.20	88.35	0.00
MW-17	1/29/2015	28.40	16.90	16.55	0.35	11.81	0.70	89.05	0.00
MW-17	2/27/2015	28.40	16.70	16.50	0.20	11.88	0.40	89.45	0.00
MW-17	3/27/2015	28.40	18.08	14.72	3.36	13.31	3.00	92.45	0.01
MW-17	4/28/2015	28.40	17.01	15.01	2.00	13.17	3.00	95.45	0.00
Well Abandoned May 14, 2015									
MW-19	8/27/2003	30.73	21.43	18.61	2.82	11.81	2.00	2.00	0.12
MW-19	9/3/2003	30.73	19.55	18.91	0.64	11.75	0.50	2.50	0.02
MW-19	9/11/2003	30.73	19.38	19.28	0.10	11.44	0.10	2.60	0.01
MW-19	9/17/2003	30.73	19.55	19.46	0.09	11.26	0.10	2.70	0.01
MW-19	9/30/2003	30.73	19.65	19.57	0.08	11.15	0.01	2.71	0.02
MW-19	10/14/2003	30.73	19.76	19.66	0.10	11.06	0.01	2.72	0.01
MW-19	10/29/2003	30.73	19.77	19.65	0.12	11.07	0.10	2.82	0.02
MW-19	11/13/2003	30.73	19.91	19.86	0.05	10.86	0.01	2.83	0.00
MW-19	11/26/2003	30.73	19.80	19.74	0.06	10.98	0.01	2.84	0.00
MW-19	12/24/2003	30.73	19.18	18.07	1.11	12.54	0.20	3.04	0.06
MW-19	12/30/2003	30.73	19.15	18.10	1.05	12.51	0.20	3.24	0.02
MW-19	1/9/2004	30.73	19.41	15.41	4.00	14.88	0.30	3.54	0.02
MW-19	1/15/2004	30.73	19.15	15.59	3.56	14.75	1.90	5.44	0.07
MW-19	1/21/2004	30.73	17.34	15.34	2.00	15.17	1.00	6.44	0.02
MW-19	1/24/2004	30.73	16.55	14.96	1.59	15.60	0.80	7.24	0.01
MW-19	2/3/2004	30.73	17.70	14.45	3.25	15.92	1.00	8.24	0.01
MW-19	2/12/2004	30.73	16.75	14.60	2.15	15.89	1.00	9.24	0.01
MW-19	2/18/2004	30.73	16.17	14.85	1.32	15.73	0.90	10.14	0.00
MW-19	2/25/2004	30.73	15.12	14.71	0.41	15.97	0.30	10.44	0.00
MW-19	3/3/2004	30.73	15.25	14.99	0.26	15.71	0.10	10.54	0.01
MW-19	3/10/2004	30.73	15.60	15.03	0.57	15.64	0.40	10.94	0.02
MW-19	3/19/2004	30.73	15.85	15.08	0.77	15.57	0.50	11.44	0.01
MW-19	3/24/2004	30.73	15.90	15.22	0.68	15.44	0.40	11.84	0.01
MW-19	4/1/2004	30.73	16.55	15.61	0.94	15.02	0.60	12.44	0.01
MW-19	1/14/2005	30.73	--	--	--	--	--	12.44	0.00
MW-19	1/21/2005	30.73	20.10	19.00	1.10	11.61	0.75	13.19	0.10
MW-19	1/28/2005	30.73	19.22	19.10	0.12	11.62	0.01	13.20	0.03
MW-19	2/4/2005	30.73	19.17	19.08	0.09	11.64	0.00	13.20	0.09
MW-19	2/18/2005	30.73	19.06	18.97	0.09	11.75	0.00	13.20	0.09
MW-19	2/25/2005	30.73	19.35	19.24	0.11	11.48	0.05	13.25	0.03
MW-19	3/11/2005	30.73	19.35	19.31	0.04	11.42	0.00	13.25	0.04
MW-19	3/25/2005	30.73	19.69	19.61	0.08	11.11	0.00	13.25	0.08
MW-19	4/30/2005	30.73	19.36	18.91	0.45	11.77	0.25	13.50	0.00
MW-19	5/13/2005	30.73	18.88	18.56	0.32	12.13	0.25	13.75	0.03
MW-19	5/31/2005	30.73	19.00	18.00	1.00	12.62	1.00	14.75	0.05
MW-19	6/24/2005	30.73	19.32	18.11	1.21	12.49	1.50	16.25	0.08
MW-19	7/8/2005	30.73	19.40	18.42	0.98	12.20	0.75	17.00	0.01
MW-19	7/15/2005	30.73	18.87	18.64	0.23	12.06	0.10	17.10	0.01
MW-19	7/22/2005	30.73	19.93	19.86	0.07	10.86	0.00	17.10	0.07
MW-19	7/29/2005	30.73	19.00	18.93	0.07	11.79	0.00	17.10	0.07
MW-19	8/12/2005	30.73	19.34	19.18	0.16	11.53	0.10	17.20	0.02
MW-19	8/26/2005	30.73	19.44	19.39	0.05	11.33	0.00	17.20	0.05
MW-19	9/24/2005	30.73	19.84	19.75	0.09	10.97	0.00	17.20	0.09
MW-19	10/21/2005	30.73	20.00	19.99	0.01	10.74	0.00	17.20	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-19	11/28/2005	30.73	19.55	19.42	0.13	11.30	0.05	17.25	0.00
MW-19	12/14/2005	30.73	19.65	19.22	0.43	11.46	0.10	17.35	0.08
MW-19	12/21/2005	30.73	19.16	18.82	0.34	11.87	0.50	17.85	0.10
MW-19	1/3/2006	30.73	20.15	17.35	2.80	13.07	2.50	20.35	0.10
MW-19	1/11/2006	30.73	17.40	15.00	2.40	15.47	2.50	22.85	0.10
MW-19	1/17/2006	30.73	15.75	14.46	1.29	16.13	1.10	23.95	0.03
MW-19	1/23/2006	30.73	15.38	14.50	0.88	16.13	0.70	24.65	0.10
MW-19	1/31/2006	30.73	14.92	14.33	0.59	16.34	0.20	24.85	0.08
MW-19	2/17/2006	30.73	15.25	14.43	0.82	16.21	1.50	26.35	0.04
MW-19	2/24/2006	30.73	15.11	14.62	0.49	16.06	1.50	27.85	0.03
MW-19	3/3/2006	30.73	15.23	14.57	0.66	16.09	0.50	28.35	0.03
MW-19	3/14/2006	30.73	16.19	14.95	1.24	15.64	0.75	29.10	0.05
MW-19	3/21/2006	30.73	15.66	14.89	0.77	15.76	0.50	29.60	0.10
MW-19	3/31/2006	30.73	15.48	14.89	0.59	15.78	0.30	29.90	0.02
MW-19	4/6/2006	30.73	15.45	15.21	0.24	15.49	0.20	30.10	0.01
MW-19	4/14/2006	30.73	15.04	14.81	0.23	15.89	0.20	30.30	0.10
MW-19	4/24/2006	30.73	15.19	14.75	0.44	15.93	0.25	30.55	0.01
MW-19	5/9/2006	30.73	15.58	14.98	0.60	15.68	0.70	31.25	0.07
MW-19	5/19/2006	30.73	15.50	15.02	0.48	15.66	0.90	32.15	0.01
MW-19	5/25/2006	30.73	15.41	15.06	0.35	15.63	0.70	32.85	0.01
MW-19	6/2/2006	30.73	15.33	15.10	0.23	15.60	0.30	33.15	0.03
MW-19	Product Skimmer Installed in Well								
MW-19	6/9/2006	30.73	--	--	--	--	0.25	33.40	--
MW-19	6/19/2006	30.73	--	--	--	--	0.15	33.55	--
MW-19	6/28/2006	30.73	--	--	--	--	0.20	33.75	--
MW-19	7/3/2006	30.73	--	--	--	--	0.10	33.85	--
MW-19	7/10/2006	30.73	--	--	--	--	0.10	33.95	--
MW-19	7/18/2006	30.73	--	--	--	--	0.20	34.15	--
MW-19	7/25/2006	30.73	--	--	--	--	0.40	34.55	--
MW-19	8/4/2006	30.73	--	--	--	--	0.10	34.65	--
MW-19	8/11/2006	30.73	--	--	--	--	0.90	35.55	--
MW-19	8/18/2006	30.73	--	--	--	--	0.30	35.85	--
MW-19	8/23/2006	30.73	--	--	--	--	0.10	35.95	--
MW-19	9/8/2006	30.73	--	--	--	--	0.05	36.00	--
MW-19	9/20/2006	30.73	--	--	--	--	0.10	36.10	--
MW-19	10/3/2006	30.73	--	--	--	--	0.05	36.15	--
MW-19	11/6/2006	30.73	--	--	--	--	0.05	36.20	--
MW-19	11/22/2006	30.73	--	--	--	--	0.00	36.20	--
MW-19	12/4/2006	30.73	--	--	--	--	1.90	38.10	--
MW-19	12/13/2006	30.73	--	--	--	--	1.30	39.40	--
MW-19	12/18/2006	30.73	--	--	--	--	1.00	40.40	--
MW-19	12/26/2006	30.73	--	--	--	--	1.10	41.50	--
MW-19	1/9/2007	30.73	--	--	--	--	1.20	42.70	--
MW-19	1/15/2007	30.73	--	--	--	--	1.00	43.70	--
MW-19	1/26/2007	30.73	--	--	--	--	1.10	44.80	--
MW-19	1/31/2007	30.73	--	--	--	--	1.10	45.90	--
MW-19	2/9/2007	30.73	--	--	--	--	1.00	46.90	--
MW-19	2/13/2007	30.73	--	--	--	--	1.00	47.90	--
MW-19	2/28/2007	30.73	--	--	--	--	1.10	49.00	--
MW-19	3/6/2007	30.73	--	--	--	--	1.20	50.20	--
MW-19	3/23/2007	30.73	--	--	--	--	4.00	54.20	--
MW-19	3/29/2007	30.73	--	--	--	--	5.00	59.20	--
MW-19	4/5/2007	30.73	--	--	--	--	0.50	59.70	--
MW-19	4/11/2007	30.73	--	--	--	--	0.40	60.10	--
MW-19	4/16/2007	30.73	--	--	--	--	8.20	68.30	--
MW-19	4/25/2007	30.73	--	--	--	--	0.80	69.10	--
MW-19	5/3/2007	30.73	--	--	--	--	5.00	74.10	--
MW-19	5/10/2007	30.73	--	--	--	--	0.90	75.00	--
MW-19	5/15/2007	30.73	--	--	--	--	0.50	75.50	--
MW-19	5/25/2007	30.73	--	--	--	--	0.25	75.75	--
MW-19	6/4/2007	30.73	--	--	--	--	0.75	76.50	--
MW-19	6/13/2007	30.73	--	--	--	--	0.20	76.70	--
MW-19	6/19/2007	30.73	--	--	--	--	0.10	76.80	--
MW-19	6/27/2007	30.73	--	--	--	--	1.00	77.80	--
MW-19	7/9/2007	30.73	--	--	--	--	1.20	79.00	--
MW-19	7/25/2007	30.73	--	--	--	--	0.10	79.10	--
MW-19	8/9/2007	30.73	--	--	--	--	0.15	79.25	--
MW-19	8/22/2007	30.73	--	--	--	--	0.00	79.25	--
MW-19	9/7/2007	30.73	--	--	--	--	0.10	79.35	--
MW-19	9/14/2007	30.73	--	--	--	--	0.10	79.45	--
MW-19	9/19/2007	30.73	--	--	--	--	0.00	79.45	--
MW-19	10/4/2007	30.73	--	--	--	--	0.10	79.55	--
MW-19	10/11/2007	30.73	--	--	--	--	0.00	79.55	--
MW-19	10/24/2007	30.73	--	--	--	--	0.10	79.65	--

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-19	11/8/2007	30.73	--	--	--	--	0.10	79.75	--
MW-19	11/21/2007	30.73	--	--	--	--	0.00	79.75	--
MW-19	12/7/2007	30.73	--	--	--	--	0.05	79.80	--
MW-19	12/21/2007	30.73	--	--	--	--	0.05	79.85	--
MW-19	1/3/2008	30.73	17.59	16.98	0.61	--	1.50	81.35	0.04
MW-19	1/18/2008	30.73	17.94	16.25	1.69	--	2.75	84.10	0.00
MW-19	1/24/2008	30.73	16.29	15.52	0.77	--	2.00	86.10	0.00
MW-19	1/31/2008	30.73	16.48	15.37	1.11	--	2.50	88.60	0.00
MW-19	2/6/2008	30.73	16.88	15.07	1.81	--	4.00	92.60	0.00
MW-19	2/15/2008	30.73	15.54	14.75	0.79	--	2.75	95.35	0.00
MW-19	2/29/2008	30.73	17.00	14.71	2.29	--	2.50	97.85	0.00
MW-19	3/14/2008	30.73	16.89	14.88	2.01	--	2.50	100.35	0.00
MW-19	3/21/2008	30.73	15.67	15.19	0.48	--	2.25	102.60	0.00
MW-19	4/11/2008	30.73	15.87	15.45	0.42	--	1.00	103.60	0.00
MW-19	4/17/2008	30.73	15.63	15.50	0.13	--	0.66	104.26	0.00
MW-19	4/24/2008	30.73	15.89	15.88	0.01	--	0.40	104.66	0.01
MW-19	5/2/2008	30.73	16.12	16.10	0.02	--	0.25	104.91	0.02
MW-19	5/8/2008	30.73	16.35	16.32	0.03	--	0.13	105.04	0.03
MW-19	5/14/2008	30.73	17.01	17.00	0.01	--	0.00	105.04	0.01
MW-19	5/30/2008	30.73	16.13	16.12	0.01	--	0.60	105.64	0.01
MW-19	6/13/2008	30.73	15.64	15.63	0.01	--	0.13	105.77	0
MW-19	6/25/2008	30.73	16.92	16.91	0.01	--	0.00	105.77	0.01
MW-19	7/11/2008	30.73	16.82	16.81	0.01	--	0.05	105.83	0.01
MW-19	7/28/2008	30.73	17.88	17.82	0.06	--	0.00	105.83	0.06
MW-19	8/13/2008	30.73	18.31	18.28	0.03	--	0.07	105.89	0.03
MW-19	8/27/2008	30.73	19.07	19.00	0.07	--	0.07	105.96	0.07
MW-19	9/8/2008	30.73	19.43	19.19	0.24	--	0.26	106.22	0.01
MW-19	9/18/2008	30.73	19.66	19.65	0.01	--	0.00	106.22	0.01
MW-19	9/30/2008	30.73	20.02	20.01	0.01	--	0.00	106.22	0.01
MW-19	10/16/2008	30.73	20.42	20.40	0.02	--	0.00	106.22	0.02
MW-19	10/30/2008	30.73	20.41	20.41	0.00	--	0.05	106.27	0.00
MW-19	11/14/2008	30.73	20.80	20.80	0.00	--	0.01	106.28	0.00
MW-19	11/26/2008	30.73	20.42	20.42	0.00	--	0.00	106.28	0.00
MW-19	12/16/2008	30.73	20.68	20.67	0.01	--	0.00	106.28	0.01
MW-19	12/29/2008	30.73	19.45	19.45	0.00	--	0.00	106.28	0.00
MW-19	1/15/2009	30.73	18.60	16.96	1.64	--	1.19	107.47	0.00
MW-19	1/23/2009	30.73	17.12	17.12	0.00	--	0.08	107.55	0
MW-19	1/29/2009	30.73	17.30	17.29	0.01	--	0.26	107.81	0.00
MW-19	2/4/2009	30.73	17.24	17.24	0.00	--	0.66	108.47	0.01
MW-19	2/12/2009	30.73	17.33	17.33	0.00	--	0.53	109.00	0.00
MW-19	2/19/2009	30.73	19.34	19.30	0.04	--	0.00	109.00	0.04
MW-19	3/10/2009	30.73	18.97	18.94	0.03	--	0.00	109.00	0.03
MW-19	3/27/2009	30.73	18.74	18.70	0.04	--	0.05	109.05	0.04
MW-19	4/16/2009	30.73	19.00	18.99	0.01	--	0.00	109.05	0.01
MW-19	5/14/2009	30.73	18.46	18.45	0.01	--	0.00	109.05	0.01
MW-19	6/5/2009	30.73	17.88	17.86	0.02	--	0.03	109.08	0.00
MW-19	7/13/2009	30.73	19.34	19.30	0.04	--	0.04	109.12	0.04
MW-19	8/10/2009	30.73	20.15	20.09	0.06	--	0.00	109.12	0.06
MW-19	9/9/2009	30.73	21.60	21.52	0.08	--	0.00	109.12	0.08
MW-19	10/15/2009	30.73	20.73	20.72	0.01	--	0.00	109.12	0.01
MW-19	11/18/2009	30.73	20.53	20.53	0.00	--	0.00	109.12	0.00
MW-19	12/16/2009	30.73	19.03	19.03	0.00	--	0.00	109.12	0.00
MW-19	1/13/2010	30.73	21.65	17.75	3.90	--	5.00	114.12	0.00
MW-19	1/21/2010	30.73	20.26	16.82	3.44	--	3.10	117.22	0.00
MW-19	1/26/2010	30.73	--	--	--	--	1.10	118.32	--
MW-19	2/5/2010	30.73	--	--	--	--	0.90	119.22	0.00
MW-19	3/2/2010	30.73	23.70	15.72	7.98	--	10.75	129.97	0.03
MW-19	3/12/2010	30.73	17.36	15.51	1.85	--	3.50	133.47	0.01
MW-19	3/25/2010	30.73	19.13	16.10	3.03	--	3.00	136.47	--
MW-19	4/2/2010	30.73	17.33	17.33	0.00	--	1.00	137.47	0.00
MW-19	4/9/2010	30.73	17.35	15.31	2.04	--	2.50	139.97	0.01
MW-19	4/16/2010	30.73	17.43	15.32	2.11	--	2.50	142.47	0.06
MW-19	4/23/2010	30.73	17.23	15.72	1.51	--	2.00	144.47	0.01
MW-19	5/4/2010	30.73	19.86	15.94	3.92	--	3.25	147.72	0.03
MW-19	6/8/2010	30.73	16.19	14.98	1.21	--	1.50	149.22	0.05
MW-19	7/9/2010	30.73	22.54	15.25	7.29	--	5.50	154.72	0.09
MW-19	7/23/2010	30.73	17.12	15.73	1.39	--	3.25	157.97	0.01
MW-19	8/6/2010	30.73	17.06	16.38	0.68	--	1.25	159.22	0.01
MW-19	8/19/2010	30.73	17.51	17.48	0.03	--	0.50	159.72	0.01
MW-19	8/27/2010	30.73	18.01	17.97	0.04	--	0.00	159.72	0.01
MW-19	9/17/2010	30.73	18.75	18.68	0.07	--	0.25	159.97	0.01
MW-19	10/8/2010	30.73	18.60	18.58	0.02	--	0.20	160.17	0.02
MW-19	11/11/2010	30.73	18.95	18.88	0.07	--	0.00	160.17	0.07
MW-19	12/15/2010	30.73	20.10	15.51	4.59	--	4.75	164.92	0.02

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Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-19	12/21/2010	30.73	18.49	15.20	3.29	--	3.00	167.92	0.04
MW-19	12/30/2010	30.73	18.90	16.09	2.81	--	3.00	170.92	0.02
MW-19	1/6/2011	30.73	15.90	14.65	1.25	--	2.25	173.17	0.03
MW-19	1/13/2011	30.73	16.30	16.07	0.23	--	2.50	175.67	0.01
MW-19	1/19/2011	30.73	15.53	14.62	0.91	--	2.25	177.92	0.01
MW-19	1/28/2011	30.73	14.43	14.34	0.09	--	0.15	178.07	0.09
MW-19	2/9/2011	30.73	15.62	14.51	1.11	--	2.50	180.57	0.02
MW-19	2/23/2011	30.73	14.80	14.75	0.05	--	--	180.57	0.00
MW-19	3/9/2011	30.73	14.57	14.16	0.41	--	0.85	181.42	0.00
MW-19	3/29/2011	30.73	14.21	13.86	0.35	--	1.25	182.67	0.02
MW-19	4/21/2011	30.73	13.90	13.78	0.12	--	0.60	183.27	0.02
MW-19	5/6/2011	30.73	14.06	14.00	0.06	--	0.00	183.27	0.06
MW-19	6/9/2011	30.73	13.93	13.86	0.07	--	0.00	183.27	0.07
MW-19	7/7/2011	30.73	14.23	14.09	0.14	--	0.25	183.52	0.01
MW-19	8/3/2011	30.73	14.52	14.48	0.04	--	0.00	183.52	0.04
MW-19	9/8/2011	30.73	15.98	15.91	0.07	--	0.00	183.52	0.07
MW-19	10/3/2011	30.73	15.79	15.67	0.12	--	0.20	183.72	0.03
MW-19	11/10/2011	30.73	16.80	16.73	0.07	--	0.00	183.72	0.07
MW-19	12/1/2011	30.73	16.02	16.02	0.00	--	0.00	183.72	0.00
MW-19	1/6/2012	30.73	Well buried under asphalt pile.						
MW-19	1/25/2012	30.73	Well buried under asphalt pile.						
MW-19	3/3/2012	30.73	Well buried under asphalt pile.						
MW-19	3/6/2012	30.73	18.75	14.98	3.77	--	3.00	186.72	0.00
MW-19	3/14/2012	30.73	Well under large puddle.						
MW-19	3/22/2012	30.73	15.57	14.45	1.12	--	1.00	187.72	0.01
MW-19	3/29/2012	30.73	Well under large puddle.						
MW-19	4/5/2012	30.73	15.66	15.33	0.33	--	0.87	188.59	0.01
MW-19	4/13/2012	30.73	14.33	14.24	0.09	--	0.10	188.69	0.09
MW-19	4/23/2012	30.73	14.26	14.25	0.01	--	0.13	188.82	0.01
MW-19	5/14/2012	30.73	14.20	14.19	0.01	--	0.05	188.87	0.01
MW-19	5/25/2012	30.73	14.29	14.29	0.00	--	0.00	188.87	0.00
MW-19	6/12/2012	30.73	14.30	--	0.00	--	0.00	188.87	0.00
MW-19	7/3/2012	30.73	14.64	14.62	0.02	--	0.00	188.87	0.00
MW-19	8/23/2012	30.73	15.80	15.35	0.45	--	0.50	189.37	0.05
MW-19	9/24/2012	30.73	16.16	16.00	0.16	--	0.75	190.12	0.02
MW-19	10/8/2012	30.73	16.68	16.61	0.07	--	0.25	190.37	0.07
MW-19	11/14/2012	30.73	16.39	16.38	0.01	--	0.25	190.62	0.01
MW-19	12/20/2012	30.73	14.81	14.32	0.49	--	0.75	191.37	0.02
MW-19	1/4/2013	30.73	14.19	14.17	0.02	--	0.25	191.62	0.02
MW-19	1/18/2013	30.73	14.59	14.58	0.01	--	0.25	191.87	0.02
MW-19	1/31/2013	30.73	14.74	14.74	0.00	--	0.00	191.87	0.00
MW-19	3/6/2013	30.73	15.22	15.16	0.06	--	0.60	192.47	0.01
MW-19	4/3/2013	30.73	15.98	15.48	0.50	--	0.85	193.32	0.01
MW-19	5/6/2013	30.73	16.72	15.98	0.74	--	1.50	194.82	0.01
MW-19	6/12/2013	30.73	16.39	16.00	0.39	--	2.50	197.32	0.01
MW-19	7/16/2013	30.73	16.65	16.38	0.27	--	0.40	197.72	0.03
MW-19	8/26/2013	30.73	17.80	17.63	0.17	--	0.50	198.22	0.01
MW-19	9/25/2013	30.73	20.15	20.13	0.02	--	0.00	198.22	0.02
MW-19	10/31/2013	30.73	17.50	17.42	0.08	--	0.00	198.22	0.08
MW-19	11/27/2013	30.73	17.84	17.77	0.07	--	0.00	198.22	0.07
MW-19	12/17/2013	30.73	16.80	16.68	0.12	--	0.20	198.42	0.01
MW-19	1/27/2014	30.73	18.60	16.55	2.05	--	2.00	200.42	0.05
MW-19	2/27/2014	30.73	16.15	16.05	0.10	--	0.10	200.52	0.01
MW-19	3/26/2014	30.73	18.30	15.53	2.77	--	1.00	201.52	0.03
MW-19	4/15/2014	30.73	16.30	14.92	1.38	--	0.50	202.02	0.01
MW-19	5/9/2014	30.73	15.86	14.68	1.18	--	1.50	203.52	0.00
MW-19	6/30/2014	30.73	16.90	15.60	1.30	--	2.50	206.02	0.00
MW-19	7/16/2004	30.73	14.95	14.20	0.75	--	0.25	206.27	0.00
MW-19	8/4/2014	30.73	16.55	16.05	0.50	--	0.50	206.77	0.00
MW-19	9/30/2014	30.73	18.10	17.30	0.80	--	1.50	208.27	0.00
MW-19	10/27/2014	30.73	17.80	17.50	0.30	--	0.25	208.52	0.00
MW-19	11/24/2014	30.73	19.20	17.85	1.35	--	2.00	210.52	0.00
MW-19	12/11/2014	30.73	17.43	17.30	0.13	--	0.25	210.77	0.00
MW-19	1/29/2015	30.73	16.15	16.10	0.05	--	0.20	210.97	0.00
MW-19	2/27/2015	30.73	17.95	17.75	0.20	--	0.40	211.37	0.00
MW-19	3/27/2015	30.73	20.14	15.05	5.09	--	4.25	215.62	0.06
MW-19	4/28/2015	30.73	20.27	19.57	0.70	--	2.00	217.62	0.02
MW-19	5/29/2015	30.73	17.90	17.30	0.60	--	2.00	219.62	0.01
MW-19	6/23/2015	30.73	17.20	17.12	0.08	--	0.00	219.62	0.08
MW-19	7/8/2015	30.73	17.46	17.33	0.13	--	0.50	220.12	0.01
MW-19	8/12/2015	30.73	18.09	17.97	0.12	--	3.00	223.12	0.02
MW-19	9/11/2015	30.73	18.46	18.32	0.14	--	1.50	224.62	0.00
MW-19	10/15/2015	30.73	19.04	18.85	0.19	--	1.00	225.62	0.00
MW-19	11/10/2015	30.73	18.80	18.60	0.20	--	1.50	227.12	0.00

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			(feet)				(gallons)		(feet)
MW-19	12/16/2015	30.73	17.35	17.20	0.15	--	1.00	228.12	0.00
MW-19	1/21/2016	30.73	15.41	14.05	1.36	--	2.00	230.12	0.05
MW-19	2/17/2016	30.73	14.80	13.95	0.85	--	2.00	232.12	0.04
MW-19	3/29/2016	30.73	14.16	13.84	0.32	--	0.50	232.62	0.00
MW-19	4/27/2016	30.73	14.35	14.20	0.15	--	0.25	232.87	0.30
MW-19	5/27/2016	30.73	14.65	14.53	0.12	--	0.25	233.12	0.01
MW-19	6/29/2016	30.73	15.07	15.00	0.07	--	0.00	233.12	0.07
MW-19	7/20/2016	30.73	15.69	15.50	0.19	--	0.25	233.37	0.04
MW-19	8/31/2016	30.73	16.45	16.20	0.25	--	0.45	233.82	0.02
MW-19	9/16/2016	30.73	16.48	16.31	0.17	--	0.60	234.42	0.05
MW-19	10/20/2016	30.73	16.66	16.65	0.01	--	0.50	234.92	0.00
MW-19	11/28/2016	30.73	16.60	15.08	1.52	--	1.00	235.92	0.05
MW-19	12/19/2016	30.73	15.10	14.61	0.49	--	0.75	236.67	0.00
MW-19	1/5/2017	30.73	14.65	14.65	0.00	--	1.00	237.67	0.00
MW-19	2/14/2017	30.73	14.97	14.59	0.38	--	0.50	238.17	0.03
MW-19	3/28/2017	30.73	13.10	13.08	0.02	--	0.00	238.17	0.02
MW-19	4/18/2017	30.73	13.20	13.20	0.00	--	0.50	238.67	0.00
MW-19	5/26/2017	30.73	13.51	13.51	0.00	--	0.00	238.67	0.00
MW-19	6/23/2017	30.73	13.83	13.83	0.00	--	0.00	238.67	0.00
MW-19	7/21/2017	30.73	14.33	14.32	0.01	--	0.00	238.67	0.01
MW-19	8/18/2017	30.73	14.74	14.72	0.02	--	0.00	238.67	0.02
MW-19	9/26/2017	30.73	14.91	14.90	0.01	--	0.50	239.17	0.01
MW-19	10/30/2017	30.73	14.66	14.65	0.01	--	0.50	239.67	0.01
MW-19	11/17/2017	30.73	14.49	14.45	0.04	--	0.00	239.67	0.04
MW-19	12/13/2017	30.73	14.29	14.27	0.02	--	0.00	239.67	0.02
MW-19	1/26/2018	30.73	13.84	13.80	0.04	--	0.00	239.67	0.04
MW-19	2/14/2018	30.73	14.08	14.07	0.01	--	0.00	239.67	0.01
MW-19	3/26/2018	30.73	14.20	14.15	0.05	--	1.00	240.67	0.01
MW-19	5/3/2018	30.73	14.24	14.20	0.04	--	0.00	240.67	0.04
MW-19	5/31/2018	30.73	14.55	14.54	0.01	--	0.00	240.67	0.01
MW-19	6/21/2018	30.73	14.98	14.97	0.01	--	0.00	240.67	0.01
MW-19	7/17/2018	30.73	15.21	15.20	0.01	--	0.00	240.67	0.01
MW-19	8/17/2018	30.73	15.93	15.92	0.01	--	0.00	240.67	0.01
MW-19	10/16/2018	30.73	16.67	16.66	0.01	--	0.00	240.67	0.01
MW-19	11/5/2018	30.73	16.53	16.52	0.01	--	0.00	240.67	0.01
MW-19	12/5/2018	30.73	16.06	16.05	0.01	--	0.00	240.67	0.01
MW-19	12/31/2018	30.73	15.53	15.08	0.45	--	3.00	243.67	0.00
MW-19	1/18/2019	30.73	15.62	15.07	0.55	15.60	1.50	245.17	0.05
MW-19	2/21/2019	30.73	14.56	14.42	0.14	16.29	0.50	245.67	0.01
MW-19	4/2/2019	30.73	14.99	14.92	0.07	15.80	0.00	245.67	0.07
MW-19	4/18/2019	30.73	14.71	14.60	0.11	16.12	0.10	245.77	0.01
MW-19	5/16/2019	30.73	15.11	15.10	0.01	15.63	0.00	245.77	0.01
MW-19	6/19/2019	30.73	15.57	15.56	0.01	15.17	0.00	245.77	0.01
MW-19	7/23/2019	30.73	16.25	16.24	0.01	14.49	0.00	245.77	0.01
MW-19	8/22/2019	30.73	16.09	--	0.00	14.64	0.00	245.77	0.00
MW-19	9/25/2019	30.73	16.26	16.25	0.01	14.48	0.00	245.77	0.00
MW-19	10/25/2019	30.73	16.21	16.20	0.01	14.53	0.00	245.77	0.01
MW-19	11/20/2019	30.73	16.33	16.32	0.01	14.41	0.00	245.77	0.01
MW-19	12/9/2019	30.73	16.65	16.64	0.01	14.09	0.00	245.77	0.01
MW-19	2/18/2020	30.73	14.38	14.35	0.03	16.38	0.00	245.77	0.03
MW-19	2/28/2020	30.73	14.50	14.49	0.01	16.24	0.20	245.97	0.01
MW-19	3/19/2020	30.73	14.93	14.92	0.01	15.81	0.00	245.97	0.01
MW-19	4/20/2020	30.73	14.75	14.74	0.01	15.99	0.00	245.97	0.01
MW-19	5/29/2020	30.73	15.53	15.52	0.01	15.21	0.00	245.97	0.01
MW-19	6/11/2020	30.73	14.97	14.96	0.01	15.77	0.00	245.97	0.01
MW-19	7/15/2020	30.73	15.90	15.88	0.02	14.85	0.00	245.97	0.02
MW-19	8/31/2020	30.73	15.65	15.64	0.01	15.09	0.00	245.97	0.01
MW-19	9/28/2020	30.73	17.29	17.28	0.01	13.45	0.00	245.97	0.01
MW-19	10/23/2020	30.73	17.02	17.01	0.01	13.72	0.00	245.97	0.01
MW-19	11/13/2020	30.73	16.85	16.84	0.01	13.89	0.00	245.97	0.01
MW-19	12/10/2020	30.73	16.06	16.05	0.01	14.68	0.00	245.97	0.01
MW-19	1/20/2021	30.73	14.40	--	0.00	16.33	0.00	243.87	0.00
MW-19	2/24/2021	30.73	13.94	--	0.00	16.79	0.00	243.87	0.00
MW-19	1/6/2022	30.73	14.79	13.92	0.87	16.71	1.50	245.37	0.06
MW-19	12/5/2022	30.73	16.01	15.95	0.06	14.77	0.09	245.46	0.00
MW-19	12/7/2023	30.73	15.80	14.80	1.00	15.82	1.30	245.26	<0.01
MW-19	12/3/2024	30.73	14.81	14.71	0.10	16.01	0.75	244.71	<0.01
MW-20	8/27/2003	30.73	20.58	19.46	1.12	11.15	2.00	2.00	0.04
MW-20	9/3/2003	30.73	19.99	19.59	0.40	11.10	0.50	2.50	0.03
MW-20	9/11/2003	30.73	20.15	19.91	0.24	10.79	0.50	3.00	0.01
MW-20	9/17/2003	30.73	20.27	19.99	0.28	10.71	0.50	3.50	0.01
MW-20	9/30/2003	30.73	20.32	20.17	0.15	10.54	0.10	3.60	0.00
MW-20	10/14/2003	30.73	20.38	20.26	0.12	10.46	0.10	3.70	0.00
MW-20	10/29/2003	30.73	20.36	20.21	0.15	10.50	0.10	3.80	0.00
MW-20	11/13/2003	30.73	20.45	20.37	0.08	10.35	0.10	3.90	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-20	11/26/2003	30.73	20.41	20.35	0.06	10.37	0.10	4.00	0.02
MW-20	12/24/2003	30.73	20.66	18.68	1.98	11.83	0.30	4.30	0.04
MW-20	12/30/2003	30.73	20.69	18.75	1.94	11.77	0.20	4.50	0.01
MW-20	1/9/2004	30.73	20.71	18.88	1.83	11.65	0.10	4.60	0.01
MW-20	1/15/2004	30.73	20.70	17.66	3.04	12.74	1.50	6.10	0.04
MW-20	1/21/2004	30.73	19.22	16.14	3.08	14.25	1.50	7.60	0.03
MW-20	1/29/2004	30.73	19.90	15.55	4.35	14.70	2.00	9.60	0.01
MW-20	2/3/2004	30.73	20.90	15.42	5.48	14.71	2.50	12.10	0.01
MW-20	2/12/2004	30.73	18.05	15.40	2.65	15.04	1.50	13.60	0.02
MW-20	2/18/2004	30.73	19.02	15.62	3.40	14.74	2.20	15.80	0.00
MW-20	2/25/2004	30.73	16.56	15.44	1.12	15.17	0.70	16.50	0.00
MW-20	3/3/2004	30.73	16.95	15.85	1.10	14.76	0.50	17.00	0.01
MW-20	3/10/2004	30.73	17.66	16.00	1.66	14.55	1.00	18.00	0.02
MW-20	3/18/2004	30.73	17.29	15.92	1.37	14.66	0.75	18.75	0.02
MW-20	3/24/2004	30.73	17.75	16.20	1.55	14.36	1.00	19.75	0.00
MW-20	4/1/2004	30.73	17.78	16.92	0.86	13.72	0.50	20.25	0.00
MW-20	1/14/2005	30.73	20.70	19.75	0.95	10.88	1.20	21.45	0.01
MW-20	1/21/2005	30.73	20.00	19.60	0.40	11.09	1.20	22.65	0.10
MW-20	1/28/2005	30.73	19.70	19.50	0.20	11.21	0.10	22.75	0.05
MW-20	2/4/2005	30.73	19.73	19.61	0.12	11.11	0.05	22.80	0.06
MW-20	2/11/2005	30.73	19.48	19.38	0.10	11.34	0.05	22.85	0.03
MW-20	2/18/2005	30.73	19.51	19.45	0.06	11.27	0.00	22.85	0.06
MW-20	2/25/2005	30.73	19.77	19.69	0.08	11.03	0.00	22.85	0.08
MW-20	3/11/2005	30.73	19.89	19.82	0.07	10.90	0.20	23.05	0.00
MW-20	3/25/2005	30.73	20.18	20.12	0.06	10.60	0.00	23.05	0.06
MW-20	4/30/2005	30.73	19.49	19.45	0.04	11.28	0.00	23.05	0.04
MW-20	5/31/2005	30.73	18.65	18.60	0.05	12.12	0.00	23.05	0.05
MW-20	6/24/2005	30.73	21.02	18.57	2.45	11.89	3.00	26.05	0.00
MW-20	7/8/2005	30.73	20.10	18.95	1.15	11.65	1.00	27.05	0.05
MW-20	7/15/2005	30.73	19.62	19.14	0.48	11.54	0.25	27.30	0.05
MW-20	7/22/2005	30.73	19.61	19.33	0.28	11.37	2.50	29.80	0.09
MW-20	7/29/2005	30.73	19.67	19.45	0.22	11.26	2.00	31.80	0.02
MW-20	8/5/2005	30.73	19.70	19.61	0.09	11.11	0.00	31.80	0.09
MW-20	8/12/2005	30.73	19.85	19.72	0.13	11.00	0.15	31.95	0.02
MW-20	8/26/2005	30.73	20.07	19.93	0.14	10.78	0.50	32.45	0.02
MW-20	9/9/2005	30.73	20.15	20.10	0.05	10.62	0.00	32.45	0.05
MW-20	9/24/2005	30.73	20.36	20.28	0.08	10.44	0.00	32.45	0.08
MW-20	10/21/2005	30.73	20.58	20.50	0.08	10.22	0.00	32.45	0.08
MW-20	11/28/2005	30.73	20.05	19.95	0.10	10.77	0.00	32.45	0.10
MW-20	1/3/2006	30.73	21.43	17.81	3.62	12.52	3.50	35.95	0.10
MW-20	1/17/2006	30.73	19.77	14.86	4.91	15.33	3.75	39.70	0.03
MW-20	1/23/2006	30.73	16.68	15.07	1.61	15.48	1.50	41.20	0.06
MW-20	1/31/2006	30.73	15.91	14.95	0.96	15.67	0.70	41.90	0.03
MW-20	2/17/2006	30.73	16.50	15.21	1.29	15.38	2.00	43.90	0.03
MW-20	2/24/2006	30.73	16.09	15.52	0.57	15.15	1.50	45.40	0.05
MW-20	3/3/2006	30.73	15.81	15.45	0.36	15.24	0.25	45.65	0.01
MW-20	3/14/2006	30.73	16.19	15.81	0.38	14.88	0.25	45.90	0.05
MW-20	3/21/2006	30.73	16.30	16.09	0.21	14.62	0.25	46.15	0.06
MW-20	3/31/2006	30.73	16.65	16.30	0.35	14.39	0.40	46.55	0.03
MW-20	4/6/2006	30.73	15.80	15.57	0.23	15.13	0.10	46.65	0.00
MW-20	4/14/2006	30.73	15.96	15.59	0.37	15.10	0.30	46.95	0.05
MW-20	4/24/2006	30.73	16.02	15.50	0.52	15.17	0.75	47.70	0.00
MW-20	5/9/2006	30.73	16.60	15.95	0.65	14.71	0.70	48.40	0.05
MW-20	5/19/2006	30.73	16.51	15.89	0.62	14.77	1.10	49.50	0.01
MW-20	5/25/2006	30.73	16.41	15.84	0.57	14.83	0.80	50.30	0.01
MW-20	6/2/2006	30.73	16.32	15.78	0.54	14.89	0.50	50.80	0.04
MW-20	Product Skimmer Installed in Well								
MW-20	6/9/2006	30.73	--	--	--	--	0.75	51.55	--
MW-20	6/19/2006	30.73	--	--	--	--	0.25	51.80	--
MW-20	6/28/2006	30.73	--	--	--	--	0.30	52.10	--
MW-20	7/3/2006	30.73	--	--	--	--	0.15	52.25	--
MW-20	7/10/2006	30.73	--	--	--	--	0.10	52.35	--
MW-20	7/18/2006	30.73	--	--	--	--	0.20	52.55	--
MW-20	7/25/2006	30.73	--	--	--	--	0.50	53.05	--
MW-20	8/4/2006	30.73	--	--	--	--	0.50	53.55	--
MW-20	8/11/2006	30.73	--	--	--	--	0.20	53.75	--
MW-20	8/18/2006	30.73	--	--	--	--	0.20	53.95	--
MW-20	8/23/2006	30.73	--	--	--	--	0.10	54.05	--
MW-20	9/8/2006	30.73	--	--	--	--	0.00	54.05	--
MW-20	9/20/2006	30.73	--	--	--	--	0.20	54.25	--
MW-20	10/3/2006	30.73	--	--	--	--	0.05	54.30	--
MW-20	11/6/2006	30.73	--	--	--	--	0.10	54.40	--
MW-20	11/22/2006	30.73	--	--	--	--	0.10	54.50	--

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Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-20	12/4/2006	30.73	--	--	--	--	1.90	56.40	--
MW-20	12/13/2006	30.73	--	--	--	--	1.30	57.70	--
MW-20	12/18/2006	30.73	--	--	--	--	1.20	58.90	--
MW-20	12/26/2006	30.73	--	--	--	--	1.20	60.10	--
MW-20	1/5/2007	30.73	--	--	--	--	1.30	61.40	--
MW-20	1/9/2007	30.73	--	--	--	--	1.20	62.60	--
MW-20	1/15/2007	30.73	--	--	--	--	0.00	62.60	--
MW-20	1/26/2007	30.73	--	--	--	--	1.20	63.80	--
MW-20	1/31/2007	30.73	--	--	--	--	1.10	64.90	--
MW-20	2/9/2007	30.73	--	--	--	--	1.00	65.90	--
MW-20	2/13/2007	30.73	--	--	--	--	1.00	66.90	--
MW-20	2/28/2007	30.73	--	--	--	--	1.10	68.00	--
MW-20	3/6/2007	30.73	--	--	--	--	1.00	69.00	--
MW-20	3/23/2007	30.73	--	--	--	--	1.00	70.00	--
MW-20	3/29/2007	30.73	--	--	--	--	4.00	74.00	--
MW-20	4/5/2007	30.73	--	--	--	--	1.00	75.00	--
MW-20	4/11/2007	30.73	--	--	--	--	1.20	76.20	--
MW-20	4/5/2007	30.73	--	--	--	--	1.00	77.20	--
MW-20	4/11/2007	30.73	--	--	--	--	1.20	78.40	--
MW-20	4/16/2007	30.73	--	--	--	--	2.70	81.10	--
MW-20	4/25/2007	30.73	--	--	--	--	0.30	81.40	--
MW-20	5/3/2007	30.73	--	--	--	--	4.10	85.50	--
MW-20	5/10/2007	30.73	--	--	--	--	0.80	86.30	--
MW-20	5/15/2007	30.73	--	--	--	--	1.20	87.50	--
MW-20	5/25/2007	30.73	--	--	--	--	0.50	88.00	--
MW-20	6/4/2007	30.73	--	--	--	--	0.50	88.50	--
MW-20	6/13/2007	30.73	--	--	--	--	0.50	89.00	--
MW-20	6/19/2007	30.73	--	--	--	--	0.00	89.00	--
MW-20	6/27/2007	30.73	--	--	--	--	1.00	90.00	--
MW-20	7/9/2007	30.73	--	--	--	--	0.50	90.50	--
MW-20	7/25/2007	30.73	--	--	--	--	0.10	90.60	--
MW-20	8/9/2007	30.73	--	--	--	--	0.10	90.70	--
MW-20	8/22/2007	30.73	--	--	--	--	0.10	90.80	--
MW-20	9/7/2007	30.73	--	--	--	--	0.10	90.90	--
MW-20	9/14/2007	30.73	--	--	--	--	0.90	91.80	--
MW-20	9/19/2007	30.73	--	--	--	--	0.10	91.90	--
MW-20	10/4/2007	30.73	--	--	--	--	0.10	92.00	--
MW-20	10/11/2007	30.73	--	--	--	--	0.00	92.00	--
MW-20	10/24/2007	30.73	--	--	--	--	0.10	92.10	--
MW-20	11/8/2007	30.73	--	--	--	--	0.10	92.20	--
MW-20	11/21/2007	30.73	--	--	--	--	0.00	92.20	--
MW-20	12/7/2007	30.73	--	--	--	--	0.05	92.25	--
MW-20	12/21/2007	30.73	--	--	--	--	0.05	92.30	--
MW-20	1/3/2008	30.73	19.70	17.44	2.26	13.04	3.00	95.30	0.02
MW-20	1/18/2008	30.73	18.00	16.93	1.07	13.68	2.50	97.80	0.00
MW-20	1/24/2008	30.73	17.57	16.57	1.00	14.05	1.00	98.80	0.00
MW-20	1/31/2008	30.73	17.61	16.76	0.85	13.88	1.75	100.55	0.00
MW-20	2/6/2008	30.73	18.02	16.55	1.47	14.02	3.00	103.55	0.00
MW-20	2/15/2008	30.73	17.46	15.94	1.52	14.62	4.25	107.80	0.00
MW-20	2/29/2008	30.73	18.18	16.28	1.90	14.24	2.50	110.30	0.00
MW-20	3/14/2008	30.73	17.62	16.59	1.03	14.03	2.50	112.80	0.00
MW-20	3/21/2008	30.73	17.40	17.33	0.07	13.39	1.00	113.80	0.00
MW-20	4/11/2008	30.73	17.80	17.57	0.23	13.13	2.00	115.80	0.00
MW-20	4/17/2008	30.73	17.67	17.56	0.11	13.16	1.06	116.86	0.00
MW-20	4/24/2008	30.73	17.84	17.71	0.13	13.01	0.26	117.12	0.00
MW-20	5/2/2008	30.73	17.58	17.50	0.08	13.22	0.25	117.37	0.08
MW-20	5/8/2008	30.73	17.63	17.59	0.04	13.14	1.30	118.67	0.04
MW-20	5/14/2008	30.73	17.92	17.88	0.04	12.85	0.03	118.70	0.04
MW-20	5/30/2008	30.73	16.79	16.71	0.08	14.01	0.03	118.73	0.08
MW-20	6/13/2008	30.73	16.50	16.43	0.07	14.29	0.26	118.99	0.00
MW-20	6/25/2008	30.73	17.05	16.86	0.19	13.85	0.00	118.99	0.00
MW-20	7/11/2008	30.73	17.85	17.76	0.09	12.96	0.13	119.12	0.09
MW-20	7/28/2008	30.73	18.22	18.21	0.01	12.52	0.03	119.15	0.01
MW-20	8/13/2008	30.73	19.30	19.28	0.02	11.45	0.00	119.15	0.02
MW-20	8/27/2008	30.73	19.56	19.55	0.01	11.18	0.13	119.28	0.01
MW-20	9/8/2008	30.73	19.71	19.68	0.03	11.05	0.00	119.28	0.03
MW-20	9/18/2008	30.73	19.86	19.84	0.02	10.89	0.03	119.31	0.02
MW-20	9/30/2008	30.73	20.05	20.02	0.03	10.71	0.00	119.31	0.03
MW-20	10/16/2008	30.73	20.41	20.40	0.01	10.33	0.00	119.31	0.01
MW-20	10/30/2008	30.73	20.40	20.39	0.01	10.34	0.00	119.31	0.01
MW-20	11/14/2008	30.73	20.55	20.54	0.01	10.19	0.00	119.31	0.01
MW-20	11/26/2008	30.73	20.28	20.23	0.05	10.49	0.00	119.31	0.05
MW-20	12/16/2008	30.73	20.47	20.46	0.01	10.27	0.00	119.31	0.01
MW-20	12/29/2008	30.73	20.46	20.44	0.02	10.29	0.00	119.31	0.02

