



***Revised Annual 2023 Groundwater
Monitoring and LNAPL Removal Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon
ECSI No. 272***

**Prepared for:
Port of Portland**

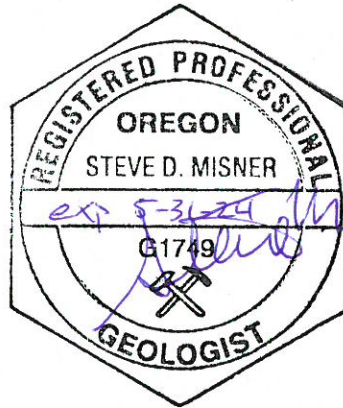
**April 11, 2024
32-23011042**



**Revised Annual 2023 Groundwater Monitoring
and LNAPL Removal Report
Terminal 4 Slip 3 Upland Facility
Portland, Oregon
ECSI No. 272**

Prepared for:
Port of Portland

April 11, 2024
32-23011042



Steve Misner, R.G.
Senior Associate

A handwritten signature in blue ink, likely belonging to Herb Clough.

Herb Clough, P.E.
Principal Engineer

Table of Contents

1.0 INTRODUCTION	1
1.1 Scope	1
1.2 Report Organization	2
2.0 BACKGROUND	2
2.1 Facility Location and Description	2
2.2 Geology	2
2.3 Hydrogeology	3
2.4 Remedial Action Status	3
3.0 FIELD ACTIVITIES	4
3.1 LNAPL Monitoring Program	4
3.2 Groundwater Monitoring Activities	4
4.0 LNAPL MONITORING RESULTS AND EVALUATION	5
4.1 LNAPL Monitoring and Removal	5
4.2 Evaluation of LNAPL Results	6
5.0 GROUNDWATER MONITORING RESULTS AND EVALUATION	7
5.1 Chemical Analytical Results	7
5.2 Evaluation of Annual Groundwater Results	8
6.0 CONCLUSIONS AND RECOMMENDATIONS	11
6.1 LNAPL Monitoring and Removal	11
6.2 Conclusions of ROD Compliance Annual Results	11
6.3 Additional Considerations	13
6.4 Recommendations for Additional Monitoring	13
7.0 REFERENCES	14

Tables

1	2023 Groundwater and LNAPL Level Monitoring
2	2023 LNAPL Recovery
3	Groundwater Analytical Results, Petroleum Hydrocarbons and PAHs
4	Groundwater Analytical Results – C10-C12 Aliphatic Hydrocarbons and Metals (Total and Dissolved)

Figures

- 1 Facility Location Map
- 2 Site Vicinity Plan
- 3 LNAPL Monitoring/Removal
- 4 Groundwater Elevations (June 2023)
- 5 Groundwater Elevations (December 2023)
- 6 Groundwater Analytical Results

Appendices

- A Field and Quality Assurance/Quality Control Procedures
- B Data QA/QC Review and Analytical Laboratory Reports
- C Historical Data Tables
- D LNAPL Thickness and Recovery Trend Plots
- E Chemical Concentration Versus Time Plots
- F Four-Year Chemical Concentration Trend Plots

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 2023. 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 June and December 2023 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 2023 annual monitoring event also included collection of groundwater levels from additional monitoring wells (BE-3, 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 diesel- and oil-range petroleum hydrocarbons (TPH-D), C10-C12 aliphatic hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and total/dissolved metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, zinc, and vanadium).

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

Lithologic logs and geologic cross-sections indicate that the Facility is underlain by approximately 10 to 30 feet of sandy fill. The sandy fill has been described as fine- to medium-grained sand with some coarse sand and fine gravel and relatively few fines (BBL/Ash Creek/Newfields, 2006; Hart Crowser, 2000). The sandy fill is underlain by alluvium. A laterally continuous layer of silt makes up the top of the alluvium. The silt varies in thickness from approximately 2 to 5 feet or more. This silt layer appears to be hummocky with a general slope towards the river; the silt layer rises sharply to the surface beyond the eastern boundary of the Facility, and a “mound” in the silt is present in the northwestern portion of the Facility. Below the silt layer, the alluvium is comprised of layers of silt, sandy silt, silty sand, and sand, which do not appear to be laterally continuous for significant distances.

2.3 Hydrogeology

Depth to shallow groundwater in the central portion of the Facility generally ranges between 12 and 24 feet below ground surface (bgs; BBL/Ash Creek/Newfields, 2006). Potentiometric maps from periodically collected water level measurements indicate a general site-wide gradient towards the river (BBL/Ash Creek/Newfields, 2006). However, gradients are highly variable in the center portion of the Facility, often indicating groundwater flow directions away from the river or to the north or south.

Older wells installed at the Facility (designated by “MW”) are screened within both the sandy fill and the alluvial unit (Century West, 1994). Groundwater levels drop below the sandy fill in many of these wells during the dry season and times when river levels are low (Hart Crowser, 2000). Groundwater levels measured in shallow wells screened only within the sandy fill (e.g., HC-16 and HC-23) are several feet higher than in adjacent MW wells, suggesting the silty layer at the top of the alluvial unit acts to separate two groundwater zones: one above and one below the silt layer. The upper groundwater zone is “perched” on the silt layer.

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 2023. The following describes the results of the LNAPL monitoring and removal program for 2023. A more detailed description of the procedures used is provided in Appendix A.

During the LNAPL monitoring events, 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. Additionally, LNAPL was manually removed from well BE-4 by hand bailing.

The Slip is 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 June and December 2023 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 June 20 and 21, 2023. 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-3, BE-4, and BE-5 during the annual monitoring event on December 6, 7, and 8, 2023. Water levels were measured for the purpose of determining groundwater elevations and gradients using an electronic water level indicator or an interface probe 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 (June 2023) and Figure 5 (December 2023).

3.2.2 Groundwater Sampling

Semi-Annual Monitoring. The 2023 semi-annual groundwater monitoring program consisted of collection of groundwater samples from wells HC-5, HC-12D, BE-1, and BE-5. The 2023 groundwater monitoring events were conducted on June 20 and 21 and December 6, 7, and 8, 2023. Due to slow recharge in well BE-1, samples from this well were collected over two days in December 2023.

Purging. After 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 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 1.75 gallons of LNAPL were removed from the wells during the 2023 event. Individual LNAPL recovered from wells were: 1.3 gallons from MW-19, 0.45 gallons from MW-20, and less than 0.01 gallon from BE-4. LNAPL was not observed in wells HC-5, HC-10, HC-12D, HC-19, HC-21, HC-23, HC-24, BE-1, BE-3, or BE-5 during the 2023 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 any of the 2023 monitoring year 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 2023 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 concentrations over time, whereas negative values indicate a decrease in concentrations 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 (BE-4, MW-19, and MW-20) as described above. The results of the Mann-Kendall analysis for well BE-4 show no statistically significant trend for LNAPL recovery and suggest that LNAPL recovery from wells MW-19 and MW-20 is decreasing.

Well	Mann-Kendall Statistic	Confidence in Trend	Coefficient of Variation	Concentration Trend
BE-4	-1	0%	2.07	NO TREND
MW-19	-63	100%	1.61	DECREASING
MW-20	-65	100%	1.09	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 2023 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);
- PAHs using EPA Method 8270E;
- C10-C12 aliphatic hydrocarbons using the Northwest Extractable 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. Arsenic, copper, lead, and manganese were detected in one or more samples at concentrations above the PHROD CUL in groundwater samples collected from monitoring well BE-1. Copper and lead were detected in one or more samples at concentrations above the PHROD 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 concentrations of 338 micrograms per liter ($\mu\text{g/L}$) and 1,090 $\mu\text{g/L}$ (for the June and December 2023 monitoring events, respectively), one of which exceeds the ROD Compliance Criterion (1,000 $\mu\text{g/L}$, December 2023). 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 reporting period. Arsenic, copper, manganese and zinc were detected in the sample collected in June 2023 at concentrations above the PHROD CUL. Copper, lead, manganese, and zinc were detected in the groundwater sample collected in December 2023 at concentrations above the PHROD CUL.

HC-12D. Monitoring results for well HC-12D were consistent with historical ranges. No TPH-Dx or C10-C12 aliphatic hydrocarbons were detected in groundwater samples collected during the reporting period. No PAHs were detected in well HC-12D during the reporting period with the exception of acenaphthene at concentrations below the ROD Compliance Criteria. Arsenic, cadmium, copper, lead, and manganese were detected at concentrations above the PHROD CUL in the groundwater sample collected in June 2023. Arsenic, cadmium, and manganese were detected at concentrations above the PHROD CUL in the groundwater sample collected in December 2023.

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 $\mu\text{g/L}$ (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 2023. Statistical analysis of TPH-Dx in well BE-1 was conducted using the historical data from June 2005 through December 2023, 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	42	25	17	-58	46%	1.52	NO TREND
BE-5	BAA	23	12	11	-127	100%	1.06	DECREASING
	BAP	23	15	8	-124	100%	1.14	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 2023), 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. (An exponential trend line has been used to perform the regression.) However, due to the high variability in TPH-Dx data in BE-1, there is some uncertainty in the slope of the regression line. Regressions for concentrations of BAA and BAP in BE-5 indicate negative slopes. However, similar to the TPH-Dx data observed in BE-1, there is some uncertainty in the slope of the BAA and BAP regression lines for BE-5 due to the variability in concentrations, specifically the higher concentrations in the samples collected during the 2020 annual monitoring event.

5.2.2 South Slip Compliance Wells

Mann-Kendall. A Mann-Kendall statistical evaluation could not be completed on the data collected from well HC-5 due to the insufficient number of data points and the two-year period in which data was not collected for the well; one of the assumptions of the Mann-Kendall test is evenly spaced data per time, and the data gap between February 2018 and December 2020 violates the condition.

Regression. A straight-line regression for the last four years of the available data set (December 2020 through December 2023) 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 may be evaluated in conjunction with forthcoming porewater data that is being collected as part of the in-water design process.

6.0 Conclusions and Recommendations

This section provides conclusions for the 2023 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 2023. The total 2023 LNAPL removal volume was 1.75 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. However, the Port plans to continue the monitoring program on an annual basis (to be conducted coincident with the Annual Groundwater Monitoring Event).

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 and 2023 monitoring events;
 - No BAA or BAP were detected during the 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 2023 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 2023 monitoring period and have not exceeded compliance levels since 2007.
- HC-5:
 - Diesel-range TPH was detected below and at concentrations slightly above compliance levels during the reporting period (June and December 2023, respectively);
 - Straight-line regressions on the four most current rounds of sampling indicated a decreasing slope for TPH; and
 - Concentrations of BAA and BAP were not detected in the samples collected since 2020.

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 of the following:

- The concentrations of TPH-D in HC-5 slightly exceeded the ROD Compliance Criteria.

Well HC-5 will require continued monitoring until a declining trend or stable conditions are present and concentrations of TPH-D are below those of the ROD Compliance Criteria. The requirements have been met to terminate the LNAPL Monitoring/Removal program (Item 1). When all four of the conditions are met, the Port will recommend termination of the program; see further discussion of recommendations in Section 6.4.

6.3 Additional Considerations

The results and conclusions for other sampling and analysis are summarized below.

- HC-12D:
 - No PAHs were detected in well HC-12D during the reporting period with the exception of acenaphthene at concentrations below the PHROD CUL;
 - C10-C12 aliphatic hydrocarbons were not detected during the reporting period; and
 - Arsenic, cadmium, copper, lead, and manganese were detected in one or more samples at concentrations above the PHROD CUL.

Except for TPH-Dx in well HC-5, TPH and PAHs are below PHROD CULs. Several metals were detected above PHROD CULs. The detected arsenic, copper, and zinc concentrations are generally consistent with Willamette Valley background concentrations (13 ug/L, 21 ug/L, and 280 ug/L, respectively [Washington Department of Ecology, 2022; DEQ, 2004b; United States Geological Survey, 1999]). Other metals are present above the PHROD CULs. Relatively higher concentrations of cadmium and lead in some wells may be the result of reducing conditions related to the presence of petroleum hydrocarbons. The metals concentrations will be reassessed when porewater data becomes available.

6.4 Recommendations for Additional Monitoring

Because the ROD Compliance Criteria have not been achieved, the Port recommends that the groundwater sampling continue in 2024 as follows:

- Collect groundwater samples from ROD compliance monitoring wells BE-1, BE-5, HC-5, and HC-12D on an annual basis in 2024 and analyze for TPH-Dx and PAHs. Although well HC-5 (currently the only well that has ROD compliance criteria exceedances) is not the POC, the data from this and other ROD compliance wells may be used along with porewater data to assess if ROD criteria have been met.
- Collect groundwater samples from the ROD compliance wells (BE-1, BE-5, HC-5, and HC-12D) on a semi-annual basis through 2024 for analysis of C10-C12 aliphatic hydrocarbons and metals (arsenic, cadmium, chromium, copper, lead, manganese, mercury, zinc, and vanadium). The need for additional analysis of other parameters will be evaluated after receipt of porewater data.

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
2023 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)	7-Dec-2023	15.80	14.80	1.00	15.82	1.30	245.26	<0.01
MW-20 (30.73)	6-Dec-2023	17.72	17.55	0.17	13.16	0.45	263.95	<0.01
HC-5 (32.10)	20-Jun-2023	18.27	NP	0.00	13.83	NA	0.60	0.00
	6-Dec-2023	18.33	NP	0.00	13.77	NA	0.60	0.00
HC-10 (29.30)	6-Dec-2023	11.19	NP	0.00	18.11	NA	46.64	0.00
HC-12D (29.32)	20-Jun-2023	16.54	NP	0.00	12.78	NA	0.00	0.00
	6-Dec-2023	16.85	NP	0.00	12.47	NA	0.00	0.00
HC-19 (33.05)	6-Dec-2023	17.62	NP	0.00	15.43	NA	0.00	0.00
HC-21 (31.95)	6-Dec-2023	16.23	NP	0.00	15.72	NA	0.00	0.00
HC-23 (32.74)	7-Dec-2023	14.46	NP	0.00	18.28	NA	0.70	0.00
HC-24 (30.04)	6-Dec-2023	8.81	NP	0.00	21.23	NA	0.00	0.00

Please see notes at end of table.

Table 1
2023 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)	20-Jun-2023	6.64	NP	0.00	13.11	NA	0.00	0.00
	6-Dec-2023	6.21	NP	0.00	13.54	NA	0.00	0.00
BE-3 (17.55)	6-Dec-2023	8.24	NP	0.00	9.31	NA	0.00	0.00
BE-4 (31.16)	6-Dec-2023	15.81	15.81	<0.01	15.35	<0.01	12.76	<0.01
BE-5 (21.12)	20-Jun-2023	10.50	NP	0.00	10.62	NA	0.00	0.00
	6-Dec-2023	7.28	NP	0.00	13.84	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
2023 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	
Date	LNAPL Removed (gallons)							Total
6/20/2023	n/a	n/a	0.00	0.00	0.00	0.00	0.00	0.00
12/7/2023	n/a	n/a	1.30	0.45	0.00	<0.01	0.00	1.75
2023 Total	n/a	n/a	1.30	0.45	0.00	<0.01	0.00	1.75

Notes:

1. The current (2023) 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 removed.
2. n/a = not available
3. Wells MW-15 and MW-17 were abandoned in May 2015.

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

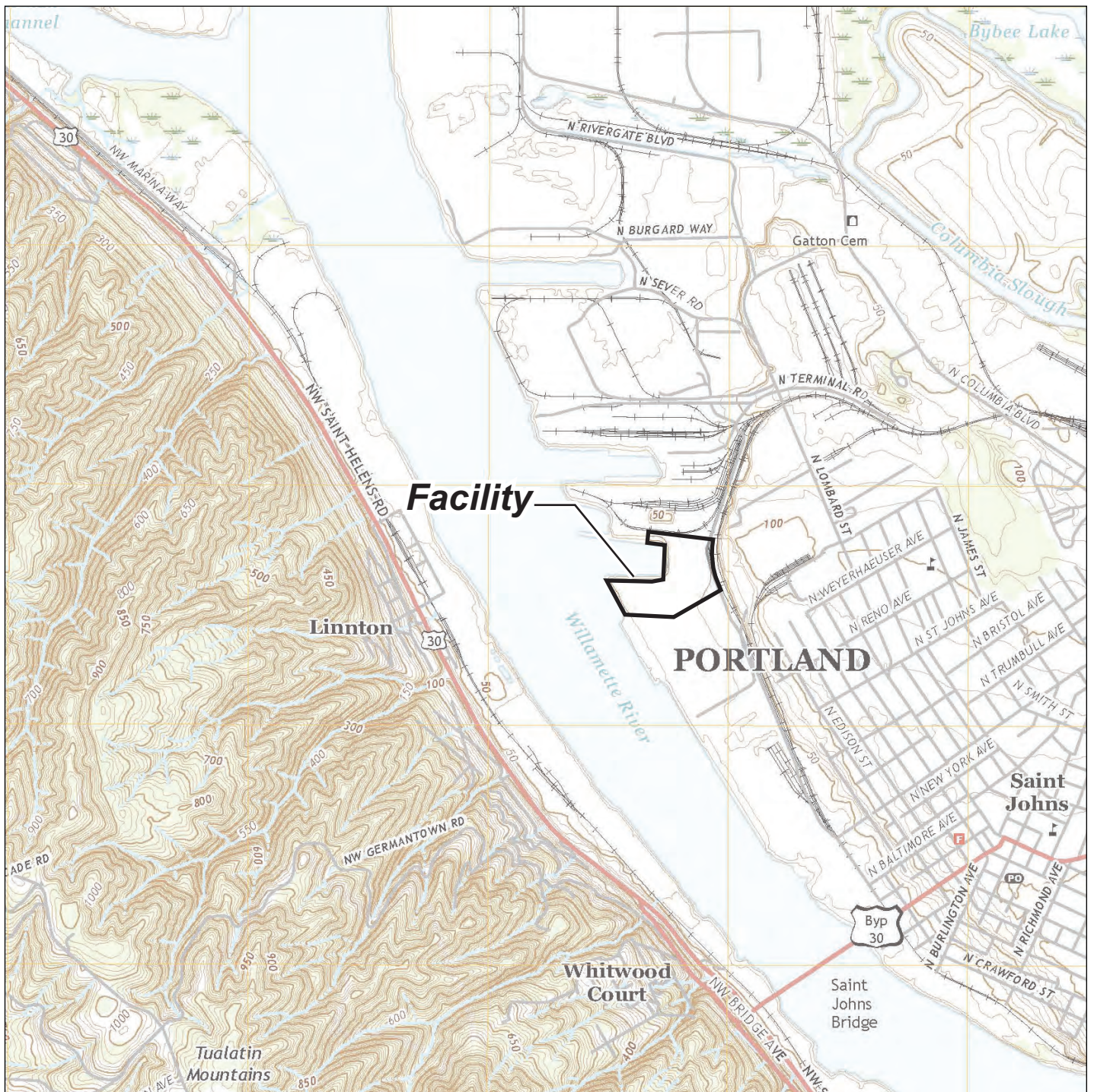
Well ID	Date	TPH (µg/L)		PAHs (µg/L)																			
		Diesel - Range	Residual-Range	Acenaph-thene	Acenaph-thylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	Carbazole	Dibenzofuran
South Slip 3 Area																							
HC-5	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
	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
BEBRA Area																							
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
	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-5	6/20/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	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
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
	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
	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
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. J = Result is an estimated value.
 5. PAHs = Polycyclic aromatic hydrocarbons.
 6. TPH = Total petroleum hydrocarbons.
 7. µg/L = Micrograms per liter.
 8. < = Constituent not detected above the minimum reporting limit.
 9. -- Value was not available
 10. Monitoring well BE-5 was dry during June 2023 sampling event and no samples were collected.