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			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-20	1/15/2009	30.73	18.62	18.07	0.55	12.60	0.33	119.64	0.00
MW-20	1/23/2009	30.73	18.85	17.93	0.92	12.70	0.40	120.04	0.01
MW-20	1/29/2009	30.73	18.42	18.28	0.14	12.43	0.26	120.30	0.00
MW-20	2/4/2009	30.73	18.31	18.03	0.28	12.67	0.79	121.09	0.01
MW-20	2/12/2009	30.73	18.53	18.40	0.13	12.32	0.60	121.69	0.00
MW-20	2/19/2009	30.73	18.88	18.81	0.07	11.91	0.00	121.69	0.07
MW-20	3/10/2009	30.73	19.15	19.12	0.03	11.61	0.05	121.74	0.03
MW-20	3/27/2009	30.73	19.06	19.03	0.03	11.70	0.05	121.79	0.03
MW-20	4/16/2009	30.73	18.70	18.67	0.03	12.06	0.00	121.79	0.03
MW-20	5/14/2009	30.73	18.51	18.48	0.03	12.25	0.00	121.79	0.03
MW-20	6/5/2009	30.73	17.95	17.94	0.01	12.79	0.05	121.84	0.00
MW-20	7/13/2009	30.73	19.28	19.28	0.00	11.45	0.00	121.84	0.00
MW-20	8/10/2009	30.73	20.10	20.10	0.00	10.63	0.00	121.84	0.00
MW-20	9/9/2009	30.73	20.84	20.82	0.02	9.91	0.00	121.84	0.02
MW-20	10/15/2009	30.73	20.84	20.80	0.04	9.93	0.00	121.84	0.04
MW-20	11/18/2009	30.73	20.46	20.46	0.00	10.27	0.00	121.84	0.00
MW-20	12/16/2009	30.73	19.90	19.90	0.00	10.83	0.00	121.84	0.00
MW-20	1/13/2010	30.73	20.22	18.38	1.84	12.15	2.50	124.34	0.00
MW-20	1/21/2010	30.73	18.67	17.62	1.05	12.99	2.10	126.44	0.00
MW-20	1/26/2010	30.73	18.45	17.80	0.65	12.86	1.00	127.44	0.00
MW-20	2/5/2010	30.73	--	--	--	--	1.00	128.44	0.00
MW-20	3/2/2010	30.73	20.57	17.51	3.06	12.88	2.65	131.09	0.02
MW-20	3/12/2010	30.73	18.70	17.35	1.35	13.23	2.25	133.34	0.01
MW-20	3/25/2010	30.73	18.56	17.49	1.07	13.12	2.00	135.34	0.01
MW-20	4/2/2010	30.73	18.15	17.23	0.92	13.40	2.50	137.84	0.00
MW-20	4/9/2010	30.73	18.39	17.43	0.96	13.19	1.25	139.09	0.01
MW-20	4/16/2010	30.73	18.44	17.39	1.05	13.22	1.25	140.34	0.03
MW-20	4/23/2010	30.73	18.44	17.60	0.84	13.04	2.00	142.34	0.01
MW-20	5/4/2010	30.73	19.58	17.59	1.99	12.92	2.25	144.59	0.02
MW-20	6/8/2010	30.73	17.65	16.05	1.60	14.50	1.50	146.09	0.05
MW-20	7/9/2010	30.73	19.73	16.80	2.93	13.61	3.75	149.84	0.01
MW-20	7/23/2010	30.73	19.05	17.90	1.15	12.70	1.25	151.09	0.01
MW-20	8/6/2010	30.73	18.66	18.47	0.19	12.24	1.30	152.39	0.01
MW-20	8/19/2010	30.73	18.96	18.90	0.06	11.82	0.00	152.39	0.01
MW-20	8/27/2010	30.73	18.91	18.88	0.03	11.85	0.50	152.89	0.01
MW-20	9/17/2010	30.73	19.44	19.43	0.01	11.30	0.00	152.89	0.01
MW-20	10/8/2010	30.73	19.66	19.63	0.03	11.10	0.00	152.89	0.03
MW-20	11/11/2010	30.73	19.96	19.92	0.04	10.81	0.00	152.89	0.04
MW-20	12/15/2010	30.73	19.93	16.93	3.00	13.47	5.00	157.89	0.02
MW-20	12/21/2010	30.73	18.68	16.39	2.29	14.09	2.25	160.14	0.03
MW-20	12/30/2010	30.73	17.84	15.03	2.81	15.39	3.00	163.14	0.02
MW-20	1/6/2011	30.73	15.81	15.62	0.19	15.09	2.00	165.14	0.01
MW-20	1/13/2011	30.73	16.30	16.07	0.23	14.63	1.00	166.14	0.01
MW-20	1/19/2011	30.73	15.76	15.63	0.13	15.09	0.75	166.89	0.03
MW-20	1/28/2011	30.73	15.55	15.43	0.12	15.29	0.75	167.64	0.02
MW-20	2/9/2011	30.73	16.92	16.13	0.79	14.51	2.00	169.64	0.01
MW-20	2/23/2011	30.73	16.30	16.29	0.01	14.44	0.00	169.64	0.01
MW-20	3/9/2011	30.73	15.82	15.53	0.29	15.17	0.75	170.39	0.02
MW-20	3/29/2011	30.73	16.25	15.27	0.98	15.35	1.25	171.64	0.02
MW-20	4/21/2011	30.73	16.11	14.84	1.27	15.75	1.00	172.64	0.01
MW-20	6/9/2011	30.73	15.15	14.33	0.82	16.31	0.95	173.59	0.02
MW-20	7/7/2011	30.73	15.27	15.06	0.21	15.65	0.50	174.09	0.01
MW-20	8/3/2011	30.73	18.35	16.23	2.12	14.27	2.00	176.09	0.01
MW-20	9/8/2011	30.73	18.76	18.26	0.50	12.42	0.50	176.59	0.02
MW-20	10/3/2011	30.73	19.09	18.89	0.20	11.82	0.50	177.09	0.02
MW-20	11/10/2011	30.73	19.53	19.50	0.03	11.23	0.30	177.39	0.03
MW-20	12/1/2011	30.73	19.19	19.18	0.01	11.55	0.00	177.39	0.01
MW-20	1/6/2012	30.73	19.15	--	0.00	11.58	0.25	177.64	--
MW-20	1/25/2012	30.73	--	--	--	--	0.10	177.74	--
MW-20	3/3/2012	30.73	19.80	18.00	1.80	12.53	4.00	181.74	0.26
MW-20	3/6/2012	30.73	18.90	17.57	1.33	13.01	1.50	183.24	0.00
MW-20	3/14/2012	30.73	18.62	17.19	1.43	13.38	2.55	185.79	0.01
MW-20	3/22/2012	30.73	18.67	16.43	2.24	14.05	1.50	187.29	0.01
MW-20	3/29/2012	30.73	16.25	15.84	0.41	14.84	2.00	189.29	0.03
MW-20	4/5/2012	30.73	14.35	14.35	0.00	16.38	0.50	189.79	0.00
MW-20	4/13/2012	30.73	14.37	14.33	0.04	16.40	0.55	190.34	0.04
MW-20	4/13/2012	30.73	16.65	15.26	1.39	15.32	2.30	192.64	0.02
MW-20	5/14/2012	30.73	--	--	--	--	0.79	193.43	--
MW-20	5/25/2012	30.73	16.58	15.32	1.26	15.27	1.75	195.18	0.00
MW-20	6/12/2012	30.73	15.67	15.61	0.06	15.11	1.25	196.43	0.00
MW-20	7/3/2012	30.73	16.40	15.71	0.69	14.94	0.50	196.93	0.01
MW-20	8/23/2012	30.73	18.65	18.31	0.34	12.38	0.60	197.53	0.05
MW-20	9/24/2012	30.73	19.42	19.25	0.17	11.46	0.25	197.78	0.02
MW-20	10/8/2012	30.73	19.61	19.50	0.11	11.22	0.25	198.03	0.02

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-20	11/14/2012	30.73	19.51	19.48	0.03	11.25	0.00	198.03	0.03
MW-20	12/20/2012	30.73	17.71	15.62	2.09	14.88	2.50	200.53	0.00
MW-20	1/4/2013	30.73	16.38	15.62	0.76	15.03	2.30	202.83	0.04
MW-20	1/18/2013	30.73	16.56	16.26	0.30	14.44	1.25	204.08	0.03
MW-20	1/31/2013	30.73	17.03	17.00	0.03	13.73	1.00	205.08	0.01
MW-20	3/6/2013	30.73	17.78	17.75	0.03	12.98	0.10	205.18	0.01
MW-20	4/3/2013	30.73	17.65	17.54	0.11	13.18	0.90	206.08	--
MW-20	5/6/2013	30.73	16.54	15.74	0.80	14.90	1.50	207.58	0.01
MW-20	6/12/2013	30.73	18.11	18.10	0.01	12.63	1.00	208.58	0.01
MW-20	7/16/2013	30.73	18.81	18.78	0.03	11.95	0.50	209.08	0.03
MW-20	8/26/2013	30.73	20.12	20.01	0.11	10.71	0.30	209.38	0.11
MW-20	9/25/2013	30.73	20.15	20.10	0.05	10.62	0.20	209.58	0.05
MW-20	10/31/2013	30.73	20.14	20.10	0.04	10.63	0.00	209.58	0.04
MW-20	11/27/2013	30.73	19.95	19.93	0.02	10.80	0.00	209.58	0.02
MW-20	12/17/2013	30.73	19.90	19.89	0.01	10.84	0.00	209.58	0.01
MW-20	1/27/2014	30.73	20.35	20.34	0.01	10.39	0.00	209.58	0.01
MW-20	2/27/2014	30.73	19.30	19.30	0.00	11.43	0.00	209.58	0.00
MW-20	3/26/2014	30.73	18.54	17.01	1.53	13.55	2.00	211.58	0.01
MW-20	4/15/2014	30.73	18.11	17.42	0.69	13.23	0.50	212.08	0.01
MW-20	5/9/2014	30.73	17.25	16.80	0.45	13.88	1.25	213.33	0.00
MW-20	6/30/2014	30.73	18.20	17.80	0.40	12.89	0.50	213.83	0.00
MW-20	7/16/2014	30.73	19.00	18.45	0.55	12.22	2.00	215.83	0.00
MW-20	8/4/2014	30.73	18.95	18.90	0.05	11.82	0.25	216.08	0.00
MW-20	9/30/2014	30.73	20.40	19.80	0.60	10.86	0.50	216.58	0.00
MW-20	10/27/2014	30.73	19.40	19.20	0.20	11.51	0.25	216.83	0.00
MW-20	11/24/2014	30.73	19.90	19.70	0.20	11.01	1.00	217.83	0.00
MW-20	12/11/2014	30.73	18.84	18.83	0.01	11.90	0.00	217.83	0.00
MW-20	1/29/2015	30.73	18.40	17.80	0.60	12.86	1.00	218.83	0.10
MW-20	2/27/2015	30.73	20.00	19.75	0.25	10.95	0.50	219.33	0.00
MW-20	3/27/2015	30.73	18.60	17.49	1.11	13.12	1.50	220.83	0.02
MW-20	4/28/2015	30.73	18.71	18.00	0.71	12.65	2.00	222.83	0.01
MW-20	5/29/2015	30.73	19.32	19.02	0.30	11.68	1.50	224.33	0.01
MW-20	6/23/2015	30.73	19.74	19.44	0.30	11.26	2.00	226.33	0.01
MW-20	7/8/2015	30.73	19.66	19.58	0.08	11.14	0.00	226.33	0.08
MW-20	8/12/2015	30.73	20.21	19.98	0.23	10.72	3.00	229.33	0.02
MW-20	9/11/2015	30.73	20.48	20.30	0.18	10.41	1.50	230.83	0.01
MW-20	10/15/2015	30.73	20.73	20.61	0.12	10.11	1.00	231.83	0.00
MW-20	11/10/2015	30.73	20.76	20.62	0.14	10.09	0.75	232.58	0.00
MW-20	12/16/2015	30.73	18.25	18.15	0.10	12.57	1.00	233.58	0.00
MW-20	1/21/2016	30.73	15.68	15.64	0.04	15.09	1.00	234.58	0.00
MW-20	2/17/2016	30.73	15.42	15.39	0.03	15.34	0.00	234.58	0.00
MW-20	3/29/2016	30.73	15.70	15.20	0.50	15.48	0.50	235.08	0.00
MW-20	4/27/2016	30.73	16.19	15.71	0.48	14.97	0.50	235.58	0.03
MW-20	5/27/2016	30.73	17.40	17.13	0.27	13.57	0.50	236.08	0.02
MW-20	6/29/2016	30.73	18.95	18.35	0.60	12.31	1.50	237.58	0.06
MW-20	7/20/2016	30.73	19.32	19.03	0.29	11.67	0.25	237.83	0.03
MW-20	8/31/2016	30.73	20.10	19.78	0.32	10.91	0.50	238.33	0.05
MW-20	9/16/2016	30.73	20.39	20.03	0.36	10.66	0.65	238.98	0.06
MW-20	10/20/2016	30.73	20.05	20.00	0.05	10.72	0.50	239.48	0.00
MW-20	11/28/2016	30.73	18.95	18.91	0.04	11.82	0.00	239.48	0.00
MW-20	12/19/2016	30.73	18.30	17.50	0.80	13.14	1.50	240.98	0.00
MW-20	1/5/2017	30.73	18.55	17.52	1.03	13.10	1.50	242.48	0.01
MW-20	2/14/2017	30.73	16.76	15.17	1.59	15.39	4.00	246.48	0.02
MW-20	3/28/2017	30.73	14.38	13.90	0.48	16.78	1.50	247.98	0.00
MW-20	4/18/2017	30.73	14.42	14.20	0.22	16.51	1.50	249.48	0.00
MW-20	5/26/2017	30.73	14.66	14.42	0.24	16.28	1.50	250.98	0.01
MW-20	6/23/2017	30.73	15.12	15.11	0.01	15.62	0.00	250.98	0.01
MW-20	7/21/2017	30.73	16.11	15.80	0.31	14.90	0.10	251.08	0.00
MW-20	8/18/2017	30.73	18.52	18.44	0.08	12.28	0.00	251.08	0.08
MW-20	9/26/2017	30.73	19.10	18.99	0.11	11.73	0.50	251.58	0.00
MW-20	10/30/2017	30.73	18.95	18.91	0.04	11.82	0.25	251.83	0.04
MW-20	11/17/2017	30.73	18.85	18.69	0.16	12.02	0.40	252.23	0.03
MW-20	12/13/2017	30.73	17.34	17.16	0.18	13.55	1.25	253.48	0.02
MW-20	1/26/2018	30.73	16.65	16.14	0.51	14.53	0.50	253.98	0.05
MW-20	2/14/2018	30.73	16.17	15.94	0.23	14.76	0.85	254.83	0.05
MW-20	3/26/2018	30.73	17.31	17.20	0.11	13.52	1.50	256.33	0.01
MW-20	5/3/2018	30.73	16.10	16.06	0.04	14.67	0.50	256.83	0.04
MW-20	5/31/2018	30.73	16.92	15.41	1.51	15.15	3.10	259.93	0.03
MW-20	6/21/2018	30.73	18.33	17.75	0.58	12.92	1.50	261.43	0.01
MW-20	7/17/2018	30.73	18.97	18.96	0.01	11.77	0.00	261.43	0.01
MW-20	8/17/2018	30.73	19.77	19.76	0.01	10.97	0.00	261.43	0.01
MW-20	10/16/2018	30.73	20.69	20.64	0.05	10.08	0.10	261.53	0.01
MW-20	11/5/2018	30.73	20.79	20.70	0.09	10.02	0.20	261.73	0.01
MW-20	12/5/2018	30.73	20.57	20.55	0.02	10.18	0.00	261.73	0.02

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
MW-20	12/31/2018	30.73	19.92	19.91	0.01	10.82	0.00	261.73	0.01
MW-20	1/18/2019	30.73	19.52	19.43	0.09	11.29	0.50	262.23	0.00
MW-20	2/21/2019	30.73	18.21	17.70	0.51	12.97	1.50	263.73	0.01
MW-20	4/2/2019	30.73	18.34	18.24	0.10	12.48	0.50	264.23	0.01
MW-20	4/18/2019	30.73	17.23	17.11	0.12	13.61	0.01	264.24	0.01
MW-20	5/16/2019	30.73	17.91	17.75	0.16	12.96	0.01	264.25	0.01
MW-20	6/19/2019	30.73	18.88	18.83	0.05	11.89	0.00	264.25	0.05
MW-20	7/23/2019	30.73	20.14	20.12	0.02	10.61	0.00	264.25	0.02
MW-20	8/22/2019	30.73	19.85	19.84	0.01	10.89	0.00	264.25	0.01
MW-20	9/25/2019	30.73	20.72	20.56	0.16	10.15	0.25	264.50	0.01
MW-20	10/25/2019	30.73	20.86	20.80	0.06	9.92	0.00	264.50	0.06
MW-20	11/20/2019	30.73	20.26	20.24	0.02	10.49	0.00	264.50	0.02
MW-20	12/9/2019	30.73	20.90	20.89	0.01	9.84	0.00	264.50	0.01
MW-20	2/18/2020	30.73	17.41	16.42	0.99	14.20	1.00	265.50	0.02
MW-20	2/28/2020	30.73	16.99	16.82	0.17	13.89	0.15	265.65	0.00
MW-20	3/19/2020	30.73	18.20	18.18	0.02	12.55	0.05	265.70	0.02
MW-20	4/20/2020	30.73	17.32	17.27	0.05	13.45	0.45	266.15	0.00
MW-20	5/29/2020	30.73	18.40	18.35	0.05	12.37	0.00	266.15	0.05
MW-20	6/11/2020	30.73	18.07	18.04	0.03	12.69	0.00	266.15	0.03
MW-20	7/15/2020	30.73	19.21	19.20	0.01	11.53	0.00	266.15	0.01
MW-20	8/31/2020	30.73	19.08	19.07	0.01	11.66	0.00	266.15	0.01
MW-20	9/28/2020	30.73	20.64	20.60	0.04	10.13	0.00	266.15	0.04
MW-20	10/23/2020	30.73	21.00	20.95	0.05	9.77	0.06	266.21	0.05
MW-20	11/13/2020	30.73	20.68	20.67	0.01	10.06	0.00	266.21	0.01
MW-20	12/10/2020	30.73	20.30	20.30	0.00	10.43	0.00	266.21	0.00
MW-20	1/20/2021	30.73	16.90	16.32	0.58	14.35	0.35	263.79	0.02
MW-20	2/24/2021	30.73	16.03	15.94	0.09	14.78	0.10	263.89	0.00
MW-20	1/6/2022	30.73	16.01	15.28	0.73	15.37	1.20	265.09	0.03
MW-20	12/5/2022	30.73	19.86	19.83	0.03	10.90	0.06	263.85	0.00
MW-20	12/6/2023	30.73	17.72	17.55	0.17	13.16	0.45	263.95	<0.01
MW-20	12/3/2024	30.73	17.77	17.55	0.22	13.16	0.25	264.20	<0.01
HC-1	2/2/2005	32.36	28.72	--	0.00	3.64	0.00	0.00	0.00
HC-1	6/2/2005	32.36	26.42	--	0.00	5.94	0.00	0.00	0.00
HC-1	9/14/2005	32.36	30.29	--	0.00	2.07	0.00	0.00	0.00
HC-1	12/6/2005	32.36	27.88	--	0.00	4.48	0.00	0.00	0.00
HC-1	3/13/2006	32.36	27.05	--	0.00	5.31	0.00	0.00	0.00
HC-1	6/27/2006	32.36	25.32	--	0.00	7.04	0.00	0.00	0.00
HC-1	9/19/2006	32.36	30.42	--	0.00	1.94	0.00	0.00	0.00
HC-1	12/13/2006	32.36	27.40	--	0.00	4.96	0.00	0.00	0.00
HC-1	3/29/2007	32.36	24.85	--	0.00	7.51	0.00	0.00	0.00
HC-1	6/27/2007	32.36	28.33	--	0.00	4.03	0.00	0.00	0.00
HC-1	9/18/2007	32.36	30.65	--	0.00	1.71	0.00	0.00	0.00
HC-2	2/2/2005	32.19	27.69	--	0.00	4.50	0.00	0.00	0.00
HC-2	6/2/2005	32.19	25.16	--	0.00	7.03	0.00	0.00	0.00
HC-2	9/14/2005	32.19	29.88	--	0.00	2.31	0.00	0.00	0.00
HC-2	12/6/2005	32.19	27.60	--	0.00	4.59	0.00	0.00	0.00
HC-2	3/13/2006	32.19	26.50	--	0.00	5.69	0.00	0.00	0.00
HC-2	6/27/2006	32.19	24.20	--	0.00	7.99	0.00	0.00	0.00
HC-2	9/19/2006	32.19	29.89	--	0.00	2.30	0.00	0.00	0.00
HC-2	12/13/2006	32.19	26.83	--	0.00	5.36	0.00	0.00	0.00
HC-2	3/29/2007	32.19	24.43	--	0.00	7.76	0.00	0.00	0.00
HC-2	6/27/2007	32.19	27.44	--	0.00	4.75	0.00	0.00	0.00
HC-2	9/18/2007	32.19	29.99	--	0.00	2.20	0.00	0.00	0.00
HC-2	12/6/2007	32.19	25.41	--	0.00	6.78	0.00	0.00	0.00
HC-2	3/10/2008	32.19	27.90	--	0.00	4.29	0.00	0.00	0.00
HC-2	6/12/2008	32.19	20.07	--	0.00	12.12	0.00	0.00	0.00
HC-2	9/8/2008	32.19	29.44	--	0.00	2.75	0.00	0.00	0.00
HC-2	12/29/2008	32.19	28.02	--	0.00	4.17	0.00	0.00	0.00
HC-2	3/9/2009	32.19	27.98	--	0.00	4.21	0.00	0.00	0.00
HC-2	6/4/2009	32.19	22.40	--	0.00	9.79	0.00	0.00	0.00
HC-2	4/25/2022	32.19	27.23	--	0.00	4.55	0.00	0.00	0.00
HC-2	11/17/2022	32.19	28.60	--	0.00	3.18	0.00	0.00	0.00
HC-3	2/2/2005	32.88	25.17	--	0.00	7.71	0.00	0.00	0.00
HC-3	6/2/2005	32.88	26.72	--	0.00	6.16	0.00	0.00	0.00
HC-3	9/14/2005	32.88	31.24	--	0.00	1.64	0.00	0.00	0.00
HC-3	12/6/2005	32.88	29.00	--	0.00	3.88	0.00	0.00	0.00
HC-3	3/13/2006	32.88	27.82	--	0.00	5.06	0.00	0.00	0.00
HC-3	6/27/2006	32.88	25.52	--	0.00	7.36	0.00	0.00	0.00
HC-3	9/19/2006	32.88	31.29	--	0.00	1.59	0.00	0.00	0.00
HC-3	12/13/2006	32.88	28.21	--	0.00	4.67	0.00	0.00	0.00
HC-3	3/29/2007	32.88	25.79	--	0.00	7.09	0.00	0.00	0.00
HC-3	6/27/2007	32.88	28.92	--	0.00	3.96	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-3	9/18/2007	32.88	31.32	--	0.00	1.56	0.00	0.00	0.00
HC-3	12/6/2007	32.88	27.36	--	0.00	5.52	0.00	0.00	0.00
HC-3	3/10/2008	32.88	29.19	--	0.00	3.69	0.00	0.00	0.00
HC-3	6/12/2008	32.88	21.28	--	0.00	11.60	0.00	0.00	0.00
HC-3	9/8/2008	32.88	30.91	--	0.00	1.97	0.00	0.00	0.00
HC-3	12/29/2008	32.88	29.34	--	0.00	3.54	0.00	0.00	0.00
HC-3	3/9/2009	32.88	29.35	--	0.00	3.53	0.00	0.00	0.00
HC-3	6/4/2009	32.88	23.77	--	0.00	9.11	0.00	0.00	0.00
HC-4S	2/2/2005	32.35	26.14	--	0.00	6.21	0.00	0.00	0.00
HC-4S	6/2/2005	32.35	26.10	--	0.00	6.25	0.00	0.00	0.00
HC-4S	9/14/2005	32.35	26.05	--	0.00	6.30	0.00	0.00	0.00
HC-4S	12/6/2005	32.35	26.05	--	0.00	6.30	0.00	0.00	0.00
HC-4S	3/13/2006	32.35	26.05	--	0.00	6.30	0.00	0.00	0.00
HC-4S	6/27/2006	32.35	26.06	--	0.00	6.29	0.00	0.00	0.00
HC-4S	9/19/2006	32.35	26.12	--	0.00	6.23	0.00	0.00	0.00
HC-4S	12/13/2006	32.35	26.13	--	0.00	6.22	0.00	0.00	0.00
HC-4S	3/29/2007	32.35	26.08	--	0.00	6.27	0.00	0.00	0.00
HC-4S	6/27/2007	32.35	26.13	--	0.00	6.22	0.00	0.00	0.00
HC-4S	9/18/2007	32.35	26.14	--	0.00	6.21	0.00	0.00	0.00
HC-4S	12/6/2007	32.35	27.73	--	0.00	4.62	0.00	0.00	0.00
HC-4S	3/10/2008	32.35	26.09	--	0.00	6.26	0.00	0.00	0.00
HC-4S	6/12/2008	32.35	22.08	--	0.00	10.27	0.00	0.00	0.00
HC-4S	9/8/2008	32.35	26.42	--	0.00	5.93	0.00	0.00	0.00
HC-4S	12/29/2008	32.35	26.13	--	0.00	6.22	0.00	0.00	0.00
HC-4S	3/9/2009	32.35	26.08	--	0.00	6.27	0.00	0.00	0.00
HC-4S	6/4/2009	32.35	24.59	--	0.00	7.76	0.00	0.00	0.00
HC-4D	2/2/2005	32.18	29.46	--	0.00	2.72	0.00	0.00	0.00
HC-4D	6/2/2005	32.18	27.22	--	0.00	4.96	0.00	0.00	0.00
HC-4D	9/14/2005	32.18	31.91	--	0.00	0.27	0.00	0.00	0.00
HC-4D	12/6/2005	32.18	30.02	--	0.00	2.16	0.00	0.00	0.00
HC-4D	3/13/2006	32.18	27.45	--	0.00	4.73	0.00	0.00	0.00
HC-4D	6/27/2006	32.18	25.31	--	0.00	6.87	0.00	0.00	0.00
HC-4D	9/19/2006	32.18	31.94	--	0.00	0.24	0.00	0.00	0.00
HC-4D	12/13/2006	32.18	29.74	--	0.00	2.44	0.00	0.00	0.00
HC-4D	3/29/2007	32.18	26.58	--	0.00	5.60	0.00	0.00	0.00
HC-4D	6/27/2007	32.18	29.53	--	0.00	2.65	0.00	0.00	0.00
HC-4D	9/18/2007	32.18	32.13	--	0.00	0.05	0.00	0.00	0.00
HC-4D	12/6/2007	32.18	26.16	--	0.00	6.02	0.00	0.00	0.00
HC-4D	3/10/2008	32.18	29.77	--	0.00	2.41	0.00	0.00	0.00
HC-4D	6/12/2008	32.18	22.48	--	0.00	9.70	0.00	0.00	0.00
HC-4D	9/8/2008	32.18	31.92	--	0.00	0.26	0.00	0.00	0.00
HC-4D	12/29/2008	32.18	29.75	--	0.00	2.43	0.00	0.00	0.00
HC-4D	3/9/2009	32.18	29.53	--	0.00	2.65	0.00	0.00	0.00
HC-4D	6/4/2009	32.18	24.49	--	0.00	7.69	0.00	0.00	0.00
HC-5	2/11/2005	32.10	18.24	--	0.00	13.86	0.00	0.00	0.00
HC-5	6/3/2005	32.10	18.06	--	0.00	14.04	0.00	0.00	0.00
HC-5	9/14/2005	32.10	18.63	--	0.00	13.47	0.00	0.00	0.00
HC-5	12/6/2005	32.10	17.90	--	0.00	14.20	0.00	0.00	0.00
HC-5	3/13/2006	32.10	18.02	--	0.00	14.08	0.00	0.00	0.00
HC-5	6/27/2006	32.10	18.36	--	0.00	13.74	0.00	0.00	0.00
HC-5	9/19/2006	32.10	18.78	--	0.00	13.32	0.00	0.00	0.00
HC-5	12/13/2006	32.10	18.11	--	0.00	13.99	0.00	0.00	0.00
HC-5	3/29/2007	32.10	18.15	--	0.00	13.95	0.00	0.00	0.00
HC-5	6/27/2007	32.10	18.59	--	0.00	13.51	0.00	0.00	0.00
HC-5	9/18/2007	32.10	19.08	--	0.00	13.02	0.00	0.00	0.00
HC-5	12/6/2007	32.10	17.91	--	0.00	14.19	0.00	0.00	0.00
HC-5	3/10/2008	32.10	18.26	--	0.00	13.84	0.00	0.00	0.00
HC-5	6/12/2008	32.10	18.26	--	0.00	13.84	0.00	0.00	0.00
HC-5	9/8/2008	32.10	19.00	--	0.00	13.10	0.00	0.00	0.00
HC-5	12/29/2008	32.10	18.41	--	0.00	13.69	0.00	0.00	0.00
HC-5	3/9/2009	32.10	18.58	--	0.00	13.52	0.00	0.00	0.00
HC-5	6/4/2009	32.10	19.50	--	0.00	12.60	0.00	0.00	0.00
HC-5	9/9/2009	32.10	19.46	--	0.00	12.64	0.00	0.00	0.00
HC-5	12/15/2009	32.10	18.49	--	0.00	13.61	0.00	0.00	0.00
HC-5	3/11/2010	32.10	18.27	--	0.00	13.83	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-5	6/8/2010	32.10	17.83	--	0.00	14.27	0.00	0.00	0.00
HC-5	9/16/2010	32.10	18.78	--	0.00	13.32	0.00	0.00	0.00
HC-5	12/13/2010	32.10	17.46	--	0.00	14.64	0.00	0.00	0.00
HC-5	6/9/2011	32.10	15.78	15.78	0.00	16.32	0.00	0.00	0.00
HC-5	12/1/2011	32.10	18.01	--	0.00	14.09	0.00	0.00	0.00
HC-5	6/11/2012	32.10	18.17	--	0.00	13.93	0.00	0.00	0.00
HC-5	12/19/2012	32.10	17.70	--	0.00	14.40	0.00	0.00	0.00
HC-5	12/17/2013	32.10	18.68	--	0.00	13.42	0.00	0.00	0.00
HC-5	12/11/2014	32.10	18.14	--	0.00	13.96	0.00	0.00	0.00
HC-5	12/15/2015	32.10	17.52	--	0.00	14.58	0.00	0.00	0.00
HC-5	12/19/2016	32.10	18.09	--	0.00	14.01	0.00	0.00	0.00
HC-5	12/13/2017	32.10	18.27	--	0.00	13.83	0.00	0.00	0.00
HC-5	12/5/2018	32.10	19.73	19.70	0.03	12.40	0.10	0.10	0.00
HC-5	12/31/2018	32.10	18.59	18.50	0.09	13.59	0.50	0.60	0.00
HC-5	1/17/2019	32.10	18.53	18.48	0.05	12.24	0.50	1.10	0.00
HC-5	2/21/2019	32.10	18.19	18.13	0.06	12.59	0.50	1.60	0.00
HC-5	4/2/2019	32.10	18.80	18.74	0.06	11.98	0.25	1.85	0.01
HC-5	4/18/2019	32.10	18.35	18.32	0.03	12.41	0.01	1.86	0.00
HC-5	5/16/2019	32.10	18.67	18.63	0.04	12.10	0.01	1.87	0.00
HC-5	6/19/2019	32.10	18.91	18.90	0.01	11.83	0.00	1.87	0.01
HC-5	7/23/2019	32.10	19.25	19.23	0.02	11.50	0.00	1.87	0.02
HC-5	8/22/2019	32.10	19.10	--	0.00	11.63	0.00	1.87	0.00
HC-5	9/25/2019	32.10	19.47	19.47	0.00	11.26	0.00	1.87	0.00
HC-5	10/25/2019	32.10	19.65	19.65	0.00	11.08	0.00	1.87	0.00
HC-5	11/20/2019	32.10	19.71	19.71	0.00	11.02	0.00	1.87	0.00
HC-5	12/9/2019	32.10	20.10	19.83	0.27	10.87	1.00	2.87	0.00
HC-5	2/18/2020	32.10	18.32	18.32	0.00	13.78	0.00	2.87	0.00
HC-5	2/28/2020	32.10	18.44	18.44	0.00	13.66	0.00	2.87	0.00
HC-5	3/19/2020	32.10	18.61	18.61	0.00	13.49	0.00	2.87	0.00
HC-5	4/20/2020	32.10	18.52	18.52	0.00	13.58	0.00	2.87	0.00
HC-5	5/29/2020	32.10	18.93	18.93	0.00	13.17	0.00	2.87	0.00
HC-5	6/11/2020	32.10	18.71	18.71	0.00	13.39	0.00	2.87	0.00
HC-5	7/15/2020	32.10	19.62	19.62	0.00	12.48	0.00	2.87	0.00
HC-5	8/31/2020	32.10	19.48	19.48	0.00	12.62	0.00	2.87	0.00
HC-5	9/28/2020	32.10	19.82	19.82	0.00	12.28	0.00	2.87	0.00
HC-5	10/23/2020	32.10	19.66	19.66	0.00	12.44	0.00	2.87	0.00
HC-5	11/13/2020	32.10	18.98	18.98	0.00	13.12	0.00	2.87	0.00
HC-5	12/10/2020	32.10	18.71	18.71	0.00	13.39	0.00	2.87	0.00
HC-5	1/20/2021	32.10	17.97	--	0.00	14.13	0.00	0.60	0.00
HC-5	2/24/2021	32.10	16.64	--	0.00	15.46	0.00	0.60	0.00
HC-5	4/7/2021	32.10	18.60	--	0.00	13.50	0.00	0.60	0.00
HC-5	12/22/2021	32.10	17.81	17.77	0.04	14.33	0.30	0.90	0.00
HC-5	1/6/2022	32.10	17.72	--	0.00	14.38	0.00	0.90	0.00
HC-5	4/25/2022	32.10	18.21	--	0.00	13.89	0.00	0.90	0.00
HC-5	11/17/2022	32.10	18.57	--	0.00	13.53	0.00	0.90	0.00
HC-5	6/20/2023	32.10	18.27	--	0.00	13.83	0.00	0.60	0.00
HC-5	12/6/2023	32.10	18.33	--	0.00	13.77	0.00	0.60	0.00
HC-5	5/1/2024	32.10	18.58	--	0.00	13.52	0.00	0.60	0.00
HC-5	12/3/2024	32.10	18.20	--	0.00	13.90	0.00	0.60	0.00
HC-6S	8/27/2003	32.62	18.93	--	0.00	13.69	0.00	0.00	0.00
HC-6S	9/3/2003	32.62	19.00	--	0.00	13.62	0.00	0.00	0.00
HC-6S	9/11/2003	32.62	19.11	--	0.00	13.51	0.00	0.00	0.00
HC-6S	9/17/2003	32.62	19.20	--	0.00	13.42	0.00	0.00	0.00
HC-6S	9/30/2003	32.62	19.15	--	0.00	13.47	0.00	0.00	0.00
HC-6S	10/14/2003	32.62	19.19	--	0.00	13.43	0.00	0.00	0.00
HC-6S	10/29/2003	32.62	19.29	--	0.00	13.33	0.00	0.00	0.00
HC-6S	11/13/2003	32.62	19.33	--	0.00	13.29	0.00	0.00	0.00
HC-6S	11/26/2003	32.62	19.13	--	0.00	13.49	0.00	0.00	0.00
HC-6S	12/24/2003	32.62	18.60	--	0.00	14.02	0.00	0.00	0.00
HC-6S	1/21/2004	32.62	17.31	--	0.00	15.31	0.00	0.00	0.00
HC-6S	2/25/2004	32.62	17.81	--	0.00	14.81	0.00	0.00	0.00
HC-6S	3/24/2004	32.62	16.31	--	0.00	16.31	0.00	0.00	0.00
HC-6S	2/2/2005	32.62	18.69	--	0.00	13.93	0.00	0.00	0.00
HC-6S	6/2/2005	32.62	18.41	--	0.00	14.21	0.00	0.00	0.00
HC-6S	9/14/2005	32.62	18.64	--	0.00	13.98	0.00	0.00	0.00
HC-6S	12/6/2005	32.62	18.47	--	0.00	14.15	0.00	0.00	0.00
HC-6S	3/13/2006	32.62	17.71	--	0.00	14.91	0.00	0.00	0.00
HC-6S	6/27/2006	32.62	18.11	--	0.00	14.51	0.00	0.00	0.00
HC-6S	9/19/2006	32.62	18.68	--	0.00	13.94	0.00	0.00	0.00
HC-6S	12/13/2006	32.62	18.39	--	0.00	14.23	0.00	0.00	0.00
HC-6S	3/29/2007	32.62	18.13	--	0.00	14.49	0.00	0.00	0.00
HC-6S	6/27/2007	32.62	18.60	--	0.00	14.02	0.00	0.00	0.00
HC-6S	9/18/2007	32.62	19.13	--	0.00	13.49	0.00	0.00	0.00

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Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-6S	12/6/2007	32.62	18.79	--	0.00	13.83	0.00	0.00	0.00
HC-6S	3/10/2008	32.62	18.16	--	0.00	14.46	0.00	0.00	0.00
HC-6S	6/12/2008	32.62	18.20	--	0.00	14.42	0.00	0.00	0.00
HC-6S	9/8/2008	32.62	19.11	--	0.00	13.51	0.00	0.00	0.00
HC-6S	12/29/2008	32.62	21.56	--	0.00	11.06	0.00	0.00	0.00
HC-6S	3/9/2009	32.62	18.43	--	0.00	14.19	0.00	0.00	0.00
HC-6S	6/4/2009	32.62	18.84	--	0.00	13.78	0.00	0.00	0.00
HC-6S	4/25/2022	32.62	18.98	--	0.00	14.05	0.00	0.00	0.00
HC-6D	8/27/2003	32.48	21.90	--	0.00	10.58	0.00	0.00	0.00
HC-6D	9/3/2003	32.48	21.99	--	0.00	10.49	0.00	0.00	0.00
HC-6D	9/11/2003	32.48	22.04	--	0.00	10.44	0.00	0.00	0.00
HC-6D	9/17/2003	32.48	22.10	--	0.00	10.38	0.00	0.00	0.00
HC-6D	9/30/2003	32.48	22.06	--	0.00	10.42	0.00	0.00	0.00
HC-6D	10/14/2003	32.48	22.16	--	0.00	10.32	0.00	0.00	0.00
HC-6D	10/29/2003	32.48	22.04	--	0.00	10.44	0.00	0.00	0.00
HC-6D	11/13/2003	32.48	22.10	--	0.00	10.38	0.00	0.00	0.00
HC-6D	11/26/2003	32.48	21.96	--	0.00	10.52	0.00	0.00	0.00
HC-6D	12/24/2003	32.48	21.35	--	0.00	11.13	0.00	0.00	0.00
HC-6D	1/21/2004	32.48	19.88	--	0.00	12.60	0.00	0.00	0.00
HC-6D	2/25/2004	32.48	20.71	--	0.00	11.77	0.00	0.00	0.00
HC-6D	3/24/2004	32.48	17.88	--	0.00	14.60	0.00	0.00	0.00
HC-6D	2/2/2005	32.48	22.45	--	0.00	10.03	0.00	0.00	0.00
HC-6D	6/2/2005	32.48	21.38	--	0.00	11.10	0.00	0.00	0.00
HC-6D	9/14/2005	32.48	21.90	--	0.00	10.58	0.00	0.00	0.00
HC-6D	12/6/2005	32.48	21.33	--	0.00	11.15	0.00	0.00	0.00
HC-6D	3/13/2006	32.48	20.68	--	0.00	11.80	0.00	0.00	0.00
HC-6D	6/27/2006	32.48	20.72	--	0.00	11.76	0.00	0.00	0.00
HC-6D	9/19/2006	32.48	21.75	--	0.00	10.73	0.00	0.00	0.00
HC-6D	12/13/2006	32.48	21.23	--	0.00	11.25	0.00	0.00	0.00
HC-6D	3/29/2007	32.48	20.42	--	0.00	12.06	0.00	0.00	0.00
HC-6D	6/27/2007	32.48	21.43	--	0.00	11.05	0.00	0.00	0.00
HC-6D	9/18/2007	32.48	21.96	--	0.00	10.52	0.00	0.00	0.00
HC-6D	12/6/2007	32.48	20.57	--	0.00	11.91	0.00	0.00	0.00
HC-6D	3/10/2008	32.48	20.98	--	0.00	11.50	0.00	0.00	0.00
HC-6D	6/12/2008	32.48	19.28	--	0.00	13.20	0.00	0.00	0.00
HC-6D	9/8/2008	32.48	21.91	--	0.00	10.57	0.00	0.00	0.00
HC-6D	12/29/2008	32.48	19.03	18.81	0.22	13.65	0.10	0.10	0.00
HC-6D	3/9/2009	32.48	21.76	--	0.00	10.72	0.00	0.10	0.00
HC-6D	6/4/2009	32.48	20.86	--	0.00	11.62	0.00	0.10	0.00
HC-10	8/27/2003	29.30	21.98	17.71	4.27	11.12	2.00	2.00	0.21
HC-10	9/3/2003	29.30	20.06	18.03	2.03	11.05	0.50	2.50	0.04
HC-10	9/11/2003	29.30	19.61	18.46	1.15	10.71	0.10	2.60	0.03
HC-10	9/17/2003	29.30	19.77	18.65	1.12	10.53	0.20	2.80	0.03
HC-10	9/30/2003	29.30	19.69	18.99	0.70	10.23	0.20	3.00	0.01
HC-10	10/14/2003	29.30	19.68	18.85	0.83	10.36	0.30	3.30	0.02
HC-10	10/29/2003	29.30	19.62	18.83	0.79	10.38	0.10	3.40	0.07
HC-10	11/13/2003	29.30	19.60	19.05	0.55	10.19	0.01	3.41	0.01
HC-10	11/19/2003	29.30	19.60	19.15	0.45	10.10	0.10	3.51	0.03
HC-10	11/26/2003	29.30	19.51	19.00	0.51	10.24	0.10	3.61	0.01
HC-10	12/3/2003	29.30	19.27	18.89	0.38	10.37	0.10	3.71	0.01
HC-10	12/10/2003	29.30	19.88	19.60	0.28	9.67	0.10	3.81	0.01
HC-10	12/17/2003	29.30	18.66	18.36	0.30	10.91	0.10	3.91	0.01
HC-10	12/24/2003	29.30	17.98	17.76	0.22	11.52	0.01	3.92	0.00
HC-10	1/9/2004	29.30	17.11	16.84	0.27	12.43	0.10	4.02	0.01
HC-10	1/15/2004	29.30	17.00	16.71	0.29	12.56	0.10	4.12	0.01
HC-10	1/21/2004	29.30	16.01	15.85	0.16	13.43	0.10	4.22	0.01
HC-10	1/29/2004	29.30	16.00	15.30	0.70	13.92	0.30	4.52	0.01
HC-10	2/3/2004	29.30	16.10	15.40	0.70	13.82	0.30	4.82	0.01
HC-10	2/12/2004	29.30	15.87	15.28	0.59	13.96	0.10	4.92	0.01
HC-10	2/18/2004	29.30	16.22	15.41	0.81	13.80	0.10	5.02	0.00
HC-10	2/25/2004	29.30	15.47	14.86	0.61	14.37	0.10	5.12	0.00
HC-10	3/3/2004	29.30	15.95	15.55	0.40	13.71	0.10	5.22	0.01
HC-10	3/10/2004	29.30	16.10	15.65	0.45	13.60	0.05	5.27	0.01
HC-10	3/18/2004	29.30	16.03	15.59	0.44	13.66	0.05	5.32	0.00
HC-10	3/24/2004	29.30	16.33	15.99	0.34	13.27	0.05	5.37	0.00
HC-10	4/1/2004	29.30	16.50	15.95	0.55	13.29	0.08	5.45	0.00
HC-10	1/14/2005	29.30	18.90	18.49	0.41	10.76	0.10	5.55	0.09
HC-10	1/21/2005	29.30	18.60	18.25	0.35	11.01	1.00	6.55	0.10
HC-10	1/28/2005	29.30	18.48	18.22	0.26	11.05	0.15	6.70	0.09
HC-10	2/2/2005	29.30	18.66	18.47	0.19	10.81	0.00	6.70	0.00
HC-10	2/4/2005	29.30	18.49	18.27	0.22	11.01	0.20	6.90	0.03
HC-10	2/11/2005	29.30	18.30	18.12	0.18	11.16	0.05	6.95	0.06
HC-10	2/18/2005	29.30	18.26	18.11	0.15	11.17	0.10	7.05	0.06

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-10	2/25/2005	29.30	18.50	18.37	0.13	10.92	0.05	7.10	0.06
HC-10	3/4/2005	29.30	18.64	18.52	0.12	10.77	0.05	7.15	0.02
HC-10	3/11/2005	29.30	18.58	18.48	0.10	10.81	0.15	7.30	0.01
HC-10	3/18/2005	29.30	18.56	18.47	0.09	10.82	0.00	7.30	0.09
HC-10	3/25/2005	29.30	18.86	18.75	0.11	10.54	0.05	7.35	0.01
HC-10	4/1/2005	29.30	18.52	18.46	0.06	10.83	0.00	7.35	0.06
HC-10	4/14/2005	29.30	18.44	18.43	0.01	10.87	0.10	7.45	0.01
HC-10	4/30/2005	29.30	18.22	18.14	0.08	11.15	0.00	7.45	0.08
HC-10	5/13/2005	29.30	18.88	18.82	0.06	10.47	0.00	7.45	0.06
HC-10	5/31/2005	29.30	17.38	17.32	0.06	11.97	0.00	7.45	0.06
HC-10	6/2/2005	29.30	17.45	17.33	0.12	11.96	0.00	7.45	--
HC-10	6/24/2005	29.30	17.55	17.50	0.05	11.79	0.00	7.45	0.05
HC-10	7/29/2005	29.30	18.16	18.09	0.07	11.20	0.00	7.45	0.07
HC-10	8/26/2005	29.30	18.60	18.52	0.08	10.77	0.00	7.45	0.08
HC-10	9/14/2005	29.30	18.93	0.00	18.93	27.22	0.00	7.45	--
HC-10	9/24/2005	29.30	19.05	18.90	0.15	10.38	0.05	7.50	0.00
HC-10	10/10/2005	29.30	19.25	19.05	0.20	10.23	0.50	8.00	0.04
HC-10	10/21/2005	29.30	19.25	19.19	0.06	10.10	0.00	8.00	0.06
HC-10	11/28/2005	29.30	18.70	18.65	0.05	10.64	0.00	8.00	0.05
HC-10	12/6/2005	29.30	18.62	0.00	18.62	27.25	0.00	8.00	--
HC-10	1/3/2006	29.30	17.35	17.30	0.05	11.99	0.00	8.00	0.05
HC-10	2/17/2006	29.30	15.33	14.79	0.54	14.45	1.00	9.00	0.08
HC-10	3/3/2006	29.30	15.43	14.89	0.54	14.35	0.25	9.25	0.06
HC-10	3/13/2006	29.30	15.54	15.15	0.39	14.11	0.00	9.25	0.39
HC-10	6/27/2006	29.30	15.58	15.41	0.17	13.87	0.10	9.35	0.01
HC-10	9/19/2006	29.30	19.18	18.34	0.84	10.87	0.35	9.70	0.02
HC-10	12/13/2006	29.30	17.16	16.63	0.53	12.61	0.25	9.95	0.02
HC-10	3/29/2007	29.30	15.91	15.33	0.58	13.91	0.25	10.20	0.08
HC-10	6/27/2007	29.30	17.50	17.03	0.47	12.22	2.00	12.20	0.07
HC-10	9/19/2007	29.30	19.09	18.70	0.39	10.56	0.25	12.45	0.01
HC-10	12/6/2007	29.30	18.76	18.49	0.27	10.78	0.40	12.85	0.00
HC-10	3/10/2008	29.30	16.16	15.82	0.34	13.44	0.00	12.85	0.08
HC-10	3/12/2008	29.30	16.28	15.82	0.46	13.43	0.50	13.35	0.00
HC-10	6/13/2008	29.30	15.23	15.10	0.13	14.19	0.26	13.61	0.00
HC-10	9/8/2008	29.30	18.61	18.16	0.45	11.09	0.20	13.81	0.00
HC-10	9/9/2008	29.30	18.46	18.40	0.06	10.89	0.79	14.60	0.00
HC-10	12/29/2008	29.30	19.03	18.81	0.22	10.47	0.33	14.93	0.01
HC-10	3/10/2009	29.30	17.34	17.32	0.02	11.98	0.00	14.93	0.02
HC-10	6/4/2009	29.30	16.75	16.54	0.21	12.74	0.08	15.01	0.01
HC-10	9/9/2009	29.30	19.01	18.83	0.18	10.45	0.07	15.08	0.00
HC-10	12/15/2009	29.30	18.32	18.23	0.09	11.06	0.00	15.08	0.09
HC-10	3/12/2010	29.30	16.62	16.21	0.41	13.04	0.25	15.33	0.00
HC-10	3/25/2010	29.30	16.35	16.30	0.05	12.99	0.00	15.33	0.05
HC-10	4/16/2010	29.30	16.50	16.09	0.41	13.16	0.25	15.58	0.01
HC-10	4/23/2010	29.30	16.77	16.48	0.29	12.79	0.13	15.71	0.00
HC-10	5/4/2010	29.30	16.71	16.63	0.08	12.66	0.00	15.71	0.08
HC-10	6/8/2010	29.30	15.53	15.27	0.26	14.00	0.25	15.96	0.00
HC-10	7/9/2010	29.30	--	--	--	--	0.00	15.96	0.00
HC-10	7/23/2010	29.30	--	--	--	--	0.00	15.96	0.00
HC-10	8/6/2010	29.30	17.34	16.95	0.39	12.31	0.25	16.21	0.02
HC-10	8/19/2010	29.30	17.59	17.30	0.29	11.97	0.25	16.46	0.00
HC-10	8/27/2010	29.30	17.71	17.49	0.22	11.79	0.25	16.71	0.01
HC-10	9/17/2010	29.30	18.01	17.82	0.19	11.46	0.25	16.96	0.02
HC-10	10/8/2010	29.30	18.36	18.18	0.18	11.10	0.10	17.06	0.01
HC-10	11/11/2010	29.30	18.15	18.02	0.13	11.27	0.10	17.16	0.00
HC-10	12/15/2010	29.30	16.32	16.15	0.17	13.13	0.10	17.26	0.01
HC-10	12/21/2010	29.30	15.88	15.72	0.16	13.56	0.20	17.46	0.01
HC-10	12/30/2010	29.30	--	--	--	--	0.00	17.46	--
HC-10	1/6/2011	29.30	15.22	15.08	0.14	14.20	0.25	17.71	0.02
HC-10	1/13/2011	29.30	15.34	15.31	0.03	13.99	0.00	17.71	0.03
HC-10	1/19/2011	29.30	15.09	14.76	0.33	14.50	0.25	17.96	0.00
HC-10	1/28/2011	29.30	14.41	14.12	0.29	15.15	0.25	18.21	0.00
HC-10	2/9/2011	29.30	15.35	15.19	0.16	14.09	0.25	18.46	0.00
HC-10	2/23/2011	29.30	15.31	15.11	0.20	14.17	0.10	18.56	0.03
HC-10	3/9/2011	29.30	15.49	15.31	0.18	13.97	0.25	18.81	0.02
HC-10	3/29/2011	29.30	14.98	14.64	0.34	14.62	0.25	19.06	0.00
HC-10	4/21/2011	29.30	14.42	14.08	0.34	15.18	0.30	19.36	0.00
HC-10	5/6/2011	29.30	14.57	14.23	0.34	15.03	0.15	19.51	0.00
HC-10	6/9/2011	29.30	13.42	13.12	0.30	16.15	0.20	19.71	0.00
HC-10	7/7/2011	29.30	13.43	12.84	0.59	16.40	0.25	19.96	0.01
HC-10	8/3/2011	29.30	15.69	15.45	0.24	13.82	0.20	20.16	0.00
HC-10	9/8/2011	29.30	17.25	17.04	0.21	12.24	0.25	20.41	0.01
HC-10	10/3/2011	29.30	17.67	17.54	0.13	11.75	0.20	20.61	0.01
HC-10	11/10/2011	29.30	18.26	18.13	0.13	11.16	0.10	20.71	0.10

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-10	12/1/2011	29.30	17.96	17.88	0.08	11.41	0.00	20.71	0.08
HC-10	1/6/2012	29.30	17.72	17.63	0.09	11.66	0.00	20.71	0.09
HC-10	1/25/2012	29.30	17.16	17.06	0.10	12.23	0.00	20.71	0.10
HC-10	3/3/2012	29.30	17.11	16.93	0.18	12.35	0.20	20.91	0.01
HC-10	3/14/2012	29.30	16.35	16.22	0.13	13.07	0.15	21.06	0.00
HC-10	3/22/2012	29.30	15.80	15.67	0.13	13.62	0.12	21.18	0.00
HC-10	3/29/2012	29.30	15.07	14.99	0.08	14.30	0.00	21.18	0.08
HC-10	4/5/2012	29.30	14.46	14.36	0.10	14.93	0.13	21.30	0.00
HC-10	4/13/2012	29.30	14.41	14.41	0.00	14.89	0.00	21.30	0.00
HC-10	4/23/2012	29.30	14.58	14.38	0.20	14.90	0.25	21.55	0.00
HC-10	5/14/2012	29.30	14.31	14.16	0.15	15.12	0.20	21.75	0.00
HC-10	5/25/2012	29.30	14.36	14.33	0.03	14.97	0.00	21.75	0.03
HC-10	6/12/2012	29.30	14.81	14.61	0.20	14.67	0.10	21.85	0.01
HC-10	7/3/2012	29.30	15.10	14.75	0.35	14.51	0.13	21.98	0.01
HC-10	8/23/2012	29.30	17.08	17.02	0.06	12.27	0.00	21.98	0.06
HC-10	9/24/2012	29.30	18.01	17.77	0.24	11.50	0.13	22.10	0.00
HC-10	10/8/2012	29.30	18.23	18.15	0.08	11.14	0.00	22.10	0.08
HC-10	11/14/2012	29.30	18.00	17.99	0.01	11.31	0.00	22.10	0.01
HC-10	12/20/2012	29.30	15.36	15.11	0.25	14.16	0.10	22.20	0.01
HC-10	1/4/2013	29.30	15.44	15.08	0.36	14.18	0.10	22.30	0.01
HC-10	1/18/2013	29.30	15.53	15.24	0.29	14.03	0.25	22.55	0.00
HC-10	1/31/2013	29.30	16.14	15.87	0.27	13.40	0.05	22.60	0.01
HC-10	3/6/2013	29.30	16.53	16.33	0.20	12.95	0.10	22.70	0.01
HC-10	4/3/2013	29.30	17.27	17.10	0.17	12.18	0.20	22.90	0.01
HC-10	5/6/2013	29.30	17.11	16.90	0.21	12.38	0.50	23.40	0.00
HC-10	6/12/2013	29.30	17.12	17.00	0.12	12.29	0.15	23.55	0.00
HC-10	7/16/2013	29.30	17.50	17.38	0.12	11.91	0.10	23.65	0.01
HC-10	8/26/2013	29.30	18.45	18.40	0.05	10.89	0.10	23.75	0.01
HC-10	9/25/2013	29.30	20.09	20.08	0.01	9.22	0.00	23.75	0.01
HC-10	10/31/2013	29.30	18.68	18.61	0.07	10.68	0.10	23.85	0.07
HC-10	11/27/2013	29.30	18.56	18.45	0.11	10.84	0.10	23.95	0.01
HC-10	12/17/2013	29.30	18.53	18.46	0.07	10.83	0.00	23.95	0.01
HC-10	12/12/2014	29.30	17.48	17.31	0.17	11.97	0.20	24.15	0.00
HC-10	1/29/2015	29.30	17.70	17.50	0.20	11.78	0.50	24.65	0.00
HC-10	2/27/2015	29.30	17.60	17.40	0.20	11.88	0.40	25.05	0.00
HC-10	3/27/2015	29.30	15.60	15.58	0.02	13.72	0.00	25.05	0.02
HC-10	4/28/2015	29.30	15.64	15.61	0.03	13.69	0.00	25.05	0.03
HC-10	5/29/2015	29.30	17.53	17.48	0.05	11.81	0.00	25.05	0.05
HC-10	6/23/2015	29.30	18.06	17.97	0.09	11.32	0.00	25.05	0.09
HC-10	7/8/2015	29.30	18.20	18.11	0.09	11.18	0.00	25.05	0.09
HC-10	8/12/2015	29.30	18.70	18.62	0.08	10.67	0.00	25.05	0.08
HC-10	9/11/2015	29.30	19.16	18.86	0.30	10.41	1.00	26.05	0.00
HC-10	10/15/2015	29.30	19.68	19.20	0.48	10.05	1.00	27.05	0.01
HC-10	11/10/2015	29.30	19.80	19.30	0.50	9.95	1.00	28.05	0.01
HC-10	12/16/2015	29.30	17.20	17.00	0.20	12.28	1.25	29.30	0.00
HC-10	1/21/2016	29.30	15.00	14.80	0.20	14.48	0.25	29.55	0.02
HC-10	2/17/2016	29.30	14.41	14.25	0.16	15.03	0.25	29.80	0.01
HC-10	3/29/2016	29.30	14.80	14.18	0.62	15.05	0.70	30.50	0.00
HC-10	4/27/2016	29.30	15.24	14.70	0.54	14.54	0.50	31.00	0.04
HC-10	5/27/2016	29.30	16.68	16.10	0.58	13.14	0.50	31.50	0.01
HC-10	6/29/2016	29.30	17.51	17.00	0.51	12.24	0.75	32.25	0.05
HC-10	7/20/2016	29.30	18.10	17.58	0.52	11.66	0.50	32.75	0.03
HC-10	8/31/2016	29.30	18.81	18.31	0.50	10.94	0.50	33.25	0.01
HC-10	9/16/2016	29.30	18.85	18.62	0.23	10.65	0.50	33.75	0.01
HC-10	10/20/2016	29.30	19.00	18.65	0.35	10.61	0.50	34.25	0.00
HC-10	11/28/2016	29.30	17.91	17.61	0.30	11.66	0.10	34.35	0.00
HC-10	12/19/2016	29.30	16.78	16.50	0.28	12.77	0.50	34.85	0.00
HC-10	1/5/2017	29.30	16.73	16.50	0.23	12.77	0.50	35.35	0.01
HC-10	2/14/2017	29.30	14.97	14.59	0.38	14.67	0.50	35.85	0.01
HC-10	3/28/2017	29.30	12.73	12.42	0.31	16.85	0.50	36.35	0.00
HC-10	4/18/2017	29.30	13.03	12.36	0.67	16.87	0.50	36.85	0.03
HC-10	5/26/2017	29.30	13.13	12.70	0.43	16.55	0.50	37.35	0.05
HC-10	6/23/2017	29.30	13.91	13.63	0.28	15.64	0.50	37.85	0.00
HC-10	7/21/2017	29.30	16.11	15.80	0.31	13.47	0.50	38.35	0.00
HC-10	8/18/2017	29.30	17.49	17.04	0.45	12.21	0.10	38.45	0.04
HC-10	9/26/2017	29.30	17.79	17.49	0.30	11.78	0.50	38.95	0.01
HC-10	10/30/2017	29.30	18.03	17.74	0.29	11.53	0.25	39.20	0.00
HC-10	11/17/2017	29.30	17.89	17.59	0.30	11.68	0.10	39.30	0.01
HC-10	12/13/2017	29.30	16.69	16.27	0.42	12.98	2.00	41.30	0.03
HC-10	1/26/2018	29.30	16.32	15.52	0.80	13.69	0.15	41.45	0.01
HC-10	2/14/2018	29.30	15.51	15.21	0.30	14.06	0.10	41.55	0.01
HC-10	3/26/2018	29.30	16.75	16.34	0.41	12.91	1.00	42.55	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-10	5/3/2018	29.30	15.57	15.22	0.35	14.04	0.10	42.65	0.01
HC-10	5/31/2018	29.30	14.50	14.36	0.14	14.92	0.50	43.15	0.02
HC-10	6/21/2018	29.30	16.70	16.41	0.29	12.86	0.50	43.65	0.01
HC-10	7/17/2018	29.30	17.78	17.56	0.22	11.72	0.50	44.15	0.00
HC-10	8/17/2018	29.30	18.47	18.20	0.27	11.07	0.10	44.25	0.00
HC-10	10/16/2018	29.30	19.51	19.05	0.46	10.20	0.10	44.35	0.01
HC-10	11/5/2018	29.30	19.59	19.15	0.44	10.10	0.50	44.85	0.07
HC-10	12/5/2018	29.30	19.40	19.15	0.25	10.12	0.10	44.95	0.01
HC-10	12/31/2018	29.30	18.82	18.60	0.22	10.68	0.50	45.45	0.01
HC-10	1/18/2019	29.30	18.30	18.19	0.11	11.10	0.50	45.95	0.00
HC-10	2/21/2019	29.30	17.41	16.92	0.49	12.33	1.00	46.95	0.01
HC-10	4/2/2019	29.30	17.08	16.76	0.32	12.50	0.50	47.45	0.01
HC-10	4/18/2019	29.30	16.04	15.89	0.15	13.39	0.05	47.50	0.01
HC-10	5/16/2019	29.30	16.50	16.35	0.15	12.93	0.05	47.55	0.01
HC-10	6/19/2019	29.30	17.49	17.30	0.19	11.98	0.05	47.60	0.01
HC-10	7/23/2019	29.30	18.45	18.41	0.04	10.89	0.25	47.85	0.01
HC-10	8/22/2019	29.30	18.33	NP	0.00	10.97	0.00	47.85	0.00
HC-10	9/25/2019	29.30	19.02	19.01	0.01	10.29	0.00	47.85	0.00
HC-10	10/25/2019	29.30	19.24	19.23	0.01	10.07	0.00	47.85	0.01
HC-10	11/20/2019	29.30	18.95	18.94	0.01	10.36	0.00	47.85	0.01
HC-10	12/9/2019	29.30	19.42	19.39	0.03	9.91	0.00	47.85	0.03
HC-10	2/18/2020	29.30	13.14	13.14	0.00	16.16	0.00	47.85	0.00
HC-10	2/28/2020	29.30	15.94	15.71	0.23	13.56	0.05	47.90	0.00
HC-10	3/19/2020	29.30	17.13	16.80	0.33	12.46	0.50	48.40	0.00
HC-10	4/20/2020	29.30	16.48	16.38	0.10	12.91	0.25	48.65	0.00
HC-10	5/29/2020	29.30	17.10	16.77	0.33	12.49	0.06	48.71	0.00
HC-10	6/11/2020	29.30	16.58	16.32	0.26	12.95	0.07	48.78	0.00
HC-10	7/15/2020	29.30	17.20	17.16	0.04	12.14	0.05	48.83	0.00
HC-10	8/31/2020	29.30	17.09	17.02	0.07	12.27	0.08	48.91	0.00
HC-10	9/28/2020	29.30	19.07	19.05	0.02	10.25	0.00	48.91	0.02
HC-10	10/23/2020	29.30	19.25	19.22	0.03	10.08	0.00	48.91	0.03
HC-10	11/13/2020	29.30	19.06	19.04	0.02	10.26	0.00	48.91	0.02
HC-10	12/10/2020	29.30	18.75	18.57	0.18	10.71	0.06	48.97	0.00
HC-10	1/20/2021	29.30	15.99	15.57	0.42	13.68	0.07	46.64	0.00
HC-10	2/24/2021	29.30	14.98	14.92	0.06	14.37	0.10	46.74	0.00
HC-10	1/6/2022	29.30	13.32	12.91	0.41	16.34	0.25	46.99	0.22
HC-10	11/17/2022	29.30	17.57	17.53	0.04	11.77	0.07	46.81	0.00
HC-10	12/6/2023	29.30	11.19	--	0.00	18.11	0.00	46.64	0.00
HC-10	12/3/2024	29.30	15.60	--	0.00	13.70	0.00	46.64	0.00
HC-12S	8/27/2003	29.19	14.14	--	0.00	15.05	0.00	0.00	0.00
HC-12S	9/3/2003	29.19	14.20	--	0.00	14.99	0.00	0.00	0.00
HC-12S	9/11/2003	29.19	14.34	--	0.00	14.85	0.00	0.00	0.00
HC-12S	9/17/2003	29.19	14.44	--	0.00	14.75	0.00	0.00	0.00
HC-12S	9/30/2003	29.19	14.39	--	0.00	14.80	0.00	0.00	0.00
HC-12S	10/14/2003	29.19	14.44	--	0.00	14.75	0.00	0.00	0.00
HC-12S	10/29/2003	29.19	14.60	--	0.00	14.59	0.00	0.00	0.00
HC-12S	11/13/2003	29.19	14.63	--	0.00	14.56	0.00	0.00	0.00
HC-12S	11/26/2003	29.19	14.50	--	0.00	14.69	0.00	0.00	0.00
HC-12S	12/24/2003	29.19	14.01	--	0.00	15.18	0.00	0.00	0.00
HC-12S	1/21/2004	29.19	12.75	--	0.00	16.44	0.00	0.00	0.00
HC-12S	2/25/2004	29.19	13.56	--	0.00	15.63	0.00	0.00	0.00
HC-12S	3/24/2004	29.19	12.97	--	0.00	16.22	0.00	0.00	0.00
HC-12S	2/2/2005	29.19	24.00	--	0.00	5.19	0.00	0.00	0.00
HC-12S	6/2/2005	29.19	13.91	--	0.00	15.28	0.00	0.00	0.00
HC-12S	9/14/2005	29.19	14.21	--	0.00	14.98	0.00	0.00	0.00
HC-12S	12/6/2005	29.19	13.97	--	0.00	15.22	0.00	0.00	0.00
HC-12S	3/13/2006	29.19	13.41	--	0.00	15.78	0.00	0.00	0.00
HC-12S	6/27/2006	29.19	13.73	--	0.00	15.46	0.00	0.00	0.00
HC-12S	9/19/2006	29.19	14.03	--	0.00	15.16	0.00	0.00	0.00
HC-12S	12/13/2006	29.19	13.61	--	0.00	15.58	0.00	0.00	0.00
HC-12S	3/29/2007	29.19	13.45	--	0.00	15.74	0.00	0.00	0.00
HC-12S	6/27/2007	29.19	13.89	--	0.00	15.30	0.00	0.00	0.00
HC-12S	9/18/2007	29.19	14.22	--	0.00	14.97	0.00	0.00	0.00
HC-12S	12/6/2007	29.19	14.75	--	0.00	14.44	0.00	0.00	0.00
HC-12S	3/10/2008	29.19	13.68	--	0.00	15.51	0.00	0.00	0.00
HC-12S	6/12/2008	29.19	13.75	--	0.00	15.44	0.00	0.00	0.00
HC-12S	9/8/2008	29.19	14.24	--	0.00	14.95	0.00	0.00	0.00
HC-12S	12/29/2008	29.19	14.38	--	0.00	14.81	0.00	0.00	0.00
HC-12S	3/9/2009	29.19	13.88	--	0.00	15.31	0.00	0.00	0.00
HC-12S	6/4/2009	29.19	13.93	--	0.00	15.26	0.00	0.00	0.00
HC-12D	8/27/2003	28.91	18.26	--	0.00	10.65	0.00	0.00	0.00
HC-12D	9/3/2003	28.91	18.34	--	0.00	10.57	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-12D	9/11/2003	28.91	18.65	--	0.00	10.26	0.00	0.00	0.00
HC-12D	9/17/2003	28.91	18.71	--	0.00	10.20	0.00	0.00	0.00
HC-12D	9/30/2003	28.91	18.60	--	0.00	10.31	0.00	0.00	0.00
HC-12D	10/14/2003	28.91	18.69	--	0.00	10.22	0.00	0.00	0.00
HC-12D	10/29/2003	28.91	19.01	--	0.00	9.90	0.00	0.00	0.00
HC-12D	11/13/2003	28.91	19.16	--	0.00	9.75	0.00	0.00	0.00
HC-12D	11/26/2003	28.91	18.98	--	0.00	9.93	0.00	0.00	0.00
HC-12D	12/24/2003	28.91	17.89	--	0.00	11.02	0.00	0.00	0.00
HC-12D	1/21/2004	28.91	17.63	--	0.00	11.28	0.00	0.00	0.00
HC-12D	2/25/2004	28.91	15.03	--	0.00	13.88	0.00	0.00	0.00
HC-12D	3/24/2004	28.91	17.17	--	0.00	11.74	0.00	0.00	0.00
HC-12D	2/2/2005	28.91	18.73	--	0.00	10.18	0.00	0.00	0.00
HC-12D	6/2/2005	28.91	17.26	17.25	0.01	11.66	0.00	0.00	0.01
HC-12D	9/14/2005	28.91	18.76	--	0.00	10.15	0.00	0.00	0.00
HC-12D	12/6/2005	28.91	18.45	--	0.00	10.46	0.00	0.00	0.00
HC-12D	3/13/2006	28.91	15.03	--	0.00	13.88	0.00	0.00	0.00
HC-12D	6/27/2006	28.91	15.39	--	0.00	13.52	0.00	0.00	0.00
HC-12D	9/19/2006	28.91	18.47	--	0.00	10.44	0.00	0.00	0.00
HC-12D	12/13/2006	28.91	15.72	--	0.00	13.19	0.00	0.00	0.00
HC-12D	3/29/2007	28.91	15.25	--	0.00	13.66	0.00	0.00	0.00
HC-12D	6/27/2007	28.91	17.03	--	0.00	11.88	0.00	0.00	0.00
HC-12D	9/18/2007	28.91	18.76	--	0.00	10.15	0.00	0.00	0.00
HC-12D	12/6/2007	28.91	18.34	--	0.00	10.57	0.00	0.00	0.00
HC-12D	3/10/2008	28.91	15.91	--	0.00	13.00	0.00	0.00	0.00
HC-12D	6/12/2008	28.91	14.76	--	0.00	14.15	0.00	0.00	0.00
HC-12D	9/8/2008	28.91	18.25	--	0.00	10.66	0.00	0.00	0.00
HC-12D	12/29/2008	28.91	17.07	--	0.00	11.84	0.00	0.00	0.00
HC-12D	3/9/2009	28.91	17.39	--	0.00	11.52	0.00	0.00	0.00
HC-12D	6/4/2009	28.91	16.19	--	0.00	12.72	0.00	0.00	0.00
HC-12D	12/11/2014	28.91	17.34	--	0.00	11.57	0.00	0.00	0.00
HC-12D	12/15/2015	28.91	17.36	--	0.00	11.55	0.00	0.00	0.00
HC-12D	12/19/2016	28.91	16.50	--	0.00	12.41	0.00	0.00	0.00
HC-12D	12/13/2017	28.91	16.40	--	0.00	12.51	0.00	0.00	0.00
HC-12D	12/5/2018	28.91	19.30	--	0.00	9.61	0.00	0.00	0.00
HC-12D	1/17/2019	28.91	18.23	--	0.00	10.68	0.00	0.00	0.00
HC-12D	12/9/2019	28.91	19.60	--	0.00	9.31	0.00	0.00	0.00
HC-12D	12/10/2020	28.91	18.97	--	0.00	10.35	0.00	0.00	0.00
HC-12D	12/22/2021	28.91	15.98	--	0.00	13.34	0.00	0.00	0.00
HC-12D	1/6/2022	28.91	14.82	--	0.00	14.50	0.00	0.00	0.00
HC-12D	4/25/2022	28.91	15.81	--	0.00	13.10	0.00	0.00	0.00
HC-12D	11/17/2022	28.91	18.20	--	0.00	10.71	0.00	0.00	0.00
HC-12D	6/20/2023	28.91	16.54	--	0.00	12.78	0.00	0.00	0.00
HC-12D	12/6/2023	28.91	16.85	--	0.00	12.47	0.00	0.00	0.00
HC-12D	5/1/2024	28.91	16.14	--	0.00	13.18	0.00	0.00	0.00
HC-12D	12/3/2024	28.91	17.06	--	0.00	12.26	0.00	0.00	0.00
HC-13	9/14/2005	NS	Unable to locate well						
HC-13	12/6/2005	NS	Unable to locate well						
HC-13	3/13/2006	NS	Unable to locate well						
HC-13	6/27/2006	NS	Unable to locate well						
HC-13	9/19/2006	NS	17.09	--	0.00	--	0.00	0.00	0.00
HC-13	12/13/2006	NS	16.95	--	0.00	--	0.00	0.00	0.00
HC-13	3/29/2007	NS	16.73	--	0.00	--	0.00	0.00	0.00
HC-13	6/27/2007	NS	17.01	--	0.00	--	0.00	0.00	0.00
HC-13	9/18/2007	NS	18.08	--	0.00	--	0.00	0.00	0.00
HC-13	12/6/2007	NS	17.22	--	0.00	--	0.00	0.00	0.00
HC-13	3/10/2008	NS	16.70	--	0.00	--	0.00	0.00	0.00
HC-13	6/12/2008	NS	16.70	--	0.00	--	0.00	0.00	0.00
HC-13	9/8/2008	NS	17.34	17.34	0.00	--	0.00	0.00	0.00
HC-13	12/29/2008	NS	17.38	--	0.00	--	0.00	0.00	0.00
HC-13	3/9/2009	NS	17.20	--	0.00	--	0.00	0.00	0.00
HC-13	6/4/2009	NS	17.09	--	0.00	--	0.00	0.00	0.00
Well Abandoned									
HC-15	8/27/2003	33.16	15.59	--	0.00	17.57	0.00	0.00	0.00
HC-15	9/3/2003	33.16	15.68	--	0.00	17.48	0.00	0.00	0.00
HC-15	9/11/2003	33.16	15.85	--	0.00	17.31	0.00	0.00	0.00
HC-15	9/17/2003	33.16	15.98	--	0.00	17.18	0.00	0.00	0.00
HC-15	9/30/2003	33.16	16.03	--	0.00	17.13	0.00	0.00	0.00
HC-15	10/14/2003	33.16	16.07	--	0.00	17.09	0.00	0.00	0.00
HC-15	10/29/2003	33.16	16.11	--	0.00	17.05	0.00	0.00	0.00
HC-15	11/13/2003	33.16	16.19	--	0.00	16.97	0.00	0.00	0.00
HC-15	11/26/2003	33.16	16.03	--	0.00	17.13	0.00	0.00	0.00
HC-15	12/24/2003	33.16	15.36	--	0.00	17.80	0.00	0.00	0.00
HC-15	1/21/2004	33.16	14.76	--	0.00	18.40	0.00	0.00	0.00

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			(feet)				(gallons)		(feet)
HC-15	2/25/2004	33.16	14.35	--	0.00	18.81	0.00	0.00	0.00
HC-15	3/24/2004	33.16	14.66	--	0.00	18.50	0.00	0.00	0.00
HC-15	1/14/2005	33.16	--	--	--	--	--	0.00	--
HC-15	1/21/2005	33.16	15.45	--	0.00	17.71	0.00	0.00	0.00
HC-15	1/28/2005	33.16	15.44	--	0.00	17.72	0.00	0.00	0.00
HC-15	2/25/2005	33.16	15.45	--	0.00	17.71	0.00	0.00	0.00
HC-15	3/25/2005	33.16	15.61	--	0.00	17.55	0.00	0.00	0.00
HC-15	4/30/2005	33.16	15.25	--	0.00	17.91	0.00	0.00	0.00
HC-15	5/13/2005	33.16	15.32	--	0.00	17.84	0.00	0.00	0.00
Well Abandoned									
HC-16	8/27/2003	32.83	15.75	--	0.00	17.08	0.00	0.00	0.00
HC-16	9/3/2003	32.83	15.83	--	0.00	17.00	0.00	0.00	0.00
HC-16	9/11/2003	32.83	16.00	--	0.00	16.83	0.00	0.00	0.00
HC-16	9/17/2003	32.83	16.16	--	0.00	16.67	0.00	0.00	0.00
HC-16	9/30/2003	32.83	16.15	--	0.00	16.68	0.00	0.00	0.00
HC-16	10/14/2003	32.83	16.18	--	0.00	16.65	0.00	0.00	0.00
HC-16	10/29/2003	32.83	16.28	--	0.00	16.55	0.00	0.00	0.00
HC-16	11/13/2003	32.83	16.28	--	0.00	16.55	0.00	0.00	0.00
HC-16	11/26/2003	32.83	16.15	--	0.00	16.68	0.00	0.00	0.00
HC-16	12/24/2003	32.83	15.49	--	0.00	17.34	0.00	0.00	0.00
HC-16	1/21/2004	32.83	15.88	--	0.00	16.95	0.00	0.00	0.00
HC-16	2/25/2004	32.83	14.45	--	0.00	18.38	0.00	0.00	0.00
HC-16	3/24/2004	32.83	14.76	--	0.00	18.07	0.00	0.00	0.00
HC-16	1/14/2005	32.83	15.71	--	0.00	17.12	0.00	0.00	0.00
HC-16	1/28/2005	32.83	15.67	15.65	0.02	17.18	0.00	0.00	0.02
HC-16	2/2/2005	32.83	15.69	--	0.00	17.14	0.00	0.00	0.00
HC-16	2/25/2005	32.83	15.66	15.65	0.01	17.18	0.00	0.00	0.01
HC-16	3/25/2005	32.83	15.81	15.80	0.01	17.03	0.00	0.00	0.01
HC-16	4/30/2005	32.83	15.58	--	0.00	17.25	0.00	0.00	0.00
HC-16	5/31/2005	32.83	15.35	--	0.00	17.48	0.00	0.00	0.00
HC-16	6/2/2005	32.83	15.35	--	0.00	17.48	0.00	0.00	0.00
HC-16	6/24/2005	32.83	15.36	--	0.00	17.47	0.00	0.00	0.00
HC-16	7/29/2005	32.83	15.52	--	0.00	17.31	0.00	0.00	0.00
HC-16	8/26/2005	32.83	15.70	--	0.00	17.13	0.00	0.00	0.00
HC-16	9/14/2005	32.83	15.72	--	0.00	17.11	0.00	0.00	0.00
HC-16	9/24/2005	32.83	15.85	--	0.00	16.98	0.00	0.00	0.00
HC-16	10/21/2005	32.83	15.95	--	0.00	16.88	0.00	0.00	0.00
HC-16	11/28/2005	32.83	15.63	--	0.00	17.20	0.00	0.00	0.00
HC-16	12/6/2005	32.83	15.51	--	0.00	17.32	0.00	0.00	0.00
HC-16	1/3/2006	32.83	15.14	--	0.00	17.69	0.00	0.00	0.00
HC-16	2/17/2006	32.83	14.20	--	0.00	18.63	0.00	0.00	0.00
HC-16	3/13/2006	32.83	14.40	--	0.00	18.43	0.00	0.00	0.00
HC-16	6/27/2006	32.83	14.98	--	0.00	17.85	0.00	0.00	0.00
HC-16	9/19/2006	32.83	15.62	--	0.00	17.21	0.00	0.00	0.00
HC-16	12/13/2006	32.83	15.04	--	0.00	17.79	0.00	0.00	0.00
HC-16	3/29/2007	32.83	14.66	--	0.00	18.17	0.00	0.00	0.00
HC-16	6/27/2007	32.83	15.31	--	0.00	17.52	0.00	0.00	0.00
HC-16	9/18/2007	32.83	15.95	--	0.00	16.88	0.00	0.00	0.00
HC-16	12/6/2007	32.83	15.81	--	0.00	17.02	0.00	0.00	0.00
HC-16	3/10/2008	32.83	14.84	--	0.00	17.99	0.00	0.00	0.00
HC-16	6/12/2008	32.83	15.10	--	0.00	17.73	0.00	0.00	0.00
HC-16	9/8/2008	32.83	15.87	--	0.00	16.96	0.00	0.00	0.00
HC-16	12/29/2008	32.83	15.85	--	0.00	16.98	0.00	0.00	0.00
HC-16	3/10/2009	32.83	15.44	--	0.00	17.39	0.00	0.00	0.00
HC-16	6/4/2009	32.83	15.47	--	0.00	17.36	0.00	0.00	0.00
HC-17R	11/13/2003	33.61	16.94	--	0.00	16.67	0.00	0.00	0.00
HC-17R	11/26/2003	33.61	16.41	--	0.00	17.20	0.00	0.00	0.00
HC-17R	12/24/2003	33.61	16.41	--	0.00	17.20	0.00	0.00	0.00
HC-17R	1/9/2004	33.61	16.05	16.02	0.03	17.59	0.00	0.00	0.03
HC-17R	1/21/2004	33.61	15.82	15.79	0.03	17.82	0.00	0.00	0.03
HC-17R	2/3/2004	33.61	15.90	15.88	0.02	17.73	0.00	0.00	0.02
HC-17R	2/18/2004	33.61	15.71	15.55	0.16	18.04	0.03	0.03	0.00
HC-17R	2/25/2004	33.61	15.58	15.48	0.10	18.12	0.02	0.05	0.00
HC-17R	3/10/2004	33.61	15.69	15.60	0.09	18.00	0.00	0.05	0.09
HC-17R	3/24/2004	33.61	16.87	16.78	0.09	16.82	0.00	0.05	0.09
HC-17R	1/14/2005	33.61	17.60	--	0.00	16.01	0.00	0.05	0.00
HC-17R	1/28/2005	33.61	17.47	17.47	0.00	16.14	0.00	0.05	0.00
HC-17R	2/2/2005	33.61	17.56	--	0.00	16.05	0.00	0.05	0.00
HC-17R	2/25/2005	33.61	17.52	17.52	0.00	16.09	0.00	0.05	0.00
HC-17R	3/25/2005	33.61	17.65	17.63	0.02	15.98	0.00	0.05	0.02
HC-17R	4/30/2005	33.61	17.35	--	0.00	16.26	0.00	0.05	0.00
HC-17R	5/31/2005	33.61	17.15	--	0.00	16.46	0.00	0.05	0.00
HC-17R	6/2/2005	33.61	17.14	17.13	0.01	16.48	0.00	0.05	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-17R	6/24/2005	33.61	17.14	--	0.00	16.47	0.00	0.05	0.00
HC-17R	7/29/2005	33.61	17.33	--	0.00	16.28	0.00	0.05	0.00
HC-17R	8/26/2005	33.61	17.46	--	0.00	16.15	0.00	0.05	0.00
HC-17R	9/14/2005	33.61	17.50	--	0.00	16.11	0.00	0.05	0.00
HC-17R	9/24/2005	33.61	17.55	--	0.00	16.06	0.00	0.05	0.00
HC-17R	10/21/2005	33.61	17.62	--	0.00	15.99	0.00	0.05	0.00
HC-17R	11/28/2005	33.61	17.30	--	0.00	16.31	0.00	0.05	0.00
HC-17R	12/6/2005	33.61	17.12	--	0.00	16.49	0.00	0.05	0.00
HC-17R	1/3/2006	33.61	16.73	--	0.00	16.88	0.00	0.05	0.00
HC-17R	2/17/2006	33.61	16.20	--	0.00	17.41	0.00	0.05	0.00
HC-17R	3/13/2006	33.61	16.36	--	0.00	17.25	0.00	0.05	0.00
HC-17R	6/27/2006	33.61	16.82	--	0.00	16.79	0.00	0.05	0.00
HC-17R	9/19/2006	33.61	17.47	--	0.00	16.14	0.00	0.05	0.00
HC-17R	12/13/2006	33.61	16.93	--	0.00	16.68	0.00	0.05	0.00
HC-17R	3/29/2007	33.61	16.70	--	0.00	16.91	0.00	0.05	0.00
HC-17R	6/27/2007	33.61	17.29	--	0.00	16.32	0.00	0.05	0.00
HC-17R	9/18/2007	33.61	17.89	--	0.00	15.72	0.00	0.05	0.00
HC-17R	12/6/2007	33.61	17.24	--	0.00	16.37	0.00	0.05	0.00
HC-17R	3/10/2008	33.61	16.85	--	0.00	16.76	0.00	0.05	0.00
HC-17R	6/12/2008	33.61	16.88	--	0.00	16.73	0.00	0.05	0.00
HC-17R	9/8/2008	33.61	17.85	--	0.00	15.76	0.00	0.05	0.00
HC-17R	12/29/2008	33.61	17.89	--	0.00	15.72	0.00	0.05	0.00
HC-17R	3/10/2009	33.61	17.61	--	0.00	16.00	0.00	0.05	0.00
HC-17R	6/4/2009	33.61	17.54	--	0.00	16.07	0.00	0.05	0.00
HC-18	11/13/2003	33.29	16.37	--	0.00	16.92	0.00	0.00	0.00
HC-18	11/26/2003	33.29	15.83	--	0.00	17.46	0.00	0.00	0.00
HC-18	12/24/2003	33.29	15.38	--	0.00	17.91	0.00	0.00	0.00
HC-18	1/21/2004	33.29	14.73	--	0.00	18.56	0.00	0.00	0.00
HC-18	2/25/2004	33.29	14.37	--	0.00	18.92	0.00	0.00	0.00
HC-18	3/24/2004	33.29	14.68	--	0.00	18.61	0.00	0.00	0.00
HC-18	1/14/2005	33.29	15.71	--	0.00	17.58	0.00	0.00	0.00
HC-18	2/2/2005	33.29	15.66	--	0.00	17.63	0.00	0.00	0.00
HC-18	1/28/2005	33.29	15.60	--	0.00	17.69	0.00	0.00	0.00
HC-18	2/25/2005	33.29	15.65	15.65	0.00	17.64	0.00	0.00	0.00
HC-18	3/25/2005	33.29	15.81	15.81	0.00	17.48	0.00	0.00	0.00
HC-18	4/30/2005	33.29	16.50	--	0.00	16.79	0.00	0.00	0.00
HC-18	5/31/2005	33.29	15.34	--	0.00	17.95	0.00	0.00	0.00
HC-18	6/2/2005	33.29	15.33	--	0.00	17.96	0.00	0.00	0.00
HC-18	6/24/2005	33.29	15.35	--	0.00	17.94	0.00	0.00	0.00
HC-18	7/29/2005	33.29	15.52	--	0.00	17.77	0.00	0.00	0.00
HC-18	8/26/2005	33.29	15.67	--	0.00	17.62	0.00	0.00	0.00
HC-18	9/14/2005	33.29	15.75	--	0.00	17.54	0.00	0.00	0.00
HC-18	9/24/2005	33.29	15.83	--	0.00	17.46	0.00	0.00	0.00
HC-18	10/21/2005	33.29	15.95	--	0.00	17.34	0.00	0.00	0.00
HC-18	11/28/2005	33.29	15.63	--	0.00	17.66	0.00	0.00	0.00
HC-18	12/6/2005	33.29	15.01	--	0.00	18.28	0.00	0.00	0.00
HC-18	1/3/2006	33.29	15.06	--	0.00	18.23	0.00	0.00	0.00
HC-18	2/17/2006	33.29	14.13	--	0.00	19.16	0.00	0.00	0.00
HC-18	3/13/2006	33.29	14.35	--	0.00	18.94	0.00	0.00	0.00
HC-18	6/27/2006	33.29	15.97	--	0.00	17.32	0.00	0.00	0.00
HC-18	9/19/2006	33.29	15.65	--	0.00	17.64	0.00	0.00	0.00
HC-18	12/13/2006	33.29	15.09	--	0.00	18.20	0.00	0.00	0.00
HC-18	3/29/2007	33.29	14.65	--	0.00	18.64	0.00	0.00	0.00
HC-18	6/27/2007	33.29	15.35	--	0.00	17.94	0.00	0.00	0.00
HC-18	9/18/2007	33.29	15.99	--	0.00	17.30	0.00	0.00	0.00
HC-18	12/6/2007	33.29	15.89	--	0.00	17.40	0.00	0.00	0.00
HC-18	3/10/2008	33.29	14.79	--	0.00	18.50	0.00	0.00	0.00
HC-18	6/12/2008	33.29	15.12	--	0.00	18.17	0.00	0.00	0.00
HC-18	9/8/2008	33.29	15.96	--	0.00	17.33	0.00	0.00	0.00
HC-18	12/29/2008	33.29	16.43	--	0.00	16.86	0.00	0.00	0.00
HC-18	3/10/2009	33.29	15.45	--	0.00	17.84	0.00	0.00	0.00
HC-18	6/4/2009	33.29	15.51	--	0.00	17.78	0.00	0.00	0.00
HC-19	11/13/2003	33.05	17.92	--	0.00	15.13	0.00	0.00	0.00
HC-19	11/26/2003	33.05	17.79	--	0.00	15.26	0.00	0.00	0.00
HC-19	12/24/2003	33.05	16.85	--	0.00	16.20	0.00	0.00	0.00
HC-19	1/21/2004	33.05	16.29	--	0.00	16.76	0.00	0.00	0.00
HC-19	2/25/2004	33.05	18.11	--	0.00	14.94	0.00	0.00	0.00
HC-19	3/24/2004	33.05	16.41	--	0.00	16.64	0.00	0.00	0.00
HC-19	1/14/2005	33.05	17.40	--	0.00	15.65	0.00	0.00	0.00
HC-19	1/28/2005	33.05	17.29	17.29	0.00	15.76	0.00	0.00	0.00
HC-19	2/2/2005	33.05	17.34	--	0.00	15.71	0.00	0.00	0.00
HC-19	2/25/2005	33.05	17.29	17.29	0.00	15.76	0.00	0.00	0.00
HC-19	3/25/2005	33.05	17.45	17.45	0.00	15.60	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-19	4/30/2005	33.05	17.14	--	0.00	15.91	0.00	0.00	0.00
HC-19	5/31/2005	33.05	15.90	--	0.00	17.15	0.00	0.00	0.00
HC-19	6/2/2005	33.05	15.15	--	0.00	17.90	0.00	0.00	0.00
HC-19	6/24/2005	33.05	16.95	--	0.00	16.10	0.00	0.00	0.00
HC-19	7/29/2005	33.05	17.11	--	0.00	15.94	0.00	0.00	0.00
HC-19	8/26/2005	33.05	17.28	--	0.00	15.77	0.00	0.00	0.00
HC-19	9/14/2005	33.05	17.25	--	0.00	15.80	0.00	0.00	0.00
HC-19	9/24/2005	33.05	17.40	--	0.00	15.65	0.00	0.00	0.00
HC-19	10/21/2005	33.05	17.43	--	0.00	15.62	0.00	0.00	0.00
HC-19	11/28/2005	33.05	17.09	--	0.00	15.96	0.00	0.00	0.00
HC-19	12/6/2005	33.05	16.84	--	0.00	16.21	0.00	0.00	0.00
HC-19	1/3/2006	33.05	16.30	--	0.00	16.75	0.00	0.00	0.00
HC-19	2/17/2006	33.05	15.96	--	0.00	17.09	0.00	0.00	0.00
HC-19	3/13/2006	33.05	16.13	--	0.00	16.92	0.00	0.00	0.00
HC-19	6/27/2006	33.05	16.60	--	0.00	16.45	0.00	0.00	0.00
HC-19	9/19/2006	33.05	17.26	--	0.00	15.79	0.00	0.00	0.00
HC-19	12/13/2006	33.05	16.67	--	0.00	16.38	0.00	0.00	0.00
HC-19	3/29/2007	33.05	16.36	--	0.00	16.69	0.00	0.00	0.00
HC-19	6/27/2007	33.05	17.04	--	0.00	16.01	0.00	0.00	0.00
HC-19	9/18/2007	33.05	17.63	--	0.00	15.42	0.00	0.00	0.00
HC-19	12/6/2007	33.05	16.59	--	0.00	16.46	0.00	0.00	0.00
HC-19	3/10/2008	33.05	16.48	--	0.00	16.57	0.00	0.00	0.00
HC-19	6/12/2008	33.05	16.01	--	0.00	17.04	0.00	0.00	0.00
HC-19	9/8/2008	33.05	17.64	--	0.00	15.41	0.00	0.00	0.00
HC-19	12/29/2008	33.05	17.55	--	0.00	15.50	0.00	0.00	0.00
HC-19	3/10/2009	33.05	17.34	--	0.00	15.71	0.00	0.00	0.00
HC-19	6/4/2009	33.05	17.27	--	0.00	15.78	0.00	0.00	0.00
HC-19	9/9/2009	33.05	18.03	--	0.00	15.02	0.00	0.00	0.00
HC-19	12/15/2009	33.05	17.52	--	0.00	15.53	0.00	0.00	0.00
HC-19	3/11/2010	33.05	16.75	--	0.00	16.30	0.00	0.00	0.00
HC-19	6/8/2010	33.05	16.50	--	0.00	16.55	0.00	0.00	0.00
HC-19	9/16/2010	33.05	17.26	--	0.00	15.79	0.00	0.00	0.00
HC-19	12/13/2010	33.05	16.26	--	0.00	16.79	0.00	0.00	0.00
HC-19	6/9/2011	33.05	15.12	--	0.00	17.93	0.00	0.00	0.00
HC-19	12/1/2011	33.05	17.03	--	0.00	16.02	0.00	0.00	0.00
HC-19	6/11/2012	33.05	16.30	--	0.00	16.75	0.00	0.00	0.00
HC-19	12/19/2012	33.05	16.13	--	0.00	16.92	0.00	0.00	0.00
HC-19	12/17/2013	33.05	17.84	--	0.00	15.21	0.00	0.00	0.00
HC-19	12/11/2014	33.05	17.28	--	0.00	15.77	0.00	0.00	0.00
HC-19	12/15/2015	33.05	16.08	--	0.00	16.97	0.00	0.00	0.00
HC-19	12/19/2016	33.05	16.86	--	0.00	16.19	0.00	0.00	0.00
HC-19	12/13/2017	33.05	16.96	--	0.00	16.09	0.00	0.00	0.00
HC-19	12/5/2018	33.05	18.47	--	0.00	14.58	0.00	0.00	0.00
HC-19	1/17/2019	33.05	17.89	--	0.00	15.16	0.00	0.00	0.00
HC-19	12/9/2019	33.05	18.90	--	0.00	14.15	0.00	0.00	0.00
HC-19	12/10/2020	33.05	18.45	--	0.00	14.60	0.00	0.00	0.00
HC-19	1/6/2022	33.05	15.08	--	0.00	17.97	0.00	0.00	0.00
HC-19	11/17/2022	33.05	18.03	--	0.00	15.02	0.00	0.00	0.00
HC-19	12/6/2023	33.05	17.62	--	0.00	15.43	0.00	0.00	0.00
HC-19	12/3/2024	33.05	17.63	--	0.00	15.42	0.00	0.00	0.00
HC-20	11/13/2003	32.26	16.18	--	0.00	16.08	0.00	0.00	0.00
HC-20	11/26/2003	32.26	15.99	--	0.00	16.27	0.00	0.00	0.00
HC-20	12/24/2003	32.26	15.36	--	0.00	16.90	0.00	0.00	0.00
HC-20	1/21/2004	32.26	14.78	--	0.00	17.48	0.00	0.00	0.00
HC-20	2/25/2004	32.26	14.50	14.46	0.04	17.80	0.00	0.00	0.04
HC-20	3/10/2004	32.26	14.70	14.65	0.05	17.60	0.00	0.00	0.05
HC-20	3/24/2004	32.26	14.85	14.81	0.04	17.45	0.00	0.00	0.04
HC-20	1/14/2005	32.26	--	--	--	--	--	0.00	--
HC-20	1/21/2005	32.26	17.40	--	0.00	14.86	0.00	0.00	0.00
HC-20	1/28/2005	32.26	15.40	--	0.00	16.86	0.00	0.00	0.00
HC-20	2/2/2005	32.26	15.45	--	0.00	16.81	0.00	0.00	0.00
HC-20	2/25/2005	32.26	15.36	--	0.00	16.90	0.00	0.00	0.00
HC-20	3/25/2005	32.26	15.56	15.56	0.00	16.70	0.00	0.00	0.00
HC-20	4/30/2005	32.26	15.31	--	0.00	16.95	0.00	0.00	0.00
HC-20	5/31/2005	32.26	15.17	--	0.00	17.09	0.00	0.00	0.00
HC-20	6/2/2005	32.26	15.15	--	0.00	17.11	0.00	0.00	0.00
HC-20	6/24/2005	32.26	15.17	--	0.00	17.09	0.00	0.00	0.00
HC-20	7/29/2005	32.26	15.33	--	0.00	16.93	0.00	0.00	0.00
HC-20	8/26/2005	32.26	15.49	--	0.00	16.77	0.00	0.00	0.00
HC-20	9/14/2005	32.26	15.50	--	0.00	16.76	0.00	0.00	0.00
HC-20	9/24/2005	32.26	16.69	--	0.00	15.57	0.00	0.00	0.00
HC-20	10/21/2005	32.26	15.70	--	0.00	16.56	0.00	0.00	0.00
HC-20	11/28/2005	32.26	15.32	--	0.00	16.94	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-20	12/6/2005	32.26	15.22	--	0.00	17.04	0.00	0.00	0.00
HC-20	1/3/2006	32.26	14.82	--	0.00	17.44	0.00	0.00	0.00
HC-20	2/17/2006	32.26	14.16	--	0.00	18.10	0.00	0.00	0.00
HC-20	3/13/2006	32.26	14.30	--	0.00	17.96	0.00	0.00	0.00
HC-20	6/27/2006	32.26	--	--	--	--	--	0.00	--
HC-20	9/19/2006	32.26	15.58	--	0.00	16.68	0.00	0.00	0.00
HC-20	12/13/2006	32.26	14.78	--	0.00	17.48	0.00	0.00	0.00
HC-20	3/29/2007	32.26	14.50	--	0.00	17.76	0.00	0.00	0.00
HC-20	6/27/2007	32.26	15.15	--	0.00	17.11	0.00	0.00	0.00
HC-20	9/18/2007	32.26	15.70	--	0.00	16.56	0.00	0.00	0.00
HC-20	12/6/2007	32.26	15.09	--	0.00	17.17	0.00	0.00	0.00
HC-20	3/10/2008	32.26	14.71	--	0.00	17.55	0.00	0.00	0.00
HC-20	6/12/2008	32.26	14.83	--	0.00	17.43	0.00	0.00	0.00
HC-20	9/8/2008	32.26	15.63	--	0.00	16.63	0.00	0.00	0.00
HC-20	12/29/2008	32.26	Well inadvertantly not gauged during groundwater monitoring event.						
HC-20	3/10/2009	32.26	15.70	--	0.00	16.56	0.00	0.00	0.00
HC-20	6/4/2009	32.26	15.25	--	0.00	17.01	0.00	0.00	0.00
HC-21	11/13/2003	31.95	17.60	--	0.00	14.35	0.00	0.00	0.00
HC-21	11/26/2003	31.95	17.41	--	0.00	14.54	0.00	0.00	0.00
HC-21	12/24/2003	31.95	16.22	--	0.00	15.73	0.00	0.00	0.00
HC-21	1/21/2004	31.95	15.53	--	0.00	16.42	0.00	0.00	0.00
HC-21	2/25/2004	31.95	15.32	--	0.00	16.63	0.00	0.00	0.00
HC-21	3/24/2004	31.95	14.60	--	0.00	17.35	0.00	0.00	0.00
HC-21	1/14/2005	31.95	16.36	--	0.00	15.59	0.00	0.00	0.00
HC-21	1/28/2005	31.95	16.53	16.52	0.01	15.43	0.00	0.00	0.01
HC-21	2/2/2005	31.95	16.62	--	0.00	15.33	0.00	0.00	0.00
HC-21	2/25/2005	31.95	16.57	16.57	0.00	15.38	0.00	0.00	0.00
HC-21	3/25/2005	31.95	16.78	16.78	0.00	15.17	0.00	0.00	0.00
HC-21	4/30/2005	31.95	16.44	--	0.00	15.51	0.00	0.00	0.00
HC-21	5/31/2005	31.95	16.18	--	0.00	15.77	0.00	0.00	0.00
HC-21	6/2/2005	31.95	16.20	--	0.00	15.75	0.00	0.00	0.00
HC-21	6/24/2005	31.95	16.29	--	0.00	15.66	0.00	0.00	0.00
HC-21	7/29/2005	31.95	16.49	--	0.00	15.46	0.00	0.00	0.00
HC-21	8/26/2005	31.95	16.65	--	0.00	15.30	0.00	0.00	0.00
HC-21	9/14/2005	31.95	16.52	--	0.00	15.43	0.00	0.00	0.00
HC-21	9/24/2005	31.95	17.70	--	0.00	14.25	0.00	0.00	0.00
HC-21	10/21/2005	31.95	16.70	--	0.00	15.25	0.00	0.00	0.00
HC-21	11/28/2005	31.95	16.21	--	0.00	15.74	0.00	0.00	0.00
HC-21	12/6/2005	31.95	15.81	--	0.00	16.14	0.00	0.00	0.00
HC-21	1/3/2006	31.95	15.07	--	0.00	16.88	0.00	0.00	0.00
HC-21	2/17/2006	31.95	14.95	--	0.00	17.00	0.00	0.00	0.00
HC-21	3/13/2006	31.95	15.02	--	0.00	16.93	0.00	0.00	0.00
HC-21	6/27/2006	31.95	15.62	--	0.00	16.33	0.00	0.00	0.00
HC-21	9/19/2006	31.95	16.54	--	0.00	15.41	0.00	0.00	0.00
HC-21	12/13/2006	31.95	15.53	--	0.00	16.42	0.00	0.00	0.00
HC-21	3/29/2007	31.95	15.09	--	0.00	16.86	0.00	0.00	0.00
HC-21	6/27/2007	31.95	16.11	--	0.00	15.84	0.00	0.00	0.00
HC-21	9/18/2007	31.95	16.84	--	0.00	15.11	0.00	0.00	0.00
HC-21	12/6/2007	31.95	15.05	--	0.00	16.90	0.00	0.00	0.00
HC-21	3/10/2008	31.95	15.29	--	0.00	16.66	0.00	0.00	0.00
HC-21	6/12/2008	31.95	15.36	--	0.00	16.59	0.00	0.00	0.00
HC-21	9/8/2008	31.95	16.83	--	0.00	15.12	0.00	0.00	0.00
HC-21	12/29/2008	31.95	16.44	--	0.00	15.51	0.00	0.00	0.00
HC-21	3/10/2009	31.95	16.40	--	0.00	15.55	0.00	0.00	0.00
HC-21	6/4/2009	31.95	16.25	--	0.00	15.70	0.00	0.00	0.00
HC-21	9/9/2009	31.95	17.37	--	0.00	14.58	0.00	0.00	0.00
HC-21	12/15/2009	31.95	16.32	--	0.00	15.63	0.00	0.00	0.00
HC-21	3/11/2010	31.95	15.43	--	0.00	16.52	0.00	0.00	0.00
HC-21	6/8/2010	31.95	15.14	--	0.00	16.81	0.00	0.00	0.00
HC-21	9/16/2010	31.95	15.39	--	0.00	16.56	0.00	0.00	0.00
HC-21	12/13/2010	31.95	14.90	--	0.00	17.05	0.00	0.00	0.00
HC-21	6/9/2011	31.95	13.78	--	0.00	18.17	0.00	0.00	0.00
HC-21	12/1/2011	31.95	15.94	--	0.00	16.01	0.00	0.00	0.00
HC-21	6/11/2012	31.95	15.05	--	0.00	16.90	0.00	0.00	0.00
HC-21	12/19/2012	31.95	14.65	--	0.00	17.30	0.00	0.00	0.00
HC-21	12/17/2013	31.95	17.06	--	0.00	14.89	0.00	0.00	0.00
HC-21	12/11/2014	31.95	16.14	--	0.00	15.81	0.00	0.00	0.00
HC-21	12/15/2015	31.95	14.43	--	0.00	17.52	0.00	0.00	0.00
HC-21	12/19/2016	31.95	15.23	--	0.00	16.72	0.00	0.00	0.00
HC-21	12/13/2017	31.95	15.25	--	0.00	16.70	0.00	0.00	0.00
HC-21	12/5/2018	31.95	17.57	--	0.00	14.38	0.00	0.00	0.00
HC-21	1/17/2019	31.95	16.59	--	0.00	15.36	0.00	0.00	0.00
HC-21	12/9/2019	31.95	18.16	--	0.00	13.79	0.00	0.00	0.00