Table 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-5	6/20/2023	<20.6	2.39	2.18	<0.20	<0.20	<2.00	<2.00	<2.00	2.76	<0.20	<0.20	2,060	1,820	<0.0800	<0.0800	3.66	2.92	291	235
	12/6/2023	<20.7	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	4.51	8.45	<0.20	0.573	366	434	<0.0800	<0.0800	3.12	2.36	68.2	67.2
BEBRA Area																				
BE-1	6/20/2023	<20.6	12.9	5.89	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	4,160	3,480	<0.0800	<0.0800	<2.00	<2.00	<4.00	<4.00
	12/6/2023	<20.2	11.7	14.8	<0.20	<0.20	2.28	<2.00	4.12	4.62	2.30	<0.20	2,580	2,970	<0.0800	<0.0800	9.38	<2.00	20.2	4.20
BE-5	6/20/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2023	<20.7	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	2.65	7.02	1.78	<0.20	7.81	18.5	<0.0800	<0.0800	2.79	<2.00	17.1	15.1
HC-12D	6/20/2023	<20.6	19.5	20.0	6.33	<0.20	<2.00	<2.00	<2.00	2.94	1.57	<0.20	13,600	12,600	<0.0800	<0.0800	<2.0	<2.00	7.77	<4.00
	12/6/2023	<20.7	14.7	15.1	8.25	<0.20	<2.00	<2.00	<2.00	<2.00	0.231	<0.20	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	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	15,100	14,300	<0.0800	<0.0800	<2.00	<2.00	<4.00	11.1
Portland Harbor ROD Cleanup Levels		2.6	0.018		0.094		11		2.74		0.54		430		NA		20		36.5	

- Notes:
- < = Analyte was not detected above the minimum reporting limit.
 - µg/L = Micrograms per liter.
 - J = Result is estimated.
 - J+ = Result is estimated and may be biased high.
 - Boldface** data represents detected analyte concentrations exceeding the Portland Harbor ROD.
 - NA = No screening level is established.
 - 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).
 - DUP = Field duplicate.
 - = Analyte was not tested.



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

Revised Annual 2023 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

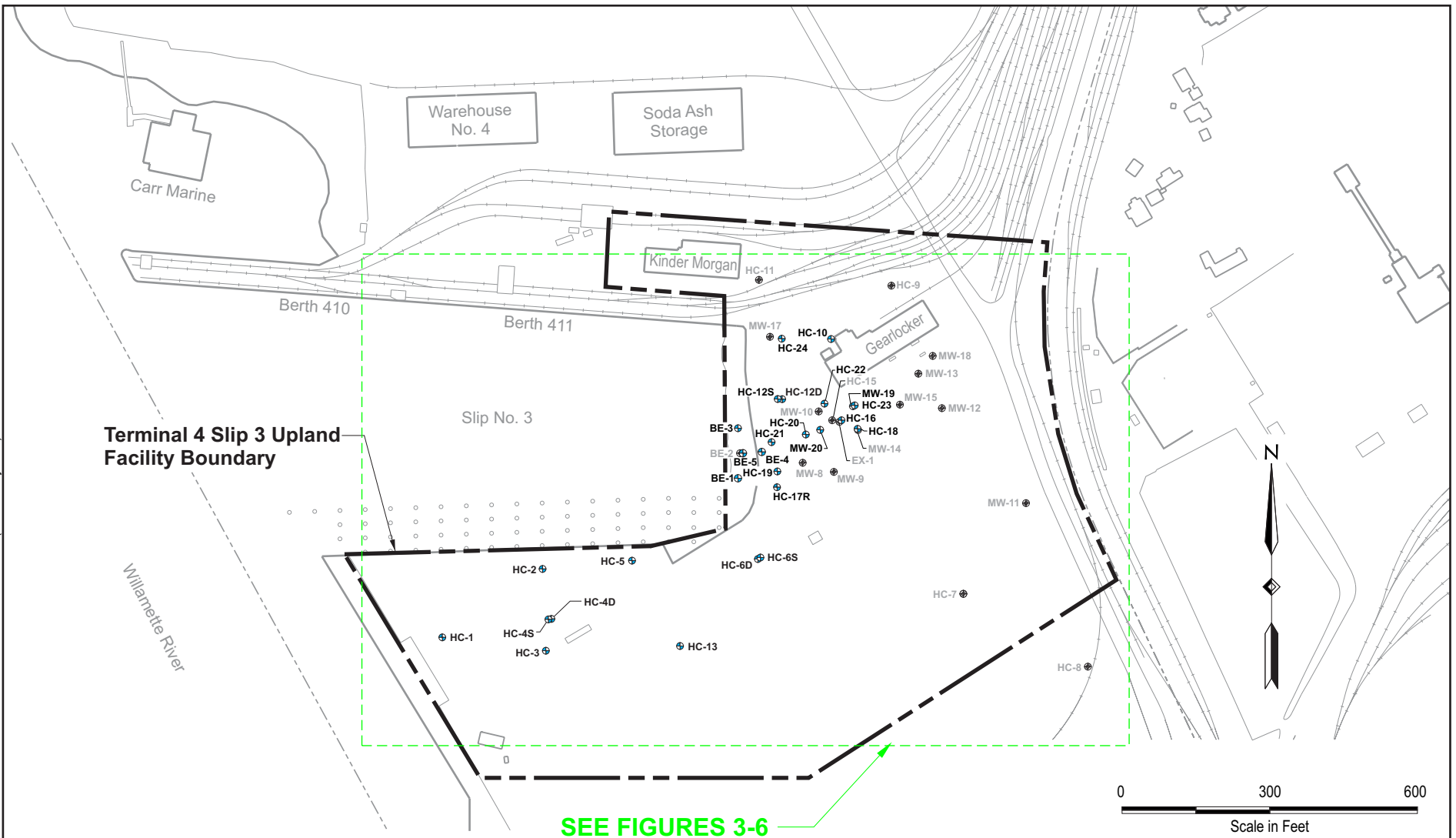
Drawn:
JP

Approved:
SM

April 2024

Figure

1



Legend:

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

Site Vicinity Plan

Revised Annual 2023 Groundwater Monitoring
Report Terminal 4 Slip 3 Upland Facility
Portland, Oregon

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

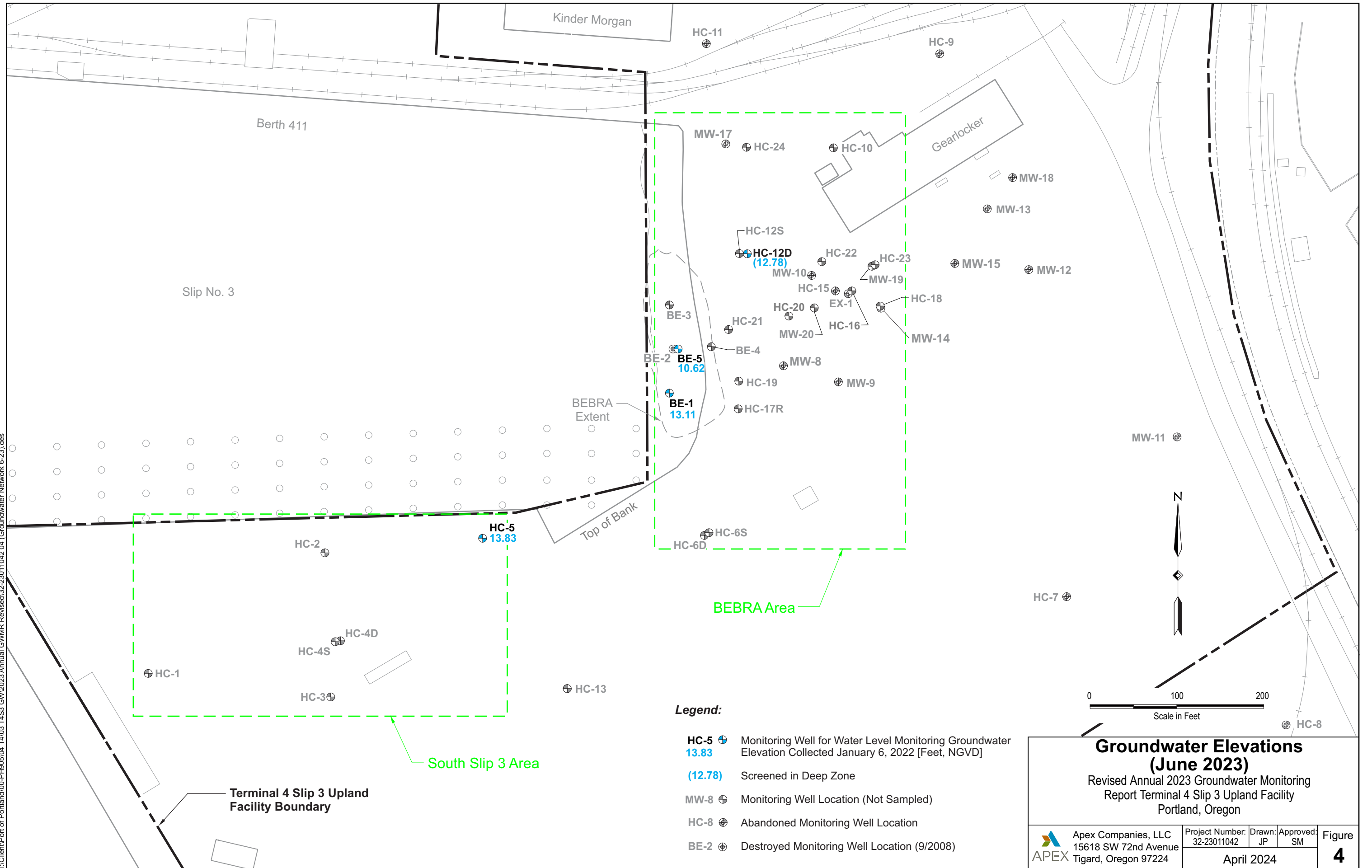
Project Number: 32-23011042	Drawn: JP	Approved: SM
April 2024		

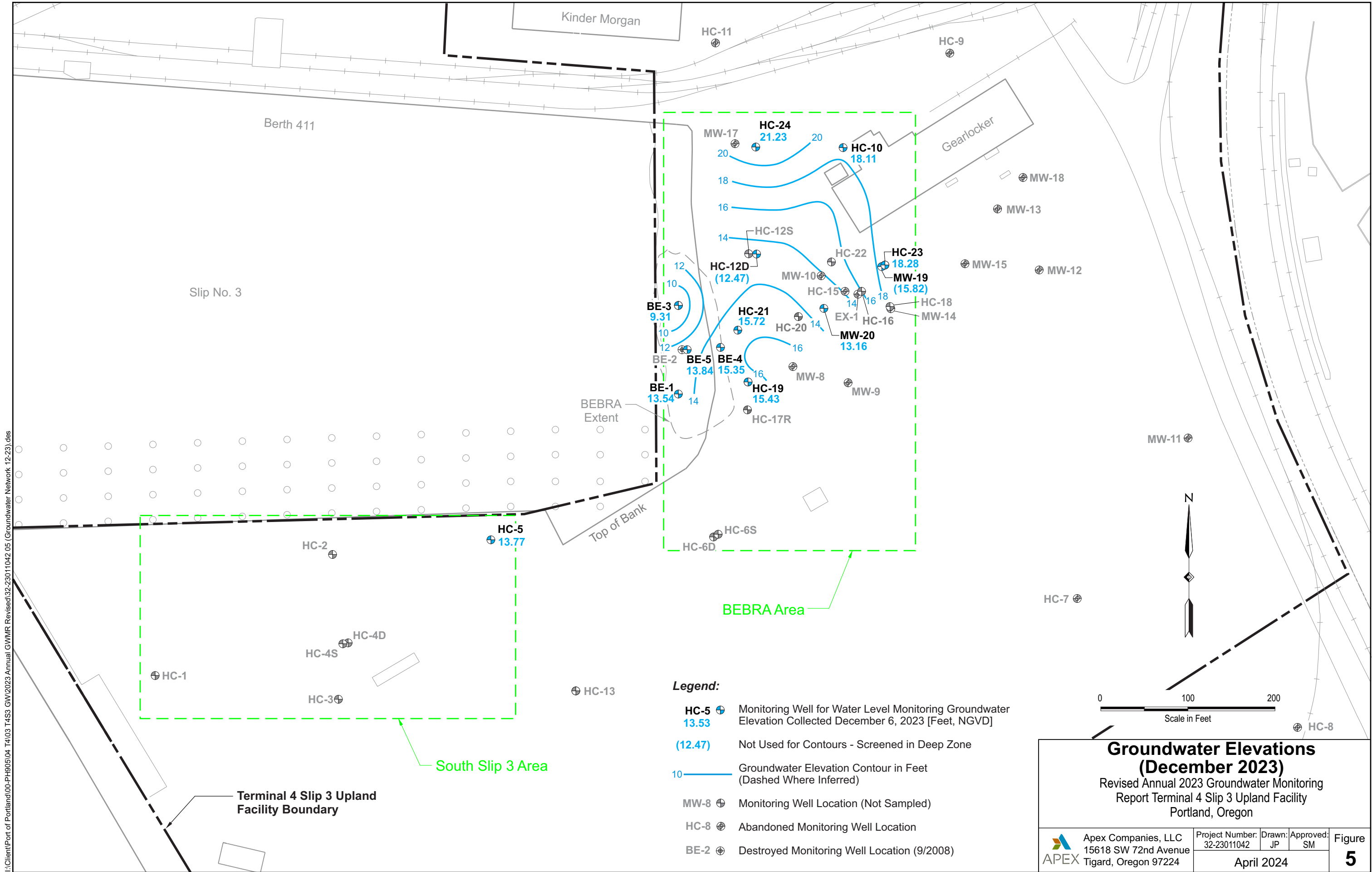
Figure
2



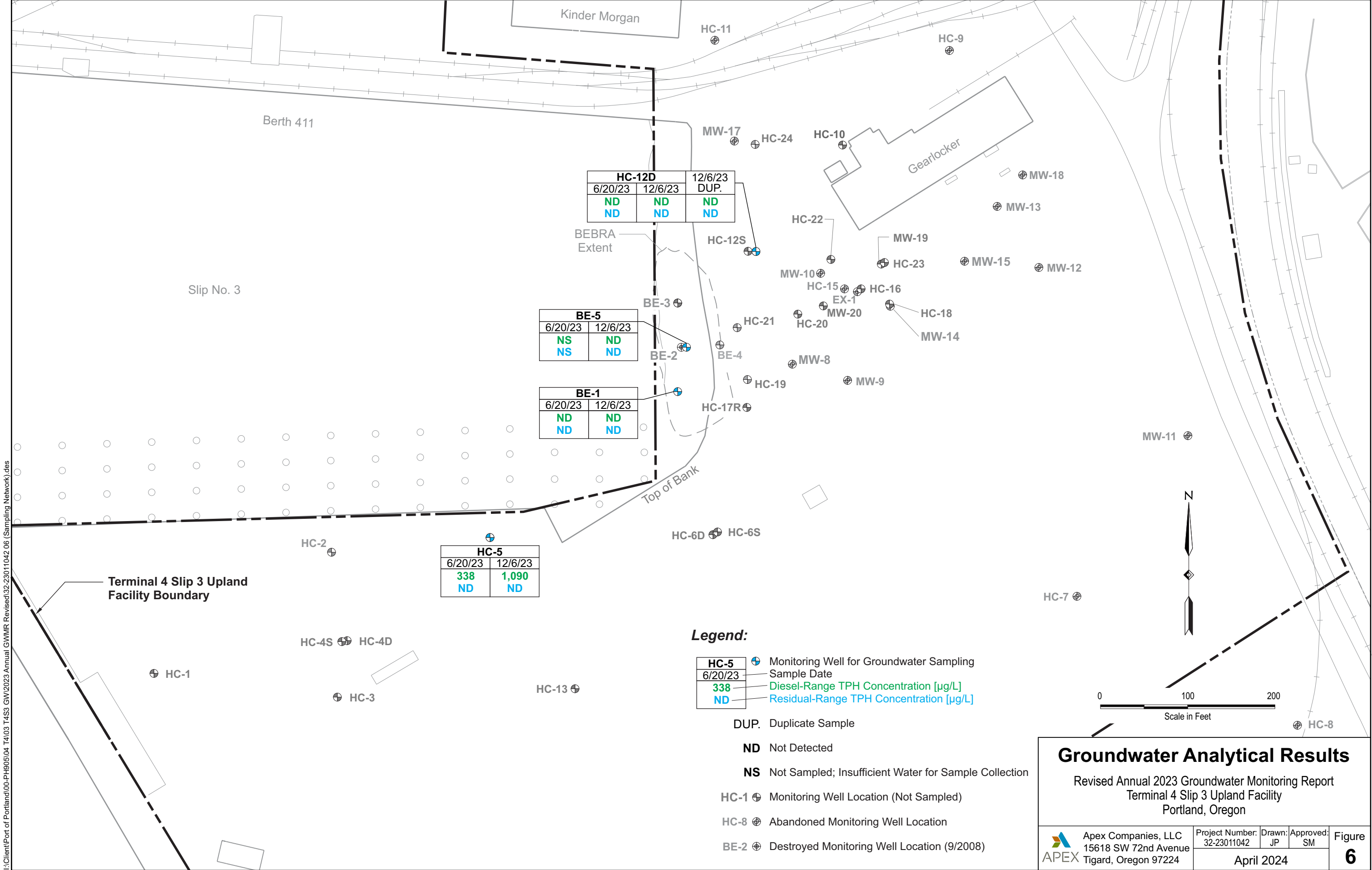
I:\Client\Port of Portland\00-PH90504 T4\03 T4S3 GW2023 Annual GWMR Revised\32-23011042 03 (LNAPL Network).des

I:\Client\Port of Portland\00-PH90504 T4\03 T4S3 GW2023 Annual GWMR Revised\32-23011042 04 (Groundwater Network 6-23).des





I:\Client\Port of Portland\00-PH90504 T403 T4S3 GW2023 Annual GWMR Revised\32-23011042 05 (Groundwater Network 12-23).des



Appendix A

Field and Quality Assurance/Quality Control Procedures

1.0 Introduction

This appendix documents the results of a quality assurance (QA) review of the analytical data for groundwater samples collected during the 2023 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
A3F1372	July 11, 2023	June 2023 Groundwater Sampling
A3L1058	January 12, 2024	December 2023 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.

Appendix B – Data QA/QC Review

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

H	Holding times for preparation or analysis exceeded
S	Spike recovery outside accepted recovery limits (surrogate)

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.

Appendix B – Data QA/QC Review

Holding Times. Samples were extracted and analyzed within method holding times with one exception. The surrogate recoveries for the C10-C12 analysis on the December 2023 groundwater samples was outside control limits (low). The samples were re-extracted and re-analyzed outside of the hold time and the surrogate recoveries were within control limits and the initial and re-extracted results were within three percent.

Sampling Containers and Preservation. Samples were collected in amber glass and plastic containers provided by the laboratory and were immediately chilled with ice. 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 December 2023 sampling event from well HC-12D. The field duplicate results were generally within the 30 percent RPD control limit. However, the RPD in the cadmium concentrations of between the primary and duplicate samples exceeded 30 percent. The results were within the range of recent detected values. Field duplicates were inadvertently not collected during the June 2023 sampling event.

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

The laboratory was 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

Appendix B – Data QA/QC Review

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 exception.

- For PAH analysis of groundwater collected from BE-1, HC-2, HC-6S, HC-12D and the field duplicate in December 2023, the surrogate acenaphthylene-d8 was recovered below the lower control limit. Verification showed that the true value of the surrogate spike was approximately 70% of expected.

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 June and December 2023 were all reported below the detection limit.

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



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Tuesday, July 11, 2023

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

RE: A3F1372 - POP T4 - Slip 3 GW - 7573-00

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 A3F1372, which was received by the laboratory on 6/21/2023 at 10:23:00AM.

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

(See Cooler Receipt Form for details)

Cooler #1 3.4 degC

Cooler #2 1.8 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. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

**ANALYTICAL REPORT****Apex Laboratories, LLC**6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062**Apex Companies, LLC**15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

ANALYTICAL REPORT FOR SAMPLES**SAMPLE INFORMATION**

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BE-1	A3F1372-01	Water	06/21/23 08:49	06/21/23 10:23
HC-5	A3F1372-02	Water	06/20/23 10:42	06/21/23 10:23
HC-12D	A3F1372-03	Water	06/20/23 09:46	06/21/23 10:23

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 (A3F1372-01)		Matrix: Water			Batch: 23G0032			
Diesel	ND	---	0.190	mg/L	1	07/03/23 20:53	NWTPH-Dx/SG	
Oil	ND	---	0.381	mg/L	1	07/03/23 20:53	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 92 %		Limits: 50-150 %	1	07/03/23 20:53	NWTPH-Dx/SG	
HC-5 (A3F1372-02)		Matrix: Water			Batch: 23G0032			
Diesel	3.38	---	0.189	mg/L	1	07/03/23 21:13	NWTPH-Dx/SG	
Oil	ND	---	0.377	mg/L	1	07/03/23 21:13	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 99 %		Limits: 50-150 %	1	07/03/23 21:13	NWTPH-Dx/SG	
HC-12D (A3F1372-03)		Matrix: Water			Batch: 23G0032			
Diesel	ND	---	0.190	mg/L	1	07/03/23 21:33	NWTPH-Dx/SG	
Oil	ND	---	0.381	mg/L	1	07/03/23 21:33	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 104 %		Limits: 50-150 %	1	07/03/23 21:33	NWTPH-Dx/SG	

Apex Laboratories

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 (A3F1372-01)		Matrix: Water			Batch: 23F0828			
Acenaphthene	ND	---	0.0403	ug/L	1	06/22/23 16:26	EPA 8270E LVI	R-02
Acenaphthylene	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Anthracene	ND	---	0.0464	ug/L	1	06/22/23 16:26	EPA 8270E LVI	R-02
Benz(a)anthracene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Chrysene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Fluoranthene	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Fluorene	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0195	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0781	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0781	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Naphthalene	ND	---	0.0781	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Phenanthrene	ND	---	0.0781	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Pyrene	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Carbazole	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0390	ug/L	1	06/22/23 16:26	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 82 %		Limits: 78-134 %	1	06/22/23 16:26	EPA 8270E LVI	
Benzo(a)pyrene-d12 (Surr)		106 %		80-132 %	1	06/22/23 16:26	EPA 8270E LVI	

HC-5 (A3F1372-02)

Matrix: Water

Batch: 23F0828

Acenaphthene	ND	---	5.26	ug/L	10	06/22/23 16:58	EPA 8270E LVI	R-02
Acenaphthylene	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Anthracene	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Chrysene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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-5 (A3F1372-02)		Matrix: Water			Batch: 23F0828			
Dibenz(a,h)anthracene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Fluoranthene	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Fluorene	0.737	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.181	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.724	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.724	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Naphthalene	ND	---	0.724	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Phenanthrene	ND	---	0.724	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Pyrene	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Carbazole	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Dibenzofuran	ND	---	0.362	ug/L	10	06/22/23 16:58	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: %		Limits: 78-134 %	10	06/22/23 16:58	EPA 8270E LVI	S-01
Benzo(a)pyrene-d12 (Surr)		88 %		80-132 %	10	06/22/23 16:58	EPA 8270E LVI	S-05
HC-12D (A3F1372-03)		Matrix: Water			Batch: 23F0828			
Acenaphthene	0.895	---	0.0398	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Acenaphthylene	ND	---	0.535	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Anthracene	ND	---	0.920	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Benz(a)anthracene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0398	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Chrysene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Fluoranthene	ND	---	0.0398	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Fluorene	ND	---	0.522	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Indeno(1,2,3-cd)pyrene	ND	---	0.0199	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.116	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
2-Methylnaphthalene	ND	---	0.0796	ug/L	1	06/22/23 17:31	EPA 8270E LVI	
Naphthalene	ND	---	0.529	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Phenanthrene	ND	---	0.284	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Pyrene	ND	---	0.0398	ug/L	1	06/22/23 17:31	EPA 8270E LVI	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 (A3F1372-03)		Matrix: Water			Batch: 23F0828			
Carbazole	ND	---	0.111	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Dibenzofuran	ND	---	0.0423	ug/L	1	06/22/23 17:31	EPA 8270E LVI	R-02
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 83 %		Limits: 78-134 %	1	06/22/23 17:31	EPA 8270E LVI	
Benzo(a)pyrene-d12 (Surr)		110 %		80-132 %	1	06/22/23 17:31	EPA 8270E LVI	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062Apex Companies, LLC
15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**
Project Number: 7573-00
Project Manager: Steve Misner**Report ID:**
A3F1372 - 07 11 23 1504

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 (A3F1372-01) Matrix: Water								
Batch: 23F1089								
Cadmium	ND	---	0.200	ug/L	1	06/30/23 01:32	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	06/30/23 01:32	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	06/30/23 01:32	EPA 6020B	
BE-1 (A3F1372-01RE1) Matrix: Water								
Batch: 23F1089								
Manganese	4160	---	10.0	ug/L	10	07/01/23 10:51	EPA 6020B	
BE-1 (A3F1372-01RE2) Matrix: Water								
Batch: 23F1089								
Arsenic	12.9	---	1.00	ug/L	1	07/01/23 09:54	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	07/01/23 09:54	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	07/01/23 09:54	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	07/01/23 09:54	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	07/01/23 09:54	EPA 6020B	
HC-5 (A3F1372-02) Matrix: Water								
Batch: 23F1089								
Cadmium	ND	---	0.200	ug/L	1	06/30/23 01:37	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	06/30/23 01:37	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	06/30/23 01:37	EPA 6020B	
HC-5 (A3F1372-02RE1) Matrix: Water								
Batch: 23F1089								
Arsenic	2.39	---	1.00	ug/L	1	07/01/23 09:59	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	07/01/23 09:59	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	07/01/23 09:59	EPA 6020B	
Manganese	2060	---	1.00	ug/L	1	07/01/23 09:59	EPA 6020B	
Vanadium	3.66	---	2.00	ug/L	1	07/01/23 09:59	EPA 6020B	
Zinc	291	---	4.00	ug/L	1	07/01/23 09:59	EPA 6020B	
HC-12D (A3F1372-03) Matrix: Water								
Batch: 23F1089								
Cadmium	6.33	---	0.200	ug/L	1	06/30/23 01:42	EPA 6020B	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HC-12D (A3F1372-03)		Matrix: Water						
Mercury	ND	---	0.0800	ug/L	1	06/30/23 01:42	EPA 6020B	
HC-12D (A3F1372-03RE1)		Matrix: Water						
Batch: 23F1089								
Manganese	13600	---	10.0	ug/L	10	07/01/23 10:56	EPA 6020B	
HC-12D (A3F1372-03RE2)		Matrix: Water						
Batch: 23F1089								
Arsenic	19.5	---	1.00	ug/L	1	07/01/23 10:04	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	07/01/23 10:04	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	07/01/23 10:04	EPA 6020B	
Lead	1.57	---	0.200	ug/L	1	07/01/23 10:04	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	07/01/23 10:04	EPA 6020B	
Zinc	7.77	---	4.00	ug/L	1	07/01/23 10:04	EPA 6020B	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 (A3F1372-01)		Matrix: Water						
Batch: 23F1009								
Arsenic	5.89	---	1.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Manganese	3480	---	1.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	06/28/23 12:25	EPA 6020B (Diss)	
HC-5 (A3F1372-02)		Matrix: Water						
Batch: 23F1009								
Arsenic	2.18	---	1.00	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Copper	2.76	---	2.00	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Manganese	1820	---	1.00	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
Zinc	235	---	4.00	ug/L	1	06/28/23 12:30	EPA 6020B (Diss)	
HC-5 (A3F1372-02RE1)		Matrix: Water						
Batch: 23F1009								
Vanadium	2.92	---	2.00	ug/L	1	06/29/23 21:17	EPA 6020B (Diss)	
HC-12D (A3F1372-03)		Matrix: Water						
Batch: 23F1009								
Arsenic	20.0	---	1.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Copper	2.94	---	2.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Manganese	12600	---	1.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

**ANALYTICAL REPORT****Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

ANALYTICAL SAMPLE RESULTS**Dissolved Metals by EPA 6020B (ICPMS)**

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HC-12D (A3F1372-03)		Matrix: Water						
Mercury	ND	---	0.0800	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	
Zinc	ND	---	4.00	ug/L	1	06/28/23 12:35	EPA 6020B (Diss)	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23G0032 - EPA 3510C (Fuels/Acid Ext.) w/Silica Gel + Acid						Water							
Blank (23G0032-BLK1)			Prepared: 07/03/23 11:56 Analyzed: 07/03/23 19:51										
<u>NWTPH-Dx/SG</u>													
Diesel	ND	---	0.200	mg/L	1	---	---	---	---	---	---		
Oil	ND	---	0.400	mg/L	1	---	---	---	---	---	---		
Surr: o-Terphenyl (Surr)		Recovery: 93 %		Limits: 50-150 %		Dilution: 1x							
LCS (23G0032-BS1)			Prepared: 07/03/23 11:56 Analyzed: 07/03/23 20:12										
<u>NWTPH-Dx/SG</u>													
Diesel	0.652	---	0.200	mg/L	1	1.25	---	52	36-132%	---	---		
Surr: o-Terphenyl (Surr)		Recovery: 98 %		Limits: 50-150 %		Dilution: 1x							
LCS Dup (23G0032-BSD1)			Prepared: 07/03/23 11:56 Analyzed: 07/03/23 20:32										Q-19
<u>NWTPH-Dx/SG</u>													
Diesel	0.616	---	0.200	mg/L	1	1.25	---	49	36-132%	6	30%		
Surr: o-Terphenyl (Surr)		Recovery: 97 %		Limits: 50-150 %		Dilution: 1x							

Apex Laboratories

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F0828 - EPA 3511 (Bottle Extraction)						Water						
Blank (23F0828-BLK1)			Prepared: 06/22/23 11:42 Analyzed: 06/22/23 14:22									
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: 85 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		103 %		80-132 %		"						

LCS (23F0828-BS1)

Prepared: 06/22/23 11:42 Analyzed: 06/22/23 14:57

EPA 8270E LVI												
Acenaphthene	1.58	---	0.0320	ug/L	1	1.60	---	98	80-120%	---	---	
Acenaphthylene	1.40	---	0.0320	ug/L	1	1.60	---	88	80-124%	---	---	
Anthracene	1.51	---	0.0320	ug/L	1	1.60	---	95	80-123%	---	---	
Benz(a)anthracene	1.49	---	0.0160	ug/L	1	1.60	---	93	80-122%	---	---	
Benzo(a)pyrene	1.56	---	0.0160	ug/L	1	1.60	---	97	80-129%	---	---	
Benzo(b)fluoranthene	1.54	---	0.0160	ug/L	1	1.60	---	97	80-124%	---	---	
Benzo(k)fluoranthene	1.54	---	0.0160	ug/L	1	1.60	---	96	80-125%	---	---	
Benzo(g,h,i)perylene	1.62	---	0.0320	ug/L	1	1.60	---	101	80-120%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F0828 - EPA 3511 (Bottle Extraction)						Water						
LCS (23F0828-BS1)			Prepared: 06/22/23 11:42		Analyzed: 06/22/23 14:57							
Chrysene	1.48	---	0.0160	ug/L	1	1.60	---	93	80-120%	---	---	
Dibenz(a,h)anthracene	1.44	---	0.0160	ug/L	1	1.60	---	90	80-120%	---	---	
Fluoranthene	1.58	---	0.0320	ug/L	1	1.60	---	99	80-126%	---	---	
Fluorene	1.64	---	0.0320	ug/L	1	1.60	---	102	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.47	---	0.0160	ug/L	1	1.60	---	92	80-121%	---	---	
1-Methylnaphthalene	1.54	---	0.0640	ug/L	1	1.60	---	96	53-148%	---	---	
2-Methylnaphthalene	1.52	---	0.0640	ug/L	1	1.60	---	95	48-150%	---	---	
Naphthalene	1.59	---	0.0640	ug/L	1	1.60	---	99	78-120%	---	---	
Phenanthrene	1.46	---	0.0640	ug/L	1	1.60	---	91	80-120%	---	---	
Pyrene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-125%	---	---	
Carbazole	1.64	---	0.0320	ug/L	1	1.60	---	102	65-141%	---	---	
Dibenzofuran	1.43	---	0.0320	ug/L	1	1.60	---	90	76-121%	---	---	
Surr: Acenaphthylene-d8 (Surr)		Recovery: 84 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		104 %		80-132 %		"						

LCS Dup (23F0828-BS1)			Prepared: 06/22/23 11:42 Analyzed: 06/22/23 15:34								Q-19	
EPA 8270E LVI												
Acenaphthene	1.59	---	0.0320	ug/L	1	1.60	---	100	80-120%	1	30%	
Acenaphthylene	1.41	---	0.0320	ug/L	1	1.60	---	88	80-124%	0.3	30%	
Anthracene	1.54	---	0.0320	ug/L	1	1.60	---	96	80-123%	2	30%	
Benz(a)anthracene	1.50	---	0.0160	ug/L	1	1.60	---	94	80-122%	0.7	30%	
Benzo(a)pyrene	1.57	---	0.0160	ug/L	1	1.60	---	98	80-129%	0.7	30%	
Benzo(b)fluoranthene	1.57	---	0.0160	ug/L	1	1.60	---	98	80-124%	2	30%	
Benzo(k)fluoranthene	1.57	---	0.0160	ug/L	1	1.60	---	98	80-125%	2	30%	
Benzo(g,h,i)perylene	1.66	---	0.0320	ug/L	1	1.60	---	104	80-120%	2	30%	
Chrysene	1.49	---	0.0160	ug/L	1	1.60	---	93	80-120%	0.5	30%	
Dibenz(a,h)anthracene	1.45	---	0.0160	ug/L	1	1.60	---	91	80-120%	1	30%	
Fluoranthene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-126%	0.8	30%	
Fluorene	1.65	---	0.0320	ug/L	1	1.60	---	103	77-127%	0.9	30%	
Indeno(1,2,3-cd)pyrene	1.50	---	0.0160	ug/L	1	1.60	---	94	80-121%	2	30%	
1-Methylnaphthalene	1.50	---	0.0640	ug/L	1	1.60	---	94	53-148%	3	30%	
2-Methylnaphthalene	1.47	---	0.0640	ug/L	1	1.60	---	92	48-150%	3	30%	
Naphthalene	1.60	---	0.0640	ug/L	1	1.60	---	100	78-120%	0.7	30%	
Phenanthrene	1.47	---	0.0640	ug/L	1	1.60	---	92	80-120%	0.6	30%	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F0828 - EPA 3511 (Bottle Extraction)						Water						
LCS Dup (23F0828-BSD1)			Prepared: 06/22/23 11:42 Analyzed: 06/22/23 15:34								Q-19	
Pyrene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-125%	0.05	30%	
Carbazole	1.65	---	0.0320	ug/L	1	1.60	---	103	65-141%	0.7	30%	
Dibenzofuran	1.46	---	0.0320	ug/L	1	1.60	---	91	76-121%	2	30%	
Surr: Acenaphthylene-d8 (Surr)		Recovery: 83 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		103 %		80-132 %		"						

Apex Laboratories

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F1089 - EPA 3015A						Water						
Blank (23F1089-BLK1)			Prepared: 06/29/23 09:04 Analyzed: 06/29/23 23:38									
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 (23F1089-BS1)			Prepared: 06/29/23 09:04 Analyzed: 06/29/23 23:43									
EPA 6020B												
Arsenic	55.4	---	1.00	ug/L	1	55.6	---	100	80-120%	---	---	
Cadmium	55.0	---	0.200	ug/L	1	55.6	---	99	80-120%	---	---	
Chromium	56.6	---	2.00	ug/L	1	55.6	---	102	80-120%	---	---	
Copper	57.9	---	2.00	ug/L	1	55.6	---	104	80-120%	---	---	
Lead	56.8	---	0.200	ug/L	1	55.6	---	102	80-120%	---	---	
Manganese	61.1	---	1.00	ug/L	1	55.6	---	110	80-120%	---	---	
Mercury	1.05	---	0.0800	ug/L	1	1.11	---	94	80-120%	---	---	
Vanadium	55.9	---	2.00	ug/L	1	55.6	---	101	80-120%	---	---	
Zinc	58.3	---	4.00	ug/L	1	55.6	---	105	80-120%	---	---	
Matrix Spike (23F1089-MS1)			Prepared: 06/29/23 09:04 Analyzed: 06/30/23 00:45									
QC Source Sample: Non-SDG (A3F1322-09)												
EPA 6020B												
Arsenic	57.0	---	1.00	ug/L	1	55.6	1.35	100	75-125%	---	---	
Cadmium	56.7	---	0.200	ug/L	1	55.6	ND	102	75-125%	---	---	
Chromium	53.3	---	2.00	ug/L	1	55.6	ND	96	75-125%	---	---	
Copper	58.3	---	2.00	ug/L	1	55.6	1.54	102	75-125%	---	---	
Lead	59.8	---	0.200	ug/L	1	55.6	ND	108	75-125%	---	---	
Manganese	618	---	1.00	ug/L	1	55.6	555	114	75-125%	---	---	
Mercury	1.15	---	0.0800	ug/L	1	1.11	ND	104	75-125%	---	---	
Vanadium	58.1	---	2.00	ug/L	1	55.6	4.92	96	75-125%	---	---	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F1089 - EPA 3015A						Water						
Matrix Spike (23F1089-MS1)			Prepared: 06/29/23 09:04		Analyzed: 06/30/23 00:45							
QC Source Sample: Non-SDG (A3F1322-09)												
Zinc	59.2	---	4.00	ug/L	1	55.6	ND	106	75-125%	---	---	
Matrix Spike Dup (23F1089-MSD1)			Prepared: 06/29/23 09:04		Analyzed: 06/30/23 00:51							
QC Source Sample: Non-SDG (A3F1322-09)												
Arsenic	55.9	---	1.00	ug/L	1	55.6	1.35	98	75-125%	2	20%	
Cadmium	57.4	---	0.200	ug/L	1	55.6	ND	103	75-125%	1	20%	
Chromium	52.7	---	2.00	ug/L	1	55.6	ND	95	75-125%	1	20%	
Copper	57.4	---	2.00	ug/L	1	55.6	1.54	101	75-125%	2	20%	
Lead	61.2	---	0.200	ug/L	1	55.6	ND	110	75-125%	2	20%	
Manganese	613	---	1.00	ug/L	1	55.6	555	105	75-125%	0.7	20%	
Mercury	1.18	---	0.0800	ug/L	1	1.11	ND	106	75-125%	2	20%	
Vanadium	56.7	---	2.00	ug/L	1	55.6	4.92	93	75-125%	2	20%	
Zinc	56.6	---	4.00	ug/L	1	55.6	ND	102	75-125%	4	20%	