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Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-21	12/10/2020	31.95	17.43	--	0.00	14.52	0.00	0.00	0.00
HC-21	1/6/2022	31.95	14.74	--	0.00	17.21	0.00	0.00	0.00
HC-21	11/17/2022	31.95	17.11	--	0.00	14.84	0.00	0.00	0.00
HC-21	12/6/2023	31.95	16.23	--	0.00	15.72	0.00	0.00	0.00
HC-21	12/3/2024	31.95	16.25	--	0.00	15.70	0.00	0.00	0.00
HC-22	11/13/2003	31.91	16.04	--	0.00	15.87	0.00	0.00	0.00
HC-22	11/26/2003	31.91	15.88	--	0.00	16.03	0.00	0.00	0.00
HC-22	12/24/2003	31.91	14.46	--	0.00	17.45	0.00	0.00	0.00
HC-22	1/21/2004	31.91	13.79	--	0.00	18.12	0.00	0.00	0.00
HC-22	2/25/2004	31.91	13.43	--	0.00	18.48	0.00	0.00	0.00
HC-22	3/24/2004	31.91	15.33	--	0.00	16.58	0.00	0.00	0.00
HC-22	1/14/2005	31.91	--	--	--	--	--	0.00	--
HC-22	1/21/2005	31.91	14.50	--	0.00	17.41	0.00	0.00	0.00
HC-22	2/2/2005	31.91	14.51	--	0.00	17.40	0.00	0.00	0.00
HC-22	1/28/2005	31.91	14.46	--	0.00	17.45	0.00	0.00	0.00
HC-22	2/25/2005	31.91	15.49	15.49	0.00	16.42	0.00	0.00	0.00
HC-22	3/25/2005	31.91	15.65	15.65	0.00	16.26	0.00	0.00	0.00
HC-22	4/30/2005	31.91	14.36	--	0.00	17.55	0.00	0.00	0.00
HC-22	5/31/2005	31.91	14.15	--	0.00	17.76	0.00	0.00	0.00
HC-22	6/2/2005	31.91	14.14	--	0.00	17.77	0.00	0.00	0.00
HC-22	6/24/2005	31.91	14.22	--	0.00	17.69	0.00	0.00	0.00
HC-22	7/29/2005	31.91	14.39	--	0.00	17.52	0.00	0.00	0.00
HC-22	8/26/2005	31.91	14.55	--	0.00	17.36	0.00	0.00	0.00
HC-22	9/14/2005	31.91	14.60	--	0.00	17.31	0.00	0.00	0.00
HC-22	9/24/2005	31.91	14.70	--	0.00	17.21	0.00	0.00	0.00
HC-22	10/21/2005	31.91	14.81	--	0.00	17.10	0.00	0.00	0.00
HC-22	11/28/2005	31.91	14.39	--	0.00	17.52	0.00	0.00	0.00
HC-22	12/6/2005	31.91	14.12	--	0.00	17.79	0.00	0.00	0.00
HC-22	1/3/2006	31.91	13.69	--	0.00	18.22	0.00	0.00	0.00
HC-22	2/17/2006	31.91	13.07	--	0.00	18.84	0.00	0.00	0.00
HC-22	3/13/2006	31.91	13.15	--	0.00	18.76	0.00	0.00	0.00
HC-22	6/27/2006	31.91	13.82	--	0.00	18.09	0.00	0.00	0.00
HC-22	9/19/2006	31.91	14.45	--	0.00	17.46	0.00	0.00	0.00
HC-22	12/13/2006	31.91	13.74	--	0.00	18.17	0.00	0.00	0.00
HC-22	3/29/2007	31.91	13.45	--	0.00	18.46	0.00	0.00	0.00
HC-22	6/27/2007	31.91	14.14	--	0.00	17.77	0.00	0.00	0.00
HC-22	9/18/2007	31.91	14.74	--	0.00	17.17	0.00	0.00	0.00
HC-22	12/6/2007	31.91	14.07	--	0.00	17.84	0.00	0.00	0.00
HC-22	3/10/2008	31.91	13.68	--	0.00	18.23	0.00	0.00	0.00
HC-22	6/12/2008	31.91	--	--	--	--	--	0.00	--
HC-22	9/8/2008	31.91	14.67	--	0.00	17.24	0.00	0.00	0.00
HC-22	12/29/2008	31.91	13.91	--	0.00	18.00	0.00	0.00	0.00
HC-22	3/10/2009	31.91	14.18	--	0.00	17.73	0.00	0.00	0.00
HC-22	6/4/2009	31.91	14.24	--	0.00	17.67	0.00	0.00	0.00
HC-23	11/13/2003	32.74	15.28	--	0.00	17.46	0.00	0.00	0.00
HC-23	11/26/2003	32.74	14.88	--	0.00	17.86	0.00	0.00	0.00
HC-23	12/24/2003	32.74	15.23	15.15	0.08	17.58	0.01	0.01	0.00
HC-23	12/30/2003	32.74	15.22	15.05	0.17	17.67	0.01	0.02	0.00
HC-23	1/9/2004	32.74	14.85	14.77	0.08	17.96	0.01	0.03	0.01
HC-23	1/15/2004	32.74	14.61	--	0.00	18.13	0.00	0.03	0.00
HC-23	1/21/2004	32.74	14.42	14.41	0.01	18.33	0.01	0.04	0.01
HC-23	2/3/2004	32.74	14.05	--	0.00	18.69	0.00	0.04	0.00
HC-23	2/18/2004	32.74	14.05	--	0.00	18.69	0.00	0.04	0.00
HC-23	2/25/2004	32.74	13.98	--	0.00	18.76	0.00	0.04	0.00
HC-23	3/10/2004	32.74	14.15	--	0.00	18.59	0.00	0.04	0.00
HC-23	3/24/2004	32.74	14.33	--	0.00	18.41	0.00	0.04	0.00
HC-23	1/14/2005	32.74	--	--	--	--	0.00	0.04	0.00
HC-23	1/21/2005	32.74	15.35	15.30	0.05	17.43	0.01	0.05	0.00
HC-23	1/28/2005	32.74	15.28	15.27	0.01	17.47	0.00	0.05	0.01
HC-23	2/2/2005	32.74	15.36	15.33	0.03	17.41	0.00	0.05	0.03
HC-23	2/25/2005	32.74	15.31	15.30	0.01	17.44	0.00	0.05	0.01
HC-23	3/25/2005	32.74	15.48	15.45	0.03	17.29	0.00	0.05	0.03
HC-23	4/30/2005	32.74	15.18	--	0.00	17.56	0.00	0.05	0.00
HC-23	5/31/2005	32.74	14.95	--	0.00	17.79	0.00	0.05	0.00
HC-23	6/2/2005	32.74	14.97	14.95	0.02	17.79	0.00	0.05	0.02
HC-23	6/24/2005	32.74	15.01	14.96	0.05	17.77	0.00	0.05	0.05
HC-23	7/29/2005	32.74	16.25	16.25	0.00	16.49	0.00	0.05	0.00
HC-23	8/26/2005	32.74	15.51	15.30	0.21	17.42	0.50	0.55	0.05
HC-23	9/9/2005	32.74	15.49	15.40	0.09	17.33	0.00	0.55	0.09
HC-23	9/14/2005	32.74	15.50	--	0.00	17.24	0.00	0.55	0.00
HC-23	9/24/2005	32.74	15.64	15.47	0.17	17.25	0.05	0.60	0.05
HC-23	10/10/2005	32.74	15.55	15.52	0.03	17.22	0.00	0.60	0.03
HC-23	10/21/2005	32.74	15.47	15.45	0.02	17.29	0.00	0.60	0.02

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Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-23	11/28/2005	32.74	15.27	15.27	0.00	17.47	0.00	0.60	0.00
HC-23	12/6/2005	32.74	15.14	--	0.00	17.60	0.00	0.60	0.00
HC-23	1/3/2006	32.74	14.75	--	0.00	17.99	0.00	0.60	0.00
HC-23	2/17/2006	32.74	13.73	--	0.00	19.01	0.00	0.60	0.00
HC-23	3/13/2006	32.74	13.91	--	0.00	18.83	0.00	0.60	0.00
HC-23	6/27/2006	32.74	--	--	--	--	--	0.60	--
HC-23	9/19/2006	32.74	15.25	15.23	0.02	17.51	0.00	0.60	0.02
HC-23	12/13/2006	32.74	14.68	14.65	0.03	18.09	0.00	0.60	0.03
HC-23	3/29/2007	32.74	14.20	14.19	0.01	18.55	0.00	0.60	0.01
HC-23	6/27/2007	32.74	14.93	14.91	0.02	17.83	0.00	0.60	0.02
HC-23	9/18/2007	32.74	15.59	15.56	0.03	17.18	0.00	0.60	0.03
HC-23	12/6/2007	32.74	15.51	--	0.00	17.23	0.00	0.60	0.00
HC-23	3/10/2008	32.74	14.37	--	0.00	18.37	0.00	0.60	0.00
HC-23	6/12/2008	32.74	14.65	--	0.00	18.09	0.00	0.60	0.00
HC-23	9/8/2008	32.74	15.50	--	0.00	17.24	0.00	0.60	0.00
HC-23	12/29/2008	32.74	15.50	--	0.00	17.24	0.00	0.60	0.00
HC-23	3/10/2009	32.74	15.04	--	0.00	17.70	0.00	0.60	0.00
HC-23	6/4/2009	32.74	15.04	--	0.00	17.70	0.00	0.60	0.00
HC-23	9/9/2009	32.74	15.81	--	0.00	16.93	0.00	0.60	0.00
HC-23	12/15/2009	32.74	15.12	--	0.00	17.62	0.00	0.60	0.00
HC-23	3/11/2010	32.74	14.55	--	0.00	18.19	0.00	0.60	0.00
HC-23	6/8/2010	32.74	14.48	--	0.00	18.26	0.00	0.60	0.00
HC-23	9/16/2010	32.74	15.11	--	0.00	17.63	0.00	0.60	0.00
HC-23	12/13/2010	32.74	14.60	--	0.00	18.14	0.00	0.60	0.00
HC-23	6/9/2011	32.74	13.60	13.60	0.00	19.14	0.00	0.60	0.00
HC-23	12/1/2011	32.74	14.93	--	0.00	17.81	0.00	0.60	0.00
HC-23	6/11/2012	32.74	14.00	--	0.00	18.74	0.00	0.60	0.00
HC-23	12/19/2012	32.74	14.12	--	0.00	18.62	0.00	0.60	0.00
HC-23	12/17/2013	32.74	15.68	15.57	0.11	17.16	0.10	0.70	0.00
HC-23	12/11/2014	32.74	17.05	--	0.00	15.69	0.00	0.70	0.00
HC-23	12/15/2015	32.74	14.62	--	0.00	18.12	0.00	0.70	0.00
HC-23	12/19/2016	32.74	14.42	--	0.00	18.32	0.00	0.70	0.00
HC-23	12/13/2017	32.74	14.04	--	0.00	18.70	0.00	0.70	0.00
HC-23	12/5/2018	32.74	15.35	--	0.00	17.39	0.00	0.70	0.00
HC-23	1/17/2019	32.74	14.74	--	0.00	18.00	0.00	0.70	0.00
HC-23	12/9/2019	32.74	15.71	--	0.00	17.03	0.00	0.70	0.00
HC-23	12/10/2020	32.74	15.19	--	0.00	17.55	0.00	0.70	0.00
HC-23	1/6/2022	32.74	13.77	--	0.00	18.97	0.00	0.70	0.00
HC-23	12/5/2022	32.74	14.75	--	0.00	17.99	0.00	0.70	0.00
HC-23	12/7/2023	32.74	14.46	--	0.00	18.28	0.00	0.70	0.00
HC-23	12/3/2024	32.74	14.35	--	0.00	18.39	0.00	0.70	0.00
HC-24	11/13/2003	30.04	15.08	--	0.00	14.96	0.00	0.00	0.00
HC-24	11/26/2003	30.04	14.68	--	0.00	15.36	0.00	0.00	0.00
HC-24	12/24/2003	30.04	13.82	--	0.00	16.22	0.00	0.00	0.00
HC-24	1/21/2004	30.04	13.13	--	0.00	16.91	0.00	0.00	0.00
HC-24	2/25/2004	30.04	12.35	--	0.00	17.69	0.00	0.00	0.00
HC-24	3/24/2004	30.04	12.61	--	0.00	17.43	0.00	0.00	0.00
HC-24	1/14/2005	30.04	14.90	--	0.00	15.14	0.00	0.00	0.00
HC-24	1/28/2005	30.04	15.79	--	0.00	14.25	0.00	0.00	0.00
HC-24	2/2/2005	30.04	14.85	--	0.00	15.19	0.00	0.00	--
HC-24	2/25/2005	30.04	14.80	14.80	0.00	15.24	0.00	0.00	0.00
HC-24	3/25/2005	30.04	15.07	15.07	0.00	14.97	0.00	0.00	0.00
HC-24	4/30/2005	30.04	14.62	--	0.00	15.42	0.00	0.00	0.00
HC-24	5/31/2005	30.04	17.34	--	0.00	12.70	0.00	0.00	0.00
HC-24	6/2/2005	30.04	14.31	--	0.00	15.73	0.00	0.00	--
HC-24	6/24/2005	30.04	14.30	--	0.00	15.74	0.00	0.00	0.00
HC-24	7/29/2005	30.04	14.60	--	0.00	15.44	0.00	0.00	0.00
HC-24	8/26/2005	30.04	14.92	--	0.00	15.12	0.00	0.00	0.00
HC-24	9/14/2005	30.04	15.05	--	0.00	14.99	0.00	0.00	--
HC-24	9/24/2005	30.04	15.18	--	0.00	14.86	0.00	0.00	0.00
HC-24	10/21/2005	30.04	15.33	--	0.00	14.71	0.00	0.00	0.00
HC-24	11/28/2005	30.04	14.55	--	0.00	15.49	0.00	0.00	0.00
HC-24	12/6/2005	30.04	14.30	--	0.00	15.74	0.00	0.00	--
HC-24	1/3/2006	30.04	13.53	--	0.00	16.51	0.00	0.00	0.00
HC-24	2/17/2006	30.04	12.23	--	0.00	17.81	0.00	0.00	0.00
HC-24	3/13/2006	30.04	12.38	--	0.00	17.66	0.00	0.00	0.00
HC-24	6/27/2006	30.04	13.31	--	0.00	16.73	0.00	0.00	0.00
HC-24	9/19/2006	30.04	14.64	--	0.00	15.40	0.00	0.00	0.00
HC-24	12/13/2006	30.04	12.84	--	0.00	17.20	0.00	0.00	0.00
HC-24	3/29/2007	30.04	12.30	--	0.00	17.74	0.00	0.00	0.00
HC-24	6/27/2007	30.04	13.74	13.73	0.01	16.31	0.00	0.00	0.01
HC-24	9/18/2007	30.04	14.99	--	0.00	15.05	0.00	0.00	0.00
HC-24	12/6/2007	30.04	13.13	--	0.00	16.91	0.00	0.00	0.00

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
HC-24	3/10/2008	30.04	12.72	--	0.00	17.32	0.00	0.00	0.00
HC-24	6/12/2008	30.04	13.22	--	0.00	16.82	0.00	0.00	0.00
HC-24	9/8/2008	30.04	14.68	--	0.00	15.36	0.00	0.00	0.00
HC-24	12/29/2008	30.04	13.05	--	0.00	16.99	0.00	0.00	0.00
HC-24	3/10/2009	30.04	13.92	--	0.00	16.12	0.00	0.00	0.00
HC-24	6/4/2009	30.04	13.89	--	0.00	16.15	0.00	0.00	0.00
HC-24	9/9/2009	30.04	15.01	--	0.00	15.03	0.00	0.00	0.00
HC-24	12/15/2009	30.04	14.09	--	0.00	15.95	0.00	0.00	0.00
HC-24	3/11/2010	30.04	12.65	--	0.00	17.39	0.00	0.00	0.00
HC-24	6/8/2010	30.04	12.57	--	0.00	17.47	0.00	0.00	0.00
HC-24	9/16/2010	30.04	15.05	15.05	0.00	14.99	0.00	0.00	0.00
HC-24	12/13/2010	30.04	12.31	12.31	0.00	17.73	0.00	0.00	0.00
HC-24	6/9/2011	30.04	11.84	--	0.00	18.20	0.00	0.00	0.00
HC-24	12/1/2011	30.04	13.29	--	0.00	16.75	0.00	0.00	0.00
HC-24	6/11/2012	30.04	12.22	--	0.00	17.82	0.00	0.00	0.00
HC-24	12/19/2012	30.04	12.02	--	0.00	18.02	0.00	0.00	0.00
HC-24	12/17/2013	30.04	14.64	--	0.00	15.40	0.00	0.00	0.00
HC-24	12/11/2014	30.04	13.29	--	0.00	16.75	0.00	0.00	0.00
HC-24	12/15/2015	30.04	11.87	--	0.00	18.17	0.00	0.00	0.00
HC-24	12/19/2016	30.04	12.33	--	0.00	17.71	0.00	0.00	0.00
HC-24	12/13/2017	30.04	12.25	--	0.00	17.79	0.00	0.00	0.00
HC-24	12/5/2018	30.04	14.29	--	0.00	15.75	0.00	0.00	0.00
HC-24	12/9/2019	30.04	14.92	--	0.00	15.12	0.00	0.00	0.00
HC-24	12/10/2020	30.04	13.60	--	0.01	16.45	0.00	0.00	0.00
HC-24	1/6/2022	30.04	11.09	--	0.00	18.95	0.00	0.00	0.00
HC-24	11/17/2022	30.04	12.12	--	0.00	17.92	0.00	0.00	0.00
HC-24	12/6/2023	30.04	8.81	--	0.00	21.23	0.00	0.00	0.00
HC-24	12/3/2024	30.04	11.43	--	0.00	18.61	0.00	0.00	0.00
EX-1	8/27/2003	33.08	15.78	--	0.00	17.30	0.00	0.00	0.00
EX-1	9/3/2003	33.08	15.88	--	0.00	17.20	0.00	0.00	0.00
EX-1	9/11/2003	33.08	16.06	--	0.00	17.02	0.00	0.00	0.00
EX-1	9/17/2003	33.08	16.21	--	0.00	16.87	0.00	0.00	0.00
EX-1	9/30/2003	33.08	16.22	--	0.00	16.86	0.00	0.00	0.00
EX-1	10/14/2003	33.08	16.25	--	0.00	16.83	0.00	0.00	0.00
EX-1	10/29/2003	33.08	16.38	--	0.00	16.70	0.00	0.00	0.00
EX-1	11/13/2003	33.08	16.45	--	0.00	16.63	0.00	0.00	0.00
EX-1	11/26/2003	33.08	16.07	--	0.00	17.01	0.00	0.00	0.00
EX-1	12/24/2003	33.08	15.46	--	0.00	17.62	0.00	0.00	0.00
EX-1	1/21/2004	33.08	15.06	--	0.00	18.02	0.00	0.00	0.00
EX-1	2/25/2004	33.08	14.53	--	0.00	18.55	0.00	0.00	0.00
EX-1	3/24/2004	33.08	14.84	--	0.00	18.24	0.00	0.00	0.00
EX-1	1/28/2005	33.08	15.79	--	0.00	17.29	0.00	0.00	0.00
EX-1	2/25/2005	33.08	14.80	14.80	0.00	18.28	0.00	0.00	0.00
EX-1	3/25/2005	33.08	15.07	15.07	0.00	18.01	0.00	0.00	0.00
EX-1	4/30/2005	33.08	14.62	--	0.00	18.46	0.00	0.00	0.00
EX-1	5/31/2005	33.08	17.34	--	0.00	15.74	0.00	0.00	0.00
EX-1	6/24/2005	33.08	14.30	--	0.00	18.78	0.00	0.00	0.00
EX-1	7/29/2005	33.08	14.60	--	0.00	18.48	0.00	0.00	0.00
EX-1	8/26/2005	33.08	14.92	--	0.00	18.16	0.00	0.00	0.00
EX-1	9/24/2005	33.08	15.18	--	0.00	17.90	0.00	0.00	0.00
EX-1	10/21/2005	33.08	15.33	--	0.00	17.75	0.00	0.00	0.00
EX-1	11/28/2005	33.08	14.55	--	0.00	18.53	0.00	0.00	0.00
EX-1	1/3/2006	33.08	13.53	--	0.00	19.55	0.00	0.00	0.00
EX-1	2/17/2006	33.08	12.23	--	0.00	20.85	0.00	0.00	0.00
EX-1	3/13/2006	33.08	12.38	--	0.00	20.70	0.00	0.00	0.00
EX-1	6/27/2006	33.08	13.31	--	0.00	19.77	0.00	0.00	0.00
EX-1	9/19/2006	33.08	14.64	--	0.00	18.44	0.00	0.00	0.00
EX-1	12/13/2006	33.08	12.84	--	0.00	20.24	0.00	0.00	0.00
EX-1	3/29/2007	33.08	12.30	--	0.00	20.78	0.0	0.00	0.00
EX-1	6/27/2007	33.08	13.74	13.73	0.01	19.35	0.0	0.00	0.01
EX-1	9/18/2007	33.08	14.99	--	0.00	18.09	0.0	0.00	0.00
EX-1	12/6/2007	33.08	13.13	--	0.00	19.95	0.0	0.00	0.00
EX-1	3/10/2008	33.08	12.72	--	0.00	20.36	0.0	0.00	0.00
EX-1	6/12/2008	33.08	13.22	--	0.00	19.86	0.0	0.00	0.00
EX-1	9/8/2008	33.08	14.68	--	0.00	18.40	0.0	0.00	0.00
EX-1	12/29/2008	33.08	13.05	--	0.00	20.03	0.0	0.00	0.00
EX-1	3/10/2009	33.08	--	--	--	--	--	0.00	--
EX-1	6/24/2009	33.08	--	--	--	--	--	0.00	--
BE-1	6/2/2005	19.75	10.02	--	0.00	9.73	0.00	0.00	0.00
BE-1	6/24/2005	19.75	10.01	--	0.00	9.74	0.00	0.00	0.00
BE-1	7/29/2005	19.75	10.23	--	0.00	9.52	0.00	0.00	0.00
BE-1	8/26/2005	19.75	10.27	--	0.00	9.48	0.00	0.00	0.00
BE-1	9/14/2005	19.75	10.05	--	0.00	9.70	0.00	0.00	0.00

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Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
BE-1	9/24/2005	19.75	10.22	--	0.00	9.53	0.00	0.00	0.00
BE-1	10/21/2005	19.75	10.10	--	0.00	9.65	0.00	0.00	0.00
BE-1	11/28/2005	19.75	9.91	--	0.00	9.84	0.00	0.00	0.00
BE-1	12/6/2005	19.75	9.70	--	0.00	10.05	0.00	0.00	0.00
BE-1	1/3/2006	19.75	--	--	0.00	--	0.00	0.00	0.00
BE-1	2/17/2006	19.75	9.61	--	0.00	10.14	0.00	0.00	0.00
BE-1	3/13/2006	19.75	9.55	--	0.00	10.20	0.00	0.00	0.00
BE-1	6/27/2006	19.75	9.66	--	0.00	10.09	0.00	0.00	0.00
BE-1	9/19/2006	19.75	10.10	--	0.00	9.65	0.00	0.00	0.00
BE-1	12/13/2006	19.75	6.57	--	0.00	13.18	0.00	0.00	0.00
BE-1	3/29/2007	19.75	6.23	--	0.00	13.52	0.00	0.00	0.00
BE-1	6/27/2007	19.75	6.76	--	0.00	12.99	0.00	0.00	0.00
BE-1	9/18/2007	19.75	7.79	--	0.00	11.96	0.00	0.00	0.00
BE-1	12/6/2007	19.75	6.38	--	0.00	13.37	0.00	0.00	0.00
BE-1	3/10/2008	19.75	6.49	--	0.00	13.26	0.00	0.00	0.00
BE-1	6/12/2008	19.75	3.90	--	0.00	15.85	0.00	0.00	0.00
BE-1	9/8/2008	19.75	7.08	--	0.00	12.67	0.00	0.00	0.00
BE-1	12/29/2008	19.75	6.51	--	0.00	13.24	0.00	0.00	0.00
BE-1	3/10/2009	19.75	6.89	--	0.00	12.86	0.00	0.00	0.00
BE-1	6/4/2009	19.75	5.63	--	0.00	14.12	0.00	0.00	0.00
BE-1	9/9/2009	19.75	7.25	--	0.00	12.50	0.00	0.00	0.00
BE-1	12/15/2009	19.75	7.01	--	0.00	12.74	0.00	0.00	0.00
BE-1	3/11/2010	19.75	6.72	--	0.00	13.03	0.00	0.00	0.00
BE-1	6/8/2010	19.75	2.40	--	0.00	17.35	0.00	0.00	0.00
BE-1	9/16/2010	19.75	6.86	--	0.00	12.89	0.00	0.00	0.00
BE-1	12/13/2010	19.75	6.15	--	0.00	13.60	0.00	0.00	0.00
BE-1	6/21/2011	19.75	2.09	--	0.00	17.66	0.00	0.00	0.00
BE-1	12/1/2011	19.75	6.73	--	0.00	13.02	0.00	0.00	0.00
BE-1	6/12/2012	19.75	5.30	--	0.00	14.45	0.00	0.00	0.00
BE-1	12/19/2012	19.75	5.88	--	0.00	13.87	0.00	0.00	0.00
BE-1	12/17/2013	19.75	6.84	--	0.00	12.91	0.00	0.00	0.00
BE-1	12/11/2014	19.75	6.24	--	0.00	13.51	0.00	0.00	0.00
BE-1	12/15/2015	19.75	5.94	--	0.00	13.81	0.00	0.00	0.00
BE-1	12/19/2016	19.75	6.34	--	0.00	13.41	0.00	0.00	0.00
BE-1	12/13/2017	19.75	6.69	--	0.00	13.06	0.00	0.00	0.00
BE-1	12/5/2018	19.75	7.01	--	0.00	12.74	0.00	0.00	0.00
BE-1	1/17/2019	19.75	6.62	--	0.00	13.13	0.00	0.00	0.00
BE-1	12/9/2019	19.75	7.19	--	0.00	12.56	0.00	0.00	0.00
BE-1	12/10/2020	19.75	6.99	--	0.00	12.76	0.00	0.00	0.00
BE-1	12/22/2021	19.75	6.15	--	0.00	13.60	0.00	0.00	0.00
BE-1	1/7/2022	19.75	7.37	--	0.00	12.38	0.00	0.00	0.00
BE-1	4/25/2022	19.75	6.52	--	0.00	13.23	0.00	0.00	0.00
BE-1	11/17/2022	19.75	6.64	--	0.00	13.11	0.00	0.00	0.00
BE-1	6/20/2023	19.75	6.64	--	0.00	13.11	0.00	0.00	0.00
BE-1	12/6/2023	19.75	6.21	--	0.00	13.54	0.00	0.00	0.00
BE-1	5/1/2024	19.75	6.38	--	0.00	13.37	0.00	0.00	0.00
BE-1	12/3/2024	19.75	6.59	--	0.00	13.16	0.00	0.00	0.00
BE-2	6/2/2005	19.69	8.94	--	0.00	10.75	0.00	0.00	0.00
BE-2	6/24/2005	19.69	8.94	--	0.00	10.75	0.00	0.00	0.00
BE-2	7/29/2005	19.69	9.04	--	0.00	10.65	0.00	0.00	0.00
BE-2	8/26/2005	19.69	9.12	--	0.00	10.57	0.00	0.00	0.00
BE-2	9/14/2005	19.69	8.94	--	0.00	10.75	0.00	0.00	0.00
BE-2	9/24/2005	19.69	6.02	--	0.00	13.67	0.00	0.00	0.00
BE-2	10/21/2005	19.69	8.95	--	0.00	10.74	0.00	0.00	0.00
BE-2	11/28/2005	19.69	8.64	--	0.00	11.05	0.00	0.00	0.00
BE-2	12/6/2005	19.69	8.48	--	0.00	11.21	0.00	0.00	0.00
BE-2	1/3/2006	19.69	--	--	0.00	--	--	0.00	--
BE-2	2/17/2006	19.69	8.43	--	0.00	11.26	0.00	0.00	0.00
BE-2	3/13/2006	19.69	8.21	--	0.00	11.48	0.00	0.00	0.00
BE-2	6/27/2006	19.69	8.45	--	0.00	11.24	0.00	0.00	0.00
BE-2	9/19/2006	19.69	8.79	--	0.00	10.90	0.00	0.00	0.00
BE-2	12/13/2006	19.69	8.57	--	0.00	11.12	0.00	0.00	0.00
BE-2	3/29/2007	19.69	8.07	--	0.00	11.62	0.00	0.00	0.00
BE-2	6/27/2007	19.69	8.55	--	0.00	11.14	0.00	0.00	0.00
BE-2	9/18/2007	19.69	8.90	--	0.00	10.79	0.00	0.00	0.00
BE-2	12/6/2007	19.69	7.89	--	0.00	11.80	0.00	0.00	0.00
BE-2	3/10/2008	19.69	8.21	--	0.00	11.48	0.00	0.00	0.00
BE-2	6/12/2008	19.69	5.73	--	0.00	13.96	0.00	0.00	0.00
BE-2	9/8/2008	19.69	8.98	--	0.00	10.71	0.00	0.00	0.00
Well Destroyed									
BE-3	6/2/2005	17.55	6.56	--	0.00	10.99	0.00	0.00	--
BE-3	6/24/2005	17.55	6.42	--	0.00	11.13	0.00	0.00	0.00
BE-3	7/29/2005	17.55	6.66	--	0.00	10.89	0.00	0.00	0.00

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Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
BE-3	8/26/2005	17.55	6.79	--	0.00	10.76	0.00	0.00	0.00
BE-3	9/14/2005	17.55	6.73	--	0.00	10.82	0.00	0.00	0.00
BE-3	9/24/2005	17.55	6.80	--	0.00	10.75	0.00	0.00	0.00
BE-3	10/21/2005	17.55	6.75	--	0.00	10.80	0.00	0.00	0.00
BE-3	11/28/2005	17.55	6.58	--	0.00	10.97	0.00	0.00	0.00
BE-3	12/6/2005	17.55	6.50	--	0.00	11.05	0.00	0.00	0.00
BE-3	1/3/2006	17.55	--	--	0.00	--	--	0.00	--
BE-3	2/17/2006	17.55	6.64	--	0.00	10.91	0.00	0.00	0.00
BE-3	3/13/2006	17.55	6.47	--	0.00	11.08	0.00	0.00	0.00
BE-3	6/27/2006	17.55	6.31	--	0.00	11.24	0.00	0.00	0.00
BE-3	9/19/2006	17.55	6.83	--	0.00	10.72	0.00	0.00	0.00
BE-3	12/13/2006	17.55	9.47	--	0.00	8.08	0.00	0.00	0.00
BE-3	3/29/2007	17.55	9.44	--	0.00	8.11	0.00	0.00	0.00
BE-3	6/27/2007	17.55	9.99	--	0.00	7.56	0.00	0.00	0.00
BE-3	9/18/2007	17.55	10.13	--	0.00	7.42	0.00	0.00	0.00
BE-3	12/6/2007	17.55	8.79	--	0.00	8.76	0.00	0.00	0.00
BE-3	3/10/2008	17.55	10.41	--	0.00	7.14	0.00	0.00	0.00
BE-3	6/12/2008	17.55	5.97	--	0.00	11.58	0.00	0.00	0.00
BE-3	9/8/2008	17.55	10.18	--	0.00	7.37	0.00	0.00	0.00
BE-3	12/29/2008	17.55	9.59	--	0.00	7.96	0.00	0.00	0.00
BE-3	3/10/2009	17.55	9.85	--	0.00	7.70	0.00	0.00	0.00
BE-3	6/4/2009	17.55	8.13	--	0.00	9.42	0.00	0.00	0.00
BE-3	9/9/2009	17.55	10.36	--	0.00	7.19	0.00	0.00	0.00
BE-3	12/15/2009	17.55	9.88	--	0.00	7.67	0.00	0.00	0.00
BE-3	3/11/2010	17.55	9.65	--	0.00	7.90	0.00	0.00	0.00
BE-3	6/8/2010	17.55	4.60	--	0.00	12.95	0.00	0.00	0.00
BE-3	9/16/2010	17.55	9.81	--	0.00	7.74	0.00	0.00	0.00
BE-3	12/13/2010	17.55	8.67	--	0.00	8.88	0.00	0.00	0.00
BE-3	6/9/2011	17.55	1.89	--	0.00	15.66	0.00	0.00	0.00
BE-3	12/1/2011	17.55	9.63	--	0.00	7.92	0.00	0.00	0.00
BE-3	6/11/2012	17.55	7.16	--	0.00	10.39	0.00	0.00	0.00
BE-3	12/19/2012	17.55	8.09	--	0.00	9.46	0.00	0.00	0.00
BE-3	12/17/2013	17.55	9.96	--	0.00	7.59	0.00	0.00	0.00
BE-3	12/11/2014	17.55	9.13	--	0.00	8.42	0.00	0.00	0.00
BE-3	12/15/2015	17.55	8.37	--	0.00	9.18	0.00	0.00	0.00
BE-3	12/19/2016	17.55	9.25	--	0.00	8.30	0.00	0.00	0.00
BE-3	12/13/2017	17.55	9.48	--	0.00	8.07	0.00	0.00	0.00
BE-3	12/5/2018	17.55	9.86	--	0.00	7.69	0.00	0.00	0.00
BE-3	1/17/2019	17.55	9.78	--	0.00	7.77	0.00	0.00	0.00
BE-3	12/9/2019	17.55	10.25	--	0.00	7.30	0.00	0.00	0.00
BE-3	12/10/2020	17.55	10.15	--	0.00	7.40	0.00	0.00	0.00
BE-3	11/17/2022	17.55	9.91	--	0.00	7.64	0.00	0.00	0.00
BE-3	12/6/2023	17.55	8.24	--	0.00	9.31	0.00	0.00	0.00
BE-3	12/3/2024	17.55	--	--	--	--	--	0.00	0.00
BE-4	6/2/2005	31.16	18.12	--	0.00	13.04	0.00	0.00	0.00
BE-4	6/24/2005	31.16	18.81	--	0.00	12.35	0.00	0.00	0.00
BE-4	7/29/2005	31.16	19.14	--	0.00	12.02	0.00	0.00	1.00
BE-4	8/26/2005	31.16	19.07	--	0.00	12.09	0.00	0.00	2.00
BE-4	9/14/2005	31.16	18.73	--	0.00	12.43	0.00	0.00	3.00
BE-4	9/24/2005	31.16	18.75	--	0.00	12.41	0.00	0.00	4.00
BE-4	10/21/2005	31.16	18.29	--	0.00	12.87	0.00	0.00	5.00
BE-4	11/28/2005	31.16	17.39	17.39	0.00	13.77	0.00	0.00	0.00
BE-4	12/6/2005	31.16	17.06	17.05	0.01	14.11	0.00	0.00	--
BE-4	1/3/2006	31.16	14.72	14.69	0.03	16.47	0.00	0.00	0.03
BE-4	2/17/2006	31.16	14.88	14.82	0.06	16.33	0.00	0.00	0.06
BE-4	3/13/2006	31.16	15.55	15.51	0.04	15.65	0.00	0.00	0.04
BE-4	6/27/2006	31.16	16.03	15.95	0.08	15.20	0.00	0.00	0.08
BE-4	9/19/2006	31.16	17.01	16.79	0.22	14.35	0.75	0.75	0.02
BE-4	12/13/2006	31.16	15.67	15.66	0.01	15.50	0.00	0.75	0.02
BE-4	3/29/2007	31.16	15.25	15.18	0.07	15.97	0.00	0.75	0.07
BE-4	6/27/2007	31.16	16.51	16.31	0.20	14.83	1.00	1.75	0.01
BE-4	8/9/2007	31.16	16.85	16.47	0.38	14.65	0.50	2.25	0.01
BE-4	8/22/2007	31.16	16.82	16.58	0.24	14.55	1.00	3.25	0.01
BE-4	9/7/2007	31.16	17.62	16.76	0.86	14.31	1.50	4.75	0.01
BE-4	9/14/2007	31.16	18.16	18.06	0.10	13.09	0.25	5.00	0.00
BE-4	9/18/2007	31.16	16.78	16.72	0.06	14.43	0.00	5.00	--
BE-4	10/4/2007	31.16	16.81	16.71	0.10	14.44	0.40	5.40	0.00
BE-4	10/11/2007	31.16	16.74	16.66	0.08	14.49	0.00	5.40	0.08
BE-4	10/24/2007	31.16	16.62	16.54	0.08	14.61	0.00	5.40	0.08
BE-4	11/8/2007	31.16	16.78	16.71	0.07	14.44	0.00	5.40	0.07
BE-4	11/21/2007	31.16	16.68	16.60	0.08	14.55	0.00	5.40	0.08
BE-4	12/7/2007	31.16	14.16	14.13	0.03	17.03	0.00	5.40	0.03
BE-4	12/21/2007	31.16	15.76	15.75	0.01	15.41	0.00	5.40	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
BE-4	1/3/2008	31.16	14.64	14.63	0.01	16.53	0.00	5.40	0.01
BE-4	1/18/2008	31.16	14.32	14.31	0.01	16.85	0.00	5.40	0.01
BE-4	1/24/2008	31.16	14.98	14.95	0.03	16.21	0.00	5.40	0.03
BE-4	1/31/2008	31.16	15.31	15.28	0.03	15.88	0.00	5.40	0.03
BE-4	2/6/2008	31.16	14.17	14.16	0.01	17.00	0.00	5.40	0.03
BE-4	2/15/2008	31.16	14.18	14.18	0.00	16.98	0.00	5.40	0.00
BE-4	2/29/2008	31.16	15.35	15.35	0.00	15.81	0.00	5.40	0.00
BE-4	3/10/2008	31.16	16.61	16.61	0.00	14.55	0.00	5.40	0.00
BE-4	3/21/2008	31.16	15.63	15.63	0.00	15.53	0.00	5.40	0.00
BE-4	4/11/2008	31.16	15.69	15.67	0.02	15.49	0.00	5.40	0.00
BE-4	4/17/2008	31.16	15.76	15.71	0.05	15.44	0.00	5.40	0.00
BE-4	4/24/2008	31.16	15.72	15.67	0.05	15.48	0.05	5.45	0.00
BE-4	5/2/2008	31.16	15.73	15.66	0.07	15.49	0.00	5.45	0.00
BE-4	5/8/2008	31.16	16.02	15.78	0.24	15.35	0.10	5.55	0.01
BE-4	5/14/2008	31.16	16.00	15.93	0.07	15.22	0.00	5.55	0.07
BE-4	5/30/2008	31.16	15.22	15.18	0.04	15.98	0.00	5.55	0.04
BE-4	6/13/2008	31.16	15.30	15.26	0.04	15.90	0.00	5.55	0.04
BE-4	6/25/2008	31.16	15.78	15.76	0.02	15.40	0.00	5.55	0.02
BE-4	7/11/2008	31.16	16.34	16.08	0.26	15.05	0.05	5.60	0.01
BE-4	7/28/2008	31.16	16.65	16.35	0.30	14.78	0.07	5.67	0.00
BE-4	8/13/2008	31.16	16.92	16.60	0.32	14.52	0.13	5.80	0.01
BE-4	8/27/2008	31.16	16.98	16.73	0.25	14.40	0.53	6.33	0.01
BE-4	9/8/2008	31.16	17.12	16.82	0.30	14.31	0.53	6.86	0.02
BE-4	9/18/2008	31.16	17.16	16.92	0.24	14.21	0.66	7.52	0.00
BE-4	9/30/2008	31.16	17.28	17.05	0.23	14.08	0.05	7.57	0.01
BE-4	10/16/2008	31.16	17.40	17.18	0.22	13.96	0.10	7.67	0.01
BE-4	10/30/2008	31.16	17.42	17.25	0.17	13.89	0.20	7.87	0.00
BE-4	11/14/2008	31.16	16.92	16.91	0.01	14.25	0.00	7.87	0.01
BE-4	11/26/2008	31.16	16.98	16.94	0.04	14.22	0.00	7.87	0.04
BE-4	12/29/2008	31.16	16.54	16.52	0.02	14.64	0.00	7.87	0.02
BE-4	1/15/2009	31.16	15.39	15.37	0.02	15.79	0.00	7.87	0.02
BE-4	1/23/2009	31.16	15.93	15.92	0.01	15.24	0.00	7.87	0.01
BE-4	1/29/2009	31.16	16.11	16.10	0.01	15.06	0.00	7.87	0.01
BE-4	2/4/2009	31.16	16.18	16.17	0.01	14.99	0.00	7.87	0.01
BE-4	2/12/2009	31.16	16.40	16.34	0.06	14.81	0.00	7.87	0.06
BE-4	2/19/2009	31.16	12.58	12.56	0.02	18.60	0.00	7.87	0.02
BE-4	3/10/2009	31.16	16.60	16.54	0.06	14.61	0.00	7.87	0.06
BE-4	3/27/2009	31.16	16.63	16.49	0.14	14.65	0.05	7.92	0.02
BE-4	4/16/2009	31.16	16.67	16.59	0.08	14.56	0.00	7.92	0.08
BE-4	5/14/2009	31.16	16.76	16.53	0.23	14.60	0.05	7.97	0.00
BE-4	6/4/2009	31.16	16.35	16.27	0.08	14.88	0.00	7.97	0.08
BE-4	7/13/2009	31.16	17.15	17.06	0.09	14.09	0.00	7.97	0.09
BE-4	8/10/2009	31.16	17.43	17.09	0.34	14.03	0.01	7.98	0.01
BE-4	9/9/2009	31.16	17.29	17.26	0.03	13.90	0.03	8.01	0.03
BE-4	10/15/2009	31.16	17.93	17.39	0.54	13.71	0.03	8.04	0.00
BE-4	11/18/2009	31.16	16.92	16.72	0.20	14.42	0.05	8.09	0.00
BE-4	12/15/2009	31.16	16.62	16.45	0.17	14.69	0.02	8.11	0.01
BE-4	1/13/2010	31.16	15.64	15.56	0.08	15.59	0.00	8.11	0.08
BE-4	3/2/2010	31.16	15.74	15.66	0.08	15.49	0.00	8.11	0.08
BE-4	3/11/2010	31.16	15.78	15.70	0.08	15.45	0.00	8.11	0.08
BE-4	3/25/2010	31.16	15.95	15.80	0.15	15.34	0.10	8.21	0.01
BE-4	4/2/2010	31.16	15.65	15.65	0.00	15.51	0.00	8.21	0.00
BE-4	4/9/2010	31.16	15.62	15.41	0.21	15.73	0.25	8.46	0.08
BE-4	4/16/2010	31.16	15.67	15.45	0.22	15.69	0.25	8.71	0.01
BE-4	4/23/2010	31.16	15.70	15.62	0.08	15.53	0.00	8.71	0.08
BE-4	6/8/2010	31.16	13.61	13.59	0.02	17.57	0.00	8.71	0.02
BE-4	7/9/2010	31.16	14.63	14.61	0.02	16.55	0.00	8.71	0.02
BE-4	7/23/2010	31.16	15.90	15.89	0.01	15.27	0.00	8.71	0.01
BE-4	8/6/2010	31.16	16.29	16.00	0.29	15.13	0.25	8.96	0.05
BE-4	8/19/2010	31.16	16.37	16.31	0.06	14.84	0.00	8.96	0.05
BE-4	8/27/2010	31.16	16.41	16.19	0.22	14.95	0.50	9.46	0.04
BE-4	9/17/2010	31.16	16.55	16.33	0.22	14.81	0.25	9.71	0.05
BE-4	10/8/2010	31.16	16.44	16.42	0.02	14.74	0.00	9.71	0.02
BE-4	11/11/2010	31.16	16.94	16.81	0.13	14.34	0.05	9.76	0.01
BE-4	12/15/2010	31.16	14.22	14.06	0.16	17.08	0.25	10.01	0.02
BE-4	12/21/2010	31.16	14.15	13.95	0.20	17.19	0.20	10.21	0.02
BE-4	12/30/2010	31.16	13.68	13.25	0.43	17.86	0.50	10.71	0.01
BE-4	1/6/2011	31.16	13.67	13.64	0.03	17.52	0.00	10.71	0.03
BE-4	1/13/2011	31.16	13.92	13.89	0.03	17.27	0.00	10.71	0.03
BE-4	1/19/2011	31.16	13.87	13.83	0.04	17.33	0.00	10.71	0.04
BE-4	1/28/2011	31.16	14.13	14.11	0.02	17.05	0.00	10.71	0.02
BE-4	2/9/2011	31.16	15.03	15.01	0.02	16.15	0.00	10.71	0.02
BE-4	2/23/2011	31.16	15.18	15.17	0.01	15.99	0.00	10.71	0.01
BE-4	3/9/2011	31.16	15.38	15.34	0.04	15.82	0.00	10.71	0.04
BE-4	3/29/2011	31.16	14.00	13.96	0.04	17.20	0.00	10.71	0.04
BE-4	4/21/2011	31.16	13.93	13.90	0.03	17.26	0.00	10.71	0.03
BE-4	5/6/2011	31.16	14.14	14.10	0.04	17.06	0.00	10.71	0.04

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
BE-4	6/9/2011	31.16	13.02	13.01	0.01	18.15	0.00	10.71	0.01
BE-4	7/7/2011	31.16	14.17	13.89	0.28	17.24	0.25	10.96	0.00
BE-4	8/3/2011	31.16	15.31	15.29	0.02	15.87	0.00	10.96	0.02
BE-4	9/8/2011	31.16	15.86	15.79	0.07	15.36	0.00	10.96	0.07
BE-4	10/3/2011	31.16	16.18	16.03	0.15	15.11	0.20	11.16	0.01
BE-4	11/10/2011	31.16	16.50	16.37	0.13	14.78	0.20	11.36	0.00
BE-4	12/1/2011	31.16	17.96	17.88	0.08	13.27	0.00	11.36	0.08
BE-4	1/6/2012	31.16	16.13	16.09	0.04	15.07	0.00	11.36	0.04
BE-4	1/25/2012	31.16	15.84	15.80	0.04	15.36	0.00	11.36	0.04
BE-4	3/3/2012	31.16	15.63	15.58	0.05	15.57	0.00	11.36	0.05
BE-4	3/14/2012	31.16	15.27	15.25	0.02	15.91	0.00	11.36	0.02
BE-4	3/22/2012	31.16	14.40	14.38	0.02	16.78	0.00	11.36	0.02
BE-4	3/29/2012	31.16	14.34	14.31	0.03	16.85	0.00	11.36	0.03
BE-4	4/5/2012	31.16	13.73	13.72	0.01	17.44	0.00	11.36	0.01
BE-4	4/13/2012	31.16	14.35	14.30	0.05	16.85	0.00	11.36	0.05
BE-4	4/23/2012	31.16	14.37	14.32	0.05	16.83	0.00	11.36	0.05
BE-4	5/14/2012	31.16	14.38	14.35	0.03	16.81	0.00	11.36	0.03
BE-4	5/25/2012	31.16	--	--	0.00	--	--	11.36	--
BE-4	6/12/2012	31.16	14.75	14.73	0.02	16.43	0.00	11.36	0.02
BE-4	7/3/2012	31.16	14.86	14.85	0.01	16.31	0.00	11.36	0.01
BE-4	8/28/2012	31.16	16.01	15.96	0.05	15.19	0.00	11.36	0.05
BE-4	9/24/2012	31.16	Well Not Accessible						
BE-4	10/8/2012	31.16	16.44	16.40	0.04	14.76	0.00	11.36	0.04
BE-4	11/14/2012	31.16	16.04	16.04	0.00	15.12	0.00	11.36	0.00
BE-4	12/19/2012	31.16	14.16	14.09	0.07	17.06	0.00	11.36	0.07
BE-4	1/4/2013	31.16	14.21	14.09	0.12	17.06	0.10	11.46	0.01
BE-4	1/18/2013	31.16	15.07	15.04	0.03	16.12	0.00	11.46	0.01
BE-4	1/31/2013	31.16	15.39	15.38	0.01	15.78	0.00	11.46	0.01
BE-4	3/6/2013	31.16	15.76	15.74	0.02	15.42	0.00	11.46	0.01
BE-4	4/3/2013	31.16	16.13	16.11	0.02	15.05	0.00	11.46	0.01
BE-4	5/6/2013	31.16	16.39	16.38	0.01	14.78	0.00	11.46	0.01
BE-4	6/12/2013	31.16	16.15	16.14	0.01	15.02	0.00	11.46	0.01
BE-4	7/16/2013	31.16	16.60	16.40	0.20	14.74	0.10	11.56	0.05
BE-4	8/26/2013	31.16	17.31	17.30	0.01	13.86	0.00	11.56	0.01
BE-4	9/25/2013	31.16	17.90	17.88	0.02	13.28	0.00	11.56	0.02
BE-4	10/31/2013	31.16	18.68	18.61	0.07	12.54	0.00	11.56	0.07
BE-4	11/27/2013	31.16	16.78	16.78	0.00	14.38	0.00	11.56	0.00
BE-4	12/17/2013	31.16	16.84	16.80	0.04	14.36	0.00	11.56	0.02
BE-4	12/11/2014	31.16	16.06	15.99	0.07	15.16	0.00	11.56	0.02
BE-4	12/15/2015	31.16	16.20	16.00	0.20	15.14	0.00	11.56	0.20
BE-4	2/17/2016	31.16	14.54	14.40	0.14	16.74	0.50	12.06	0.01
BE-4	3/29/2016	31.16	14.12	14.11	0.01	17.05	0.10	12.16	0.00
BE-4	4/27/2016	31.16	15.19	15.18	0.01	15.98	0.10	12.26	0.00
BE-4	5/27/2016	31.16	15.81	15.80	0.01	15.36	0.00	12.26	0.01
BE-4	6/29/2016	31.16	16.25	16.20	0.05	14.95	0.00	12.26	0.05
BE-4	7/20/2016	31.16	16.39	16.34	0.05	14.81	0.00	12.26	0.05
BE-4	8/31/2016	31.16	16.70	16.65	0.05	14.50	0.00	12.26	0.05
BE-4	9/16/2016	31.16	16.92	16.88	0.04	14.28	0.00	12.26	0.04
BE-4	10/20/2016	31.16	16.38	16.35	0.03	14.81	0.00	12.26	0.03
BE-4	11/28/2016	31.16	15.48	15.48	0.00	15.68	0.00	12.26	0.00
BE-4	12/19/2016	31.16	15.19	15.18	0.01	15.98	0.00	12.26	0.01
BE-4	1/5/2017	31.16	15.48	15.45	0.03	15.71	0.00	12.26	0.03
BE-4	2/14/2017	31.16	13.86	13.85	0.01	17.31	0.00	12.26	0.01
BE-4	3/28/2017	31.16	12.44	12.42	0.02	18.74	0.00	12.26	0.02
BE-4	4/18/2017	31.16	13.56	13.55	0.01	17.61	0.00	12.26	0.01
BE-4	5/26/2017	31.16	13.79	13.78	0.01	17.38	0.00	12.26	0.01
BE-4	6/23/2017	31.16	14.29	14.28	0.01	16.88	0.00	12.26	0.01
BE-4	7/21/2017	31.16	15.54	15.53	0.01	15.63	0.00	12.26	0.01
BE-4	8/18/2017	31.16	15.97	15.95	0.02	15.21	0.00	12.26	0.02
BE-4	9/26/2017	31.16	16.45	16.42	0.03	14.74	0.00	12.26	0.03
BE-4	10/30/2017	31.16	16.22	16.20	0.02	14.96	0.00	12.26	0.02
BE-4	11/17/2017	31.16	16.18	16.09	0.09	15.06	0.00	12.26	0.09
BE-4	12/13/2017	31.16	15.31	15.30	0.01	15.86	0.00	12.26	0.01
BE-4	1/26/2018	31.16	15.00	14.99	0.01	16.17	0.00	12.26	0.01
BE-4	2/14/2018	31.16	14.99	14.98	0.01	16.18	0.00	12.26	0.01
BE-4	3/26/2018	31.16	15.15	15.10	0.05	16.05	0.50	12.76	0.01
BE-4	5/3/2018	31.16	15.17	15.16	0.01	16.00	0.00	12.76	0.01
BE-4	5/31/2018	31.16	14.54	14.52	0.02	16.64	0.00	12.76	0.02
BE-4	6/21/2018	31.16	15.91	15.90	0.01	15.26	0.00	12.76	0.01
BE-4	7/17/2018	31.16	15.72	15.71	0.01	15.45	0.00	12.76	0.01
BE-4	8/17/2018	31.16	16.83	16.81	0.02	14.35	0.00	12.76	0.02
BE-4	10/16/2018	31.16	17.01	17.01	0.00	14.15	0.00	12.76	0.00
BE-4	11/5/2018	31.16	17.20	17.20	0.00	13.96	0.00	12.76	0.00
BE-4	12/5/2018	31.16	17.20	17.19	0.01	13.97	0.00	12.76	0.01
BE-4	12/31/2018	31.16	16.49	16.49	0.00	14.67	0.00	12.76	0.01
BE-4	1/17/2019	31.16	16.34	--	0.00	14.82	0.00	12.76	0.00
BE-4	2/21/2019	31.16	15.55	15.54	0.01	15.62	0.00	12.76	0.01

Table C-1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	Top of Casing	Initial Measurements				Product Removal		
			Depth to Water	Depth to Product	Product Thickness	Groundwater Elevation *	Discrete Event	Cumulative	Final Product Thickness
			(feet)				(gallons)		(feet)
BE-4	4/2/2019	31.16	15.80	15.78	0.02	15.38	0.00	12.76	0.02
BE-4	4/18/2019	31.16	15.80	15.78	0.02	15.38	0.00	12.76	0.02
BE-4	5/16/2019	31.16	15.73	15.72	0.01	15.44	0.00	12.76	0.01
BE-4	6/19/2019	31.16	16.13	16.12	0.01	15.04	0.00	12.76	0.01
BE-4	7/23/2019	31.16	17.13	17.11	0.02	14.05	0.00	12.76	0.02
BE-4	8/22/2019	31.16	17.02	17.02	0.00	14.14	0.00	12.76	0.00
BE-4	9/25/2019	31.16	17.50	17.49	0.01	13.67	0.00	12.76	0.00
BE-4	10/25/2019	31.16	17.58	17.56	0.02	13.60	0.00	12.76	0.02
BE-4	11/20/2019	31.16	17.22	17.21	0.01	13.95	0.00	12.76	0.01
BE-4	12/9/2019	31.16	17.79	17.76	0.03	13.40	0.00	12.76	0.03
BE-4	2/18/2020	31.16	15.50	15.50	0.00	15.66	0.00	12.76	0.00
BE-4	2/28/2020	31.16	15.74	15.74	0.00	15.42	0.00	12.76	0.00
BE-4	3/19/2020	31.16	16.08	16.08	0.00	15.08	0.00	12.76	0.00
BE-4	4/20/2020	31.16	15.91	15.91	0.00	15.25	0.00	12.76	0.00
BE-4	5/29/2020	31.16	16.53	16.52	0.01	14.64	0.00	12.76	0.01
BE-4	6/11/2020	31.16	16.16	16.14	0.02	15.02	0.00	12.76	0.02
BE-4	7/15/2020	31.16	17.05	17.04	0.01	14.12	0.00	12.76	0.01
BE-4	8/31/2020	31.16	16.90	16.89	0.01	14.27	0.00	12.76	0.01
BE-4	9/28/2020	31.16	17.75	17.74	0.01	13.42	0.00	12.76	0.01
BE-4	10/23/2020	31.16	17.71	17.70	0.01	13.46	0.00	12.76	0.01
BE-4	11/13/2020	31.16	17.32	17.32	0.00	13.84	0.00	12.76	0.00
BE-4	12/10/2020	31.16	17.13	17.12	0.01	14.04	0.00	12.76	0.01
BE-4	1/20/2021	31.16	14.92	--	0.00	16.24	0.00	12.76	0.00
BE-4	2/24/2021	31.16	14.03	--	0.00	17.13	0.00	12.76	0.00
BE-4	1/6/2022	31.16	14.48	--	0.00	16.68	0.00	12.76	0.00
BE-4	11/17/2022	31.16	16.60	16.57	0.03	14.59	<0.01	12.76	0.00
BE-4	12/6/2023	31.16	15.81	15.81	<0.01	15.35	<0.01	12.76	<0.01
BE-4	12/3/2024	31.16	15.98	--	0.00	15.18	0.00	12.76	<0.01
BE-5	9/9/2009	21.12	11.08	--	0.00	10.04	0.00	0.00	0.00
BE-5	12/15/2009	21.12	10.87	--	0.00	10.25	0.00	0.00	0.00
BE-5	3/11/2010	21.12	10.61	--	0.00	10.51	0.00	0.00	0.00
BE-5	6/8/2010	21.12	6.04	--	0.00	15.08	0.00	0.00	0.00
BE-5	9/16/2010	21.12	10.87	--	0.00	10.25	0.00	0.00	0.00
BE-5	12/13/2010	21.12	9.52	--	0.00	11.60	0.00	0.00	0.00
BE-5	6/9/2011	21.12	3.29	--	0.00	17.83	0.00	0.00	0.00
BE-5	12/1/2011	21.12	10.83	--	0.00	10.29	0.00	0.00	0.00
BE-5	6/11/2012	21.12	8.33	--	0.00	12.79	0.00	0.00	0.00
BE-5	12/19/2012	21.12	9.24	--	0.00	11.88	0.00	0.00	0.00
BE-5	12/17/2013	21.12	11.12	--	0.00	10.00	0.00	0.00	0.00
BE-5	12/11/2014	21.12	10.10	--	0.00	11.02	0.00	0.00	0.00
BE-5	12/15/2015	21.12	9.39	--	0.00	11.73	0.00	0.00	0.00
BE-5	12/19/2016	21.12	10.19	--	0.00	10.93	0.00	0.00	0.00
BE-5	12/13/2017	21.12	10.37	--	0.00	10.75	0.00	0.00	0.00
BE-5	12/5/2018	21.12	11.06	--	0.00	10.06	0.00	0.00	0.00
BE-5	1/17/2019	21.12	10.72	--	0.00	10.40	0.00	0.00	0.00
BE-5	12/9/2019	21.12	11.29	--	0.00	9.83	0.00	0.00	0.00
BE-5	12/10/2020	21.12	11.02	--	0.00	10.10	0.00	0.00	0.00
BE-5	12/22/2021	21.12	8.37	--	0.00	12.75	0.00	0.00	0.00
BE-5	1/7/2022	21.12	7.39	--	0.00	13.73	0.00	0.00	0.00
BE-5	4/25/2022	21.12	9.92	--	0.00	11.20	0.00	0.00	0.00
BE-5	11/17/2022	21.12	10.63	--	0.00	10.00	0.00	0.00	0.00
BE-5	6/20/2023	21.12	10.50	--	0.00	10.62	0.00	0.00	0.00
BE-5	12/6/2023	21.12	7.28	--	0.00	13.84	0.00	0.00	0.00
BE-5	5/1/2024	21.12	10.14	--	0.00	10.98	0.00	0.00	0.00
BE-5	12/3/2024	21.12	10.15	--	0.00	10.97	0.00	0.00	0.00

Notes:

1. * Phreatic Elevation = (Casing Elevation - Depth to Water) + S_g * (Product Thickness). S_g = 0.89
2. -- = Not measured or not applicable.

Table C1
Historical Groundwater and Product Level Monitoring
Terminal 4 Slip 3 Upland Facility
Port of Portland

Notes:

1. * Phreatic Elevation = (Casing Elevation - Depth to Water) + S_g * (Product Thickness
2. -- = Not measured or not applicable.

Table C-2
Historical LNAPL Recovery
Terminal 4 Slip 3 Upland Facility
Port of Portland

Year	MW-15	MW-17	MW-19	MW-20	HC-10	BE-4	HC-5	Total
	LNAPL Removed (gallons)							
2005	Data for individual wells not shown							24
2006	Data for individual wells not shown							61
2007	Data for individual wells not shown							100
2008	Data for individual wells not shown							71
2009	2.59	2.34	2.84	2.53	0.15	0.24	--	10.69
2010	4.53	15.48	61.80	41.40	2.38	2.60	--	155.69
2011	0.30	10.55	13.05	16.50	3.25	0.65	--	50.69
2012	1.13	7.80	7.66	23.14	1.50	0.00	--	41.22
2013	2.75	5.30	6.95	9.05	1.75	0.20	--	26.00
2014	1.25	0.20	12.35	8.25	0.20	0.00	--	22.25
2015	n/a	6.50	18.10	15.95	6.15	n/a	--	46.70
2016	n/a	n/a	8.55	7.40	5.55	0.70	--	22.20
2017	n/a	n/a	3.00	12.50	6.45	0.00	--	21.95
2018	n/a	n/a	5.50	8.75	4.65	0.50	1.70	21.10
2019	n/a	n/a	2.10	2.77	2.40	0.00	2.27	9.54
2020	n/a	n/a	0.20	1.31	1.12	0.00	0.00	2.28
2021	n/a	n/a	1.50	1.65	0.42	0.00	0.30	3.87
2022	n/a	n/a	0.09	0.06	0.06	<0.01	N/A	0.21
2023	n/a	n/a	1.30	0.45	0.00	<0.01	0.00	1.75
2024	n/a	n/a	0.50	0.25	0.00	0.00	0.00	0.75

Notes:

1. The current (2017) LNAPL recovery program includes wells MW-19, MW-20, HC-10, and BE-4. If LNAPL is present at a thickness that is practical for recovery (greater than 0.1 foot), the LNAPL is removed.
2. n/a = not available
3. Wells MW-15 and MW-17 were abandoned in May 2015.

Table C-3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH		PAHs																			
		Diesel-Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
		Concentration in µg/L																					
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	--	--
HC-2	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	--	--
HC-2	2/11/2005	120 J	310 J	< 0.021	--	--	0.0053	< 0.021	--	--	--	--	--	0.0084	< 0.021	--	--	--	0.14	0.0069	--	--	--
HC-2	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	--	--
HC-2	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	--	--
HC-2	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	--	--
HC-2	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	--	--
HC-2	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-2	6/12/2008	<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	--	--
HC-2	6/4/2009	<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-2	4/25/2022	<198	<396	<0.0432	<0.0432	<0.0432	<0.0216	<0.0216	<0.0216	<0.0432	<0.0216	<0.0216	<0.0216	<0.0432	<0.0432	<0.0216	<0.0864	<0.0864	<0.0864	<0.0864	<0.0432	<0.0432	<0.0432
HC-2	8/11/2022	<190	<381	<0.0332	<0.0332	0.0195	<0.0166	<0.0166	<0.0166	<0.0332	<0.0166	<0.0166	<0.0166	<0.0332	<0.0332	<0.0166	<0.0664	<0.0664	<0.0664	<0.0664	<0.0332	<0.0332	<0.0332
HC-2	11/17/2022	<192	<385	<0.0329	<0.0329	<0.0329	<0.0164	<0.0164	<0.0164	<0.0329	<0.0164	<0.0164	<0.0164	<0.0329	<0.0329	<0.0164	<0.0658	<0.0658	<0.0658	<0.0658	<0.0329	<0.0329	<0.0329
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	--	--
HC-5	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	--	--
HC-5	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	--	--
HC-5	2/11/2005	**26,000 J**	**4,800 J**	0.65	--	--	< 0.02	< 0.02	--	--	--	--	--	0.07	2.9	--	--	--	< 0.19	0.28	--	--	--
HC-5	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	--	--
HC-5	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	--	--
HC-5	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	--	--
HC-5	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	--	--
HC-5	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	--	--
HC-5	6/12/2008	**1,050 Q11**	<472	0.495	0.476	0.190	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	1.55	<0.0952	--	--	0.266	<0.190	<0.0952	--	--
HC-5	6/4/2009	999 Q11	<476	0.279	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	1.41	<0.0952	--	--	< 0.143	< 0.143	<0.0952	--	--
HC-5	9/16/2010	**2,810 Q11**	<400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	6/10/2011	**5,220 Q11**	156 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	6/11/2012	**3,600 Q11**	<400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/20/2012	**1,200 J**	<480	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/20/12 DUP	640 J	<480	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/17/2013	**2,200 JY**	<250	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/17/2013 DUP	**4,600 JY**	890	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/12/2014	**9,200 JY**	**2,100 JY**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/12/2014 DUP	**6,100 JY**	**1,300 JY**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/16/2015	**8,000**	840 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/16/2015 DUP	**9,200**	**1,300 J**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/19/2016	**4300 J**	580 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/19/16 DUP	**6100 J**	**1900 J**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/13/2017	**9,300 J-, R**	**5,900 J-, R**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/13/17 DUP	**10,000 J-, R**	**4,100 J-, R**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	2/14/2018	**3,000**	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	2/14/2018 DUP	**3,300**	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/5/2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/10/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-5	12/9/2020	**216,000 J**	<20,000 UJ	<13.1	<4.04	<9.09	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	<4.04	3.67 J	**40.3**	<4.04	--	--	<8.08	<4.04	5.48	--	--
HC-5	4/7/2021	**7,890**	<220	<0.610 UJ	<0.134 UJ	<0.366 UJ	<0.0488 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	<0.0976 UJ	<0.0244 UJ	0.119 J-	1.36 J-	<0.0244 UJ	--	--	<0.0976 UJ	<0.159 UJ	0.202 J-	--	--
HC-5	7/8/2021	**14,000**	<215	0.871	<0.105	<0.0952	<0.0381	<0.0190	<0.0190	<0.0190	<0.0190	<0.0571	<0.0190	<0.0952	2.45	<0.0190	--	--	<0.133	<0.114	<0.171	--	--
HC-5	4/26/2022	**2,460**	<385	< 1.38	< 1.38	< 1.38	< 0.688	< 0.688	< 0.688	< 1.38	< 0.688	< 0.688	< 0.688	< 1.38	< 1.38	< 0.688	< 2.75	< 2.75	< 2.75	< 2.75	< 1.38	< 1.38	< 1.38
HC-5	8/11/2022	**3,310**	<385	< 1.33	< 1.33	< 1.33	< 0.664	< 0.664	< 0.664	< 1.33	< 0.664	< 0.664	< 0.664	< 1.33	< 1.33	< 0.664	< 2.66	< 2.66	< 2.66	< 2.66	< 1.33	< 1.33	< 1.33
HC-5	11/17/2022	**9,490**	<385	<0.378	<0.378	<0.378	<0.189	<0.189	<0.189	<0.378	<0.189	<0.189	<0.189	<0.378	<0.378	<0.189	<0.755	<0.755	<0.755	<0.755	<0.378	<0.378	<0.378
HC-5	6/20/2023	**338**	<377	<5.26	<0.362	<0.362	<0.181	<0.181	<0.181	<0.181	<0.362	<0.181	<0.181	<0.362	0.737	<0.181	<0.724	<0.724	<0.724	<0.724	<0.362	<0.362	<0.362
HC-5	12/6/2023	**1,090**	<408	<0.322	<0.322	<0.322	<0.161	<0.161	<0.161	<0.322	<0.161	<0.161	<0.161	<0.322	<0.322	<0.161	<0.645	<0.645	<0.645	<0.645	<0.322	--	<0.322
HC-5	12/3/2024	**7,580 F-11**	<400	<0.667	<0.334	<0.635	<0.172	<0.172	<0.172	<0.344	<0.172	<0.172	<0.172	<0.344	<0.387	<0.172	<0.688	<0.688	<0.688	<0.688	<0.344	--	<0.344
HC-6S	4/25/2022	<194	<388	<0.0335	<0.0335	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0335	<0.0167	<0.0669	<0.0669	<0.0669	<0.0669	<0.0335	<0.0335	<0.0335
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	--	--
HC-19	2/11/2005	**9,700 J**	**1,800 J**	1.0	--	--	0.014	**0.016**	--	--	--	--	--	0.041	3.1	--	--	--	< 0.26	0.054	--	--	--
HC-19	2/11/2005 DUP	**9,700 J**	**2,000 J**	0.99	--	--	0.012	0.013	--	--	--	--	--	0.041	3.0	--	--	--	< 0.23	0.055	--	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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	--	--
HC-19	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-19	9/18/2007	< 236	< 472	0.775	< 0.0952	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	1.95	< 0.0952	--	--	< 0.381	< 0.0952	< 0.0952	--	--
HC-19	12/6/2007	407	< 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-19	3/10/2008	<238	<476	0.472	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.913	<0.0952	--	--	0.120	<0.0952	<0.0952	--	--
HC-19	6/12/2008	<236	<472	<0.476	<0.476	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	1.77	<0.0952	--	--	<0.143	<0.0952	<0.0952	--	--
HC-19	9/8/2008	939 Q11	<481	0.868	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	<0.385	<0.192	2.63	<0.192	--	--	<0.192	<0.192	<0.192	--	--
HC-19	12/29/2008	**3,410 Q11**	<500	0.930	<0.0952	<0.143	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	2.33	<0.0952	--	--	<0.286	<0.0952	<0.0952	--	--
HC-19	3/10/2009	326 Q11	<476	0.490	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	1.06	<0.0952	--	--	<0.0952	<0.0952	<0.0952	--	--
HC-19	6/4/2009	<236	<472	0.155	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.378	<0.0952	--	--	<0.0952	<0.0952	<0.0952	--	--
HC-19	9/9/2009	<236	<472	0.909	<0.143	<0.143	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	3.460	<0.0952	--	--	<0.286	<0.0952	<0.0952	--	--
HC-19	12/15/2009	448 Q11	<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	--	--
HC-19	3/11/2010	<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-19	6/8/2010	<236	<472	0.128	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.618	<0.0952	--	--	<0.0952	<0.0952	<0.0952	--	--
HC-19	9/17/2010	889 Q11	<400	0.379	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	1.140	<0.0952	--	--	<0.0952	<0.143	<0.0952	--	--
HC-19	12/13/2010	**1,400 Q12**	515 Q7	<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-19	6/10/2011	209 J	<400	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.189	<0.0943	0.141	<0.0943	--	--	<0.0943	<0.0943	<0.0943	--	--
HC-19	6/10/2011 DUP	253 J	<400	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.189	<0.0943	0.125	<0.0943	--	--	<0.0943	<0.0943	<0.0943	--	--
HC-19	12/2/2011	**1,260 Q11**	73.2 J	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.192	<0.0962	0.460	<0.0962	--	--	<0.0962	<0.0962	<0.0962	--	--
HC-19	12/2/2011 DUP	**1,290 Q11**	89.8 J	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.189	<0.0943	0.549	<0.0943	--	--	<0.0943	<0.0943	<0.0943	--	--
HC-19	6/11/2012	450 O11	<400	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.19	<0.095	0.10	<0.095	--	--	<0.095	<0.095	<0.095	--	--
HC-19	6/11/2012 DUP	<400	<400	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.19	<0.095	0.12	<0.095	--	--	<0.095	<0.095	<0.095	--	--

Table C-3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH		PAHs																			
		Diesel-Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
		Concentration in µg/L																					
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	--	--
HC-21	2/11/2005	**13,000 J**	**3,200 J**	0.58	--	--	**3.8**	**5.7**	--	--	--	--	--	4.7	0.94	--	--	--	0.18	2.3	--	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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	--	--
HC-21	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-21	9/18/2007	261	< 472	0.247	< 0.0952	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.190	0.622	< 0.0952	--	--	< 0.190	< 0.190	< 0.190	--	--
HC-21	12/6/2007	582	< 476	< 0.0952	< 0.0952	< 0.0952	**0.0978**	**0.128**	0.116	0.0994	0.106	0.114	< 0.190	0.149	< 0.0952	< 0.0952	--	--	< 0.0952	< 0.0952	0.144	--	--
HC-21	3/10/2008	<238	<476	<0.0952	<0.0952	<0.143	**0.156**	**0.194**	0.220	0.109	0.139	0.169	<0.190	0.218	<0.0952	0.117	--	--	<0.0952	<0.143	0.212	--	--
HC-21	6/12/2008	<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	--	--
HC-21	9/8/2008	<240	<481	<0.0962	<0.0962	<0.144	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.192	<0.144	0.258	<0.0962	--	--	<0.0962	<0.144	<0.144	--	--
HC-21	12/29/2008	**16,100 Q9**	<5,000	<0.190	<0.190	<0.381	<0.190	**0.269**	0.208	<0.190	<0.190	0.276	<0.381	0.279	<0.190	<0.190	--	--	1.28	<0.190	0.463	--	--
HC-21	3/10/2009	569 Q11	< 476	0.336	<0.0952	<0.0952	<0.0952	**0.0619 J**	0.0566 J	<0.0952	0.054 J	<0.0952	<0.190	<0.0952	1.18	<0.0952	--	--	<0.0952	<0.0952	0.0939 J	--	--
HC-21	6/4/2009	**5,070 Q11**	802	0.309	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.77	<0.0952	--	--	<0.0952	0.099	0.144	--	--
HC-21	9/9/2009	559 Q11	<476	0.284	<0.0952	<0.143	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	0.121	1.19	<0.0952	--	--	<0.429	<0.143	0.171	--	--
HC-21	12/15/2009	**3,110 Q11**	<472	<0.190	<0.190	<0.190	<0.190	**0.216**	<0.190	0.196	<0.190	<0.190	<0.381	0.194	<0.190	<0.190	--	--	<0.190	<0.190	0.222	--	--
HC-21	3/11/2010	387 Q11	<476	<0.476	<0.476	<0.476	<0.476	<0.476	<0.476	<0.476	<0.476	<0.476	<0.952	<0.476	<0.476	<0.476	--	--	<0.476	<0.476	<0.476	--	--
HC-21	6/8/2010	246 Q11	<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	--	--
HC-21	9/16/2010	**1,480 Q11**	133 J	<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-21	12/13/2010	**2,080 Q12**	631 Q7	<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-21	6/9/2011	**1,110 Q11**	102 J	<0.0943	<0.0943	<0.0943	**0.314**	**0.396**	0.343	0.341	0.331	0.340	<0.189	0.409	<0.0943	0.306	--	--	<0.0943	0.217	0.506	--	--
HC-21	12/1/2011	**6,890 Q11**	**1,010**	<0.0943	<0.0943	<0.189	**0.120**	**0.185**	0.165	0.171	0.128	0.140	<0.189	0.181	<0.0943	0.139	--	--	<0.0943	<0.0943	0.217	--	--
HC-21	6/11/2012	**1,300 Q11**	<400	<0.095	<0.095	<0.095	<0.095	**0.099**	0.098	<0.095	<0.095	<0.095	<0.019	0.11	<0.095	<0.095	--	--	<0.095	<0.095	0.096	--	--
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	--	--
HC-24	2/11/2005	**4,500 J**	970 J	1.2	--	--	**0.11**	**0.15**	--	--	--	--	--	0.18	**5.4**	--	--	--	< 0.55	1.8	--	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	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	--	--
HC-24	6/27/2007[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-24	9/18/2007	436	< 472	1.05	< 0.286	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	3.53	< 0.0952	--	--	< 1.14	1.92	0.12	--	--
HC-24	12/6/2007	676	< 476	1.32	< 0.476	< 0.190	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.0952	< 0.190	< 0.0952	**4.71**	< 0.0952	--	--	< 0.476	3.72	< 0.0952	--	--
HC-24	3/10/2008	**2,270**	<476	2.3	<0.952	<0.952 Q10	<0.952	<0.952	<0.952	<0.952	<0.952	<0.952	<1.90	<0.952	**7.08**	<0.952	--	--	<1.43	**6.64**	<0.952	--	--
HC-24	6/12/2008	**1,150**	<472	1.51	<0.286	<0.143	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	**4.99**	<0.0952	--	--	<0.429	3.42	<0.0952	--	--
HC-24	9/9/2008	459 Q9	<481	1.22	<0.192	0.117	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.192	<0.0962	**4.74**	<0.0962	--	--	<0.481	0.759	<0.0962	--	--
HC-24	12/29/2008	**2,780 Q9**	<500	1.29	<0.238	0.121	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	**4.42**	<0.0952	--	--	<0.476	3.04	<0.0952	--	--
HC-24	3/10/2009	--[9]	--[9]	1.54	<0.238	<0.143	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	**5.06**	<0.0952	--	--	<1.33	1.05	<0.0952	--	--
HC-24	6/4/2009	**1,100**	<476	1.13	<0.190	<0.190	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	3.64	<0.0952	--	--	<0.524	1.69	<0.0952	--	--
HC-24	9/9/2009	**2,840 Q9**	<472	0.991	<0.143	<0.333	**1.220**	**1.630**	1.610	1.230	1.340	1.340	0.365	1.960	**4.23**	1.07	--	--	<0.571	1.64	1.66	--	--
HC-24	12/15/2009	**2,900 Q9**	<472	1.50	<0.476	0.507	<0.190	<0.190	<0.190	<0.190	<0.190	<0.190	<0.381	<0.190	**6.46**	<0.190	--	--	<1.24	3.46	<0.190	--	--
HC-24	3/11/2010	781 Q9	<476	1.21	<0.381	<0.381	<0.381	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.381	<0.190	3.31	<0.0952	--	--	<1.33	<0.381	<0.381	--	--
HC-24	6/8/2010	**1,340 Q9**	<472	1.69	<0.238	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	**4.75**	<0.0952	--	--	<0.571	1.580	<0.0952	--	--
HC-24	9/16/2010[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-24	12/13/2010[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-24	6/9/2011	**2,270 Q9**	<400	0.528	<0.377	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.189	<0.0943	0.959	<0.0943	--	--	<0.236	<0.0943	<0.0943	--	--
HC-24	6/12/2012	**2,200 Q11**	<400	1.1	<0.48	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.19	<0.095	2.7	<0.095	--	--	<0.48	0.57	<0.095	--	--

Table C-3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH		PAHs																			
		Diesel-Range	Residual-Range	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
		Concentration in µg/L																					
BE-1	6/6/2005	**3,500 Y**[8]	**2,300 O**[8]	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	--	--
BE-1	9/15/2005	172 J[8]	< 515[8]	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	--	--
BE-1	12/7/2005	430[8]	< 400[8]	< 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	--	--
BE-1	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	--	--
BE-1	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	--	--
BE-1	9/20/2006	< 357	< 714	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-1	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	--	--
BE-1	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	--	--
BE-1	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-1	9/18/2007	598	< 1,000	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.0333	< 0.050	0.0791	< 0.0333	--	--	0.498	0.145	0.0598	--	--
BE-1	12/6/2007	< 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	--	--
BE-1	3/12/2008	449	<500	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.0943	<0.189	0.101	<0.0943	<0.0943	--	--	<0.0943	<0.0943	0.145	--	--
BE-1	6/12/2008	<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	--	--
BE-1	9/9/2008	190 Q11	<588	<0.357	<0.357	<0.357	<0.357	<0.357	<0.357	<0.357	<0.357	<0.357	<0.714	<0.357	<0.357	<0.357	--	--	<0.357	<0.357	<0.357	--	--
BE-1	12/29/2008	377 Q9	<500	<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	--	--
BE-1	3/9/2009	<236	<472	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	<0.0971	<0.0971	<0.0971	--	--	<0.0971	<0.0971	<0.0971	--	--
BE-1	6/5/2009	<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	--	--
BE-1	9/9/2009	<250	<500	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	<0.0971	<0.0971	<0.0971	--	--	0.141	<0.0971	<0.0971	--	--
BE-1	12/15/2009	<236	<472	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.192	<0.0962	<0.0962	<0.0962	--	--	<0.0962	<0.0962	<0.0962	--	--
BE-1	3/11/2010	<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	--	--
BE-1	6/8/2010	<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	--	--
BE-1	9/16/2010	380	<400	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	0.252	<0.0952	--	--	<0.0952	0.229	<0.0952	--	--
BE-1	12/13/2010	**1,340 Q12**	345 J	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	<0.0971	<0.0971	<0.0971	--	--	<0.0971	<0.0971	<0.0971	--	--
BE-1	6/21/2011	91.8 J	78.8 J	<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	--	--
BE-1	12/1/2011	319 Q11 J	<400	<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	--	--
BE-1	6/12/2012	<400	<400	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.20	<0.099	<0.099	<0.099	--	--	<0.099	<0.099	<0.099	--	--
BE-1	12/19/2012	<400	<400	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	--	--
BE-1	12/17/2013	220 Y	<250	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.096	<0.19	<0.096	<0.096	<0.096	--	--	<0.096	<0.096	<0.096	--	--
BE-1	12/11/2014	**1,200 Y**	420 Y	<0.020	<0.020	<0.020	<0.020	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.024	<0.020	0.022	--	--	0.050	<0.020	0.032	--	--
BE-1	12/15/2015	180	<250	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	--	--	0.058 H	<0.020 H	<0.020 H	--	--
BE-1	12/19/2016	1,000	280	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--	--	<0.040	<0.020	0.029 B	--	--
BE-1	12/14/2017	**1,900 R**	890 R	<0.041	<0.041	<0.10	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	--	--	<0.041	<0.041	<0.041	--	--
BE-1	2/14/2018	<110	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-1	12/5/2018	**19,000 J-**	**2,900 J-**	<0.019 H	<0.019 H	0.061 J-, H	<0.019 H	<0.019 H	<0.019 H	<0.019 H	<0.019 H	<0.019 H	<0.019 H	<0.019 H	0.019 J-, H	<0.019 H	--	--	<0.019 H	0.022 J-, H	<0.019 H	--	--
BE-1	1/16/2019	430	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-1	5/16/2019	66 J	<91	0.025 J	<0.0086	0.026 J	<0.013	<0.01	<0.01	<0.011	<0.011	<0.015	<0.025	<0.048	0.061 J	<0.025	--	--	0.04 J	0.07 J	<0.031	--	--
BE-1	12/9/2019	170	<330	0.023 J,B	<0.049	<0.098	<0.049	<0.098	<0.049	<0.049	<0.049	<0.098	<0.098	<0.20	0.031 J,B	<0.049	--	--	0.048 J	<0.098	0.049 J	--	--
BE-1	12/9/2020	**2,920 J**	286 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-1	12/22/2021	139 J	<189	<0.0743	<0.0743	<0.149	<0.0372	<0.0372	<0.0372	<0.0743	<0.0372	<0.0372	<0.0372	<0.0743	<0.0743	<0.0372	--	--	<0.149	<0.149	<0.0743	--	--
BE-1	4/26/2022	262	<400	<0.0457	<0.0457	<0.0457	<0.0228	<0.0228	<0.0228	<0.0457	<0.0228	<0.0228	<0.0228	<0.0457	<0.0457	<0.0228	<0.0914	<0.0914	<0.0914	<0.0914	<0.0457	<0.0457	<0.0457
BE-1	8/15/2022	313	<381	<0.0361	<0.0361	<0.0452	<0.0181	<0.0181	<0.0181	<0.0361	<0.0181	<0.0181	<0.0181	<0.0361	<0.0361	<0.0181	<0.0722	<0.0722	0.122	<0.0722	<0.0361	<0.0361	<0.0361
BE-1	12/14/2022	<190	<381	<0.0447	<0.0447	<0.0559	<0.0224	<0.0224	<0.0224	<0.0447	<0.0224	<0.0224	<0.0224	<0.0447	<0.0447	<0.0224	0.103	0.114	0.182	<0.0895	<0.0447	<0.0447	<0.0447
BE-1	6/20/2023	<190	<381	<0.0403	<0.039	<0.0464	<0.0195	<0.0195	<0.0195	<0.0195	<0.0390	<0.0195	<0.0195	<0.0390	<0.0390	<0.0195	<0.0781	<0.0781	<0.0781	<0.0781	<0.0390	<0.0390	<0.0390
BE-1	12/6/2023	<208	<417	<0.0441	<0.0441	<0.0441	<0.0221	<0.0221	<0.0221	<0.0441	<0.0221	<0.0221	<0.0221	<0.0441	<0.0441	<0.0221	<0.0883	<0.0883	<0.0883	<0.0883	<0.0441	--	<0.0441
BE-1	12/3/2024	<196	<392	<0.0391	<0.0391	<0.0391	<0.0195	<0.0195	<0.0195	<0.0391	<0.0195	<0.0195	<0.0195	<0.0391	<0.0391	<0.0195	<0.0782	<0.0782	0.251 M-04	<0.0782	<0.0391	--	<0.0391
BE-2	6/6/2005	660 Y[8]	290 J[8]	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	--	--
BE-2	9/15/2005	**1,150 J**[8]	457[8]	< 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	--	--
BE-2	12/7/2005	**2,610**[8]	**1,120**[8]	< 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	--	--
BE-2	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	--	--
BE-2	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	--	--
BE-2	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	--	--
BE-2	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	--	--
BE-2	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	--	--
BE-2	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-2	9/18/2007	<236	<472	< 0.0952	< 0.0952	< 0.0952	**0.292**	**0.354**	0.332	0.554	0.322	0.376	< 0.190	0.525	< 0.0952	0.427	--	--	0.105	0.246	0.815	--	--
BE-2	12/6/2007	709	< 476	< 0.0952	< 0.0952	< 0.0952	**0.389**	**0.485**	0.411	0.458	0.355	0.491	< 0.190	0.802	< 0.0952	0.371	--	--	0.125	0.282	0.769	--	--
BE-2	3/12/2008	<238	<476	<0.189	<0.189	<0.189	**0.915**	**1.10**	1.10	0.974	0.765	0.982	<0.377	1.62	<0.189	0.801	--	--	<0.189	0.54	1.73	--	--
BE-2	6/12/2008	674 Q11	<472	<0.0952	<0.0952	<0.0952	**0.211**	**0.261**	0.233	0.212	0.200	0.250	<0.190	0.370	<0.0952	0.180	--	--	<0.0952	0.135	0.542	--	--
BE-2	9/9/2008	495 Q11	<100	<0.05	<0.05	<0.05	**0.097**	**0.111**	0.101	0.114	0.0846	0.124	<0.050	0.132	<0.050	0.0884	--	--	<0.050	<0.050	0.198	--	--
Well Destroyed																							