Apex Laboratories

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F1009 - Matrix Matched Direct Inject						Water						
Blank (23F1009-BLK1)			Prepared: 06/28/23 10:30		Analyzed: 06/28/23 11:43							
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 (23F1009-BS1)			Prepared: 06/28/23 10:30		Analyzed: 06/28/23 11:48							
EPA 6020B (Diss)												
Arsenic	55.7	---	1.00	ug/L	1	55.6	---	100	80-120%	---	---	
Cadmium	54.9	---	0.200	ug/L	1	55.6	---	99	80-120%	---	---	
Chromium	54.1	---	2.00	ug/L	1	55.6	---	97	80-120%	---	---	
Copper	57.6	---	2.00	ug/L	1	55.6	---	104	80-120%	---	---	
Lead	56.9	---	0.200	ug/L	1	55.6	---	102	80-120%	---	---	
Manganese	58.2	---	1.00	ug/L	1	55.6	---	105	80-120%	---	---	
Mercury	1.05	---	0.0800	ug/L	1	1.11	---	94	80-120%	---	---	
Vanadium	56.6	---	2.00	ug/L	1	55.6	---	102	80-120%	---	---	
Zinc	55.9	---	4.00	ug/L	1	55.6	---	101	80-120%	---	---	
Duplicate (23F1009-DUP1)			Prepared: 06/28/23 10:30		Analyzed: 06/28/23 11:59							
QC Source Sample: Non-SDG (A3F1288-01)												
Arsenic	3.22	---	1.00	ug/L	1	---	3.37	---	---	4	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%	
Zinc	ND	---	4.00	ug/L	1	---	2.77	---	---	***	20%	
Duplicate (23F1009-DUP2)			Prepared: 06/28/23 10:30		Analyzed: 06/29/23 21:02							

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 23F1009 - Matrix Matched Direct Inject						Water						
Duplicate (23F1009-DUP2)			Prepared: 06/28/23 10:30 Analyzed: 06/29/23 21:02									
QC Source Sample: Non-SDG (A3F1288-01RE1)												
Manganese	2940	---	10.0	ug/L	10	---	2990	---	---	2	20%	Q-16
Duplicate (23F1009-DUP3)			Prepared: 06/28/23 10:30 Analyzed: 06/29/23 21:12									
QC Source Sample: Non-SDG (A3F1288-01RE2)												
Vanadium	2.66	---	2.00	ug/L	1	---	2.49	---	---	7	20%	Q-16
Matrix Spike (23F1009-MS1)			Prepared: 06/28/23 10:30 Analyzed: 06/28/23 12:04									
QC Source Sample: Non-SDG (A3F1288-01)												
EPA 6020B (Diss)												
Arsenic	60.8	---	1.00	ug/L	1	55.6	3.37	103	75-125%	---	---	E, Q-65
Cadmium	56.7	---	0.200	ug/L	1	55.6	ND	102	75-125%	---	---	
Chromium	53.8	---	2.00	ug/L	1	55.6	ND	97	75-125%	---	---	
Copper	55.7	---	2.00	ug/L	1	55.6	ND	100	75-125%	---	---	
Lead	55.6	---	0.200	ug/L	1	55.6	ND	100	75-125%	---	---	
Manganese	2860	---	1.00	ug/L	1	55.6	2850	16	75-125%	---	---	
Mercury	1.06	---	0.0800	ug/L	1	1.11	ND	96	75-125%	---	---	
Vanadium	60.4	---	2.00	ug/L	1	55.6	2.49	104	75-125%	---	---	
Zinc	57.7	---	4.00	ug/L	1	55.6	2.77	99	75-125%	---	---	

Apex Laboratories

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

**ANALYTICAL REPORT****Apex Laboratories, LLC**

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **7573-00**Project Manager: **Steve Misner****Report ID:****A3F1372 - 07 11 23 1504****SAMPLE PREPARATION INFORMATION****Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup**

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0032							
A3F1372-01	Water	NWTPH-Dx/SG	06/21/23 08:49	07/03/23 11:56	1050mL/5mL	1000mL/5mL	0.95
A3F1372-02	Water	NWTPH-Dx/SG	06/20/23 10:42	07/03/23 11:56	1060mL/5mL	1000mL/5mL	0.94
A3F1372-03	Water	NWTPH-Dx/SG	06/20/23 09:46	07/03/23 11:56	1050mL/5mL	1000mL/5mL	0.95

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: 23F0828							
A3F1372-01	Water	EPA 8270E LVI	06/21/23 08:49	06/22/23 11:42	102.47mL/5mL	125mL/5mL	1.22
A3F1372-02	Water	EPA 8270E LVI	06/20/23 10:42	06/22/23 11:42	110.57mL/5mL	125mL/5mL	1.13
A3F1372-03	Water	EPA 8270E LVI	06/20/23 09:46	06/22/23 11:42	100.49mL/5mL	125mL/5mL	1.24

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: 23F1089							
A3F1372-01	Water	EPA 6020B	06/21/23 08:49	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-01RE1	Water	EPA 6020B	06/21/23 08:49	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-01RE2	Water	EPA 6020B	06/21/23 08:49	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-02	Water	EPA 6020B	06/20/23 10:42	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-02RE1	Water	EPA 6020B	06/20/23 10:42	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-03	Water	EPA 6020B	06/20/23 09:46	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-03RE1	Water	EPA 6020B	06/20/23 09:46	06/29/23 09:04	45mL/50mL	45mL/50mL	1.00
A3F1372-03RE2	Water	EPA 6020B	06/20/23 09:46	06/29/23 09:04	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: 23F1009							
A3F1372-01	Water	EPA 6020B (Diss)	06/21/23 08:49	06/28/23 10:30	45mL/50mL	45mL/50mL	1.00
A3F1372-02	Water	EPA 6020B (Diss)	06/20/23 10:42	06/28/23 10:30	45mL/50mL	45mL/50mL	1.00
A3F1372-02RE1	Water	EPA 6020B (Diss)	06/20/23 10:42	06/28/23 10:30	45mL/50mL	45mL/50mL	1.00
A3F1372-03	Water	EPA 6020B (Diss)	06/20/23 09:46	06/28/23 10:30	45mL/50mL	45mL/50mL	1.00

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

SAMPLE PREPARATION INFORMATION

Dissolved Metals by EPA 6020B (ICPMS)

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

QUALIFIER DEFINITIONS

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

Apex Laboratories

- E** Estimated Value. The result is above the calibration range of the instrument.
- 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.
- S-01** Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: **7573-00**

Project Manager: **Steve Misner**

Report ID:

A3F1372 - 07 11 23 1504

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: **7573-00**

Project Manager: **Steve Misner**

Report ID:

A3F1372 - 07 11 23 1504

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

Darrell Auvil, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

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 provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 7573-00

Project Manager: Steve Misner

Report ID:

A3F1372 - 07 11 23 1504

APEX LABS COOLER RECEIPT FORM

Client: Apex Companies Element WO#: A3 F1372Project/Project #: Terminal 4 Slip 3 Groundwater Sampling / 7573-00

Delivery Info:

Date/time received: 6-21-23 @ 1023 By: DSSDelivered by: Apex Client ☒ ESS ☐ FedEx ☐ UPS ☐ Radio ☐ Morgan ☐ SDS ☐ Evergreen ☐ Other ☐Cooler Inspection Date/time inspected: 6-21-23 @ 12:1025 By: DSSChain of Custody included? Yes ☒ No ☐Signed/dated by client? Yes ☒ No ☐

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>3.4</u>	<u>1.8</u>					
Custody seals? (Y/N)	<u>N</u>	<u>N</u>					
Received on ice? (Y/N)	<u>Y</u>	<u>Y</u>					
Temp. blanks? (Y/N)	<u>Y</u>	<u>Y</u>					
Ice type: (Gel/Real/Other)	<u>Real</u>	<u>Real</u>					
Condition (In/Out):	<u>In</u>	<u>In</u>					

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: 6/21/23 @ 1457 By: WJAll samples intact? Yes ☒ No ☐ Comments: 6/21/23Bottle labels/COCs agree? Yes ☒ No ☐ Comments: Labels NO Time/Date on
LOL. 100% read BE-1 6/21/23 @ 0849, HC-5 6/20/23 @ 1042COC/container discrepancies form initiated? Yes ☒ No ☐Containers/volumes received appropriate for analysis? Yes ☒ No ☐ Comments: 6/21/23Do VOA vials have visible headspace? Yes ☐ No ☐ NA ☒Comments: 6/21/23Water samples: pH checked: Yes ☒ No ☐ NA ☐ pH appropriate? Yes ☒ No ☐ NA ☐Comments: 6/21/23Additional information: HC-12D: 6/20/23, 0946. LOL reads 5 conks.HC-5 + HC-12D received 8 conks. with BE-1 received 6 conks.Labeled by: KASWitness: APWCooler Inspected by: 6

Form Y-003 R-00

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Darrell Auvi, Client Services Manager

Report is complete only if it includes Fremont Analytical Data.

Page 26 of 34 07/13/2023

Page 26 of 26



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: A3F1372
Work Order Number: 2306443

July 13, 2023

Attention Darrell Auvil:

Fremont Analytical, Inc. received 3 sample(s) on 6/27/2023 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

CC:
Sub Data

*DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 for Environmental Testing
ORELAP Certification: WA 100009 (NELAP Recognized) for Environmental Testing
Washington State Department of Ecology Accredited for Environmental Testing, Lab ID C910*

Revision v1

www.fremontanalytical.com

CLIENT: Apex Laboratories
Project: A3F1372
Work Order: 2306443

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2306443-001	BE-1	06/21/2023 8:49 AM	06/27/2023 9:25 AM
2306443-002	HC-5	06/20/2023 10:42 AM	06/27/2023 9:25 AM
2306443-003	HC-12D	06/20/2023 9:46 AM	06/27/2023 9:25 AM

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

CLIENT: Apex Laboratories

Project: A3F1372

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.

7/13/2023: Revision 1 includes correction to the analyte list for EPH.

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: 2306443
Date Reported: 7/13/2023

Client: Apex Laboratories
Project: A3F1372
Lab ID: 2306443-001
Client Sample ID: BE-1

Collection Date: 6/21/2023 8:49:00 AM

Matrix: Water

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 40780

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	39.9	20.6		µg/L	1	07/12/23 11:34:15
Surr: 1-Chlorooctadecane	54.1	50 - 150			%Rec	1	07/12/23 11:34:15

Client: Apex Laboratories
Project: A3F1372
Lab ID: 2306443-002
Client Sample ID: HC-5

Collection Date: 6/20/2023 10:42:00 AM

Matrix: Water

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 40780

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	39.8	20.6		µg/L	1	07/12/23 10:50:28
Surr: 1-Chlorooctadecane	51.2	50 - 150			%Rec	1	07/12/23 10:50:28

Client: Apex Laboratories
Project: A3F1372
Lab ID: 2306443-003
Client Sample ID: HC-12D

Collection Date: 6/20/2023 9:46:00 AM

Matrix: Water

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 40780

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	39.9	20.6		µg/L	1	07/10/23 15:37:26
Surr: 1-Chlorooctadecane	53.5	50 - 150			%Rec	1	07/10/23 15:37:26

Work Order: 2306443
CLIENT: Apex Laboratories
Project: A3F1372

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: MB-40780		SampType: MBLK			Units: µg/L		Prep Date: 6/28/2023			RunNo: 85258		
Client ID: MBLKW		Batch ID: 40780			Analysis Date: 7/10/2023					SeqNo: 1779207		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aliphatic Hydrocarbon (C10-C12)	ND	39.9		0	0						
Surr: 1-Chlorooctadecane	229		398.5		57.5	50	150				

Sample ID: LCS-40780		SampType: LCS			Units: µg/L		Prep Date: 6/28/2023			RunNo: 85258		
Client ID: LCSW		Batch ID: 40780			Analysis Date: 7/10/2023					SeqNo: 1779208		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aliphatic Hydrocarbon (C10-C12)	233	39.9	498.2	0	46.8	32.2	130				
Surr: 1-Chlorooctadecane	297		398.5		74.6	50	150				

Sample ID: 2306443-003AMS		SampType: MS			Units: µg/L		Prep Date: 6/28/2023			RunNo: 85258		
Client ID: HC-12D		Batch ID: 40780			Analysis Date: 7/10/2023			SeqNo: 1779213				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aliphatic Hydrocarbon (C10-C12)	237	39.8	497.8	0	47.5	17.1	108				
Surr: 1-Chlorooctadecane	305		398.3		76.6	50	150				

Sample ID: 2306443-002ADUP		SampType: DUP			Units: µg/L		Prep Date: 6/28/2023			RunNo: 85258		
Client ID: HC-5		Batch ID: 40780			Analysis Date: 7/12/2023					SeqNo: 1779219		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Aliphatic Hydrocarbon (C10-C12)	ND	39.8		0	0			0	0	25	
Surr: 1-Chlorooctadecane	201		398.2		50.6	50	150		0		

Sample Log-In Check List

Client Name: APEX
 Logged by: Morgan Wilson

Work Order Number: 2306443
 Date Received: 6/27/2023 9:25:00 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 holding times 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 °C
Sample	5.1

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

SUBCONTRACT ORDER

Apex Laboratories

A3F1372

OB 6/22/23

2306443

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 CoC reads 5 conts, we received 6
Sampled: 06/21/23 08:49 (A3F1372-01)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	07/05/23 17:00	07/05/23 08:49	c10-c12 aliphatic ONLY
Containers Supplied: (F)1 L Amber Glass - HCL			

Sample Name: HC-5 Water CoC reads 5 conts, we received 8
Sampled: 06/20/23 10:42 (A3F1372-02)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	07/05/23 17:00	07/04/23 10:42	c10-c12 aliphatic ONLY
Containers Supplied: (G)1 L Amber Glass - HCL (H)1 L Amber Glass - HCL			

Sample Name: HC-12D Water CoC reads 5 conts, we received 8
Sampled: 06/20/23 09:46 (A3F1372-03)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	07/05/23 17:00	07/04/23 09:46	c10-c12 aliphatic ONLY
Containers Supplied: (G)1 L Amber Glass - HCL (H)1 L Amber Glass - HCL			

Standard TAT

UPS (Shipper)

Released By

Date

Received By

Date

UPS (Shipper)

Released By

Date

Received By

Date



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Friday, January 12, 2024

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

RE: A3L1058 - POP T4 - Slip 3 GW - 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 A3L1058, which was received by the laboratory on 12/8/2023 at 1:00:00PM.

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			
<u>Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.</u>			
(See Cooler Receipt Form for details)			
Cooler #1	3.3	degC	Cooler #2 1.4 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

Darrell Auvil, Client Services Manager

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.



**ANALYTICAL REPORT****Apex Laboratories, LLC**6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062**Apex Companies, LLC**15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner****Report ID:****A3L1058 - 01 12 24 1643****ANALYTICAL REPORT FOR SAMPLES****SAMPLE INFORMATION**

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BE-1	A3L1058-01	Water	12/07/23 16:20	12/08/23 13:00
BE-5	A3L1058-02	Water	12/06/23 12:35	12/08/23 13:00
HC-12D	A3L1058-03	Water	12/07/23 13:40	12/08/23 13:00
HC-5	A3L1058-04	Water	12/07/23 12:10	12/08/23 13:00
DUP-1	A3L1058-05	Water	12/07/23 14:20	12/08/23 13:00

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-01)		Matrix: Water			Batch: 23L0798			
Diesel	ND	---	0.208	mg/L	1	12/21/23 00:31	NWTPH-Dx/SG	
Oil	ND	---	0.417	mg/L	1	12/21/23 00:31	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 98 %		Limits: 50-150 %	1	12/21/23 00:31	NWTPH-Dx/SG	
BE-5 (A3L1058-02)		Matrix: Water			Batch: 23L0798			
Diesel	ND	---	0.192	mg/L	1	12/21/23 00:51	NWTPH-Dx/SG	
Oil	ND	---	0.385	mg/L	1	12/21/23 00:51	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 93 %		Limits: 50-150 %	1	12/21/23 00:51	NWTPH-Dx/SG	
HC-12D (A3L1058-03)		Matrix: Water			Batch: 23L0503			
Diesel	ND	---	0.189	mg/L	1	12/14/23 21:47	NWTPH-Dx/SG	
Oil	ND	---	0.377	mg/L	1	12/14/23 21:47	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 97 %		Limits: 50-150 %	1	12/14/23 21:47	NWTPH-Dx/SG	
HC-5 (A3L1058-04)		Matrix: Water			Batch: 23L0798			
Diesel	1.09	---	0.204	mg/L	1	12/21/23 01:12	NWTPH-Dx/SG	F-11
Oil	ND	---	0.408	mg/L	1	12/21/23 01:12	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 97 %		Limits: 50-150 %	1	12/21/23 01:12	NWTPH-Dx/SG	
DUP-1 (A3L1058-05)		Matrix: Water			Batch: 23L0503			
Diesel	ND	---	0.189	mg/L	1	12/14/23 22:10	NWTPH-Dx/SG	
Oil	ND	---	0.377	mg/L	1	12/14/23 22:10	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		Recovery: 96 %		Limits: 50-150 %	1	12/14/23 22:10	NWTPH-Dx/SG	

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-01RE1)				Matrix: Water		Batch: 23L0403		DCNT
Acenaphthene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Anthracene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Chrysene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Fluoranthene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Fluorene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0221	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0883	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0883	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Naphthalene	ND	---	0.0883	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Phenanthrene	ND	---	0.0883	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Pyrene	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0441	ug/L	1	12/12/23 16:22	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 111 %		Limits: 78-134 %	1	12/12/23 16:22	EPA 8270E LVI	
Benzo(a)pyrene-d12 (Surr)		116 %		80-132 %	1	12/12/23 16:22	EPA 8270E LVI	

BE-5 (A3L1058-02RE1)

Matrix: Water

Batch: 23L0403

Acenaphthene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Acenaphthylene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Anthracene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Benz(a)anthracene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Benzo(a)pyrene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Benzo(b)fluoranthene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Benzo(k)fluoranthene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Benzo(g,h,i)perylene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Chrysene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI
Dibenz(a,h)anthracene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-02RE1)		Matrix: Water			Batch: 23L0403			
Fluoranthene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Fluorene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0161	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0646	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0646	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Naphthalene	ND	---	0.0646	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Phenanthrene	ND	---	0.0646	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Pyrene	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0323	ug/L	1	12/12/23 16:54	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 111 %		Limits: 78-134 %	1	12/12/23 16:54	EPA 8270E LVI	
Benzo(a)pyrene-d12 (Surr)		118 %		80-132 %	1	12/12/23 16:54	EPA 8270E LVI	
HC-12D (A3L1058-03RE1)		Matrix: Water			Batch: 23L0403			DCNT
Acenaphthene	0.582	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Acenaphthylene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Anthracene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Chrysene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Fluoranthene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Fluorene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.185	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.739	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.739	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Naphthalene	ND	---	0.739	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Phenanthrene	ND	---	0.739	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Pyrene	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Dibenzofuran	ND	---	0.370	ug/L	10	12/12/23 17:26	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 52 %		Limits: 78-134 %	10	12/12/23 17:26	EPA 8270E LVI	S-05

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-03RE1)				Matrix: Water		Batch: 23L0403		DCNT
Surrogate: Benzo(a)pyrene-d12 (Surr)		Recovery: 109 %	Limits: 80-132 %	10	12/12/23 17:26	EPA 8270E LVI	S-05	
HC-5 (A3L1058-04RE1)				Matrix: Water		Batch: 23L0403		R-04
Acenaphthene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Acenaphthylene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Anthracene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Chrysene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Fluoranthene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Fluorene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.161	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.645	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.645	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Naphthalene	ND	---	0.645	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Phenanthrene	ND	---	0.645	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Pyrene	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Dibenzofuran	ND	---	0.322	ug/L	10	12/12/23 17:58	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 49 %	Limits: 78-134 %	10	12/12/23 17:58	EPA 8270E LVI	S-05	
Benzo(a)pyrene-d12 (Surr)		107 %	80-132 %	10	12/12/23 17:58	EPA 8270E LVI	S-05	
DUP-1 (A3L1058-05RE1)				Matrix: Water		Batch: 23L0403		DCNT
Acenaphthene	0.656	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Acenaphthylene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Anthracene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-05RE1)		Matrix: Water			Batch: 23L0403		DCNT	
Chrysene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Fluoranthene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Fluorene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.187	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.750	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.750	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Naphthalene	ND	---	0.750	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Phenanthrene	ND	---	0.750	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Pyrene	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Dibenzofuran	ND	---	0.375	ug/L	10	12/12/23 18:30	EPA 8270E LVI	
Surrogate: Acenaphthylene-d8 (Surr)		Recovery: 49 %		Limits: 78-134 %	10	12/12/23 18:30	EPA 8270E LVI	S-05
Benzo(a)pyrene-d12 (Surr)		114 %		80-132 %	10	12/12/23 18:30	EPA 8270E LVI	S-05

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-01) Matrix: Water								
Batch: 23L1010								
Arsenic	11.7	---	1.00	ug/L	1	12/28/23 09:16	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	12/28/23 09:16	EPA 6020B	
Chromium	2.28	---	2.00	ug/L	1	12/28/23 09:16	EPA 6020B	
Copper	4.12	---	2.00	ug/L	1	12/28/23 09:16	EPA 6020B	
Lead	2.30	---	0.200	ug/L	1	12/28/23 09:16	EPA 6020B	
Manganese	2580	---	1.00	ug/L	1	12/28/23 09:16	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/28/23 09:16	EPA 6020B	
Vanadium	9.38	---	2.00	ug/L	1	12/28/23 09:16	EPA 6020B	
Zinc	20.2	---	4.00	ug/L	1	12/28/23 09:16	EPA 6020B	
BE-5 (A3L1058-02) Matrix: Water								
Batch: 23L1010								
Arsenic	ND	---	1.00	ug/L	1	12/28/23 09:27	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	12/28/23 09:27	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/28/23 09:27	EPA 6020B	
Copper	2.65	---	2.00	ug/L	1	12/28/23 09:27	EPA 6020B	
Lead	1.78	---	0.200	ug/L	1	12/28/23 09:27	EPA 6020B	
Manganese	7.81	---	1.00	ug/L	1	12/28/23 09:27	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/28/23 09:27	EPA 6020B	
Vanadium	2.79	---	2.00	ug/L	1	12/28/23 09:27	EPA 6020B	
Zinc	17.1	---	4.00	ug/L	1	12/28/23 09:27	EPA 6020B	
HC-12D (A3L1058-03) Matrix: Water								
Batch: 23L1010								
Arsenic	14.7	---	1.00	ug/L	1	12/28/23 09:37	EPA 6020B	
Cadmium	8.25	---	0.200	ug/L	1	12/28/23 09:37	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/28/23 09:37	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	12/28/23 09:37	EPA 6020B	
Lead	0.231	---	0.200	ug/L	1	12/28/23 09:37	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/28/23 09:37	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	12/28/23 09:37	EPA 6020B	
Zinc	5.24	---	4.00	ug/L	1	12/28/23 09:37	EPA 6020B	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HC-12D (A3L1058-03RE1) Matrix: Water								
Batch: 23L1010								
Manganese	15300	---	50.0	ug/L	50	12/29/23 07:55	EPA 6020B	
HC-5 (A3L1058-04) Matrix: Water								
Batch: 23L1010								
Arsenic	ND	---	1.00	ug/L	1	12/28/23 09:43	EPA 6020B	
Cadmium	ND	---	0.200	ug/L	1	12/28/23 09:43	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/28/23 09:43	EPA 6020B	
Copper	4.51	---	2.00	ug/L	1	12/28/23 09:43	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	12/28/23 09:43	EPA 6020B	
Manganese	366	---	1.00	ug/L	1	12/28/23 09:43	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/28/23 09:43	EPA 6020B	
Vanadium	3.12	---	2.00	ug/L	1	12/28/23 09:43	EPA 6020B	
Zinc	68.2	---	4.00	ug/L	1	12/28/23 09:43	EPA 6020B	
DUP-1 (A3L1058-05) Matrix: Water								
Batch: 23L1010								
Arsenic	15.3	---	1.00	ug/L	1	12/28/23 09:48	EPA 6020B	
Cadmium	3.95	---	0.200	ug/L	1	12/28/23 09:48	EPA 6020B	
Chromium	ND	---	2.00	ug/L	1	12/28/23 09:48	EPA 6020B	
Copper	ND	---	2.00	ug/L	1	12/28/23 09:48	EPA 6020B	
Lead	ND	---	0.200	ug/L	1	12/28/23 09:48	EPA 6020B	
Mercury	ND	---	0.0800	ug/L	1	12/28/23 09:48	EPA 6020B	
Vanadium	ND	---	2.00	ug/L	1	12/28/23 09:48	EPA 6020B	
Zinc	ND	---	4.00	ug/L	1	12/28/23 09:48	EPA 6020B	
DUP-1 (A3L1058-05RE1) Matrix: Water								
Batch: 23L1010								
Manganese	15100	---	50.0	ug/L	50	12/29/23 08:01	EPA 6020B	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-01) Matrix: Water								
Batch: 23L0617								
Arsenic	14.8	---	1.00	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Copper	4.62	---	2.00	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/16/23 06:52	EPA 6020B (Diss)	
BE-1 (A3L1058-01RE1) Matrix: Water								
Batch: 23L0617								
Manganese	2970	---	10.0	ug/L	10	12/18/23 14:52	EPA 6020B (Diss)	
Zinc	4.20	---	4.00	ug/L	1	12/20/23 08:48	EPA 6020B (Diss)	
BE-5 (A3L1058-02) Matrix: Water								
Batch: 23L0617								
Arsenic	ND	---	1.00	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Copper	7.02	---	2.00	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Manganese	18.5	---	1.00	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/16/23 06:57	EPA 6020B (Diss)	
BE-5 (A3L1058-02RE1) Matrix: Water								
Batch: 23L0617								
Zinc	15.1	---	4.00	ug/L	1	12/20/23 08:54	EPA 6020B (Diss)	
HC-12D (A3L1058-03) Matrix: Water								
Batch: 23L0617								
Arsenic	15.1	---	1.00	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HC-12D (A3L1058-03)				Matrix: Water				
Lead	ND	---	0.200	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/16/23 07:02	EPA 6020B (Diss)	
HC-12D (A3L1058-03RE1)				Matrix: Water				
Batch: 23L0617								
Manganese	14100	---	10.0	ug/L	10	12/18/23 14:58	EPA 6020B (Diss)	
Zinc	11.2	---	4.00	ug/L	1	12/20/23 08:59	EPA 6020B (Diss)	
HC-5 (A3L1058-04)				Matrix: Water				
Batch: 23L0617								
Arsenic	ND	---	1.00	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Copper	8.45	---	2.00	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Lead	0.573	---	0.200	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Manganese	434	---	1.00	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
Vanadium	2.36	---	2.00	ug/L	1	12/16/23 07:07	EPA 6020B (Diss)	
HC-5 (A3L1058-04RE1)				Matrix: Water				
Batch: 23L0617								
Zinc	67.2	---	4.00	ug/L	1	12/20/23 09:04	EPA 6020B (Diss)	
DUP-1 (A3L1058-05)				Matrix: Water				
Batch: 23L0617								
Arsenic	15.7	---	1.00	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Cadmium	ND	---	0.200	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Chromium	ND	---	2.00	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Copper	ND	---	2.00	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Mercury	ND	---	0.0800	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
Vanadium	ND	---	2.00	ug/L	1	12/16/23 07:12	EPA 6020B (Diss)	
DUP-1 (A3L1058-05RE1)				Matrix: Water				

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 (A3L1058-05RE1)				Matrix: Water				
Batch: 23L0617								
Manganese	14300	---	10.0	ug/L	10	12/18/23 15:03	EPA 6020B (Diss)	
Zinc	11.1	---	4.00	ug/L	1	12/20/23 09:10	EPA 6020B (Diss)	

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

Page 12 of 31



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062Apex Companies, LLC
15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**
Project Number: **23011042**
Project Manager: **Steve Misner****Report ID:**
A3L1058 - 01 12 24 1643

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 23L0503 - EPA 3510C (Fuels/Acid Ext.) w/SG+Acid												Water
Blank (23L0503-BLK1)												Prepared: 12/14/23 06:33 Analyzed: 12/14/23 20:37
NWTPH-Dx/SG												
Diesel	ND	---	0.200	mg/L	1	---	---	---	---	---	---	
Oil	ND	---	0.400	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)												Recovery: 95 % Limits: 50-150 % Dilution: 1x
LCS (23L0503-BS1)												Prepared: 12/14/23 06:33 Analyzed: 12/14/23 21:00
NWTPH-Dx/SG												
Diesel	0.949	---	0.200	mg/L	1	1.25	---	76	36-132%	---	---	
Surr: o-Terphenyl (Surr)												Recovery: 100 % Limits: 50-150 % Dilution: 1x
LCS Dup (23L0503-BSD1)												Prepared: 12/14/23 06:33 Analyzed: 12/14/23 21:23 Q-19
NWTPH-Dx/SG												
Diesel	0.945	---	0.200	mg/L	1	1.25	---	76	36-132%	0.3	30%	
Surr: o-Terphenyl (Surr)												Recovery: 99 % Limits: 50-150 % Dilution: 1x
Batch 23L0798 - EPA 3510C (Fuels/Acid Ext.) w/SG+Acid												Water
Blank (23L0798-BLK1)												Prepared: 12/20/23 10:54 Analyzed: 12/20/23 23:29
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 (23L0798-BS1)												Prepared: 12/20/23 10:54 Analyzed: 12/20/23 23:49
NWTPH-Dx/SG												
Diesel	0.759	---	0.200	mg/L	1	1.25	---	61	36-132%	---	---	
Surr: o-Terphenyl (Surr)												Recovery: 94 % Limits: 50-150 % Dilution: 1x
LCS Dup (23L0798-BSD1)												Prepared: 12/20/23 10:54 Analyzed: 12/21/23 00:10 Q-19
NWTPH-Dx/SG												
Diesel	0.812	---	0.200	mg/L	1	1.25	---	65	36-132%	7	30%	
Surr: o-Terphenyl (Surr)												Recovery: 98 % Limits: 50-150 % Dilution: 1x

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 23L0346 - EPA 3511 (Bottle Extraction)						Water						
Blank (23L0346-BLK1)			Prepared: 12/11/23 08:14 Analyzed: 12/11/23 14:18									
EPA 8270E LV1												
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	---	---	---	---	---	---	Q-30
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: 103 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		104 %		80-132 %		"						

Blank (23L0346-BLK2)

Prepared: 12/11/23 11:26 Analyzed: 12/11/23 14:50

EPA 8270E LV1

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	---	---	---	---	---	---	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 23L0346 - EPA 3511 (Bottle Extraction)						Water						
Blank (23L0346-BLK2)			Prepared: 12/11/23 11:26		Analyzed: 12/11/23 14:50							
Chrysene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	Q-30
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: 111 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		113 %		80-132 %		"						
LCS (23L0346-BS1)			Prepared: 12/11/23 08:14		Analyzed: 12/11/23 15:22							
EPA 8270E LVI												
Acenaphthene	1.31	---	0.0320	ug/L	1	1.60	---	82	80-120%	---	---	Q-30
Acenaphthylene	1.36	---	0.0320	ug/L	1	1.60	---	85	80-124%	---	---	
Anthracene	1.39	---	0.0320	ug/L	1	1.60	---	87	80-123%	---	---	
Benz(a)anthracene	1.37	---	0.0160	ug/L	1	1.60	---	85	80-122%	---	---	
Benzo(a)pyrene	1.48	---	0.0160	ug/L	1	1.60	---	92	80-129%	---	---	
Benzo(b)fluoranthene	1.37	---	0.0160	ug/L	1	1.60	---	86	80-124%	---	---	
Benzo(k)fluoranthene	1.45	---	0.0160	ug/L	1	1.60	---	91	80-125%	---	---	
Benzo(g,h,i)perylene	1.41	---	0.0320	ug/L	1	1.60	---	88	80-120%	---	---	
Chrysene	1.39	---	0.0160	ug/L	1	1.60	---	87	80-120%	---	---	
Dibenz(a,h)anthracene	1.37	---	0.0160	ug/L	1	1.60	---	85	80-120%	---	---	
Fluoranthene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-126%	---	---	
Fluorene	1.46	---	0.0320	ug/L	1	1.60	---	91	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.29	---	0.0160	ug/L	1	1.60	---	81	80-121%	---	---	
1-Methylnaphthalene	1.50	---	0.0640	ug/L	1	1.60	---	94	53-148%	---	---	
2-Methylnaphthalene	1.44	---	0.0640	ug/L	1	1.60	---	90	48-150%	---	---	
Naphthalene	1.23	---	0.0640	ug/L	1	1.60	---	77	78-120%	---	---	
Phenanthrene	1.30	---	0.0640	ug/L	1	1.60	---	81	80-120%	---	---	

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

Page 15 of 31



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 23L0346 - EPA 3511 (Bottle Extraction)						Water						
LCS (23L0346-BS1)			Prepared: 12/11/23 08:14		Analyzed: 12/11/23 15:22							
Pyrene	1.58	---	0.0320	ug/L	1	1.60	---	99	80-125%	---	---	
Carbazole	1.57	---	0.0320	ug/L	1	1.60	---	98	65-141%	---	---	
Dibenzofuran	1.38	---	0.0320	ug/L	1	1.60	---	86	76-121%	---	---	
Surr: Acenaphthylene-d8 (Surr)		Recovery: 102 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		108 %		80-132 %		"						
LCS Dup (23L0346-BSD1)			Prepared: 12/11/23 08:14		Analyzed: 12/11/23 15:55							Q-19
EPA 8270E LVI												
Acenaphthene	1.30	---	0.0320	ug/L	1	1.60	---	81	80-120%	0.8	30%	
Acenaphthylene	1.38	---	0.0320	ug/L	1	1.60	---	86	80-124%	1	30%	
Anthracene	1.38	---	0.0320	ug/L	1	1.60	---	86	80-123%	1	30%	
Benz(a)anthracene	1.38	---	0.0160	ug/L	1	1.60	---	86	80-122%	0.7	30%	
Benzo(a)pyrene	1.48	---	0.0160	ug/L	1	1.60	---	93	80-129%	0.4	30%	
Benzo(b)fluoranthene	1.41	---	0.0160	ug/L	1	1.60	---	88	80-124%	3	30%	
Benzo(k)fluoranthene	1.41	---	0.0160	ug/L	1	1.60	---	88	80-125%	3	30%	
Benzo(g,h,i)perylene	1.40	---	0.0320	ug/L	1	1.60	---	88	80-120%	0.9	30%	
Chrysene	1.38	---	0.0160	ug/L	1	1.60	---	86	80-120%	0.6	30%	
Dibenz(a,h)anthracene	1.38	---	0.0160	ug/L	1	1.60	---	86	80-120%	1	30%	
Fluoranthene	1.56	---	0.0320	ug/L	1	1.60	---	97	80-126%	0.6	30%	
Fluorene	1.46	---	0.0320	ug/L	1	1.60	---	91	77-127%	0.3	30%	
Indeno(1,2,3-cd)pyrene	1.32	---	0.0160	ug/L	1	1.60	---	82	80-121%	2	30%	
1-Methylnaphthalene	1.63	---	0.0640	ug/L	1	1.60	---	102	53-148%	8	30%	
2-Methylnaphthalene	1.56	---	0.0640	ug/L	1	1.60	---	97	48-150%	8	30%	
Naphthalene	1.22	---	0.0640	ug/L	1	1.60	---	76	78-120%	0.5	30%	Q-30
Phenanthrene	1.29	---	0.0640	ug/L	1	1.60	---	81	80-120%	0.6	30%	
Pyrene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-125%	0.5	30%	
Carbazole	1.57	---	0.0320	ug/L	1	1.60	---	98	65-141%	0.1	30%	
Dibenzofuran	1.36	---	0.0320	ug/L	1	1.60	---	85	76-121%	2	30%	
Surr: Acenaphthylene-d8 (Surr)		Recovery: 104 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		108 %		80-132 %		"						

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner****Report ID:****A3L1058 - 01 12 24 1643**

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 23L0403 - EPA 3511 (Bottle Extraction)						Water						
Blank (23L0403-BLK1)			Prepared: 12/12/23 08:58		Analyzed: 12/12/23 13:36							
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: 109 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		115 %		80-132 %		"						

LCS (23L0403-BS1)

Prepared: 12/12/23 08:58 Analyzed: 12/12/23 14:08

EPA 8270E LVI

Acenaphthene	1.55	---	0.0320	ug/L	1	1.60	---	97	80-120%	---	---
Acenaphthylene	1.66	---	0.0320	ug/L	1	1.60	---	104	80-124%	---	---
Anthracene	1.64	---	0.0320	ug/L	1	1.60	---	103	80-123%	---	---
Benz(a)anthracene	1.59	---	0.0160	ug/L	1	1.60	---	99	80-122%	---	---
Benzo(a)pyrene	1.78	---	0.0160	ug/L	1	1.60	---	111	80-129%	---	---
Benzo(b)fluoranthene	1.68	---	0.0160	ug/L	1	1.60	---	105	80-124%	---	---
Benzo(k)fluoranthene	1.72	---	0.0160	ug/L	1	1.60	---	108	80-125%	---	---
Benzo(g,h,i)perylene	1.53	---	0.0320	ug/L	1	1.60	---	96	80-120%	---	---

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

Page 17 of 31



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 23L0403 - EPA 3511 (Bottle Extraction)						Water						
LCS (23L0403-BS1)						Prepared: 12/12/23 08:58 Analyzed: 12/12/23 14:08						
Chrysene	1.60	---	0.0160	ug/L	1	1.60	---	100	80-120%	---	---	
Dibenz(a,h)anthracene	1.59	---	0.0160	ug/L	1	1.60	---	100	80-120%	---	---	
Fluoranthene	1.71	---	0.0320	ug/L	1	1.60	---	107	80-126%	---	---	
Fluorene	1.65	---	0.0320	ug/L	1	1.60	---	103	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.47	---	0.0160	ug/L	1	1.60	---	92	80-121%	---	---	
1-Methylnaphthalene	1.77	---	0.0640	ug/L	1	1.60	---	111	53-148%	---	---	
2-Methylnaphthalene	1.70	---	0.0640	ug/L	1	1.60	---	106	48-150%	---	---	
Naphthalene	1.52	---	0.0640	ug/L	1	1.60	---	95	78-120%	---	---	
Phenanthrene	1.52	---	0.0640	ug/L	1	1.60	---	95	80-120%	---	---	
Pyrene	1.72	---	0.0320	ug/L	1	1.60	---	108	80-125%	---	---	
Carbazole	1.89	---	0.0320	ug/L	1	1.60	---	118	65-141%	---	---	
Dibenzofuran	1.58	---	0.0320	ug/L	1	1.60	---	99	76-121%	---	---	
Surr: Acenaphthylene-d8 (Surr) Recovery: 111 % Limits: 78-134 % Dilution: 1x												
Benzo(a)pyrene-d12 (Surr) 115 % 80-132 % "												

LCS Dup (23L0403-BS1)				Prepared: 12/12/23 08:58 Analyzed: 12/12/23 14:40								Q-19
EPA 8270E LVI												
Acenaphthene	1.56	---	0.0320	ug/L	1	1.60	---	98	80-120%	0.6	30%	
Acenaphthylene	1.62	---	0.0320	ug/L	1	1.60	---	101	80-124%	2	30%	
Anthracene	1.61	---	0.0320	ug/L	1	1.60	---	101	80-123%	2	30%	
Benz(a)anthracene	1.62	---	0.0160	ug/L	1	1.60	---	101	80-122%	2	30%	
Benzo(a)pyrene	1.80	---	0.0160	ug/L	1	1.60	---	112	80-129%	0.8	30%	
Benzo(b)fluoranthene	1.69	---	0.0160	ug/L	1	1.60	---	105	80-124%	0.3	30%	
Benzo(k)fluoranthene	1.75	---	0.0160	ug/L	1	1.60	---	109	80-125%	2	30%	
Benzo(g,h,i)perylene	1.53	---	0.0320	ug/L	1	1.60	---	96	80-120%	0.1	30%	
Chrysene	1.63	---	0.0160	ug/L	1	1.60	---	102	80-120%	2	30%	
Dibenz(a,h)anthracene	1.62	---	0.0160	ug/L	1	1.60	---	101	80-120%	2	30%	
Fluoranthene	1.72	---	0.0320	ug/L	1	1.60	---	107	80-126%	0.6	30%	
Fluorene	1.63	---	0.0320	ug/L	1	1.60	---	102	77-127%	1	30%	
Indeno(1,2,3-cd)pyrene	1.45	---	0.0160	ug/L	1	1.60	---	91	80-121%	1	30%	
1-Methylnaphthalene	1.86	---	0.0640	ug/L	1	1.60	---	116	53-148%	5	30%	
2-Methylnaphthalene	1.78	---	0.0640	ug/L	1	1.60	---	111	48-150%	5	30%	
Naphthalene	1.53	---	0.0640	ug/L	1	1.60	---	96	78-120%	0.4	30%	
Phenanthrene	1.52	---	0.0640	ug/L	1	1.60	---	95	80-120%	0.2	30%	

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

Report is complete only if it includes Fremont Analytical Data.