Table C-3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH		PAHs																			
		Diesel-Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
		Concentration in µg/L																					
BE-3	6/6/2005	640 Y[8]	1,000 Q[8]	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	--	--
BE-3	9/15/2005	159 J[8]	<500[8]	< 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	--	--
BE-3	12/7/2005	<500[8]	<1,000[8]	< 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	--	--
BE-3	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	--	--
BE-3	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	--	--
BE-3	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	--	--
BE-3	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	--	--
BE-3	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	--	--
BE-3	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-3	9/18/2007	210	< 1,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-3	12/6/2007	371	< 806	0.0460	< 0.0333	0.0680	**0.434**	**0.604**	0.655	0.503	0.439	0.540	< 0.167	1.10	< 0.0667	0.407	--	--	0.199	0.316	0.538	--	--
BE-3	3/12/2008	634 QP, Q11	<714	<0.50	<0.50	<0.10	**0.212**	**0.269**	0.281	0.285	0.186	0.232	<0.20	0.364	<0.50	0.22	--	--	0.228	0.14	0.253	--	--
BE-3	6/12/2008	787 Q9	<472	<0.118	<0.118	<0.118	**0.302**	**0.358**	0.360	0.272	0.291	0.340	<0.235	0.476	<0.118	0.242	--	--	<0.118	0.235	0.578	--	--
BE-3	9/9/2008	264 Q11	<833	<0.100	<0.100	<0.100	<0.100	<0.100	0.104	<0.100	<0.100	0.175	<0.100	<0.100	<0.100	<0.100	--	--	<0.100	<0.100	<0.100	--	--
BE-3	12/29/2008	563 Q11	<746	<0.111	<0.111	<0.111	<0.111	<0.111	<0.111	<0.111	<0.111	<0.111	<0.222	<0.111	<0.111	<0.111	--	--	<0.111	<0.111	<0.111	--	--
BE-3	3/9/2009	<133	<833	<0.182	<0.182	<0.182	<0.182	<0.182	<0.182	<0.182	<0.182	<0.182	<0.364	0.120 J	<0.182	<0.182	--	--	<0.182	<0.182	0.0915 J	--	--
BE-3	6/5/2009	<248	<495	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.198	<0.0990	<0.0990	<0.0990	--	--	<0.0990	<0.0990	<0.0990	--	--
BE-3	9/9/2009	--	--	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	<0.100	<0.100	--	--	0.100	<0.100	<0.100	--	--
BE-3	12/15/2009	--	--	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	<0.0971	<0.0971	<0.0971	--	--	<0.0971	<0.0971	<0.0971	--	--
BE-3	3/11/2010	164 Q11	<1,000	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.0990	<0.198	<0.0990	<0.0990	<0.0990	--	--	<0.0990	<0.0990	<0.0990	--	--
BE-3	6/8/2010	295 Q11	<495	<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	--	--
BE-3	9/16/2010	153 B	<400	<0.133	<0.133	<0.133	<0.133	<0.133	<0.133	<0.133	<0.133	<0.133	<0.267	<0.133	0.171	<0.133	--	--	<0.133	0.193	<0.133	--	--
BE-3	12/13/2010	757 Q12	226 J	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.0971	<0.194	<0.0971	<0.0971	<0.0971	--	--	<0.0971	<0.0971	<0.0971	--	--
BE-3	6/9/2011	190 J	<400	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.0962	<0.192	<0.0962	<0.0962	<0.0962	--	--	<0.0962	<0.0962	<0.0962	--	--
BE-3	12/1/2011	762 Q11	353 J	<0.100	<0.100	<0.100	**0.165**	**0.189**	0.198	0.168	0.135	0.206	<0.200	0.226	<0.100	0.135	--	--	<0.100	<0.100	0.251	--	--
BE-3	6/11/2012	<400	<400	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.22	<0.11	<0.11	<0.11	--	--	<0.11	<0.11	<0.11	--	--
BE-3	12/19/2012	<400	<400	<0.10	<0.10	<0.10	**0.22**	**0.25 B**	0.19	0.15	0.14	0.23	<0.20	0.27	<0.10	0.17	--	--	<0.10	0.14	0.31	--	--
BE-3	12/17/2013	150 Y	<250	<0.095	<0.095	<0.095	<0.095	**0.110**	<0.095	<0.095	<0.095	<0.095	<0.19	<0.095	<0.095	0.110	--	--	<0.095	<0.095	0.110	--	--
BE-3	12/11/2014	740 Y	280 Y	<0.021	<0.021	<0.021	**0.036**	**0.044**	0.062	0.048	0.025	0.046	<0.021	0.046	0.043	0.057	--	--	0.065	0.030	0.064	--	--
BE-3	12/15/2015	170	<250	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	--	--	0.022 H	<0.020 H	<0.020 H	--	--
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	--	--
BE-4	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	--	--
BE-4	12/7/2005[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	3/13/2006[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	6/28/2006[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	9/20/2006[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	12/13/2006[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	3/30/2007[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	6/27/2007[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	9/18/2007[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	12/6/2007[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	9/8/2008[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	12/29/2008[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	03/9/2009[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	06/5/2009[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	09/9/2009[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	12/15/2009[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	3/11/2010[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	6/8/2010[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	9/16/2010[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	12/13/2011[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-4	6/9/2011[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-5	9/9/2009	<263	<526	<0.0952	<0.0952	<0.0952	**0.184**	**0.217**	0.194	0.166	0.174	0.216	<0.190	0.388	<0.0952	0.135	--	--	<0.238	<0.238	0.422	--	--
BE-5	12/15/2009	<236	<472	<0.0952	<0.0952	<0.0952	**0.186**	**0.214**	0.187	0.184	0.160	0.198	<0.190	0.352	<0.0952	0.152	--	--	<0.286	<0.238	0.382	--	--
BE-5	3/11/2010	<238	<476	<0.0952	<0.0952	<0.0952	<0.0952	**0.102**	<0.0952	<0.0952	<0.0952	0.098	<0.190	0.141	<0.0952	<0.0952	--	--	<0.0952	<0.0952	0.174	--	--
BE-5	6/8/2010	247 Q11	<472	<0.0952	<0.0952	<0.0952	**0.151**	**0.175**	0.147	0.141	0.129	0.175	<0.190	0.284	<0.0952	0.116	--	--	<0.0952	0.112	0.318	--	--
BE-5	9/16/2010	**1,670 Q9**	359 J	<0.0952	<0.0952	0.0963	**0.214**	**0.274**	0.252	0.226	0.203	0.259	<0.190	0.463	0.176	0.187	--	--	<0.143	0.316	0.499	--	--
BE-5	12/13/2010	659 Q12	354 J	<0.0952	<0.0952	<0.0952	**0.163**	**0.223**	0.203	0.184	0.165	0.211	<0.190	0.338	<0.0952	0.141	--	--	<0.0952	0.131	0.356	--	--
BE-5	6/9/2011	182 J	<400	<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	--	--
BE-5	12/1/2011	**1,430 Q11**	140 J	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.118	<0.235	<0.118	<0.118	<0.118	--	--	<0.118	<0.118	0.155	--	--
BE-5	6/11/2012	610 Q11	<400	<0.095	<0.095	<0.095	**0.16**	**0.21**	0.19	0.16	0.18	0.20	<0.19	0.29	<0.095	0.13	--	--	<0.095	0.15	0.37	--	--
BE-5	12/19/2012	<400	<400	<0.098	<0.098	<0.098	**0.26**	**0.31 B**	0.25	0.28	0.19	0.27	<0.20	0.35	<0.098	0.33	--	--	<0.098	0.17	0.45	--	--
BE-5	12/17/2013	210 Y	<240	<0.095	<0.095	<0.14	<0.095	**0.12**	<0.095	<0.095	<0.095	<0.095	<0.19	<0.095	<0.14	0.11	--	--	<0.095	<0.095	0.12	--	--
BE-5	12/11/2014	**2,700 Y**	**1,600 Y**	0.042	0.020	0.058	**0.16**	**0.20**	0.260	0.180	0.100	0.190	0.043	0.290	0.037	0.22	--	--	0.11	0.12	0.31	--	--
BE-5	12/15/2015	150	<250	<0.020 H	<0.020 H	<0.020 H	**0.049 H**	**0.042 H**	0.10 H	0.070 H	0.029 H	0.062 H	<0.020 H	0.095 H	<0.020 H	0.059 H	--	--	0.022 H	0.040 H	0.10 H	--	--
BE-5	12/19/2016	770	450	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	--	--	<0.04	<0.02	0.023 B	--	--
BE-5	12/14/2017	**6,800 QP, R**	**4,800 QP, R**	<0.041	<0.041	<0.10	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	--	--	<0.041	<0.041	<0.041	--	--
BE-5	2/14/2018	<110	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-5	12/5/2018	**6,000**	**3,100**	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	--	--	<0.19 H	<0.19 H	<0.19 H	--	--
BE-5	5/16/2019	**3,800**	840	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-5	12/9/2019	280	<340	0.019 J,B	<0.051	0.130	**0.033 J**	**0.026 J**	0.028 J	0.029 J	0.012 J	0.024 J	<0.10	<0.20	0.031 J,B	0.032 J	--	--	0.068 J	0.087 J	<0.10	--	--
BE-5	12/9/2020	240	<381	0.0836	0.0391	0.0966	**0.463**	**0.697**	0.892	0.537	0.263 J	0.566	0.0961	0.837	0.0552	0.524	--	--	0.0927	0.282	0.960	--	--
BE-5	12/22/2021	<93.5	<187	<0.0184	<0.0184	<0.0184	0.0170 J	**0.0276 J+**	0.0258	0.0207 J	0.00966 J	0.0124 J	<0.00920	0.0184 J+	<0.0184	0.0147 J	--	--	<0.0368	<0.0368	<0.0184	--	--
BE-5	4/26/2022	<211	<421	<0.135	<0.135	<0.135	<0.0673	<0.0673	<0.0673	<0.135	<0.0673	<0.0673	<0.0673	<0.135	<0.135	<0.0673	<0.269	<0.269	<0.269	<0.269	<0.135	<0.135	<0.135
BE-5	8/15/2022	<192	<385	<0.0326	<0.0326	<0.0326	<0.0163	0.00857	0.016	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0714	0.0098	<0.102	<0.0653	0.182	<0.0816	0.024	<0.0816	<0.0326
BE-5	12/14/2022	<192	<385	<0.0329	<0.0329	<0.0329	<0.0165	<0.0165	<0.0165	<0.0329	<0.0165	<0.0165	<0.0165	<0.0329	<0.0329	<0.0165	<0.0659	<0.0659	0.231	<0.0659	<0.0329	<0.0329	<0.0329
BE-5	6/20/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BE-5	12/6/2023	<192	<385	<0.0323	<0.0323	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0323	<0.0161	<0.0646	<0.0646	<0.0646	<0.0646	<0.0323	--	<0.0323
BE-5	12/3/2024	<206	<412	<0.0345	<0.0345	<0.0388	<0.0173	<0.0173	<0.0173	<0.0345	<0.0173	<0.0173	<0.0173	<0.0345	<0.0345	<0.0173	<0.0690	<0.0690	0.0919 M-04	<0.0690	<0.0345	--	<0.0345

Table C-3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Well ID	Date	TPH		PAHs																			
		Diesel-Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
		Concentration in µg/L																					
HC-12D	11/13/1998	--	--	<1.00	<1.00	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	<1.00	<0.100	--	--	<1.00	<0.500	<0.100	--	--
HC-12D	2/16/1999	--	--	<5.00	<1.00	<2.00	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<1.00	5.210	<0.100	--	--	<1.00	8.190	<1.00	--	--
HC-12D	5/18/1999	--	--	0.31	<0.100	<1.00	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.200	<0.100	<10.0	<0.100	--	--	<1.00	<1.00	<0.100	--	--
HC-12D	8/25/1999	--	--	0.40	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.200	<0.1	--	--	0.200	<0.1	<0.1	--	--
HC-12D	12/12/2014	**2,200 Y**	290 Y	0.50	<0.02	<0.02	0.020	<0.02	0.023	0.021	<0.02	0.021	0.021	<0.02	0.360	0.03	--	--	0.120	0.072	<0.02	--	--
HC-12D	12/16/2015	440	<250	0.22 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	<0.020 H	--	--	<0.020 H	<0.020 H	<0.020 H	--	--
HC-12D	12/19/2016	**1,200**	<250	0.26	<0.02	<0.02	<0.02	<0.02	0.021	<0.02	<0.03	<0.02	<0.02	0.049	<0.02	<0.02	--	--	0.075	<0.02	0.052 B	--	--
HC-12D	12/13/2017	**3,800 R**	**1,200 R**	0.39	0.035	<0.047	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	0.091	<0.019	--	--	0.210	0.050	<0.019	--	--
HC-12D	2/14/2018	**640**	<350	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-12D	12/5/2018	**2,600**	<350	0.39 J-, H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	--	--	<0.19 H	<0.19 H	<0.19 H	--	--
HC-12D	12/5/2018 DUP	**2,000**	<360	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-12D	12/5/2018	**2,600**	<350	0.39 J-, H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	<0.19 H	--	--	<0.19 H	<0.19 H	<0.19 H	--	--
HC-12D	12/5/2018 DUP	**2,000**	<360	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-12D	12/10/2019	780 D	<330	0.39	<0.047	0.081 J	0.018 J,B	**0.017 J**	0.018 J,B	0.016 J,B	0.015 J,B	0.018 J	<0.094	<0.19	<0.094	0.019 J,B	--	--	0.063 J	0.051 J	<0.094	--	--
HC-12D	12/10/19 DUP	500 D	<330	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HC-12D	12/9/2020	227	<381	0.375	<0.0400	<0.0500	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.0400	<0.270	<0.0400	--	--	<0.160	<0.0400	<0.0400	--	--
HC-12D	12/9/20 DUP	218	<381	0.422	<0.0408	<0.0510	<0.0408	<0.0408	<0.0408	<0.0408	<0.0408	<0.0408	<0.0408	<0.0408	<0.224	<0.0408	--	--	<0.143	<0.0408	<0.0408	--	--
HC-12D	12/22/2021	170 J	<189	0.417	<0.0739	<0.0739	<0.0369	<0.0369	<0.0369	<0.0739	<0.0369	<0.0369	<0.0369	<0.0739	<0.462	<0.0369	--	--	<0.296	<0.296	<0.0739	--	--
HC-12D	4/25/2022	<196	<392	0.779	<0.399	<0.399	<0.200	<0.200	<0.200	<0.399	<0.200	<0.200	<0.200	<0.399	<0.399	<0.200	<0.799	<0.799	<0.799	<0.799	<0.399	<0.399	<0.399
HC-12D	4/25/2022 DUP	<190	<381	0.738	<0.070	<0.128	<0.0187	<0.0187	<0.0187	<0.0374	<0.0187	<0.0187	<0.0187	<0.0374	<0.502	<0.0187	<0.0747	<0.0747	<0.467	<0.175	<0.0374	<0.0700	<0.0374
HC-12D	8/11/2022	209	<396	0.929	<0.0667	<0.356	<0.0178	<0.0178	<0.0178	<0.0356	<0.0178	<0.0178	<0.0178	<0.0356	<0.578	<0.0178	<0.156	<0.100	<0.656	<0.311	<0.0356	<0.0356	<0.0356
HC-12D	11/17/2022	<190	<381	0.472	<0.0532	<0.177	<0.0198	<0.0198	<0.0198	<0.0396	<0.0198	<0.0198	<0.0198	<0.0396	<0.459	<0.0198	<0.0792	<0.0792	<0.404	<0.155	<0.0396	<0.160	<0.0396
HC-12D	6/20/2023	<190	<381	0.895	<0.535	<0.920	<0.0199	<0.0199	<0.0199	<0.0199	<0.0398	<0.0199	<0.0199	<0.0398	<0.522	<0.0199	<0.116	<0.0796	<0.529	<0.284	<0.0398	<0.111	<0.0423
HC-12D	12/6/2023	<189	<377	0.582	<0.370	<0.370	<0.185	<0.185	<0.185	<0.370	<0.185	<0.185	<0.185	<0.370	<0.370	<0.185	<0.739	<0.739	<0.739	<0.739	<0.370	--	<0.370
HC-12D	12/6/2023 DUP	<189	<377	0.656	<0.375	<0.375	<0.187	<0.187	<0.187	<0.375	<0.187	<0.187	<0.187	<0.375	<0.375	<0.187	<0.750	<0.750	<0.750	<0.750	<0.375	--	<0.375
HC-12D	12/3/2024	<208	<417	<0.534	<0.407	<0.407	<0.203	<0.203	<0.203	<0.407	<0.203	<0.203	<0.203	<0.407	<0.420	<0.203	<0.814	<0.814	<0.814	<0.814	<0.407	--	<0.407
HC-12D	12/3/2024 DUP	<215	<430	<0.593	<0.404	<0.404	<0.202	<0.202	<0.202	<0.404	<0.202	<0.202	<0.202	<0.404	<0.404	<0.202	<0.808	<0.808	<0.808	<0.808	<0.404	--	<0.404
ROD Compliance Criteria		**1,000**	**1,000**	**520**	**--**	**--**	**0.027**	**0.014**	**--**	**--**	**--**	**--**	**--**	**6.16**	**3.9**	**--**	**--**	**--**	**620**	**6.3**	**--**	--	--

Please refer to notes on last page of table.

Table C3
Historical Groundwater Analytical Results
Terminal 4 Slip 3 Upland Facility
Port of Portland

Notes:

1. TPH = Total Petroleum Hydrocarbons
2. PAHs = Polycyclic Aromatic Hydrocarbons
3. µg/L = micrograms per liter
4. -- = Data not available or sample not analyzed for listed analyte.
5. < = Analyte not detected above method detection limit
6. **Bold** represents detected analyte concentrations exceeding compliance criteria; note, this is provided for information purposes only.
7. Well not sampled due to presence of LNAPL in well at time of sampling.
8. Sample did not include silica gel cleanup due to inadequate sample volume.
9. Sample lost during lab extraction.
10. ROD compliance criteria is for groundwater discharge at the Slip or river and is not applicable to monitoring well data.
11. J = Result is an estimated value.
12. O = The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
13. 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 or resembles a hydrocarbon pattern for degraded fuel.
14. QP = Hydrocarbon result partly due to individual peak(s) in quantitation range.
15. Q11 = Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel.
16. Q9 = Hydrocarbon pattern most closely resembles weathered diesel.
17. B = Analyte was detected in the method blank.
18. Q12 = Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
19. H = Sample analysis re-run outside of the specified hold-time due to laboratory control issues with the initial analysis.
20. J- = Result is estimated and may be biased low.
21. R = Data does not meet Data Quality Objectives and are unusable.
22. D = The RPD between the primary sample and field duplicated exceeded the control limit.
23. F-11 = The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
24. M-04 = Due to matrix interference, this analyte cannot be accurately quantified. The reported result may contain a high bias.

Table C-4
Groundwater Analytical Results – C10-C12 Aliphatic Hydrocarbons and Metals (Total and Dissolved)
Terminal 4 Slip 3 Upland Facility
Port of Portland

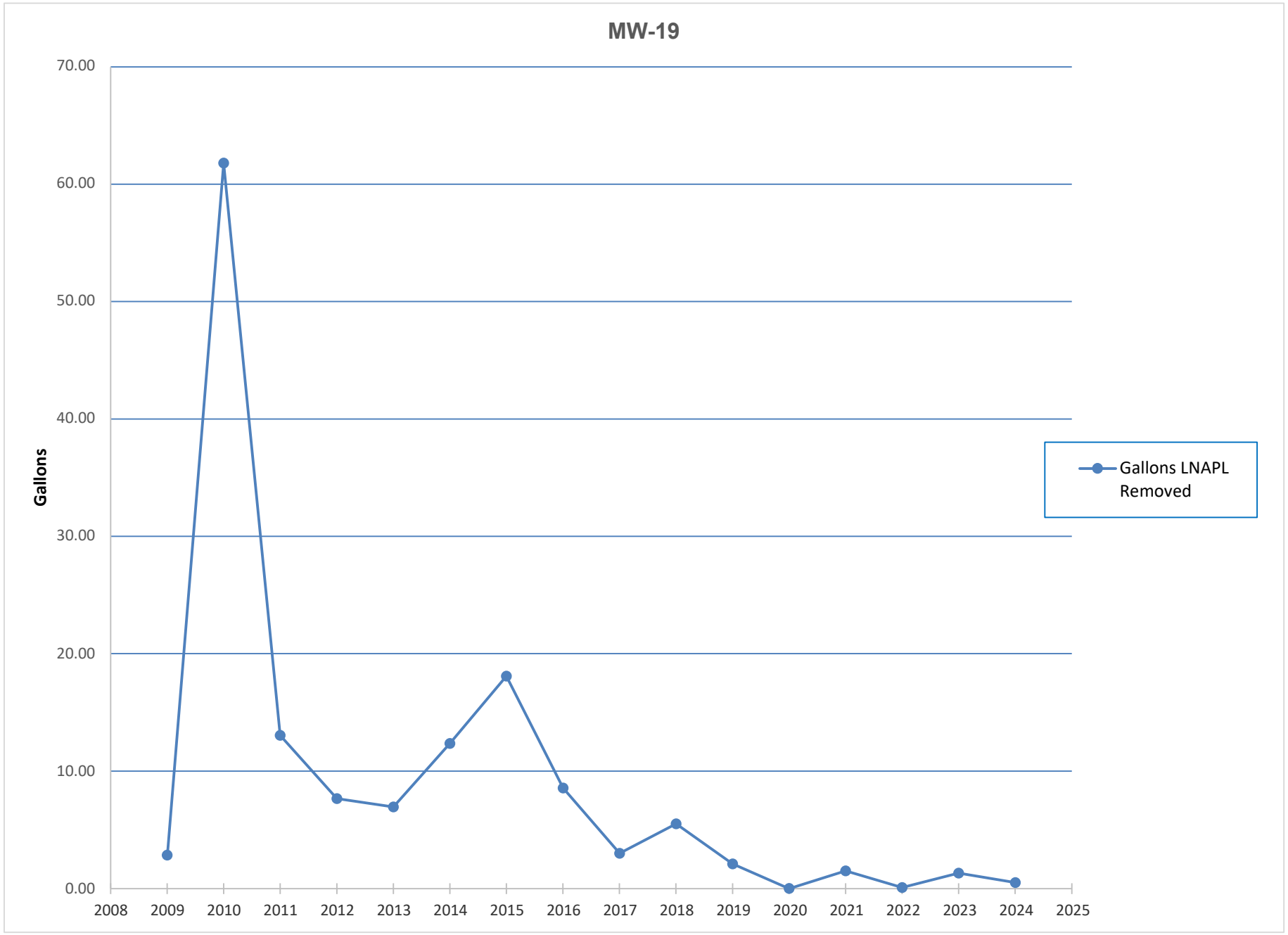
Sample ID	Sample Date	C10-C12 Aliphatic Hydrocarbons (µg/L)	Metals (µg/L)																	
			Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Vanadium		Zinc	
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
South Slip 3 Area																				
HC-2	4/25/2022	<0.13	<1.00	<1.00	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	**0.308 J+**	<0.200	**53.8**	**48.9**	<0.0800	<0.0800	<2.00	<2.00	**211 J+**	**92.2**
	8/11/2022	<20.5	<1.00	<1.00	**0.216**	<0.200	<2.00	<2.00	<2.00	<2.00	<0.200	<0.200	**17.6**	**13.8**	<0.0800	<0.0800	<2.00	<2.00	**369**	**273**
	11/17/2022	<39.5	**1.64**	**1.57**	**0.395**	**0.342**	<2.00	<2.00	<2.00	<2.00	<0.200	<0.200	**69.8**	**72.0**	<0.0800	<0.0800	<2.00	<2.00	**90.9**	**93.5**
HC-5	4/26/2022	**0.88 J**	**1.58**	**1.55**	<0.200	<0.200	<2.00	<2.00	**4.37**	<2.00	<0.200	<0.200	**771**	**779**	<0.0800	<0.0800	<2.00	<2.00	**93.3**	**82.7**
	8/11/2022	**129**	**2.60**	**1.82**	**0.171**	<0.200	<2.00	<2.00	**3.35**	**2.31**	**0.339**	**0.14**	**1,790**	**1,780**	<0.0800	<0.0800	**4.86**	**1.82**	**390**	**187**
	11/17/2022	**137**	**2.13**	**1.93**	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	**0.235**	<0.200	**1,870**	**1,780**	<0.0800	<0.0800	**5.58**	**5.31**	**699**	**683**
	6/20/2023	**3.38**	**2.36**	**2.18**	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	<0.200	<0.200	**2,060**	**1,820**	<0.0800	<0.0800	**3.66**	<2.00	**291**	**235**
	12/6/2023	<20.7	<1.00	<1.00	<0.200	<0.200	<2.00	<2.00	**4.51**	**8.45**	<0.200	**0.573**	**366**	**434**	<0.0800	<0.0800	**3.12**	**2.36**	**68.2**	**67.2**
	5/1/2024	<20.7	**1.98**	**1.44**	<0.200	<0.200	<2.00	<2.00	**2.20**	<2.00	<0.200	<0.200	**2,410**	**2,130**	<0.0800	<0.0800	**2.40**	<2.00	**286**	**281**
	12/3/2024	**45.7**	**1.08**	**1.02**	<0.200	<0.200	<2.00	<2.00	**3.22**	<2.00	0.955	<0.200	**722**	**804**	<0.0800	<0.0800	**2.23**	<2.00	**116**	**101**
HC-6S	4/25/2022	<0.13	<1.00	<1.00	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	**0.314 J+**	<0.200	**186**	**202**	<0.0800	<0.0800	<2.00	<2.00	**16.7**	**18.2**
BEBRA Area																				
BE-1	4/26/2022	<0.15	**6.24**	**10.9**	<0.200	<0.200	<2.00	<2.00	**2.00**	<2.00	**0.425 J+**	<0.20	**4,150**	**3,610**	<0.0800	<0.0800	<2.00	<2.00	**5.61**	<4.00
	8/15/2022	<20.7	**14.4**	**12.5**	<0.200	<0.200	**1.12**	<2.00	**1.28**	**3.36**	**0.715**	**0.113**	**4,050**	**3,560**	<0.0800	<0.0800	**4.17**	<2.00	**4.59**	**2.55**
	12/14/2022	<39.6	**4.99**	**6.85**	<0.200	<0.200	<2.00	<2.00	<2.00	**22.3**	**1.22**	**0.733**	**3,600**	**3,280**	<0.0800	<0.0800	<2.00	<2.00	**7.93**	**11.9**
	6/20/2023	<0.19	**12.90**	**5.89**	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	<0.200	<0.200	**4,160**	**3,480**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/6/2023	<20.2	**11.70**	**14.8**	<0.200	<0.200	**2.28**	<2.00	**4.12**	**4.62**	**2.3**	<0.200	**2,580**	**2,970**	<0.0800	<0.0800	**9.38**	<2..00	**20.2**	**4.20**
	5/1/2024	<20.5	**11.80**	**10.8**	<0.200	<0.200	<2.00	<2.00	<2.00	<2.00	<2.00	<0.200	**3,720**	**3,700**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/3/2024	<20.5	**14.90**	**12.9**	<0.200	<0.200	**2.19**	<2.00	**3.11**	<2.00	**1.87**	<0.200	**3,460**	**3,340**	<0.0800	<0.0800	**8.65**	<2.00	**12.0**	<4.00
BE-5	4/26/2022	**0.26 J**	<1.00	<1.00	**0.323**	**0.302**	<2.00	<2.00	**2.14**	**3.61**	**0.465 J+**	<0.200	**169**	**146**	<0.0800	<0.0800	<2.00	<2.00	**68.9**	**70.9**
	8/11/2022	<20.6	**7.52**	**3.06**	<0.200	<0.20	<2.00	<2.00	**1.41**	**5.78**	**0.858**	**0.175**	**3,290**	**3,000**	<0.0800	<0.0800	**3.20**	**1.89**	**6.69**	**3.75**
	12/14/2022	<39.7	<1.00	<1.00	<0.200	**0.258**	<2.00	<2.00	**19.3**	**3.59**	**0.567**	**4.56**	**16.1**	**89.3**	<0.0800	<0.0800	<2.00	**2.55**	**64.4**	**50.6**
	6/20/2023	--	**--**	**--**	--	--	--	--	**--**	**--**	**--**	**--**	**--**	**--**	--	--	**--**	**--**	**--**	**--**
	12/6/2023	<20.7	<1.00	<1.00	<0.200	<0.200	<2.00	<2.00	**2.65**	**7.02**	**1.78**	<0.200	**7.81**	**18.5**	<0.0800	<0.0800	**2.79**	<2.00	**17.1**	**15.1**
	5/1/2024	<20.6	**1.32**	<1.00	**0.379**	**0.219**	**2.50**	<2.00	**4.99**	**3.55**	**6.18**	**0.266**	**32.6**	**18.0**	<0.0800	<0.0800	**6.09**	<2.00	**79.6**	**56.8**
	12/3/2024	<20.6	<1.00	<1.00	**0.275**	**0.247**	<2.00	<2.00	**2.86**	**3.45**	**1.23**	**0.337**	**65.8**	**121**	<0.0800	<0.0800	**2.41**	**2.12**	**49.2**	**46.4**
HC-12D	4/25/2022	**6.6**	**17.2**	**17.6**	**2.38**	**0.253 J**	<2.00	<2.00	<2.00	<2.00	**0.557 J+**	<0.200	**13,100**	**12,600**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	4/25/2022 DUP-1	**4.9**	**18.0**	**16.9**	**3.56**	**0.347 J**	<2.00	<2.00	<2.00	<2.00	**0.556**	<0.200	**12,900**	**12,400**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	8/11/2022	<20.6	**19.6**	**19.8**	**4.94**	<0.200	<2.00	<2.00	**1.62**	**2.23**	**1.46**	<0.200	**12,700**	**11,400**	<0.0800	<0.0800	**2.87**	<2.00	**7.63**	**2.68**
	11/17/2022	<39.8	**18.1**	**18.3**	**3.20**	**3.11**	<2.00	<2.00	<2.00	<2.00	**1.25**	**1.230**	**14,600**	**14,900**	<0.0800	<0.0800	<2.00	<2.00	**5.58**	**8.81**
	6/20/2023	<0.19	**19.5**	**20.0**	**6.33**	<0.200	<2.00	<2.00	<2.00	**2.94**	**1.57**	<0.200	**13,600**	**12,600**	<0.0800	<0.0800	<2.00	<2.00	**7.77**	<4.00
	12/6/2023	<20.7	**14.7**	**15.1**	**8.25**	<0.200	<2.00	<2.00	<2.00	<2.00	**0.231**	<0.200	**15,300**	**14,100**	<0.0800	<0.0800	<2.00	<2.00	**5.24**	**11.2**
	12/6/2023 DUP	<20.7	**15.3**	**15.7**	**3.95**	<0.200	<2.00	<2.00	<2.00	<2.00	<0.200	<0.200	**15,100**	**14,300**	<0.0800	<0.0800	<2.00	<2.00	<4.00	**11.1**
	5/1/2024	<20.6	**20.2**	**20.7**	**1.39**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.25**	<0.200	**12,700**	**12,300**	<0.0800	<0.0800	<2.00	<2.00	**4.37 B-02**	<4.00
	5/1/2024 DUP	<20.5	**20.0**	**20.5**	**1.18**	<0.200	<2.00	<2.00	<2.00	<2.00	**2.99**	<0.200	**14,000**	**12,900**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/3/2024	<20.5	**15.5**	**16.3**	**0.581**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.01**	<0.200	**15,000**	**15,500**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/3/2024 DUP	<20.5	**14.7**	**16.0**	**0.422**	<0.200	<2.00	<2.00	<2.00	<2.00	**1.04**	<0.200	**16,000**	**14,700**	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
Portland Harbor ROD Cleanup Levels		2.6	0.018		0.094		11		2.74		0.54		430		NA		20		36.5	

Notes:

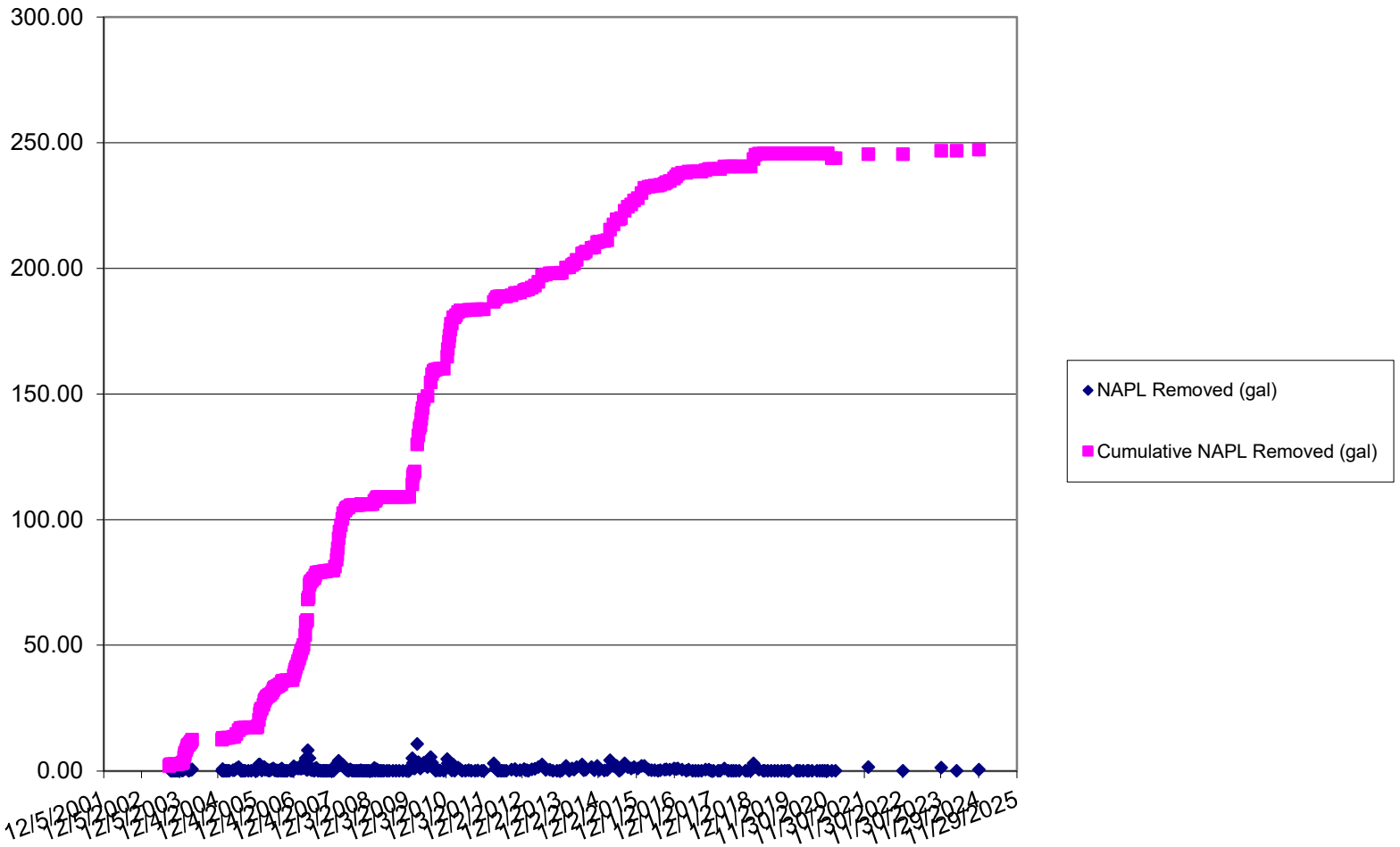
1. < = Analyte was not detected above the minimum reporting limit.
2. µg/L = Micrograms per liter.
3. J = Result is estimated.
4. J+ = Result is estimated and may be biased high.
5. Boldface data represents detected analyte concentration.
6. NA = No screening level is established.
7. DUP = Field duplicate.
8. -- = Analyte was not tested.

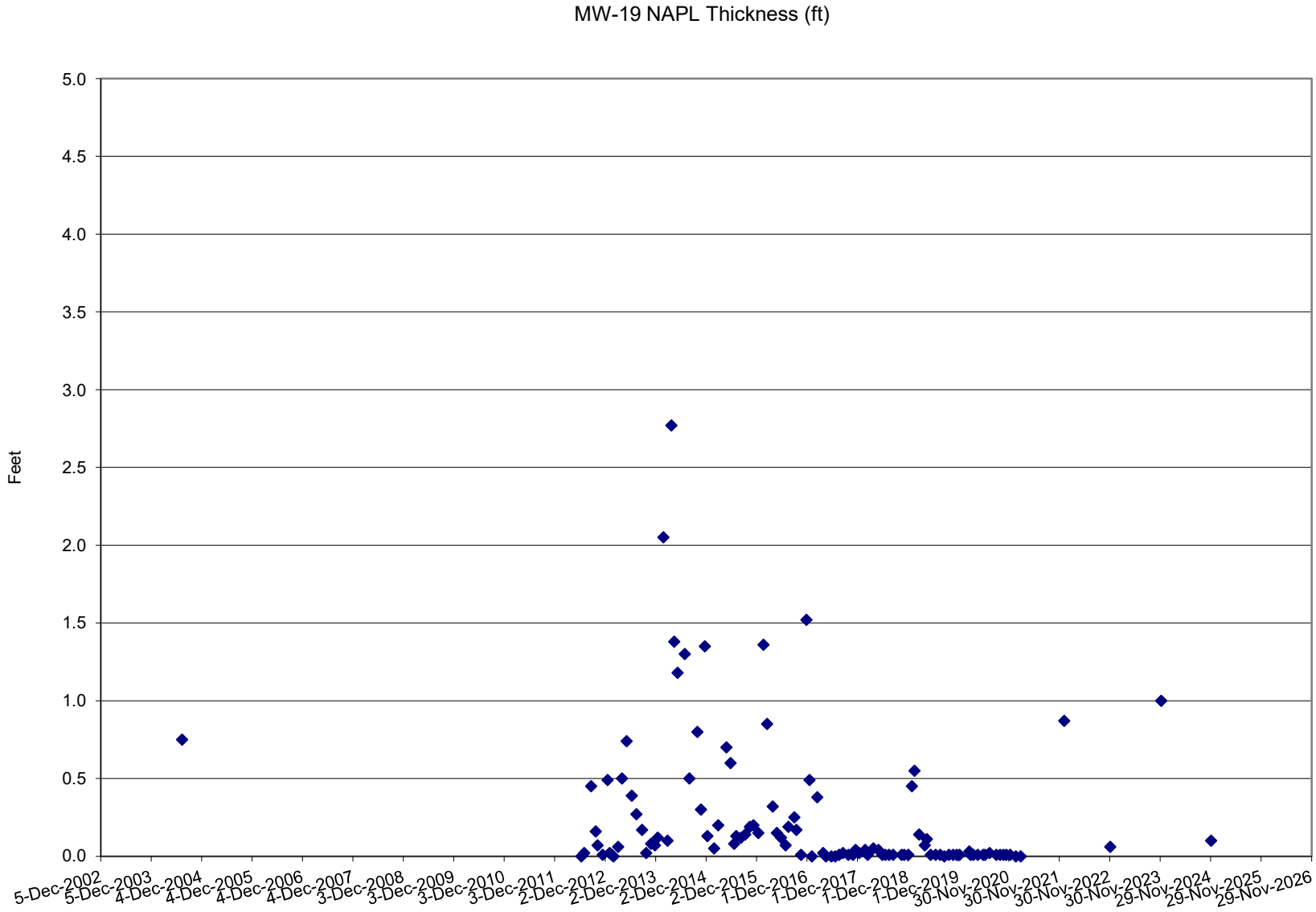
Appendix D

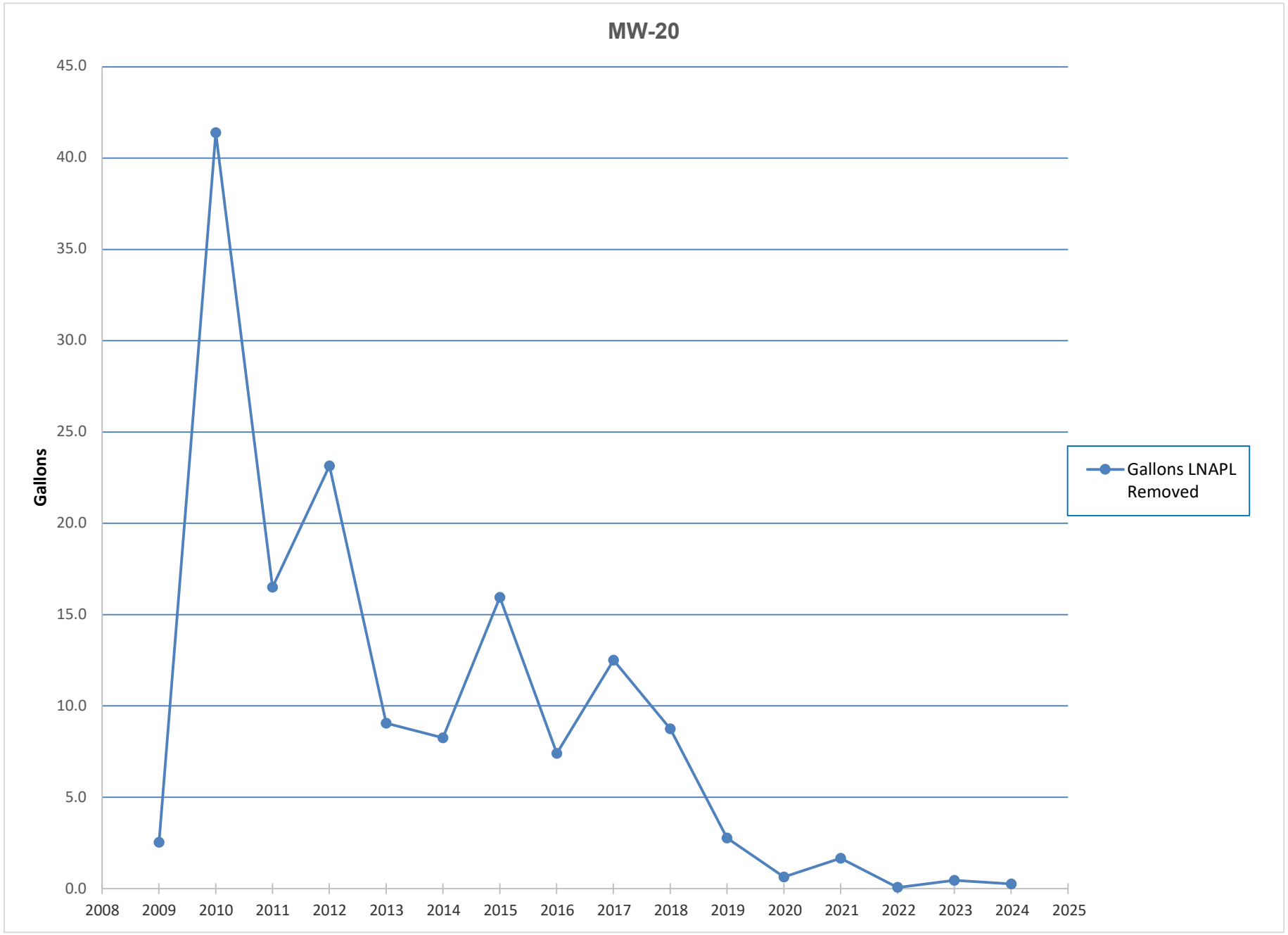
LNAPL Thickness and Recovery Trend Plots


MW-19
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Gallons
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Gallons LNAPL Removed