Page 18 of 45 01/12/2024

Page 18 of 31



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 23L0403 - EPA 3511 (Bottle Extraction)						Water						
LCS Dup (23L0403-BSD1)			Prepared: 12/12/23 08:58 Analyzed: 12/12/23 14:40						Q-19			
Pyrene	1.73	---	0.0320	ug/L	1	1.60	---	108	80-125%	0.2	30%	
Carbazole	1.90	---	0.0320	ug/L	1	1.60	---	119	65-141%	0.8	30%	
Dibenzofuran	1.55	---	0.0320	ug/L	1	1.60	---	97	76-121%	2	30%	
Surr: Acenaphthylene-d8 (Surr)		Recovery: 111 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		117 %		80-132 %		"						

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 23L1010 - EPA 3015A						Water						
Blank (23L1010-BLK1)			Prepared: 12/27/23 11:46 Analyzed: 12/28/23 09:05									
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 (23L1010-BS1)												
										Prepared: 12/27/23 11:46 Analyzed: 12/28/23 09:11		
EPA 6020B												
Arsenic	55.8	---	1.00	ug/L	1	55.6	---	101	80-120%	---	---	
Cadmium	54.2	---	0.200	ug/L	1	55.6	---	98	80-120%	---	---	
Chromium	55.2	---	2.00	ug/L	1	55.6	---	99	80-120%	---	---	
Copper	59.2	---	2.00	ug/L	1	55.6	---	106	80-120%	---	---	
Lead	56.0	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	
Manganese	55.0	---	1.00	ug/L	1	55.6	---	99	80-120%	---	---	
Mercury	1.16	---	0.0800	ug/L	1	1.11	---	104	80-120%	---	---	
Vanadium	57.4	---	2.00	ug/L	1	55.6	---	103	80-120%	---	---	
Zinc	55.9	---	4.00	ug/L	1	55.6	---	101	80-120%	---	---	
Duplicate (23L1010-DUP1)												
										Prepared: 12/27/23 11:46 Analyzed: 12/28/23 09:21		
QC Source Sample: BE-1 (A3L1058-01)												
EPA 6020B												
Arsenic	11.8	---	1.00	ug/L	1	---	11.7	---	---	0.7	20%	
Cadmium	ND	---	0.200	ug/L	1	---	0.118	---	---	***	20%	
Chromium	2.26	---	2.00	ug/L	1	---	2.28	---	---	1	20%	
Copper	4.14	---	2.00	ug/L	1	---	4.12	---	---	0.4	20%	
Lead	2.33	---	0.200	ug/L	1	---	2.30	---	---	1	20%	
Manganese	2560	---	1.00	ug/L	1	---	2580	---	---	0.9	20%	
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	9.19	---	2.00	ug/L	1	---	9.38	---	---	2	20%	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 23L1010 - EPA 3015A						Water						
Duplicate (23L1010-DUP1)			Prepared: 12/27/23 11:46 Analyzed: 12/28/23 09:21									
QC Source Sample: BE-1 (A3L1058-01)												
Zinc	20.1	---	4.00	ug/L	1	---	20.2	---	---	0.6	20%	
Matrix Spike (23L1010-MS1)			Prepared: 12/27/23 11:46 Analyzed: 12/28/23 09:32									
QC Source Sample: BE-5 (A3L1058-02)												
EPA 6020B												
Arsenic	57.7	---	1.00	ug/L	1	55.6	0.736	103	75-125%	---	---	
Cadmium	55.8	---	0.200	ug/L	1	55.6	ND	100	75-125%	---	---	
Chromium	56.8	---	2.00	ug/L	1	55.6	ND	102	75-125%	---	---	
Copper	59.1	---	2.00	ug/L	1	55.6	2.65	102	75-125%	---	---	
Lead	56.7	---	0.200	ug/L	1	55.6	1.78	99	75-125%	---	---	
Manganese	63.2	---	1.00	ug/L	1	55.6	7.81	100	75-125%	---	---	
Mercury	1.14	---	0.0800	ug/L	1	1.11	ND	103	75-125%	---	---	
Vanadium	61.8	---	2.00	ug/L	1	55.6	2.79	106	75-125%	---	---	
Zinc	72.3	---	4.00	ug/L	1	55.6	17.1	99	75-125%	---	---	

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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 23L0617 - Matrix Matched Direct Inject						Water						
Blank (23L0617-BLK1)			Prepared: 12/15/23 14:25		Analyzed: 12/16/23 06:00							
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	---	---	---	---	---	---	
Blank (23L0617-BLK2)			Prepared: 12/15/23 14:25		Analyzed: 12/18/23 14:26							
EPA 6020B (Diss)												
Zinc	ND	---	4.00	ug/L	1	---	---	---	---	---	---	Q-16
LCS (23L0617-BS1)			Prepared: 12/15/23 14:25		Analyzed: 12/16/23 06:05							
EPA 6020B (Diss)												
Arsenic	54.1	---	1.00	ug/L	1	55.6	---	97	80-120%	---	---	
Cadmium	53.9	---	0.200	ug/L	1	55.6	---	97	80-120%	---	---	
Chromium	52.8	---	2.00	ug/L	1	55.6	---	95	80-120%	---	---	
Copper	55.7	---	2.00	ug/L	1	55.6	---	100	80-120%	---	---	
Lead	52.7	---	0.200	ug/L	1	55.6	---	95	80-120%	---	---	
Manganese	54.7	---	1.00	ug/L	1	55.6	---	99	80-120%	---	---	
Mercury	1.07	---	0.0800	ug/L	1	1.11	---	97	80-120%	---	---	
Vanadium	54.2	---	2.00	ug/L	1	55.6	---	98	80-120%	---	---	
Zinc	55.4	---	4.00	ug/L	1	55.6	---	100	80-120%	---	---	
Duplicate (23L0617-DUP1)			Prepared: 12/15/23 14:25		Analyzed: 12/16/23 06:16							
QC Source Sample: Non-SDG (A3L0945-01)												
Arsenic	3.41	---	1.00	ug/L	1	---	3.56	---	---	5	20%	
Cadmium	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Chromium	3.98	---	2.00	ug/L	1	---	3.87	---	---	3	20%	
Copper	ND	---	2.00	ug/L	1	---	ND	---	---	---	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Manganese	ND	---	1.00	ug/L	1	---	ND	---	---	---	20%	

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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 23L0617 - Matrix Matched Direct Inject						Water						
Duplicate (23L0617-DUP1)			Prepared: 12/15/23 14:25		Analyzed: 12/16/23 06:16							
QC Source Sample: Non-SDG (A3L0945-01)												
Mercury	ND	---	0.0800	ug/L	1	---	ND	---	---	---	20%	
Vanadium	13.6	---	2.00	ug/L	1	---	13.4	---	---	1	20%	
Zinc	ND	---	4.00	ug/L	1	---	ND	---	---	---	20%	
Matrix Spike (23L0617-MS1)			Prepared: 12/15/23 14:25		Analyzed: 12/16/23 06:21							
QC Source Sample: Non-SDG (A3L0945-01)												
EPA 6020B (Diss)												
Arsenic	58.0	---	1.00	ug/L	1	55.6	3.56	98	75-125%	---	---	
Cadmium	54.4	---	0.200	ug/L	1	55.6	ND	98	75-125%	---	---	
Chromium	57.3	---	2.00	ug/L	1	55.6	3.87	96	75-125%	---	---	
Copper	55.6	---	2.00	ug/L	1	55.6	ND	100	75-125%	---	---	
Lead	52.5	---	0.200	ug/L	1	55.6	ND	95	75-125%	---	---	
Manganese	54.4	---	1.00	ug/L	1	55.6	ND	98	75-125%	---	---	
Mercury	1.06	---	0.0800	ug/L	1	1.11	ND	96	75-125%	---	---	
Vanadium	68.3	---	2.00	ug/L	1	55.6	13.4	99	75-125%	---	---	
Zinc	57.6	---	4.00	ug/L	1	55.6	ND	104	75-125%	---	---	

Apex Laboratories

Darrell Auvil, Client Services Manager

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.



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**Project Number: **23011042**Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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: 23L0503							
A3L1058-03	Water	NWTPH-Dx/SG	12/07/23 13:40	12/14/23 06:33	1060mL/5mL	1000mL/5mL	0.94
A3L1058-05	Water	NWTPH-Dx/SG	12/07/23 14:20	12/14/23 06:33	1060mL/5mL	1000mL/5mL	0.94
Batch: 23L0798							
A3L1058-01	Water	NWTPH-Dx/SG	12/07/23 16:20	12/20/23 10:54	960mL/5mL	1000mL/5mL	1.04
A3L1058-02	Water	NWTPH-Dx/SG	12/06/23 12:35	12/20/23 10:54	1040mL/5mL	1000mL/5mL	0.96
A3L1058-04	Water	NWTPH-Dx/SG	12/07/23 12:10	12/20/23 10:54	980mL/5mL	1000mL/5mL	1.02

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: 23L0403							
A3L1058-01RE1	Water	EPA 8270E LVI	12/07/23 16:20	12/12/23 08:58	90.65mL/5mL	125mL/5mL	1.38
A3L1058-02RE1	Water	EPA 8270E LVI	12/06/23 12:35	12/12/23 08:58	123.9mL/5mL	125mL/5mL	1.01
A3L1058-03RE1	Water	EPA 8270E LVI	12/07/23 13:40	12/12/23 08:58	108.25mL/5mL	125mL/5mL	1.15
A3L1058-04RE1	Water	EPA 8270E LVI	12/07/23 12:10	12/12/23 08:58	124.12mL/5mL	125mL/5mL	1.01
A3L1058-05RE1	Water	EPA 8270E LVI	12/07/23 14:20	12/12/23 08:58	106.67mL/5mL	125mL/5mL	1.17

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: 23L1010							
A3L1058-01	Water	EPA 6020B	12/07/23 16:20	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-02	Water	EPA 6020B	12/06/23 12:35	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-03	Water	EPA 6020B	12/07/23 13:40	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-03RE1	Water	EPA 6020B	12/07/23 13:40	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-04	Water	EPA 6020B	12/07/23 12:10	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-05	Water	EPA 6020B	12/07/23 14:20	12/27/23 11:46	45mL/50mL	45mL/50mL	1.00
A3L1058-05RE1	Water	EPA 6020B	12/07/23 14:20	12/27/23 11:46	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: 23L0617							

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

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
A3L1058-01	Water	EPA 6020B (Diss)	12/07/23 16:20	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-01RE1	Water	EPA 6020B (Diss)	12/07/23 16:20	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-02	Water	EPA 6020B (Diss)	12/06/23 12:35	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-02RE1	Water	EPA 6020B (Diss)	12/06/23 12:35	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-03	Water	EPA 6020B (Diss)	12/07/23 13:40	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-03RE1	Water	EPA 6020B (Diss)	12/07/23 13:40	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-04	Water	EPA 6020B (Diss)	12/07/23 12:10	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-04RE1	Water	EPA 6020B (Diss)	12/07/23 12:10	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-05	Water	EPA 6020B (Diss)	12/07/23 14:20	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00
A3L1058-05RE1	Water	EPA 6020B (Diss)	12/07/23 14:20	12/15/23 14:25	45mL/50mL	45mL/50mL	1.00

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

Page 25 of 31



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: **23011042**

Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

QUALIFIER DEFINITIONS

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

Apex Laboratories

- DCNT** Sample decanted due to the presence of sediment. Sample bottle not rinsed with solvent.
- F-11** The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
- 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-30** Recovery for Lab Control Spike (LCS) is below the lower control limit. Data may be biased low.
- 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.

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



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: **23011042**

Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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

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



ANALYTICAL REPORT

Apex Laboratories, LLC

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

Apex Companies, LLC

15618 SW 72nd Ave
Tigard, OR 97224

Project: **POP T4 - Slip 3 GW**

Project Number: **23011042**

Project Manager: **Steve Misner**

Report ID:

A3L1058 - 01 12 24 1643

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

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

**ANALYTICAL REPORT****Apex Laboratories, LLC**6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062**Apex Companies, LLC**
15618 SW 72nd Ave
Tigard, OR 97224Project: **POP T4 - Slip 3 GW**
Project Number: **23011042**
Project Manager: **Steve Misner****Report ID:**
A3L1058 - 01 12 24 1643**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
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

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 provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street

Tigard, OR 97223

503-718-2323

ORELAP ID: OR100062

Apex Companies, LLC

15618 SW 72nd Ave

Tigard, OR 97224

Project: POP T4 - Slip 3 GW

Project Number: 23011042

Project Manager: Steve Misner

Report ID:

A3L1058 - 01 12 24 1643

APEXLABS COOLER RECEIPT FORM

Client: Apex Companies, LLC Element WO#: A3 L1058Project/Project #: Terminal 4 Slip 3 Groundwater Sampling

Delivery Info:

Date/time received: 12/8/23 @ 1300 By: ESTDelivered by: Apex ☒ Client ☒ ESS ☐ FedEx ☐ UPS ☐ Radio ☐ Morgan ☐ SDS ☐ Evergreen ☐ Other ☐Cooler Inspection Date/time inspected: 12/8/23 @ 1310 By: ESTChain of Custody included? Yes ☒ No ☐Signed/dated by client? Yes ☒ No ☐

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>3.3</u>	<u>1.4</u>					
Custody seals? (Y/N)	<u>N</u>	<u>N</u>					
Received on ice? (Y/N)	<u>Y</u>	<u>Y</u>					
Temp. blanks? (Y/N)	<u>Y</u>	<u>Y</u>					
Ice type: (Gel/Real/Other)	<u>Real</u>	<u>Real</u>					
Condition (In/Out):	<u>In</u>	<u>In</u>					

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: 12-8-23 @ 1516 By: DJSAll 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 ☒ ^{DJS 12-8-23} NA ☒

Comments:

Water samples: pH checked: Yes ☒ No ☐ NA ☐ pH appropriate? Yes ☐ No ☒ NA ☐ pH ID: A23 J 172Comments: HC-120 pH=7. no room to preserve. DUP-1 one/four embryos HCLpH=7; no room to preserve.

Additional information:

Labeled by:

DJS

Witness:

JS

Cooler Inspected by:

DJS

Form Y-003 R-01

Apex Laboratories

Darrell Auvel, Client Services Manager

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.



Fremont
Analytical
An Alliance Technical Group Company

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: A3L1058
Work Order Number: 2312285

January 05, 2024

Attention Darrell Auvil:

Fremont Analytical, Inc. received 5 sample(s) on 12/12/2023 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

CC:
Sub Data

DoD-ELAP Accreditation #79636 by PJLA, ISO/IEC 17025:2017 and QSM 5.3 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

www.fremontanalytical.com

CLIENT: Apex Laboratories
Project: A3L1058
Work Order: 2312285

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2312285-001	BE-1	12/07/2023 4:20 PM	12/12/2023 10:20 AM
2312285-002	BE-5	12/06/2023 12:35 PM	12/12/2023 10:20 AM
2312285-003	HC-12D	12/07/2023 1:40 PM	12/12/2023 10:20 AM
2312285-004	HC-5	12/07/2023 12:10 PM	12/12/2023 10:20 AM
2312285-005	DUP-1	12/07/2023 2:20 PM	12/12/2023 10:20 AM

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

Original

CLIENT: Apex Laboratories

Project: A3L1058

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: **2312285**
Date Reported: **1/5/2024**

Client: Apex Laboratories

Collection Date: 12/7/2023 4:20:00 PM

Project: A3L1058

Lab ID: 2312285-001

Matrix: Water

Client Sample ID: BE-1

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 42310

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	39.1	20.2		µg/L	1	12/20/23 12:35:35
Surr: 1-Chlorooctadecane	50.0	50 - 150			%Rec	1	12/20/23 12:35:35

Client: Apex Laboratories

Collection Date: 12/6/2023 12:35:00 PM

Project: A3L1058

Lab ID: 2312285-002

Matrix: Water

Client Sample ID: BE-5

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 42463

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.7	H	µg/L	1	01/04/24 19:15:29
Aliphatic Hydrocarbon (C10-C12)	ND	38.7	20.0		µg/L	1	12/20/23 12:57:17
Surr: 1-Chlorooctadecane	66.4	50 - 150		H	%Rec	1	01/04/24 19:15:29
Surr: 1-Chlorooctadecane	43.3	50 - 150		S	%Rec	1	12/20/23 12:57:17

NOTES:

S - Outlying surrogate recovery(ies) observed.

Client: Apex Laboratories

Collection Date: 12/7/2023 1:40:00 PM

Project: A3L1058

Lab ID: 2312285-003

Matrix: Water

Client Sample ID: HC-12D

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 42463

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.7	H	µg/L	1	01/04/24 19:58:36
Aliphatic Hydrocarbon (C10-C12)	ND	39.0	20.1		µg/L	1	12/20/23 13:18:56
Surr: 1-Chlorooctadecane	58.6	50 - 150		H	%Rec	1	01/04/24 19:58:36
Surr: 1-Chlorooctadecane	26.5	50 - 150		S	%Rec	1	12/20/23 13:18:56

NOTES:

S - Outlying surrogate recovery(ies) observed.



Analytical Report

Work Order: 2312285
Date Reported: 1/5/2024

Client: Apex Laboratories

Collection Date: 12/7/2023 12:10:00 PM

Project: A3L1058

Lab ID: 2312285-004

Matrix: Water

Client Sample ID: HC-5

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 42463

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.7	H	µg/L	1	01/04/24 20:41:29
Aliphatic Hydrocarbon (C10-C12)	ND	39.3	20.3		µg/L	1	12/20/23 13:40:58
Surr: 1-Chlorooctadecane	53.5	50 - 150		H	%Rec	1	01/04/24 20:41:29
Surr: 1-Chlorooctadecane	41.7	50 - 150		S	%Rec	1	12/20/23 13:40:58

NOTES:

S - Outlying surrogate recovery(ies) observed.

Original

Client: Apex Laboratories

Collection Date: 12/7/2023 2:20:00 PM

Project: A3L1058

Lab ID: 2312285-005

Matrix: Water

Client Sample ID: DUP-1

Analyses	Result	RL	MDL	Qual	Units	DF	Date Analyzed
----------	--------	----	-----	------	-------	----	---------------

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 42463

Analyst: AP

Aliphatic Hydrocarbon (C10-C12)	ND	40.0	20.7	H	µg/L	1	01/04/24 20:20:03
Aliphatic Hydrocarbon (C10-C12)	ND	39.2	20.2		µg/L	1	12/20/23 19:24:16
Surr: 1-Chlorooctadecane	50.2	50 - 150		H	%Rec	1	01/04/24 20:20:03
Surr: 1-Chlorooctadecane	45.0	50 - 150		S	%Rec	1	12/20/23 19:24:16

NOTES:

S - Outlying surrogate recovery(ies) observed.

Work Order: 2312285
CLIENT: Apex Laboratories
Project: A3L1058

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: LCS-42310		SampType: LCS		Units: µg/L		Prep Date: 12/12/2023		RunNo: 88450			
Client ID: LCSW		Batch ID: 42310				Analysis Date: 12/18/2023		SeqNo: 1847033			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	212	39.7	495.8	0	42.7	32.2	130				
Surr: 1-Chlorooctadecane	275		396.7		69.3	50	150				

Sample ID: 2312190-001BDUP		SampType: DUP		Units: µg/L		Prep Date: 12/12/2023			RunNo: 88450		
Client ID: BATCH		Batch ID: 42310					Analysis Date: 12/18/2023			SeqNo: 1847035	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	ND	46.3		0	0			0	0	25	
Surr: 1-Chlorooctadecane	225		463.5		48.5	50	150		0		S

NOTES:

S - Outlying surrogate recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID: 2312190-002BMS	SampType: MS	Units: µg/L			Prep Date: 12/12/2023			RunNo: 88450			
Client ID: BATCH	Batch ID: 42310				Analysis Date: 12/18/2023			SeqNo: 1847037			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	197	48.3	604.2	0	32.6	17.1	108				
Surr: 1-Chlorooctadecane	244		483.4		50.6	50	150				

Sample ID: MB-42310		SampType: MBLK		Units: µg/L		Prep Date: 12/12/2023		RunNo: 88450			
Client ID: MBLKW		Batch ID: 42310				Analysis Date: 12/18/2023		SeqNo: 1847042			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	ND	39.6		0	0						
Surr: 1-Chlorooctadecane	200		395.6		50.7	50	150				

Sample ID: LCS-42463		SampType: LCS		Units: µg/L		Prep Date: 12/28/2023		RunNo: 88784			
Client ID: LCSW		Batch ID: 42463				Analysis Date: 1/4/2024		SeqNo: 1854860			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C10-C12)	207	39.8	497.8	0	41.5	32.2	130				

Work Order: 2312285
CLIENT: Apex Laboratories
Project: A3L1058

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: LCS-42463		SampType: LCS			Units: µg/L		Prep Date: 12/28/2023			RunNo: 88784		
Client ID: LCSW		Batch ID: 42463			Analysis Date: 1/4/2024					SeqNo: 1854860		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Surr: 1-Chlorooctadecane	264		398.2		66.4	50	150					

Sample ID: 2312285-002ADUP		SampType: DUP			Units: µg/L		Prep Date: 12/28/2023			RunNo: 88784		
Client ID: BE-5		Batch ID: 42463			Analysis Date: 1/4/2024					SeqNo: 1854864		
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			0	0	25	H	
Surr: 1-Chlorooctadecane	239		400.0		59.7	50	150		0		H	

Sample ID: MB-42463		SampType: MBLK			Units: µg/L		Prep Date: 12/28/2023			RunNo: 88784		
Client ID: MBLKW		Batch ID: 42463			Analysis Date: 1/5/2024					SeqNo: 1854870		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aliphatic Hydrocarbon (C10-C12)	ND	39.8		0	0							
Surr: 1-Chlorooctadecane	326		398.5		81.9	50	150					



Sample Log-In Check List

Work Order Number: 2312285

Date Received: 12/12/2023 10:20:00 AM

Chain of Custody

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

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 ☐ |
| | | | HCL ☐ |
| 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 °C
Sample	3.0

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

Original

SUBCONTRACT ORDER

Apex Laboratories

A3L1058

15
2312285

APAC 12/11/23

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: 12/07/23 16:20

(A3L1058-01)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/21/23 17:00	12/21/23 16:20	c10-c12 aliphatic ONLY
Containers Supplied: (F)1 L Amber Glass - HCL			

Sample Name: BE-5

Water

Sampled: 12/06/23 12:35

(A3L1058-02)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/21/23 17:00	12/20/23 12:35	c10-c12 aliphatic ONLY
Containers Supplied: (G)1 L Amber Glass - HCL (H)1 L Amber Glass - HCL			

Sample Name: HC-12D

Water

Sampled: 12/07/23 13:40

(A3L1058-03)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/21/23 17:00	12/14/23 13:40	c10-c12 aliphatic ONLY. <u>ph=7, no room to preserve.</u>
Containers Supplied: (G)1 L Amber Glass - HCL (H)1 L Amber Glass - HCL			

WATCH HOLD TIME

Sample Name: HC-5

Water

Sampled: 12/07/23 12:10

(A3L1058-04)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/21/23 17:00	12/21/23 12:10	c10-c12 aliphatic ONLY
Containers Supplied: (G)1 L Amber Glass - HCL (H)1 L Amber Glass - HCL			

Standard TAT

Released By

UPS (Shipper)

Date

Received By

Date

Released By

Date

Received By

Date

UPS (Shipper)

SUBCONTRACT ORDER

Apex Laboratories

A3L1058

Sample Name: DUP-1

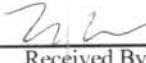
Water

Sampled: 12/07/23 14:20

(A3L1058-05)

Analysis	Due	Expires	Comments
NWTPH-EPH (Sub)	12/21/23 17:00	12/21/23 14:20	c10-c12 aliphatic ONLY
Containers Supplied:			
(G)1 L Amber Glass - HCL			
(H)1 L Amber Glass - HCL			

Standard TAT

Released By	Date	Received By	Date
	12/11/23	UPS (Shipper)	
Released By	Date	Received By	Date
UPS (Shipper)			12/12/23

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

Please refer to notes at the end of table.

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	5/31/2005	31.13	19.40	--	0.00	11.73	0.00	0.00	0.00
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

Please refer to notes at the end of table.

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	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
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 inadvertently 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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	1/15/2009	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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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
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	--

Please refer to notes at the end of table.

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	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	--
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

Please refer to notes at the end of table.

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	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
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	7/16/2014	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

Please refer to notes at the end of table.

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	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
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-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

Please refer to notes at the end of table.

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	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
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	--

Please refer to notes at the end of table.

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	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	--
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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
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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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-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
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

Please refer to notes at the end of table.

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-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
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

Please refer to notes at the end of table.

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	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
HC-10	12/1/2011	29.30	17.96	17.88	0.08	11.41	0.00	20.71	0.08

Please refer to notes at the end of table.

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	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

Please refer to notes at the end of table.

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	3/26/2018	29.30	16.75	16.34	0.41	12.91	1.00	42.55	0.01
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-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

Please refer to notes at the end of table.

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	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
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-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

Please refer to notes at the end of table.

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-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

Please refer to notes at the end of table.

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	6/2/2005	33.61	17.14	17.13	0.01	16.48	0.00	0.05	0.01
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

Please refer to notes at the end of table.

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	3/25/2005	33.05	17.45	17.45	0.00	15.60	0.00	0.00	0.00
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-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

Please refer to notes at the end of table.

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 inadvertently 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

Please refer to notes at the end of table.

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-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-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
HC-23	11/28/2005	32.74	15.27	15.27	0.00	17.47	0.00	0.60	0.00

Please refer to notes at the end of table.

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-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-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
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

Please refer to notes at the end of table.

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	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
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
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

Please refer to notes at the end of table.

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-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-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
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

Please refer to notes at the end of table.

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-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-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
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

Please refer to notes at the end of table.

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	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
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

Please refer to notes at the end of table.

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	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

Please refer to notes at the end of table.

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	1/17/2019	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
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-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

Notes:

- * Phreatic Elevation = (Casing Elevation - Depth to Water) + S_g * (Product Thickness). S_g = 0.89
- = 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

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	Dibenz(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene	
		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	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	
HC-2	5/10/2004	<500	<500	<0.1	<0.1	<250	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	--	--	0.0084	<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	<472	<0.0952	<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	<238	<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	<0.0432	<0.0216	<0.0216	<0.0216	<0.0216	<0.0216	<0.0216	<0.0432	<0.0432	<0.0216	<0.0864	<0.0864	<0.0864	<0.0864	<0.0432	
HC-2	8/11/2022	<190	<381	<0.0332	<0.0332	0.0195	<0.0166	<0.0166	<0.0166	<0.0166	<0.0166	<0.0166	<0.0332	<0.0332	<0.0332	<0.0166	<0.0664	<0.0664	<0.0664	<0.0664	<0.0332	
HC-2	11/17/2022	<192	<385	<0.0329	<0.0329	<0.0329	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0164	<0.0329	<0.0329	<0.0329	<0.0164	<0.0658	<0.0658	<0.0658	<0.0658	<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	<0.1	<0.5	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	<0.25	<0.25	0.815	<0.25	<0.1	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	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.096	2.7	--	<0.17	<0.21	<0.020	
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	<0.0952	<0.0952	<0.190	<0.0952	4.21	<0.020	<0.952	<0.476	<0.143	
HC-5	9/15/2005	1,510 J	<476	0.973	<0.476	<0.952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.476	<0.0952	<0.476	<0.0952	1.15	<0.0952	<0.952	<0.476	<0.143		
HC-5	12/7/2005	1,940	<485	<0.143	<0.143	<0.190	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	<0.190	<0.0952	1.15	<0.0952	<0.952	<0.476	<0.143		
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	<0.385	<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	4,300 J	580 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
HC-5	12/19/16 DUP	6,100 J	1,900 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	<0.386 UJ	<0.0488 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	<0.0244 UJ	0.119 J	1.38 J	<0.0244 UJ	--	--	<0.0976 UJ	<0.159 UJ	0.202 J-	
HC-5	4/7/2021	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	7/8/2021	2,460	<385	<1.38	<1.38	<1.38	<0.688	<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	<1.38	
HC-5	8/11/2022	3,310	<385	<1.38	<1.38	<1.38	<0.664	<0.664	<0.664	<1.33	<0.664	<0.664	<1.33	<0.664	<1.33	<0.664	<2.66	<2.66	<2.66	<1.33		
HC-5	11/17/2022	9,190	<385	<0.378	<0.378	<0.378	<0.189	<0.189	<0.189	<0.378	<0.189	<0.189	<0.378	<0.189	<0.378	<0.755	<0.755	<0.755	<0.378	<0.378		
HC-5	6/20/2023	338	<377	<5.26	<0.362	<0.362	<0.181	<0.181	<0.181	<0.362	<0.181	<0.181	<0.362	<0.181	<0.362	0.737	<0.724	<0.724	<0.724	<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	<0.322	<0.161	<0.322	<0.161	<0.645	<0.645	<0.645	<0.322		
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	
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	<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	<0.21	0.21	0.023	0.024	0.028	0.025	0.041	<0.020	0.076	2.8	0.028	0.076	--	<0.19	0.12	--		
HC-19	9/15/2005	<236	<476	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.0952	<0.190	<0.0952	3.48	<0.0952	--	<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	<0.204	<0.102	<0.102	1.02	<0.102	--	<0.102	<0.102	<		

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

Well ID	Date	TPH			Acenaph- thene	Acenaph- thylene	Anthracene	Benzo(a)- anthracene	Benzo(a)- pyrene	Benzo(b)- fluoranthene	Benzo(g,h,i)- perylene	Benzo(k)- fluoranthene	PAHs										1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		Diesel-Range	Residual- Range										Concentration in µg/L																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

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	
		Concentration in µg/L																				
BE-1	6/6/2005	3,500 Y ^b	2,300 O ^a	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 ^b	< 515 ^b	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 ^b	< 400 ^b	< 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	0.024	--	--	--	< 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	< 0.020	< 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	< 0.01	< 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	< 0.0372	< 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	< 0.0228	< 0.0457	< 0.0228	< 0.0228	< 0.0457	< 0.0457	< 0.0228	< 0.0914	< 0.0914	< 0.0914	< 0.0914	< 0.0914	< 0.0457
BE-1	8/15/2022	313	< 381	< 0.0361	< 0.0361	< 0.0452	< 0.0181	< 0.0181	< 0.0181	< 0.0181	< 0.0181	< 0.0181	< 0.0181	< 0.0361	< 0.0361	< 0.0181	< 0.0722	< 0.0722	< 0.0722	0.122	< 0.0722	< 0.0361
BE-1	12/14/2022	< 190	< 381	< 0.0447	< 0.0447	< 0.0559	< 0.0224	< 0.0224	< 0.0224	< 0.0224	< 0.0447	< 0.0224	< 0.0224	< 0.0447								

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

Well ID	Date	TPH						PAHs														1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene
		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										
		Concentration in µg/L																								
BE-3	6/6/2005	640 Y ^a	1,000 Q ^b	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 ^c	<500 ^a	<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 ^c	<1,000 ^b	<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	<0.100	<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	<0.095	<0.095	0.110	<0.095	--	--	<0.095	<0.095	0.110					
BE-3	12/11/2014	740 Y	280 Y	<0.021	<0.021	0.024	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 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	3/13/2006 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	6/28/2006 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	9/20/2006 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	12/13/2006 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	3/30/2007 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	6/27/2007 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	9/18/2007 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	12/6/2007 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	9/8/2008 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	12/29/2008 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	03/9/2009 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	06/5/2009 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	09/9/2009 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	12/15/2009 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	3/11/2010 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	6/8/2010 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	9/16/2010 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--					
BE-4	12/13/2011 ^c	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						

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	
		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	<1.00	<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	<0.02	0.049	<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	540	<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	<0.0369	<0.0369	<0.0369	<0.0369	<0.0369	<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	<0.399	<0.200	<0.200	<0.200	<0.200	<0.399	<0.399	<0.200	<0.799	<0.799	<0.799	<0.799	<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	
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	
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	
HC-12D	6/20/2023	<190	<381	0.895	<0.535	<0.920	<0.0199	<0.0199	<0.0199	<0.0398	<0.0199	<0.0199	<0.0199	<0.0398	<0.522	<0.0199	<0.116	<0.0796	<0.529	<0.284	<0.0398	
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	
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	
ROD Compliance Criteria		1,000	1,000	520	--	--	0.027	0.014	--	--	--	--	--	6.16	3.9	--	--	--	620	6.3	--	
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. OP = 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.																						

Notes:

- TPH = Total Petroleum Hydrocarbons
- PAHs = Polycyclic Aromatic Hydrocarbons
- µg/L = micrograms per liter
- = Data not available or sample not analyzed for listed analyte.
- < = Analyte not detected above method detection limit
- Bold** represents detected analyte concentrations exceeding compliance criteria; note, this is provided for information purposes only.
- Well not sampled due to presence of LNAPL in well at time of sampling.
- Sample did not include silica gel cleanup due to inadequate sample volume.
- Sample lost during lab extraction.
- ROD compliance criteria is for groundwater discharge at the Slip or river and is not applicable to monitoring well data.
- J = Result is an estimated value.
- O = The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- 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.
- QP = Hydrocarbon result partly due to individual peak(s) in quantitation range.
- Q11 = Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel.
- Q9 = Hydrocarbon pattern most closely resembles weathered diesel.
- B = Analyte was detected in the method blank.
- 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.
- H = Sample analysis re-run outside of the specified hold-time due to laboratory control issues with the initial analysis.
- J- = Result is estimated and may be biased low.
- R = Data does not meet Data Quality Objectives and are unusable.
- D = The RPD between the primary sample and field duplicated exceeded the control limit.