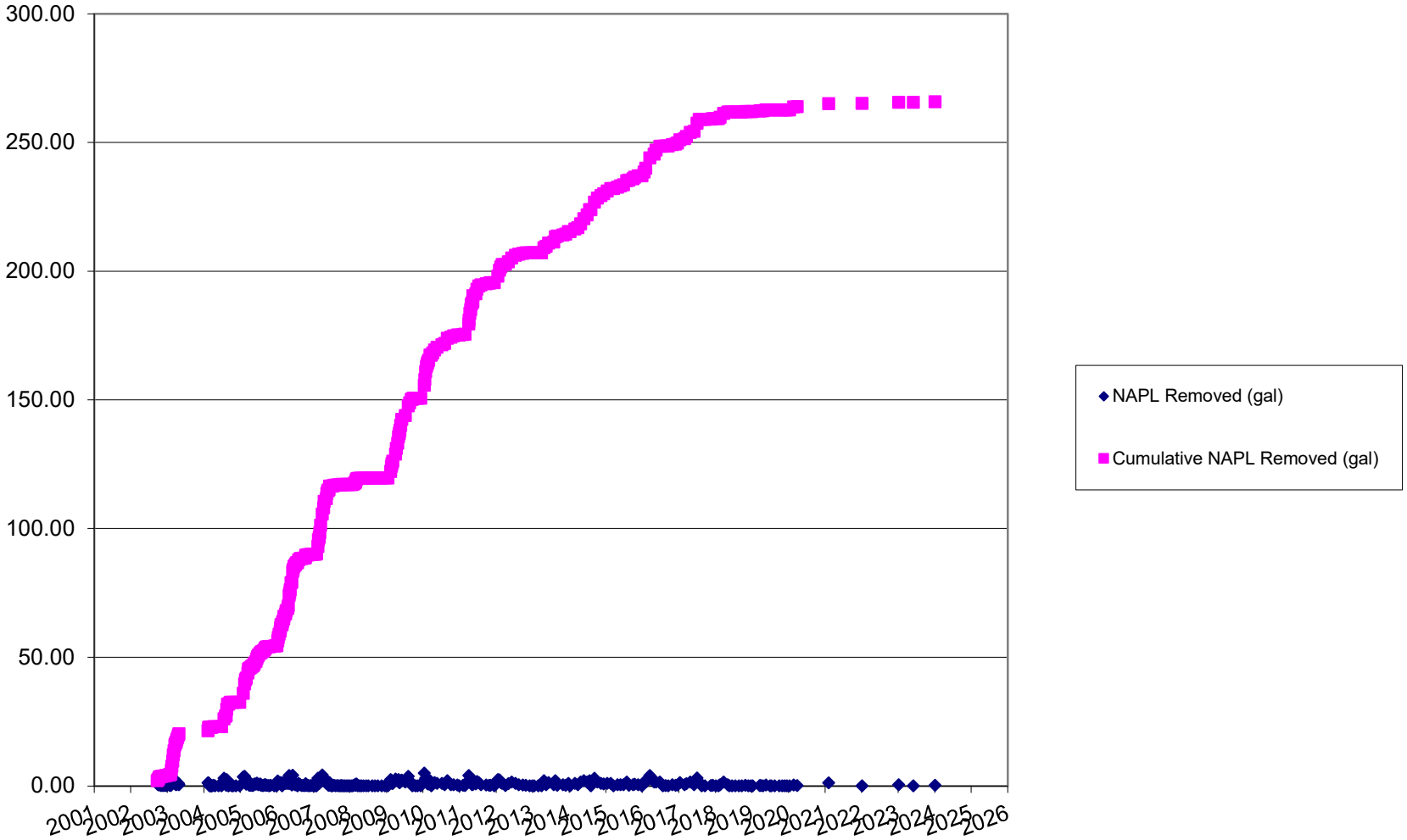
MW-19

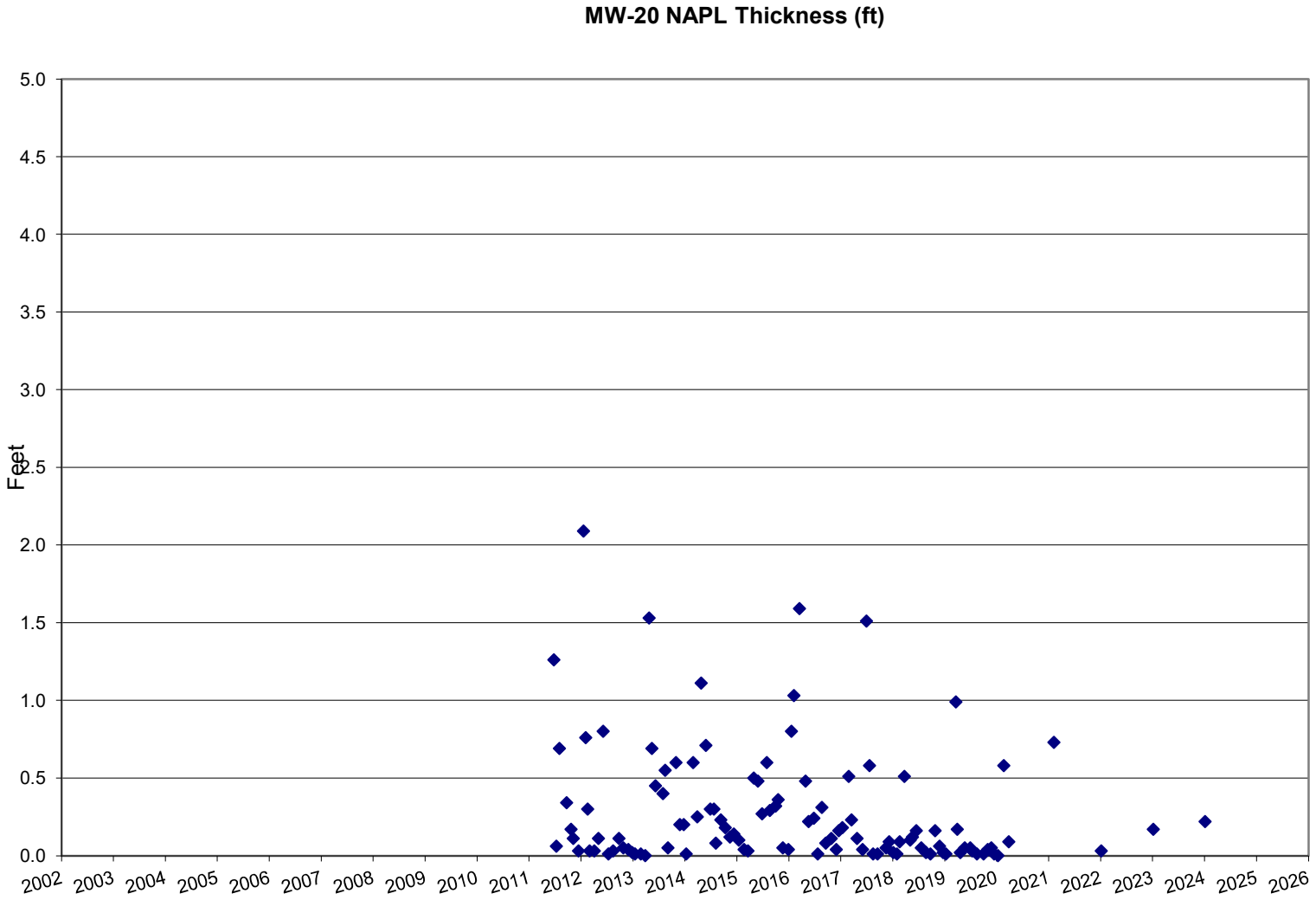

300.00
250.00
200.00
150.00
100.00
50.00
0.00
12/5/2001
12/5/2002
12/5/2003
12/4/2004
12/4/2005
12/4/2006
12/4/2007
12/3/2008
12/3/2009
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
12/1/2017
12/1/2018
11/30/2019
11/30/2020
11/30/2021
11/30/2022
11/30/2023
11/29/2024
11/29/2025
NAPL Removed (gal)
Cumulative NAPL Removed (gal)

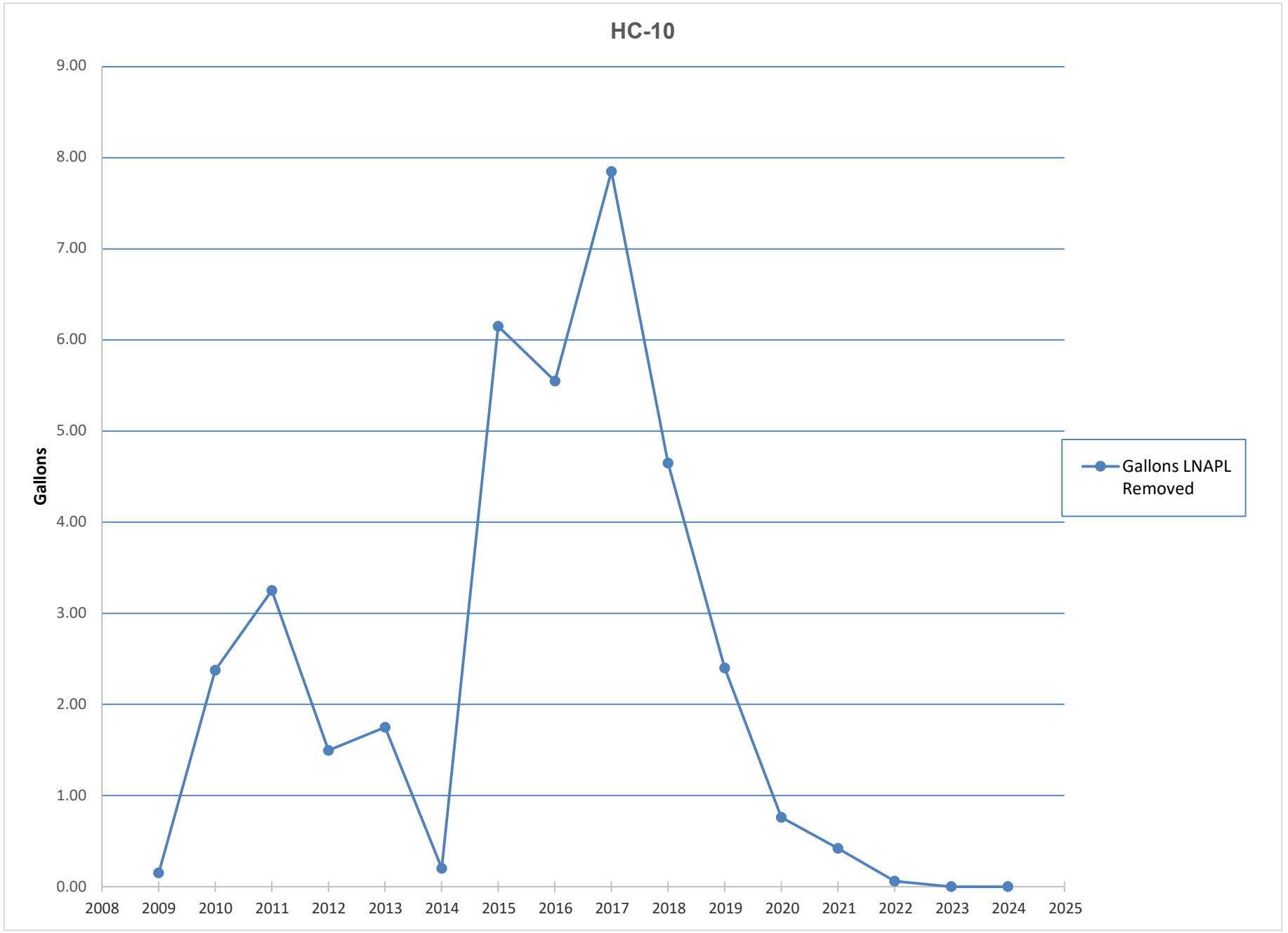

MW-19 NAPL Thickness (ft)
Feet
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
5-Dec-2002
5-Dec-2003
4-Dec-2004
4-Dec-2005
4-Dec-2006
4-Dec-2007
3-Dec-2008
3-Dec-2009
3-Dec-2010
3-Dec-2011
2-Dec-2012
2-Dec-2013
2-Dec-2014
2-Dec-2015
1-Dec-2016
1-Dec-2017
1-Dec-2018
1-Dec-2019
30-Nov-2020
30-Nov-2021
30-Nov-2022
29-Nov-2023
29-Nov-2024
29-Nov-2025
29-Nov-2026


MW-20
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Gallons
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Gallons LNAPL Removed

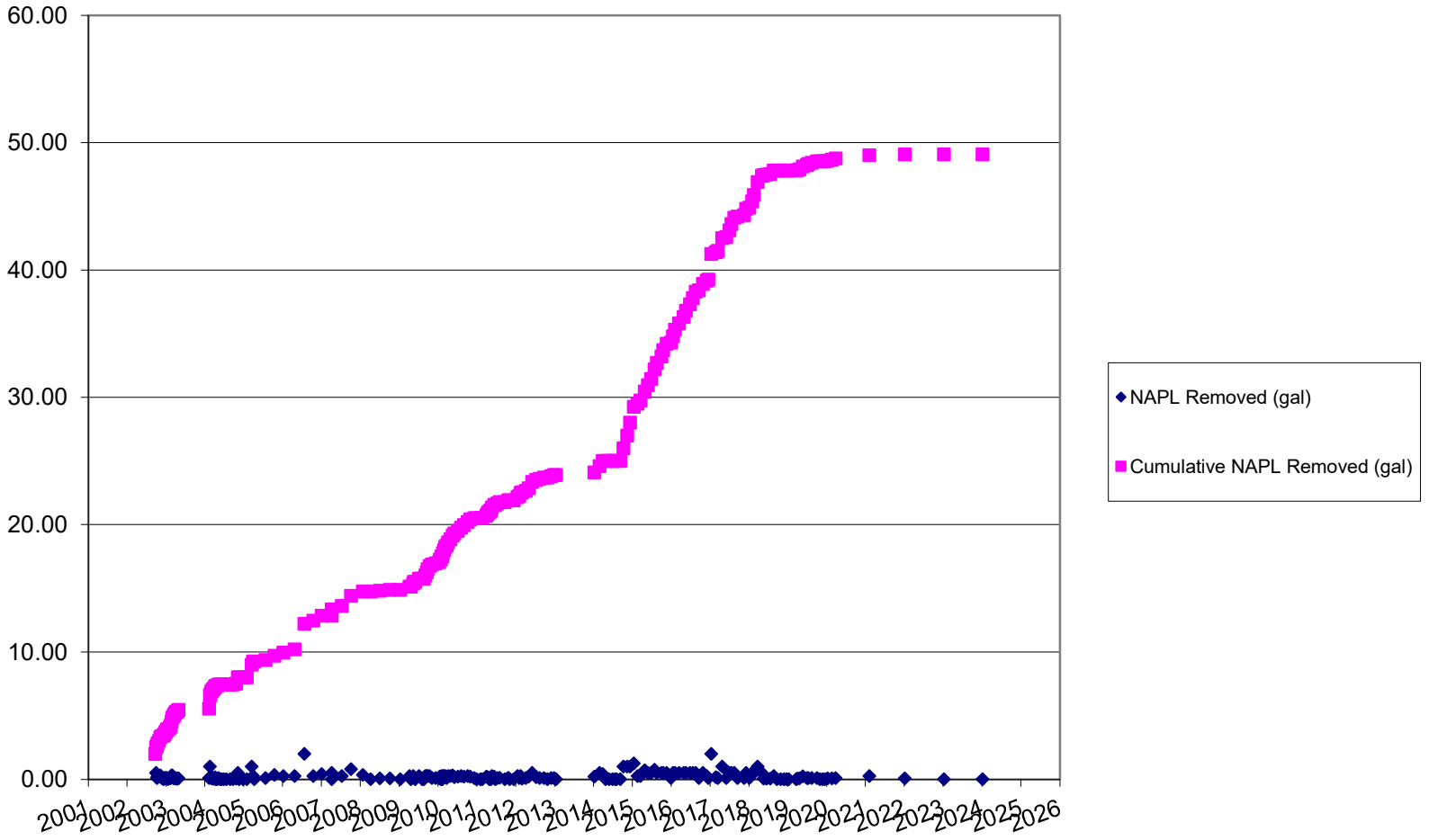
MW-20

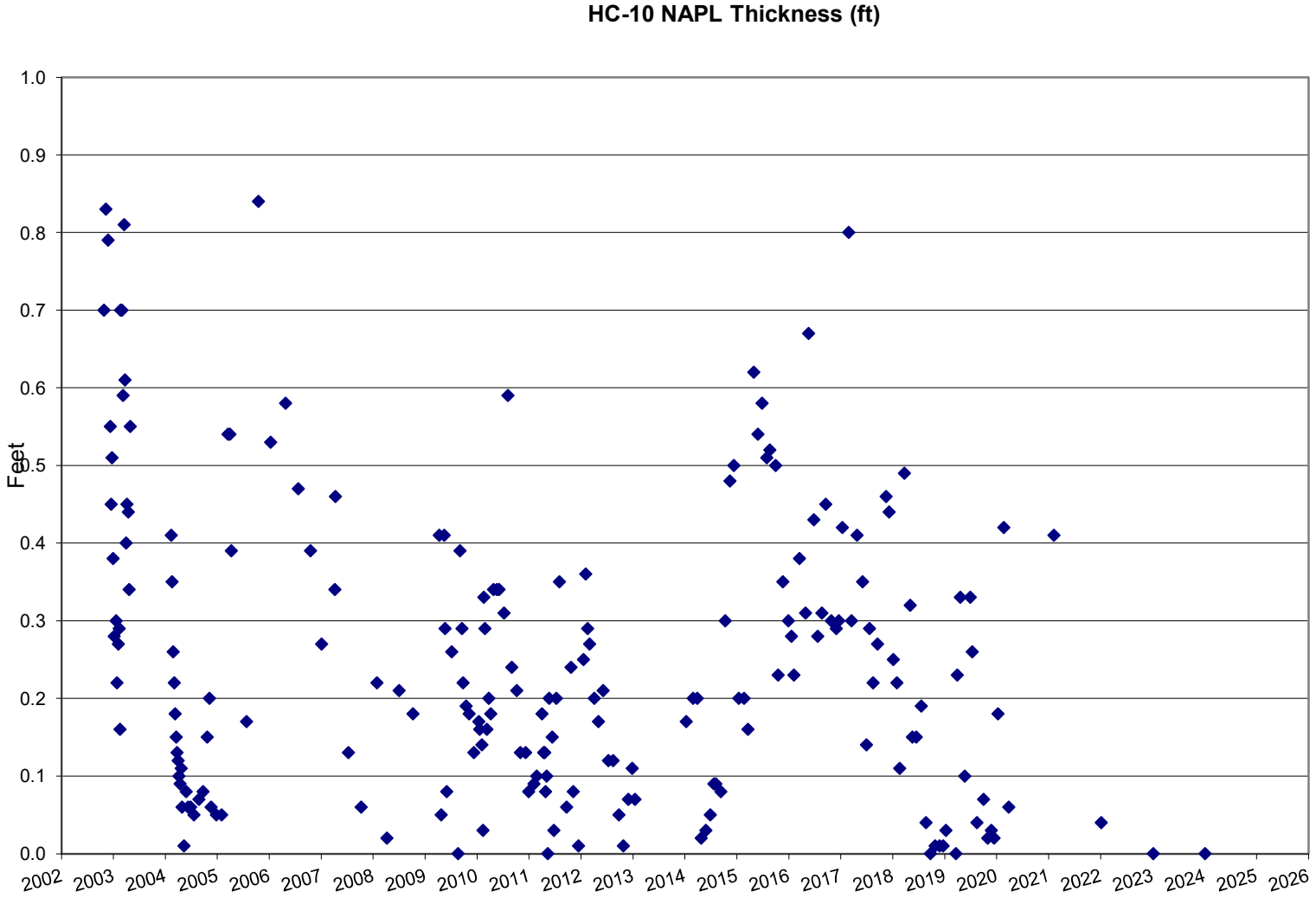

300.00
250.00
200.00
150.00
100.00
50.00
0.00
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
NAPL Removed (gal)
Cumulative NAPL Removed (gal)

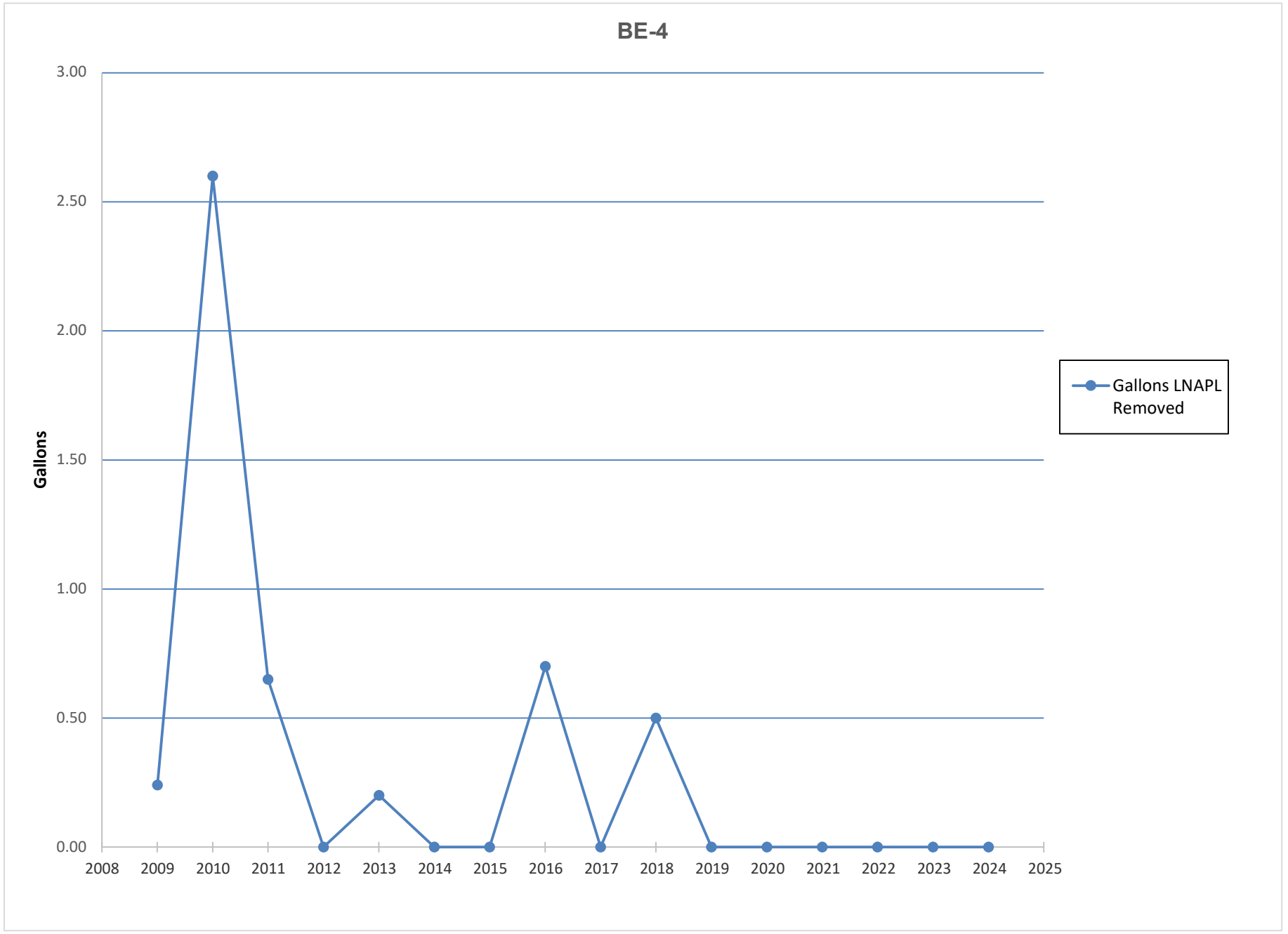

MW-20 NAPL Thickness (ft)
Feet
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026

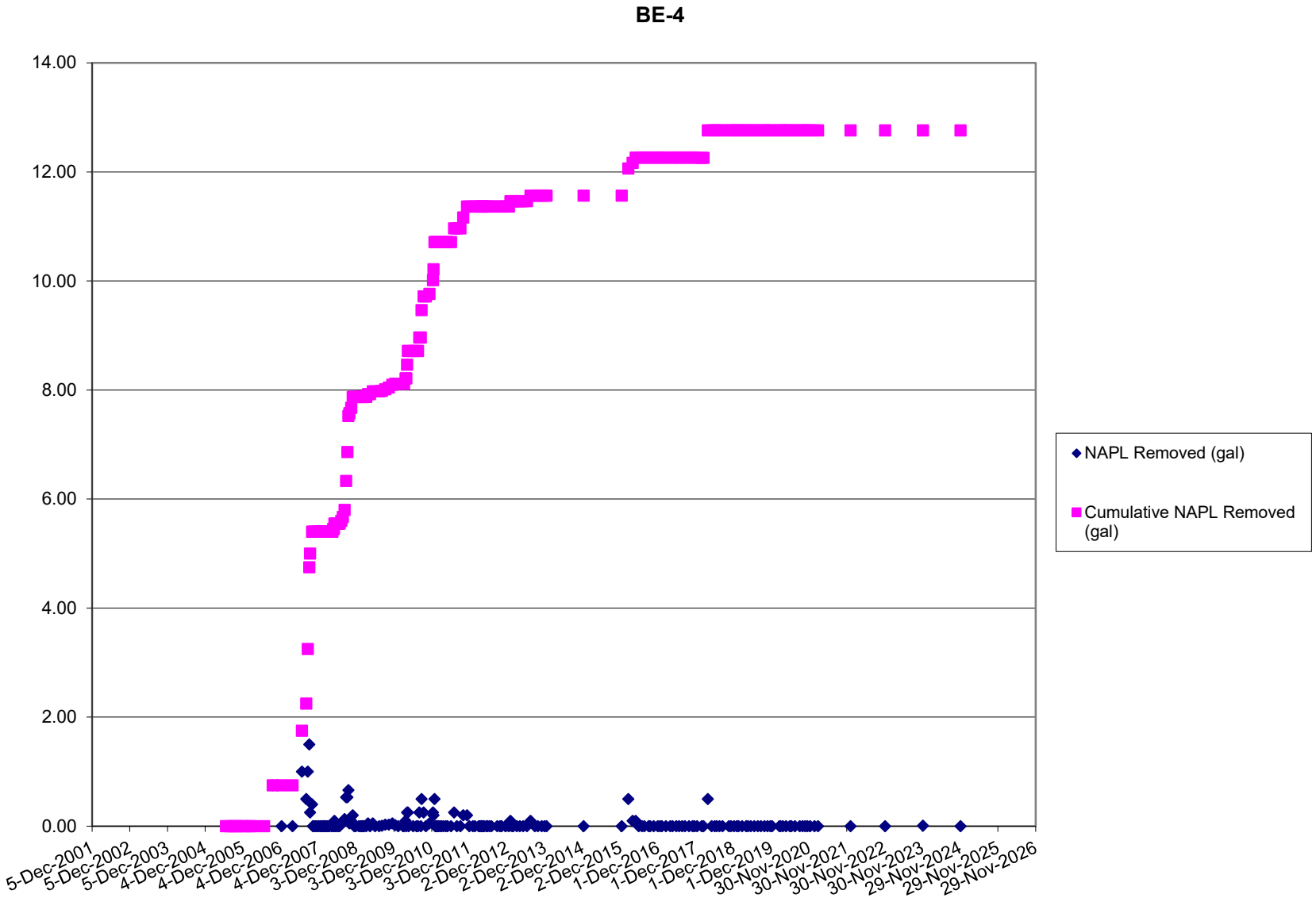

HC-10
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Gallons
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Gallons LNAPL Removed

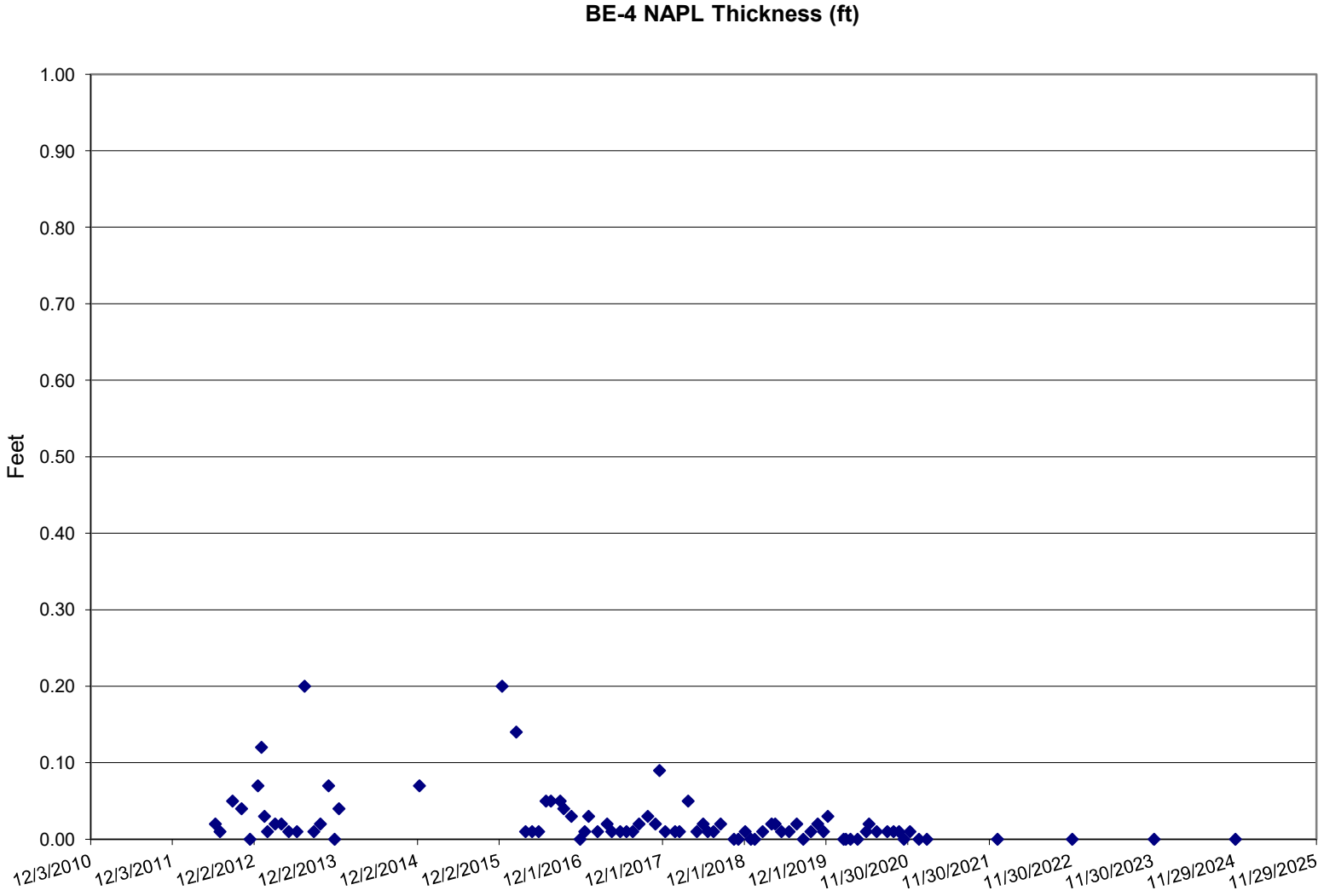
HC-10


60.00
50.00
40.00
30.00
20.00
10.00
0.00
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
NAPL Removed (gal)
Cumulative NAPL Removed (gal)


HC-10 NAPL Thickness (ft)
Feet
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026


BE-4
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Gallons
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Gallons LNAPL Removed

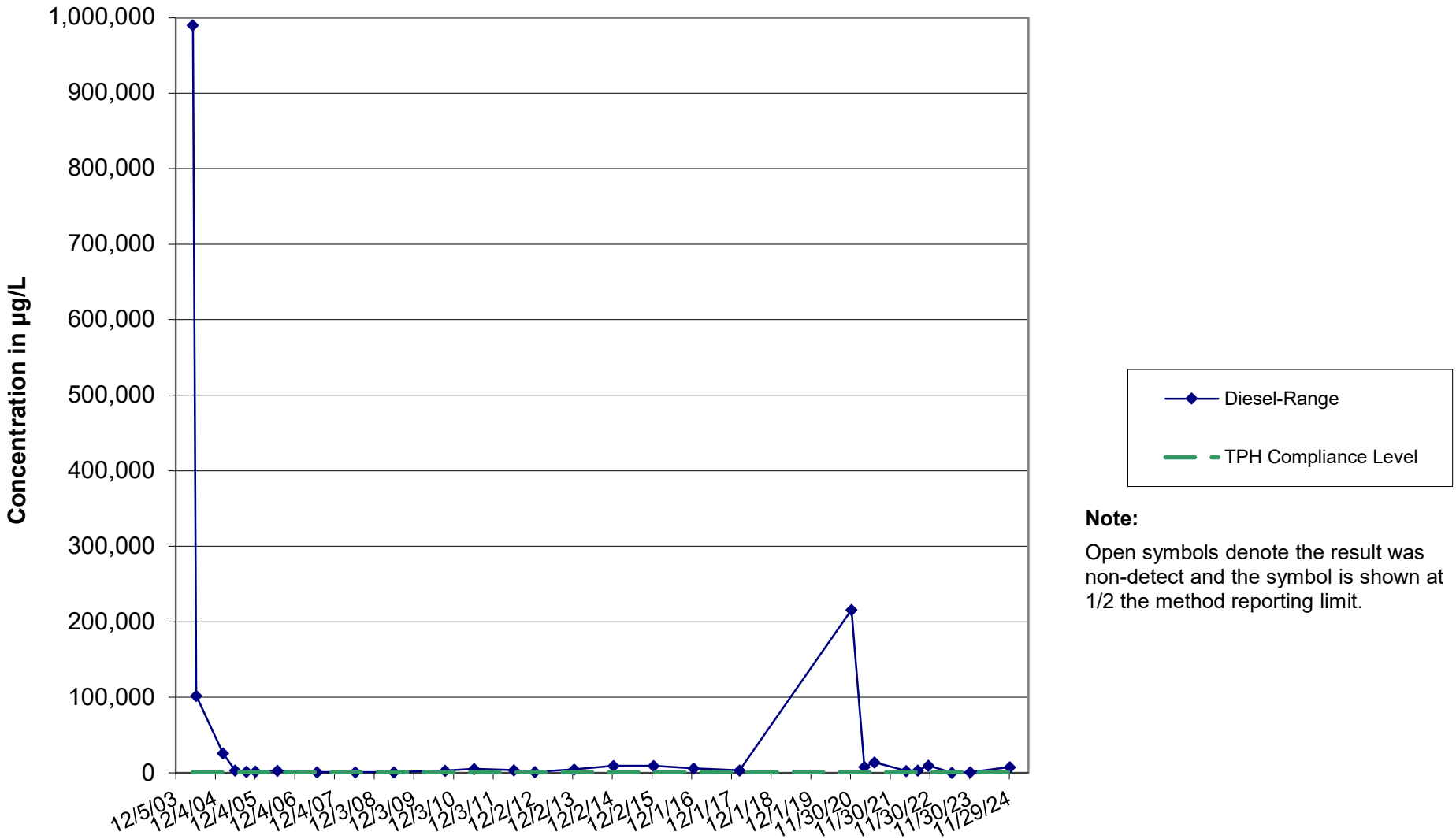

BE-4
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
5-Dec-2001
5-Dec-2002
5-Dec-2003
4-Dec-2004
4-Dec-2005
4-Dec-2006
4-Dec-2007
3-Dec-2008
3-Dec-2009
3-Dec-2010
3-Dec-2011
2-Dec-2012
2-Dec-2013
2-Dec-2014
2-Dec-2015
1-Dec-2016
1-Dec-2017
1-Dec-2018
30-Nov-2019
30-Nov-2020
30-Nov-2021
30-Nov-2022
30-Nov-2023
29-Nov-2024
29-Nov-2025
29-Nov-2026
NAPL Removed (gal)
Cumulative NAPL Removed (gal)


BE-4 NAPL Thickness (ft)
Feet
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
12/3/2010
12/3/2011
12/2/2012
12/2/2013
12/2/2014
12/2/2015
12/1/2016
12/1/2017
12/1/2018
12/1/2019
11/30/2020
11/30/2021
11/30/2022
11/30/2023
11/29/2024
11/29/2025

Appendix E

Chemical Concentration Versus Time Plots

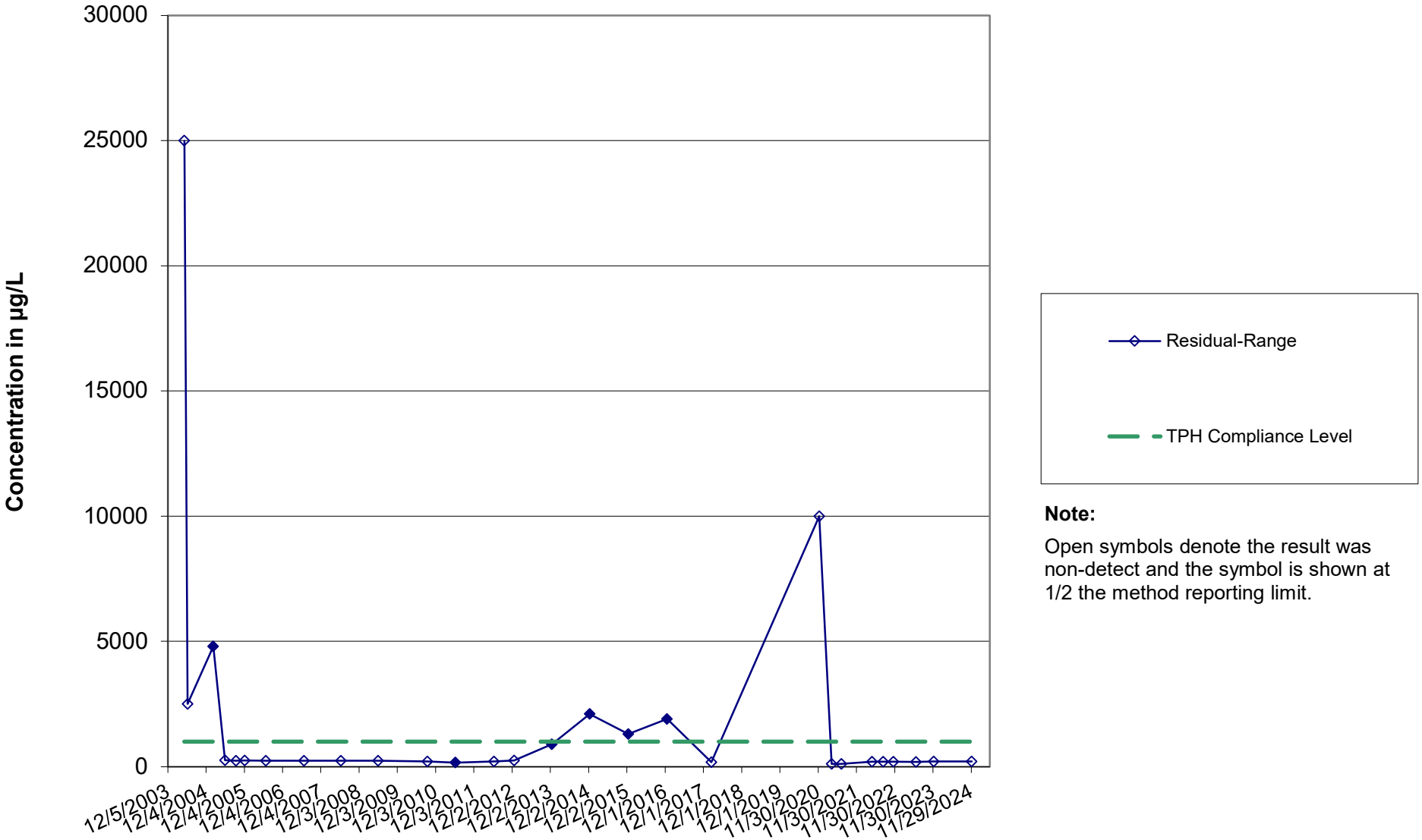
HC-5



Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

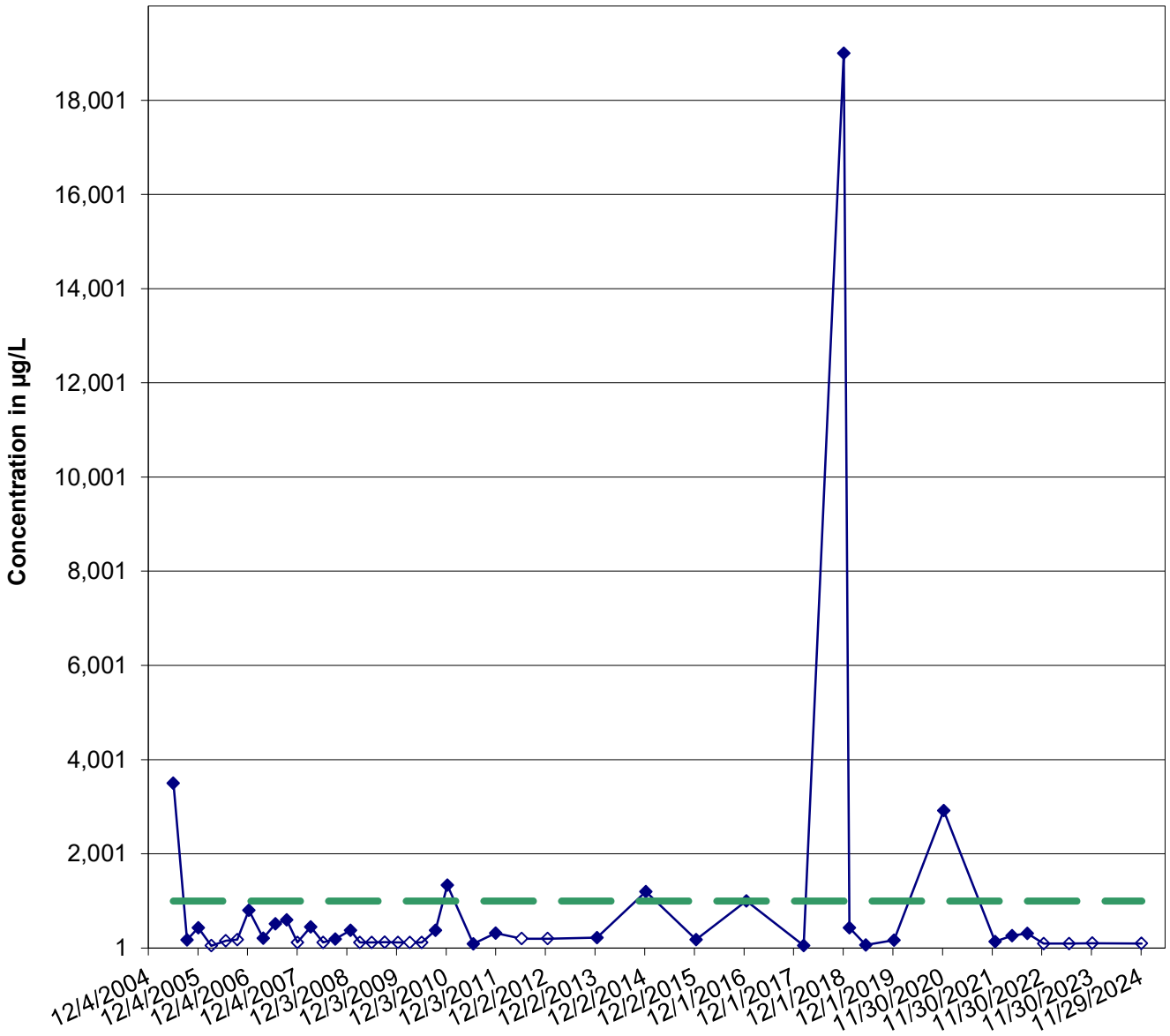
HC-5

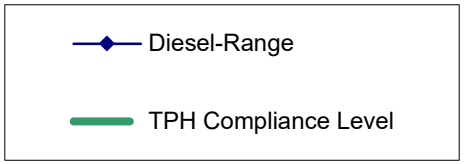


Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-1

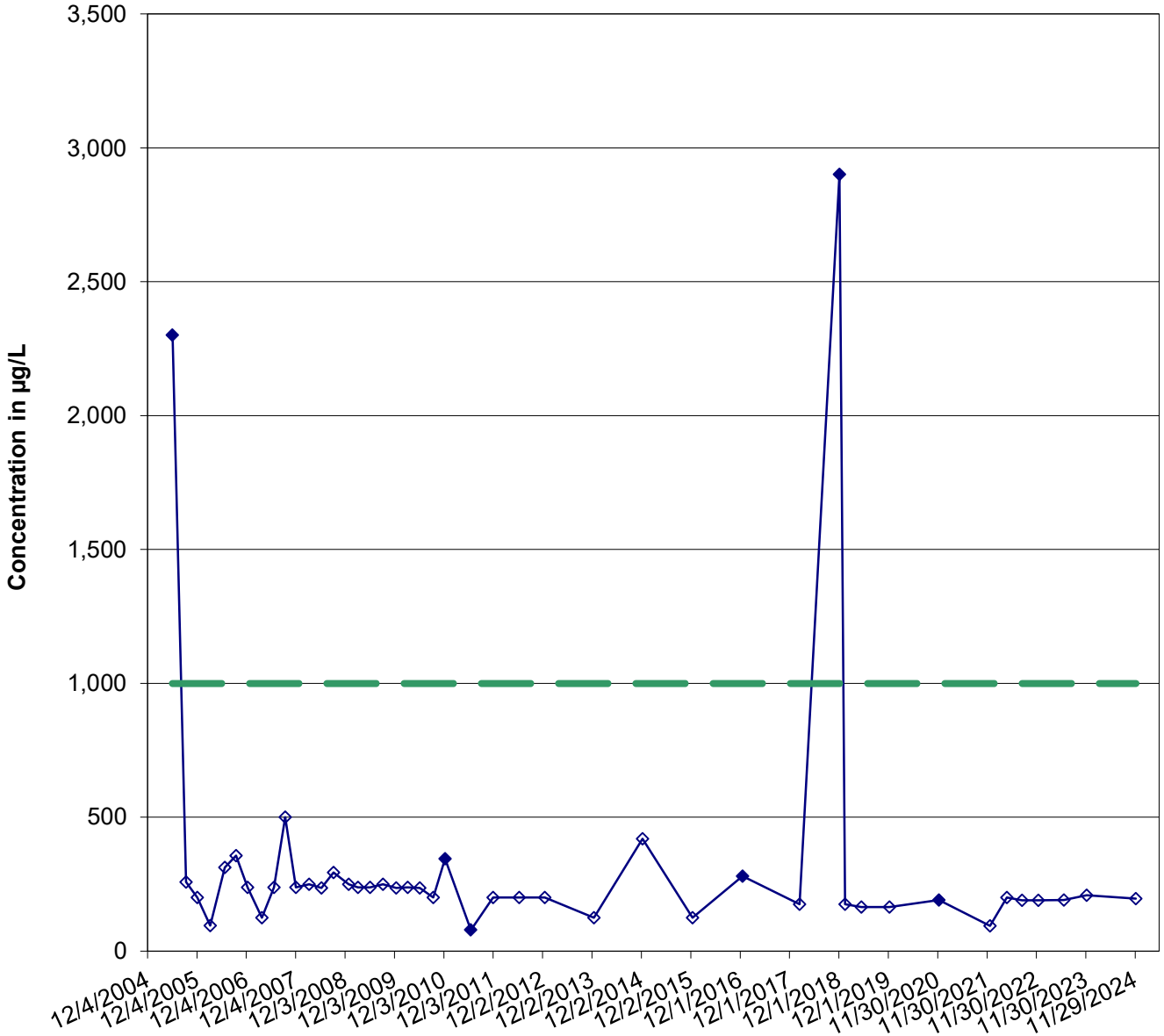




Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-1



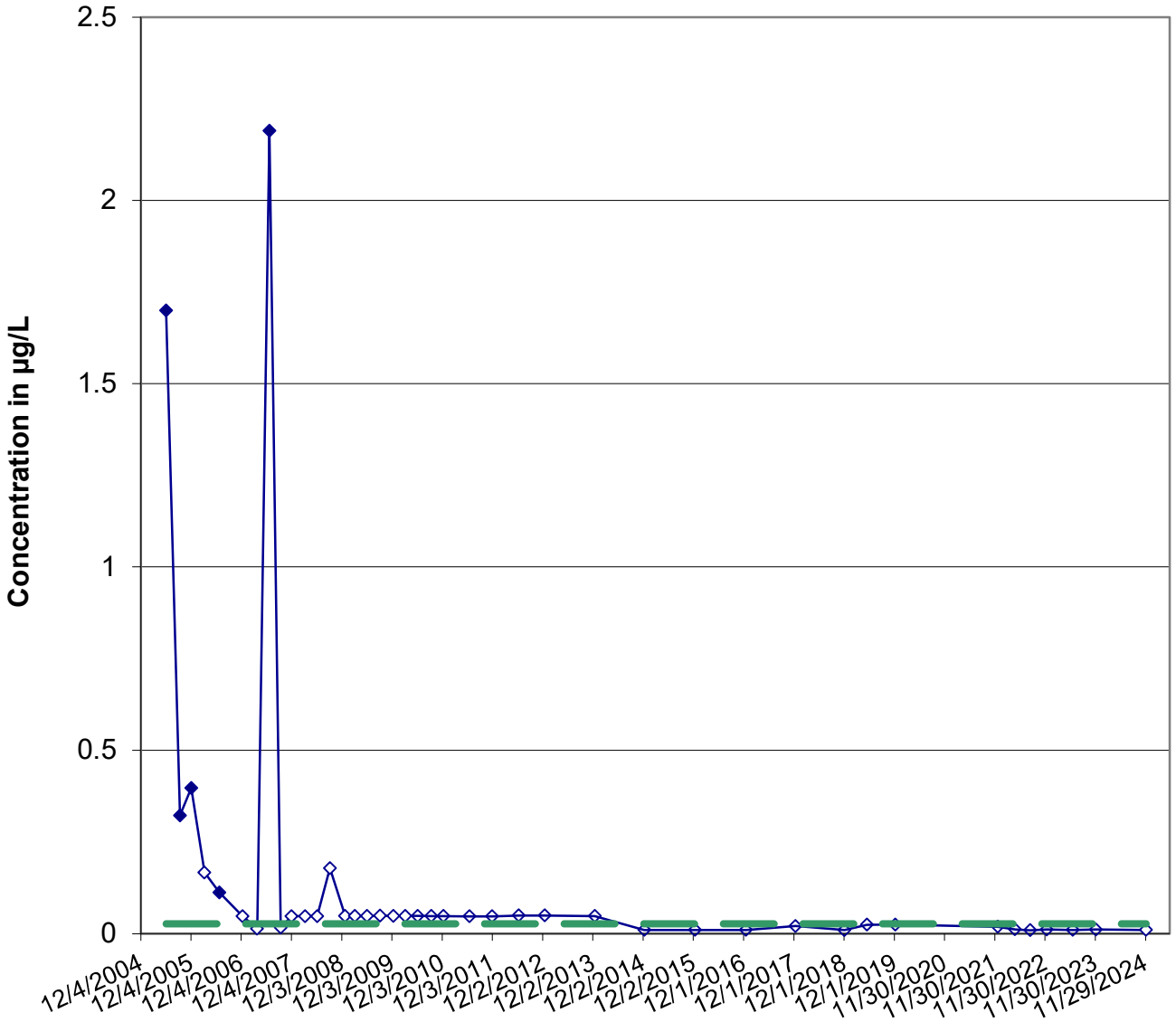
Residual-Range

TPH Compliance Level

Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

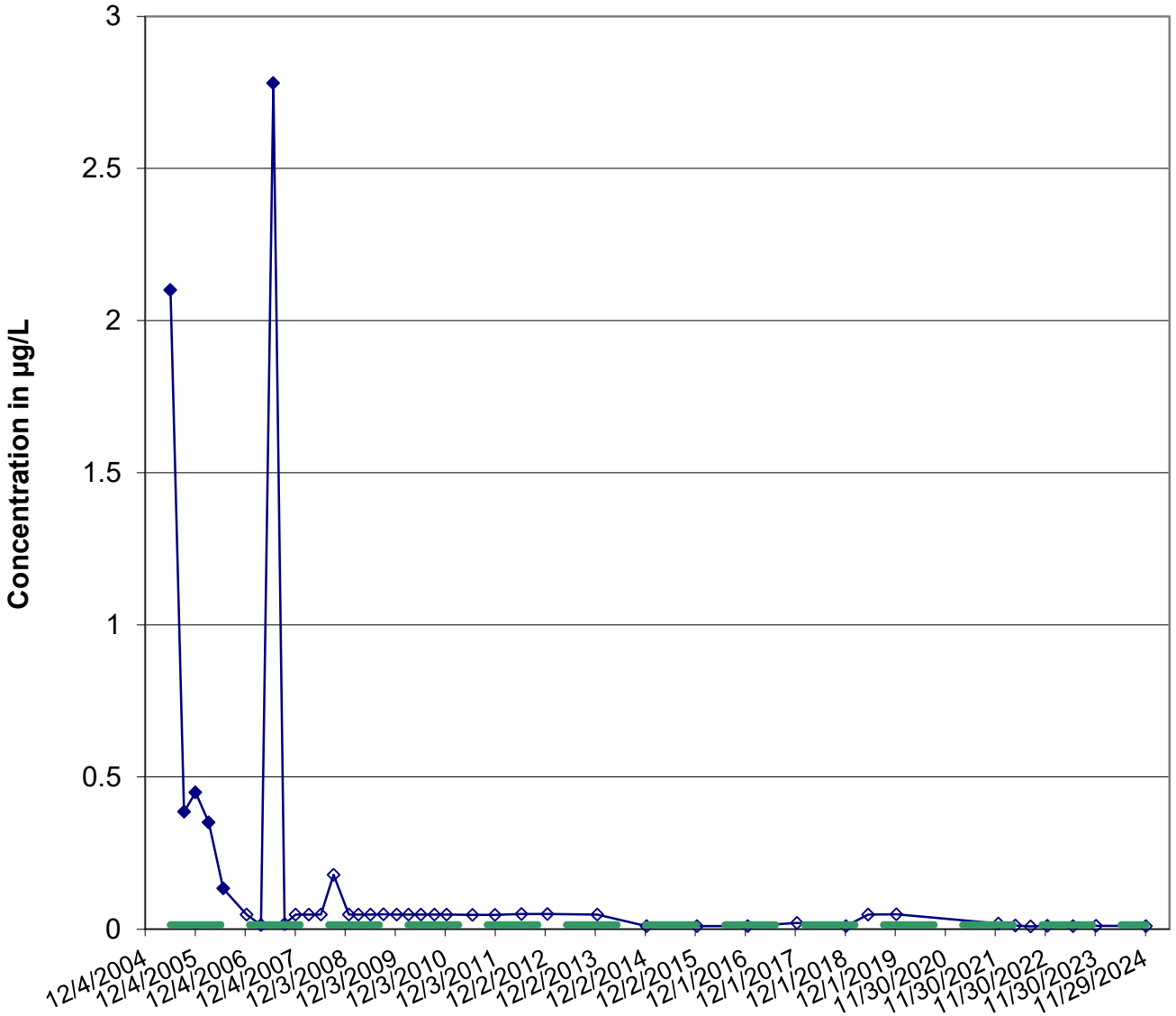
BE-1



Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

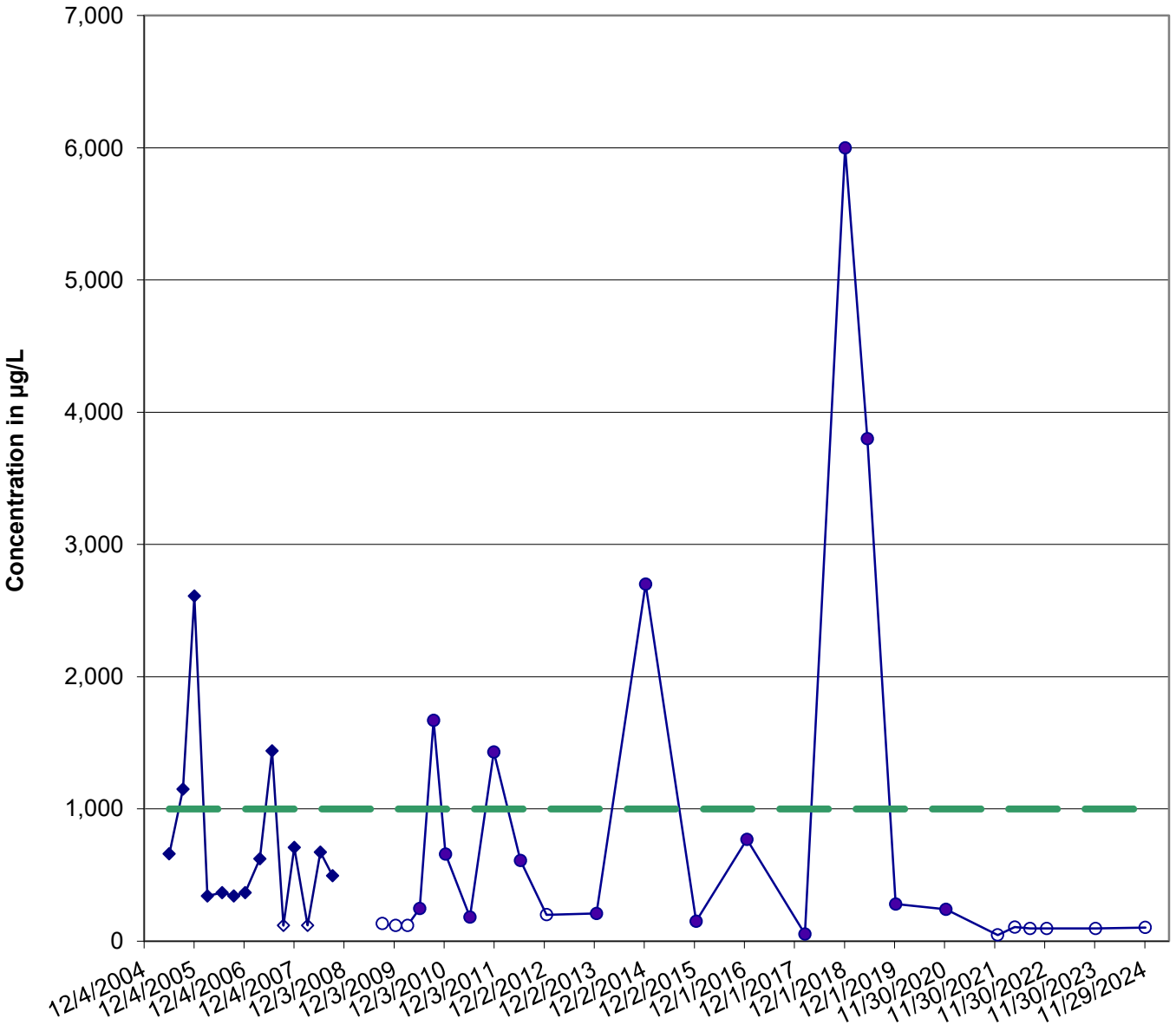
BE-1



Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-2 and BE-5



BE-2 Diesel-Range

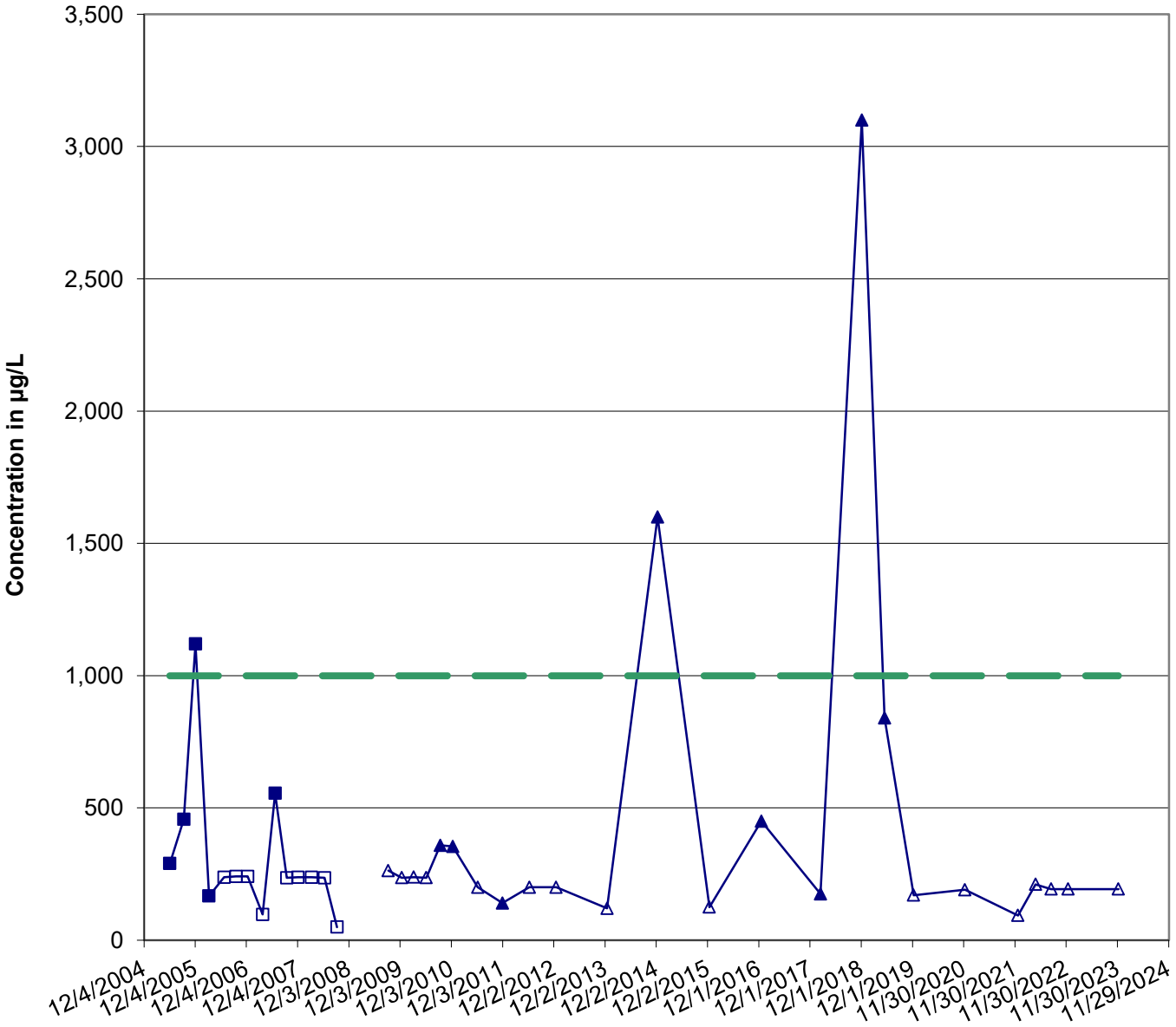
BE-5 Diesel-Range

TPH Compliance Level

Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-2 and BE-5



BE-2 Residual Range

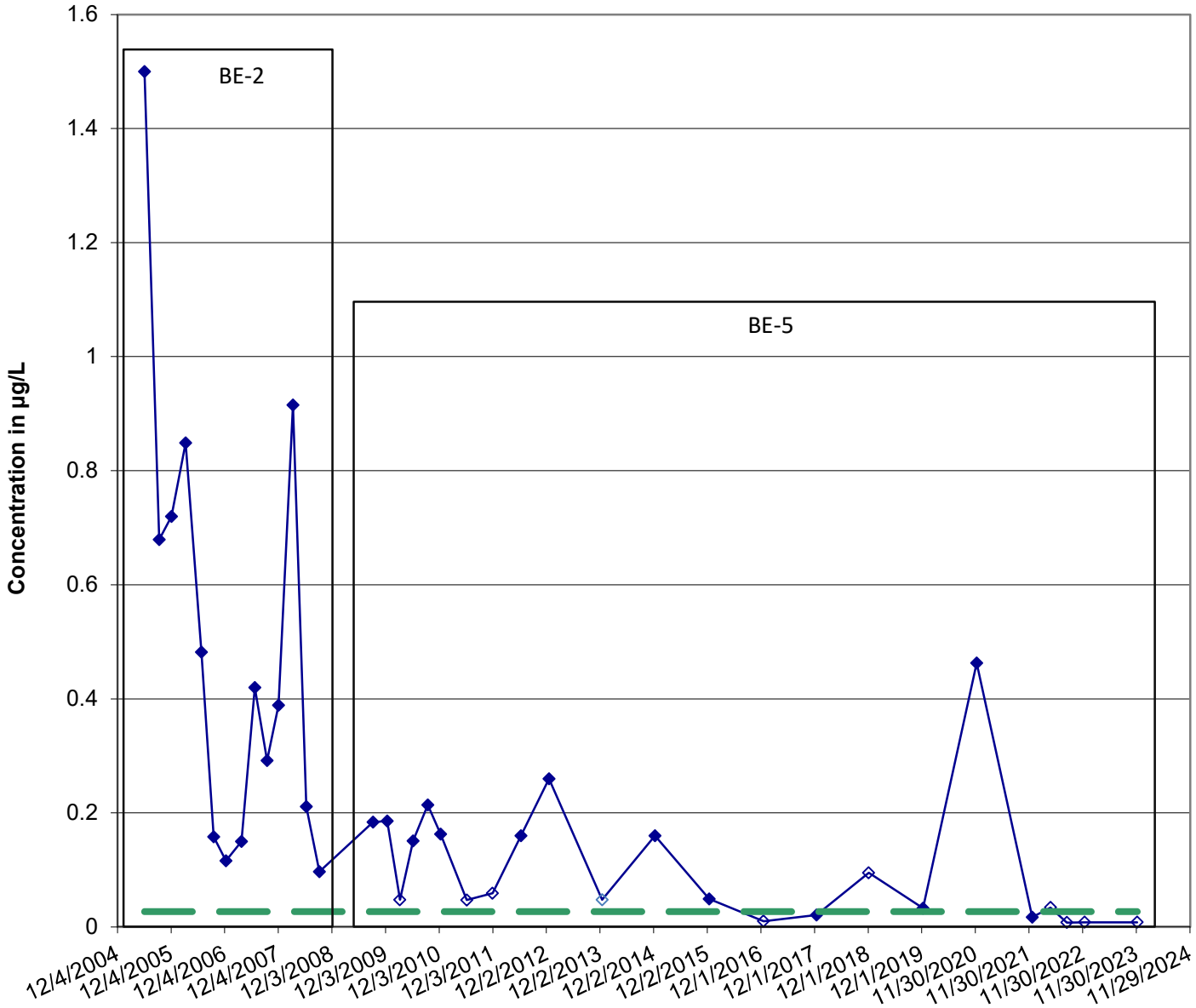
BE-5 Residual Range

TPH Compliance Level

Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-2 and BE-5



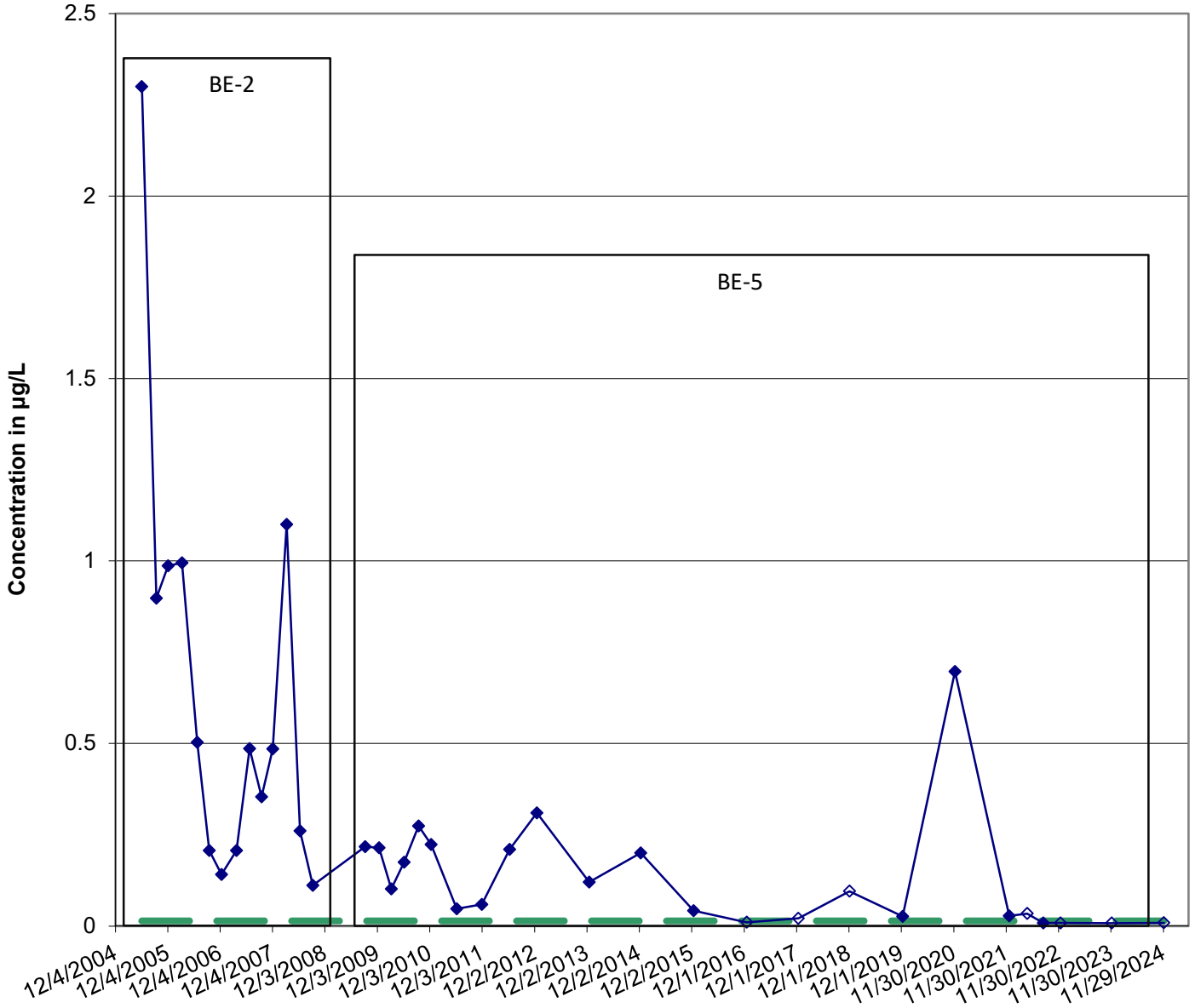
BAA

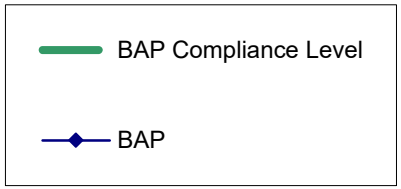
BAA Compliance Level

Note:

Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

BE-2 and BE-5



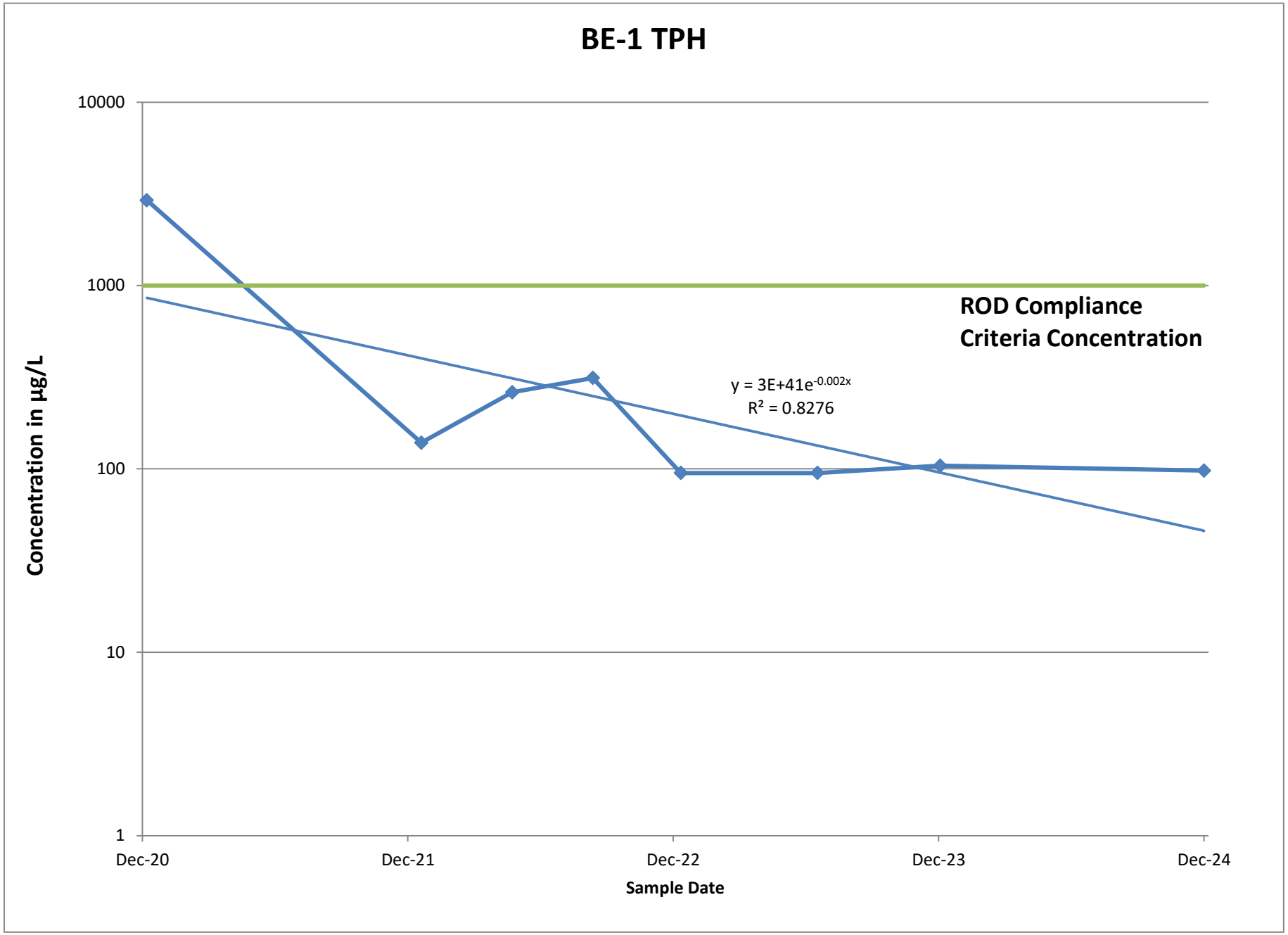


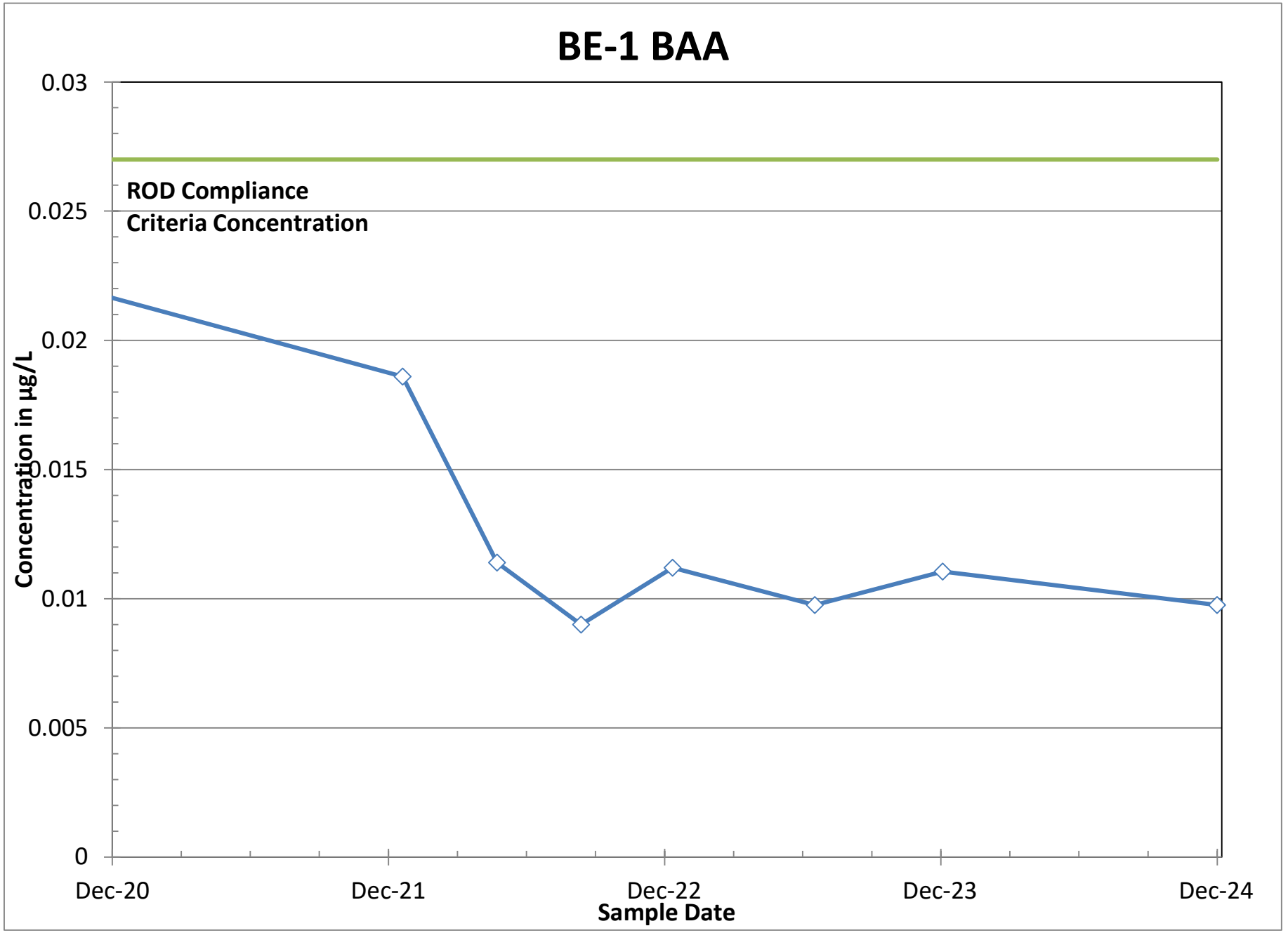
Note:

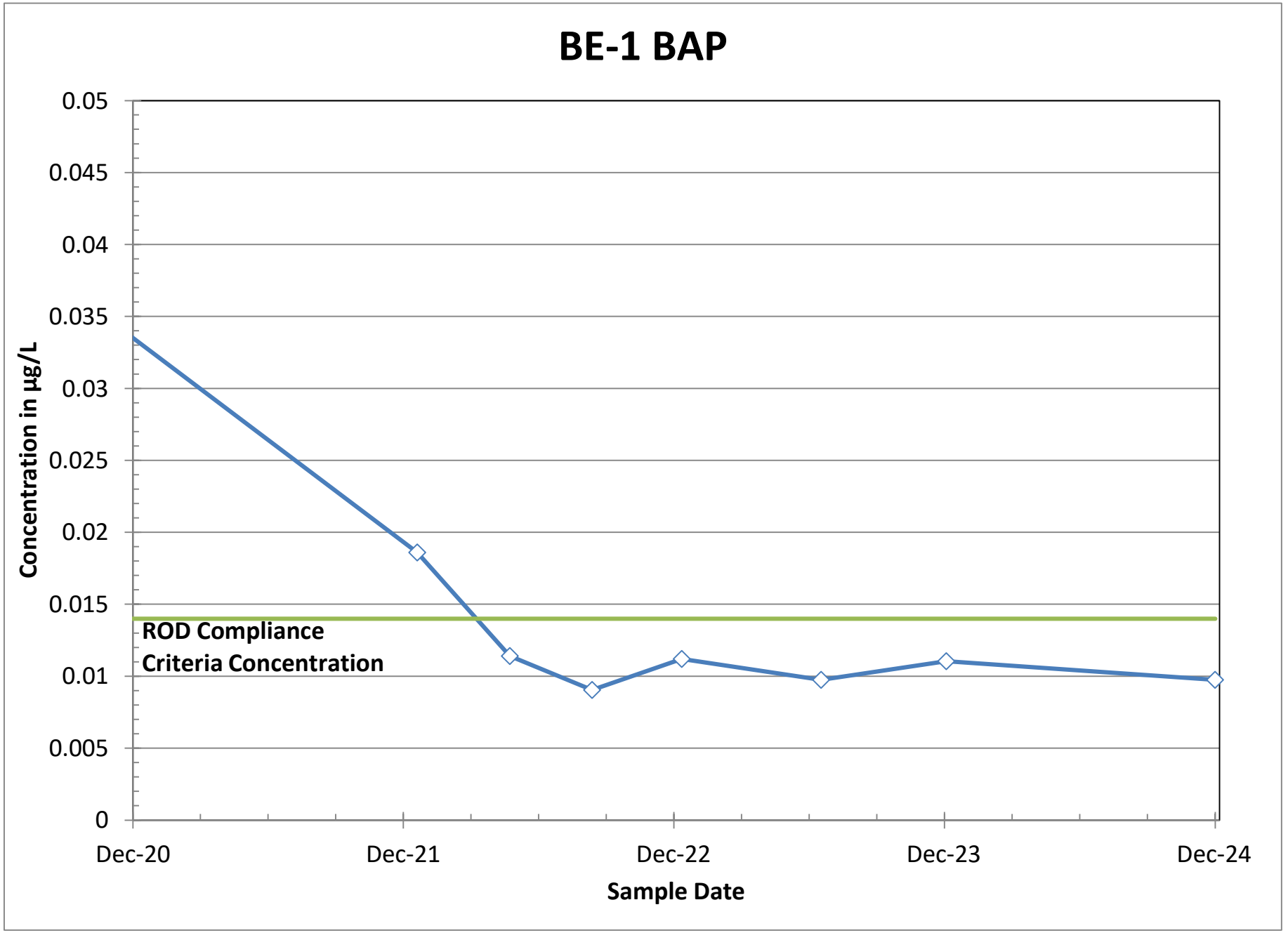
Open symbols denote the result was non-detect and the symbol is shown at 1/2 the method reporting limit.

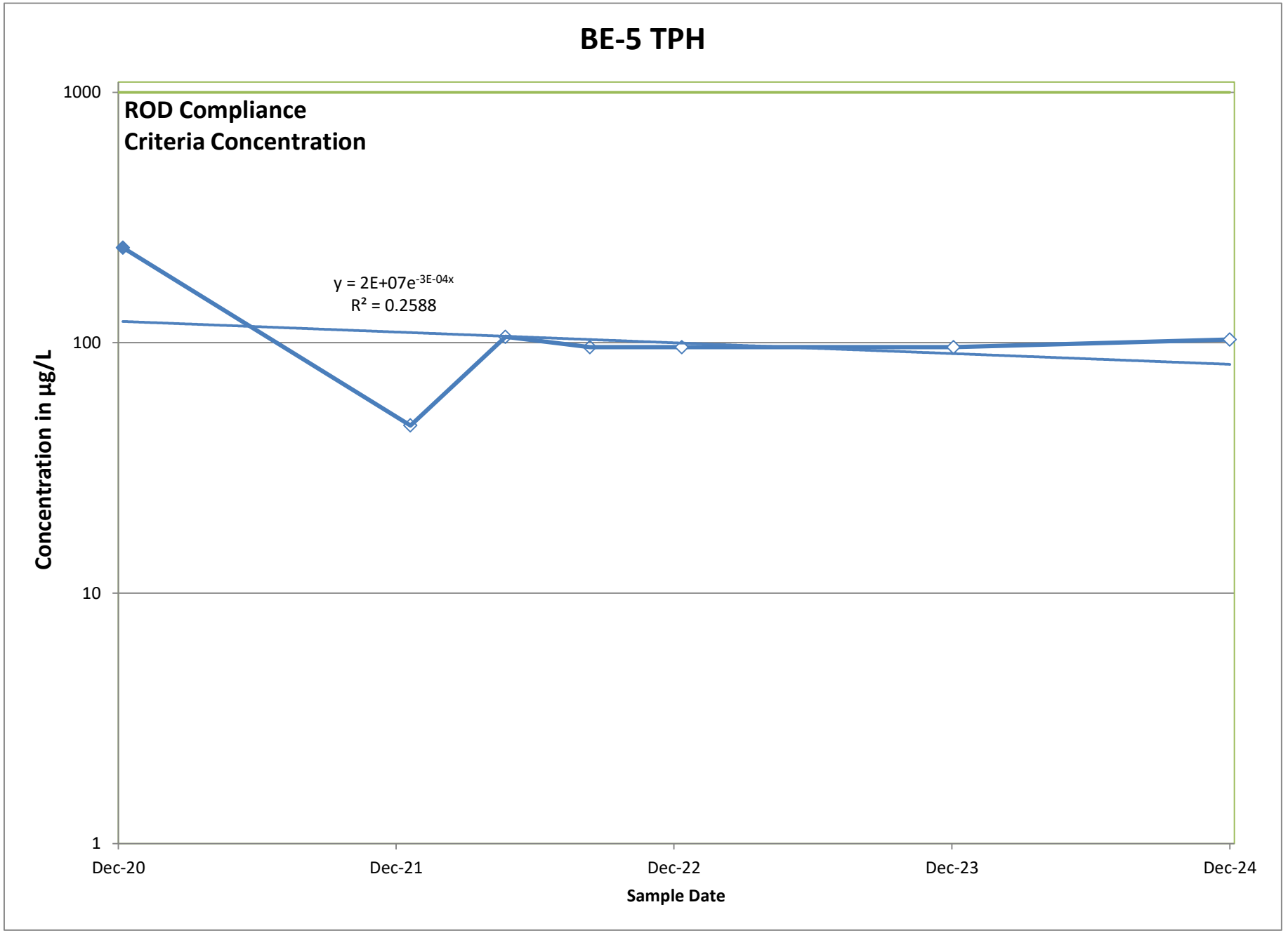
Appendix F

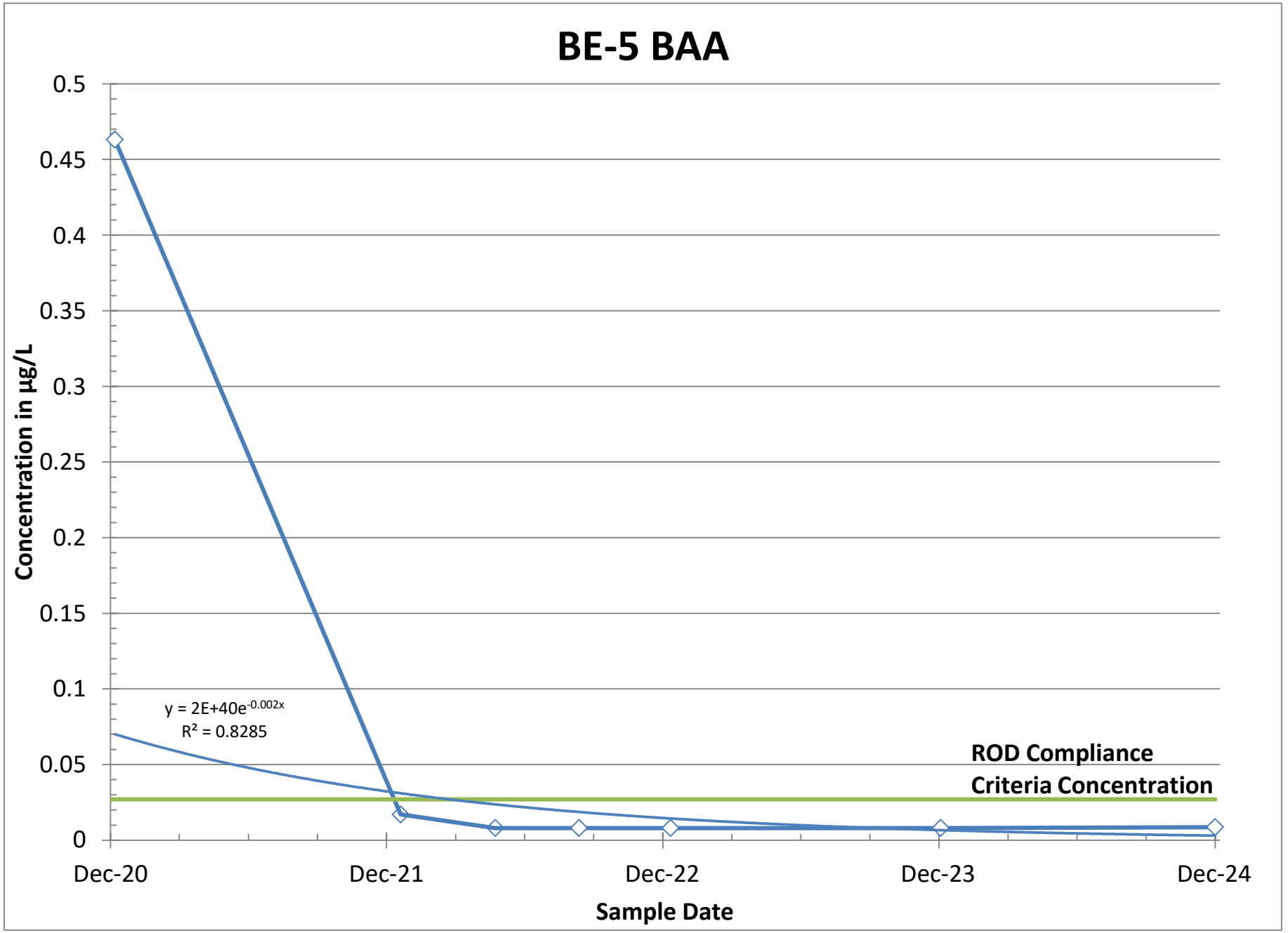
Four-Year Chemical Concentration Trend Plots

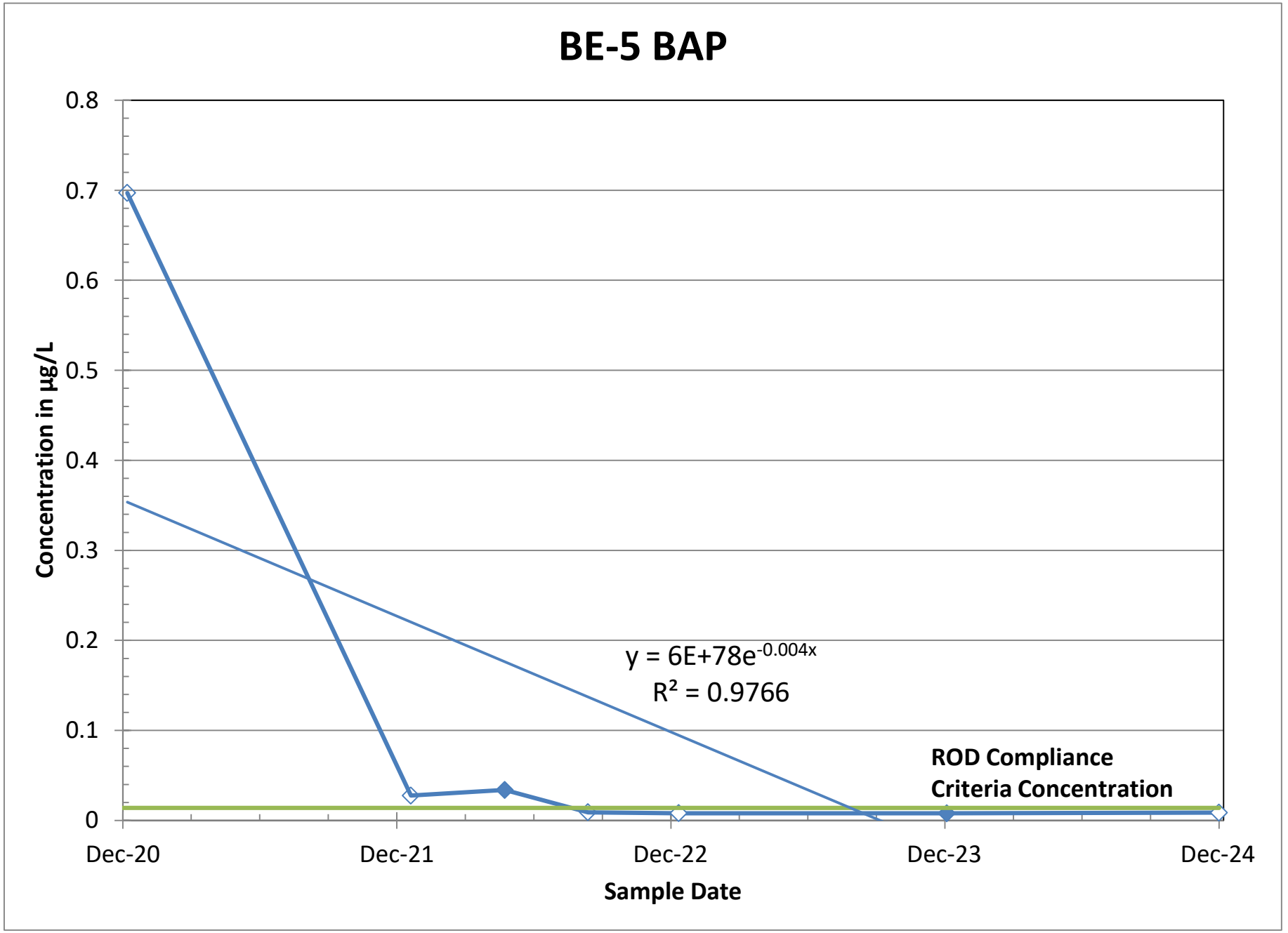

BE-1 TPH
10000
1000
100
10
1
Concentration in µg/L
ROD Compliance
Criteria Concentration
y = 3E+41e-0.002x
R² = 0.8276
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date

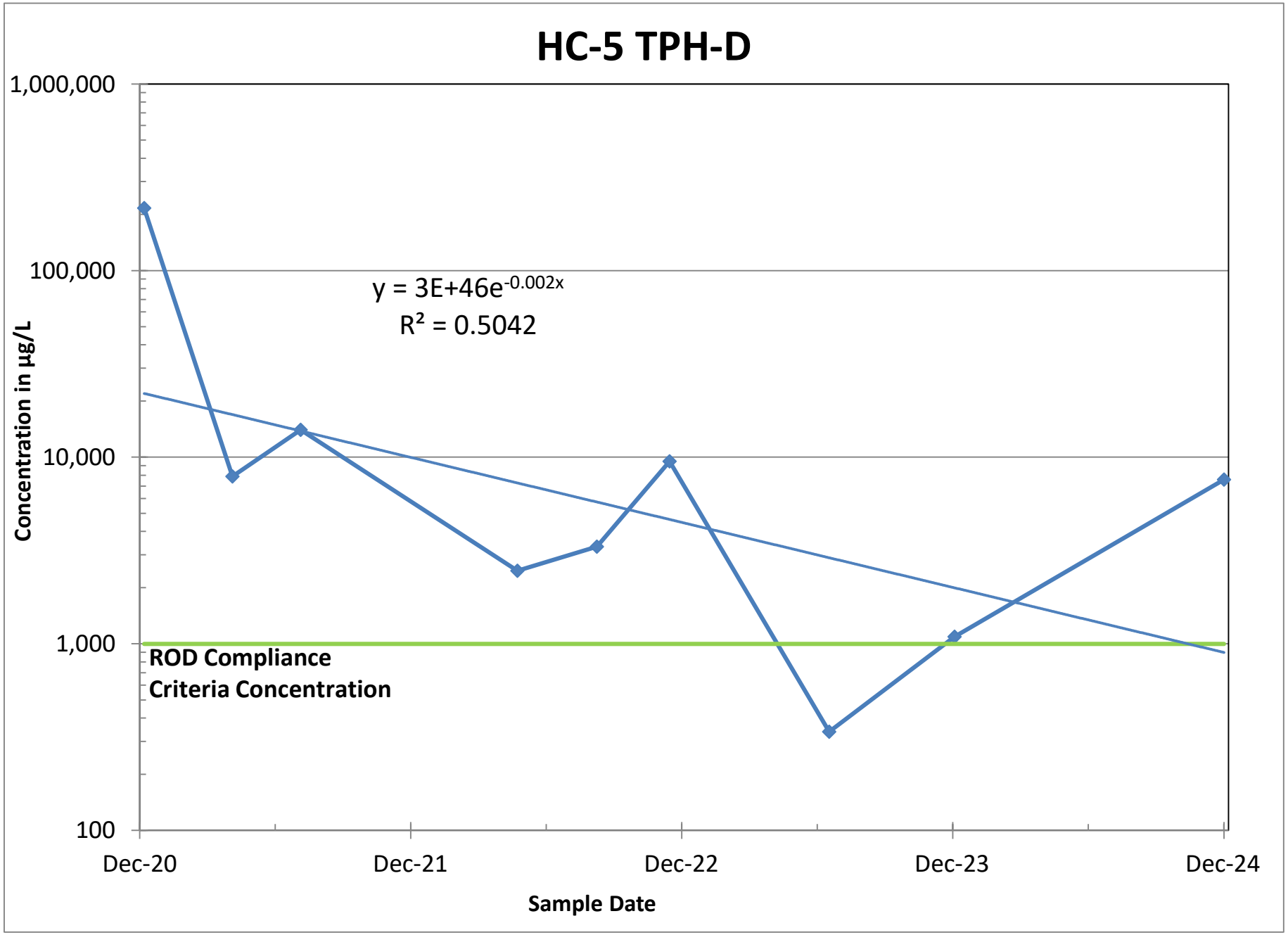

BE-1 BAA
0.03
0.025
0.02
0.015
0.01
0.005
0
ROD Compliance
Criteria Concentration
Concentration in µg/L
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date


BE-1 BAP
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
Concentration in µg/L
ROD Compliance
Criteria Concentration
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date


BE-5 TPH
ROD Compliance
Criteria Concentration
y = 2E+07e-3E-04x
R² = 0.2588
1000
100
10
1
Concentration in µg/L
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date


BE-5 BAA
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Concentration in µg/L
y = 2E+40e-0.002x
R² = 0.8285
ROD Compliance
Criteria Concentration
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date


BE-5 BAP
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Concentration in µg/L
y = 6E+78e-0.004x
R² = 0.9766
ROD Compliance
Criteria Concentration
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date


HC-5 TPH-D
1,000,000
100,000
10,000
1,000
100
Concentration in µg/L
y = 3E+46e-0.002x
R² = 0.5042
ROD Compliance
Criteria Concentration
Dec-20
Dec-21
Dec-22
Dec-23
Dec-24
Sample Date