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

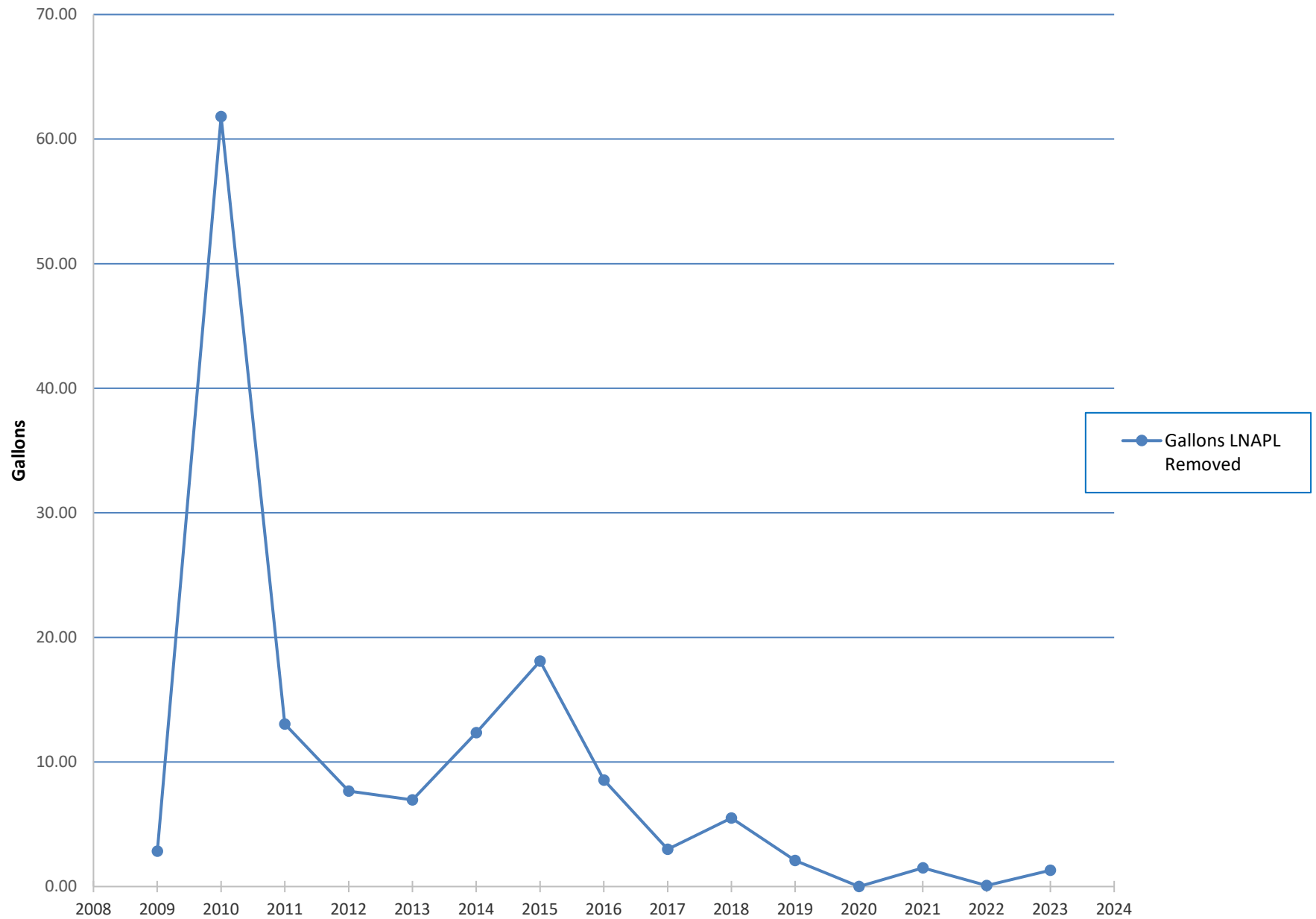
Sample ID	Sample Date	C10-C12 Aliphatic Hydrocarbons (µg/L)	Metals (µg/L)																	
			Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Vanadium		Zinc	
			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
South Slip 3 Area																				
HC-2	4/25/2022	<0.13	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	0.308 J+	<0.20	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	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	17.6	13.8	<0.0800	<0.0800	<2.00	<2.00	369	273
	11/17/2022	<39.5	1.640	1.570	0.395	0.342	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	69.8	72	<0.0800	<0.0800	<2.00	<2.00	90.9	93.5
HC-5	4/26/2022	0.88 J	1.58	1.55	<0.20	<0.20	<2.00	<2.00	4.37	<2.00	<0.20	<0.20	771	779	<0.0800	<0.0800	<2.00	<2.00	93.3	82.7
	8/11/2022	129	2.60	1.82	0.171	<0.20	<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	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	0.235	<0.20	1,870	1,780	<0.0800	<0.0800	5.58	5.31	699	683
	6/20/2023	3	2.36	2.18	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	2,060	1,820	<0.0800	<0.0800	3.66	<2.00	291	235
	12/6/2023	<20.7	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	4.51	8.45	<0.20	0.573	366	434	<0.0800	<0.0800	3.12	2.36	68.2	67.2
HC-6S	4/25/2022	<0.13	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	0.314 J+	<0.20	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	<0.20	<0.20	<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	<0.20	<0.20	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	<0.20	<0.20	<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	<0.20	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	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	<0.20	<0.20	2.28	<2.00	4.12	4.62	2.3	<0.20	2,580	2,970	<0.0800	<0.0800	9.38	<2.00	20.2	4.2
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+	<0.20	169	146	<0.0800	<0.0800	<2.00	<2.00	68.9	70.9
	8/11/2022	<20.6	7.52	3.06	<0.20	<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	<0.20	0.258	<2.00	<2.00	19.3	3.59	0.567	4.56	16	89	<0.0800	<0.0800	<2.00	2.55	64.4	50.6
	6/20/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2023	<20.7	<1.00	<1.00	<0.20	<0.20	<2.00	<2.00	2.65	7.02	1.78	<0.20	8	19	<0.0800	<0.0800	2.79	<2.00	17.10	15.10
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+	<0.20	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	<0.20	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	<0.20	<2.00	<2.00	1.62	2.23	1.46	<0.20	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	3.110	<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	6.33	<0.20	<2.00	<2.00	<2.00	2.94	1.57	<0.20	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	<0.20	<2.00	<2.00	<2.00	<2.00	0.231	<0.20	15,300	14,100	<0.0800	<0.0800	<2.00	<2.00	5.24	11.20
	12/6/2023 DUP	<20.7	15.3	15.7	3.95	<0.20	<2.00	<2.00	<2.00	<2.00	<0.20	<0.20	15,100	14,300	<0.0800	<0.0800	<2.00	<2.00	<4.00	11.10
Portland Harbor ROD Cleanup Levels		2.6	0.018		0.094		11		2.74		0.54		430		NA		20		36.5	

- Notes:
- < = Analyte was not detected above the minimum reporting limit.
 - µg/L = Micrograms per liter.
 - J = Result is estimated.
 - J+ = Result is estimated and may be biased high.
 - Boldface** data represents detected analyte concentration.
 - NA = No screening level is established.
 - DUP = Field duplicate.
 - = Analyte was not tested.

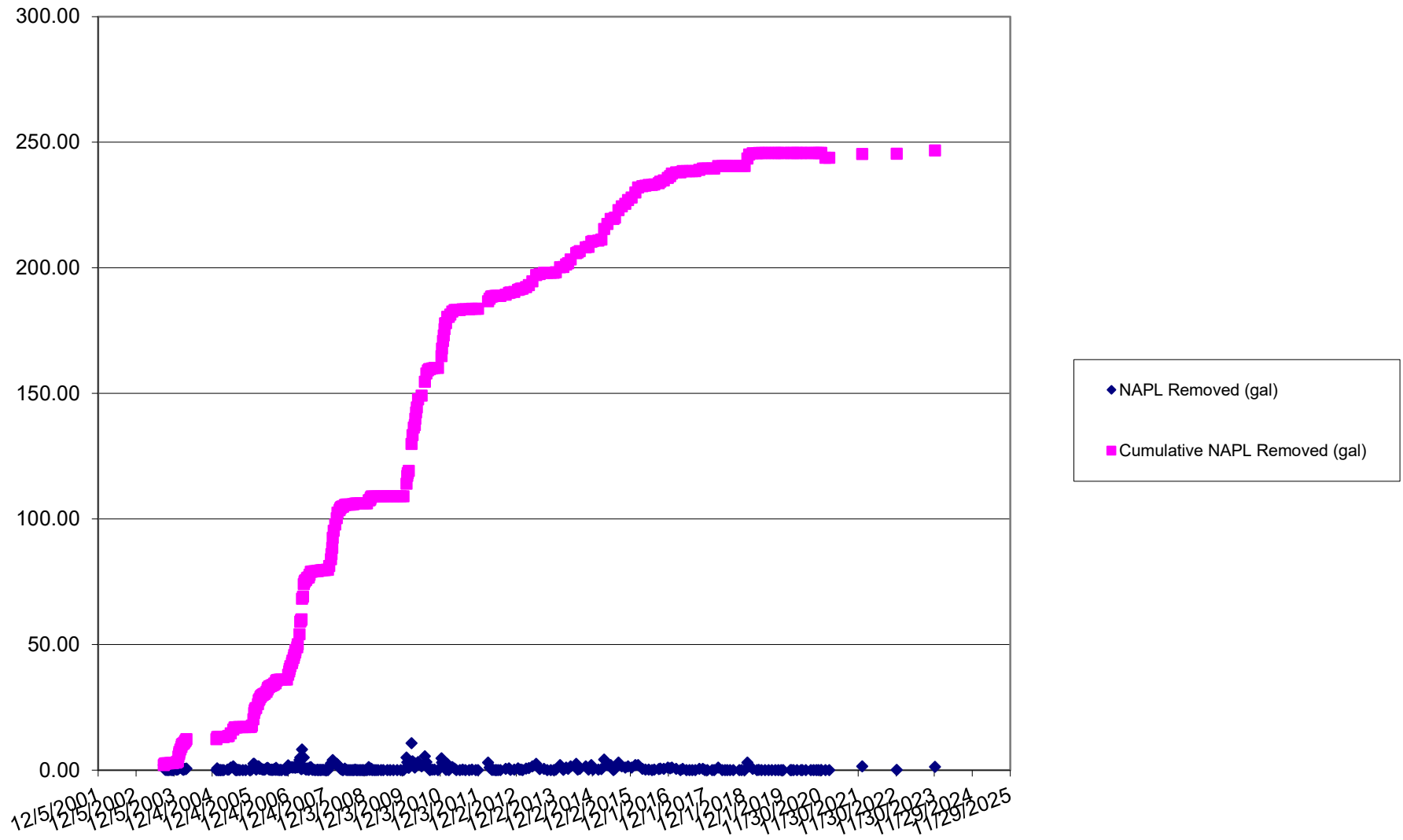
Appendix D

LNAPL Thickness and Recovery Trend Plots

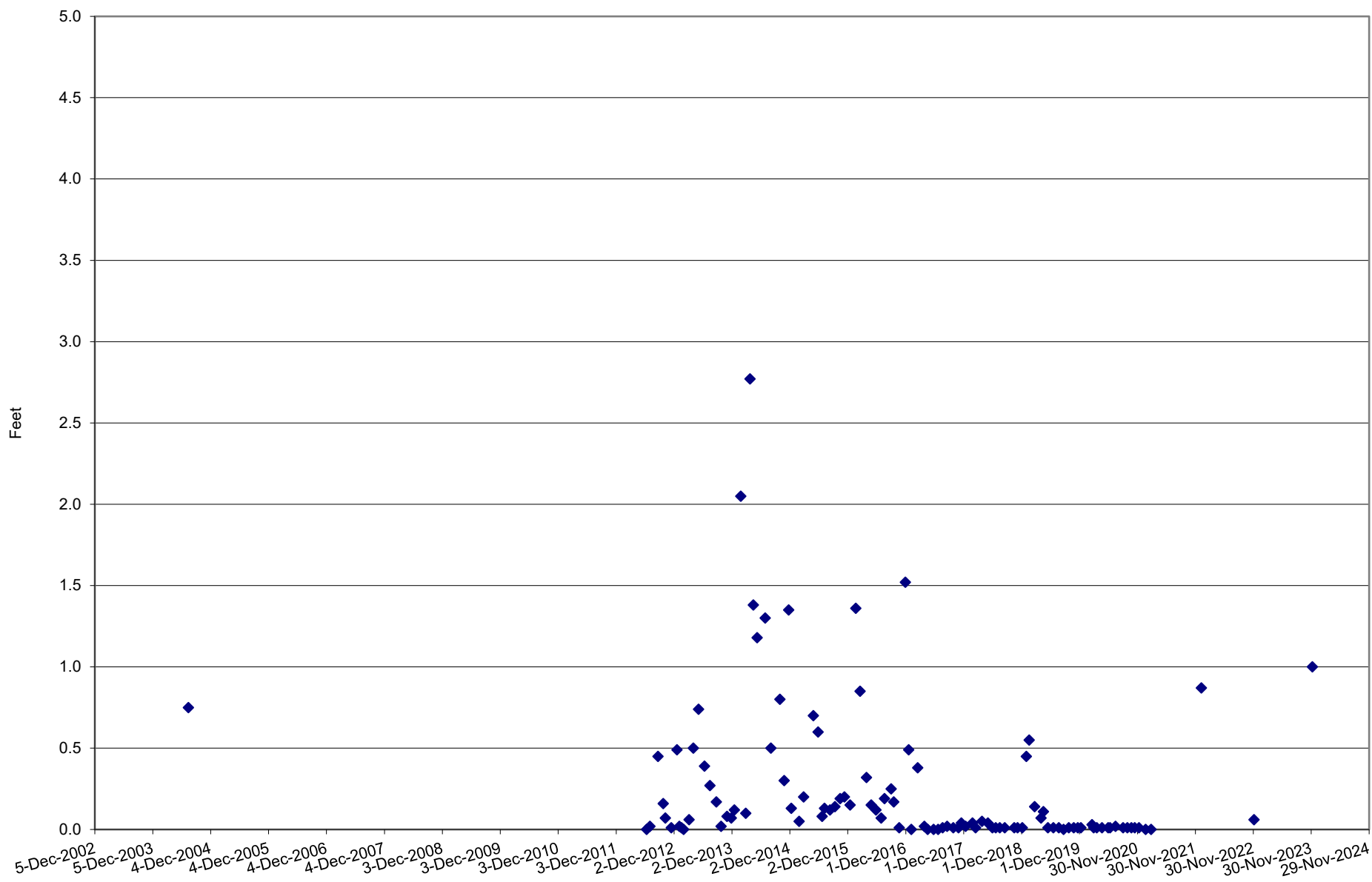
MW-19



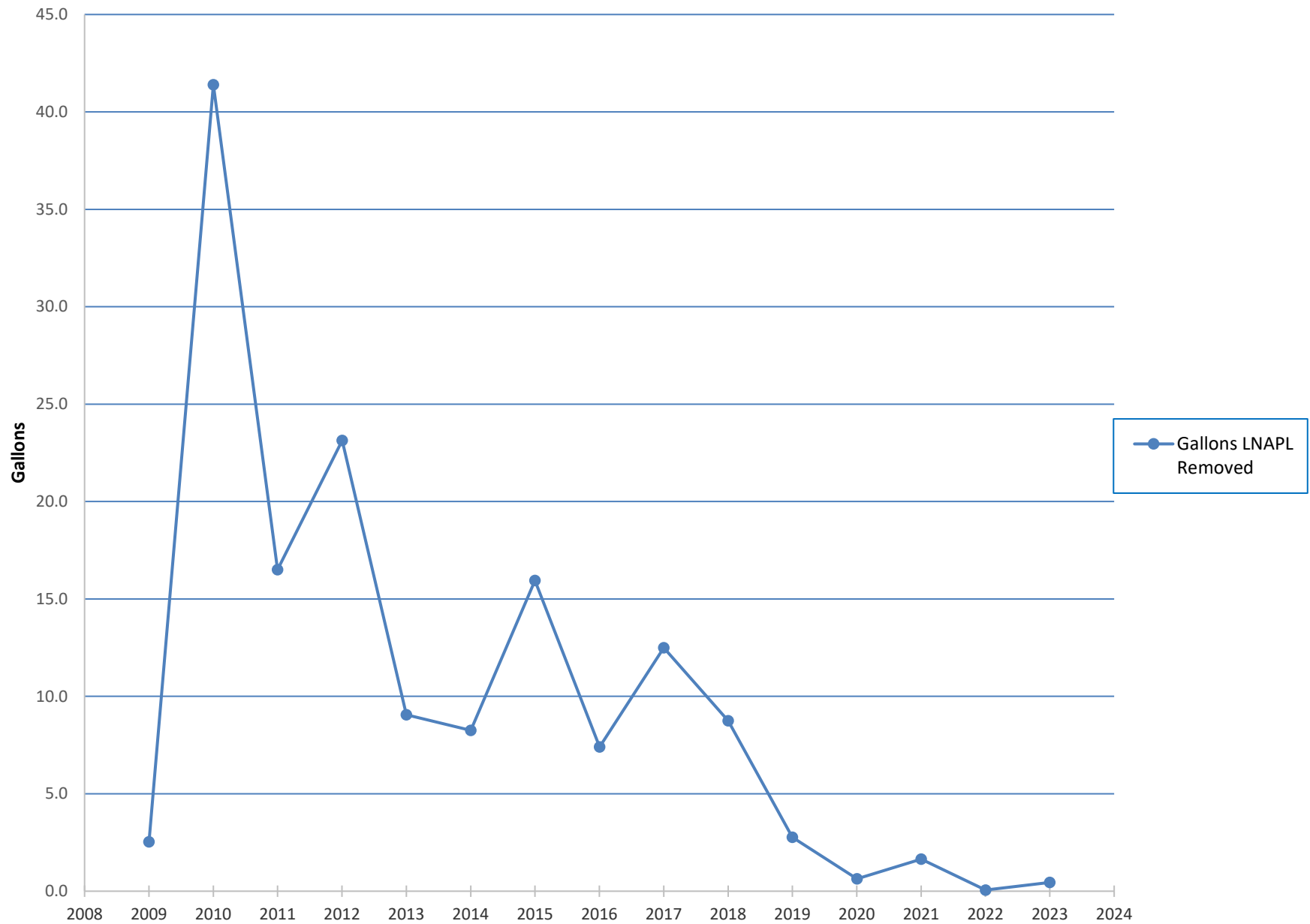
MW-19



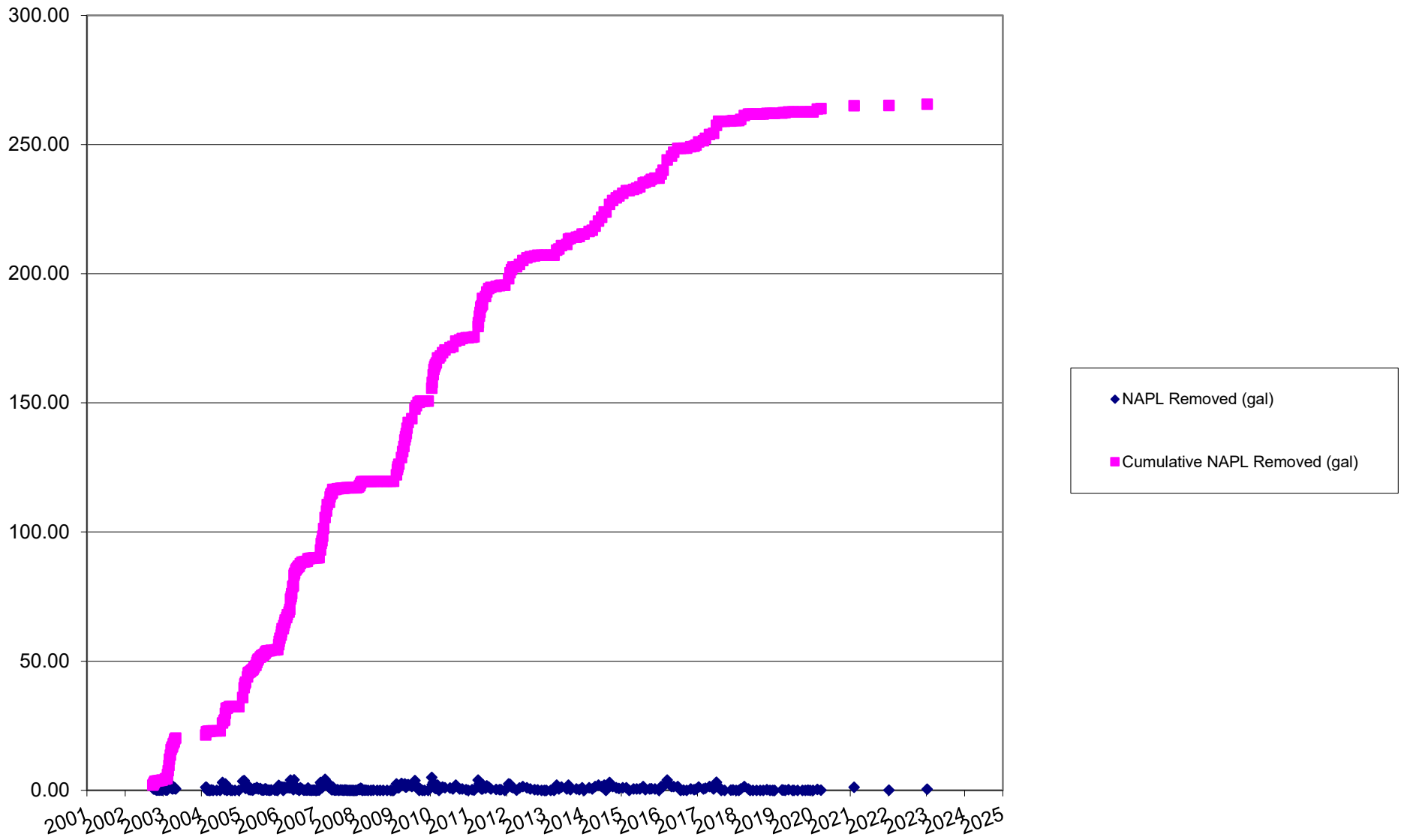
MW-19 NAPL Thickness (ft)



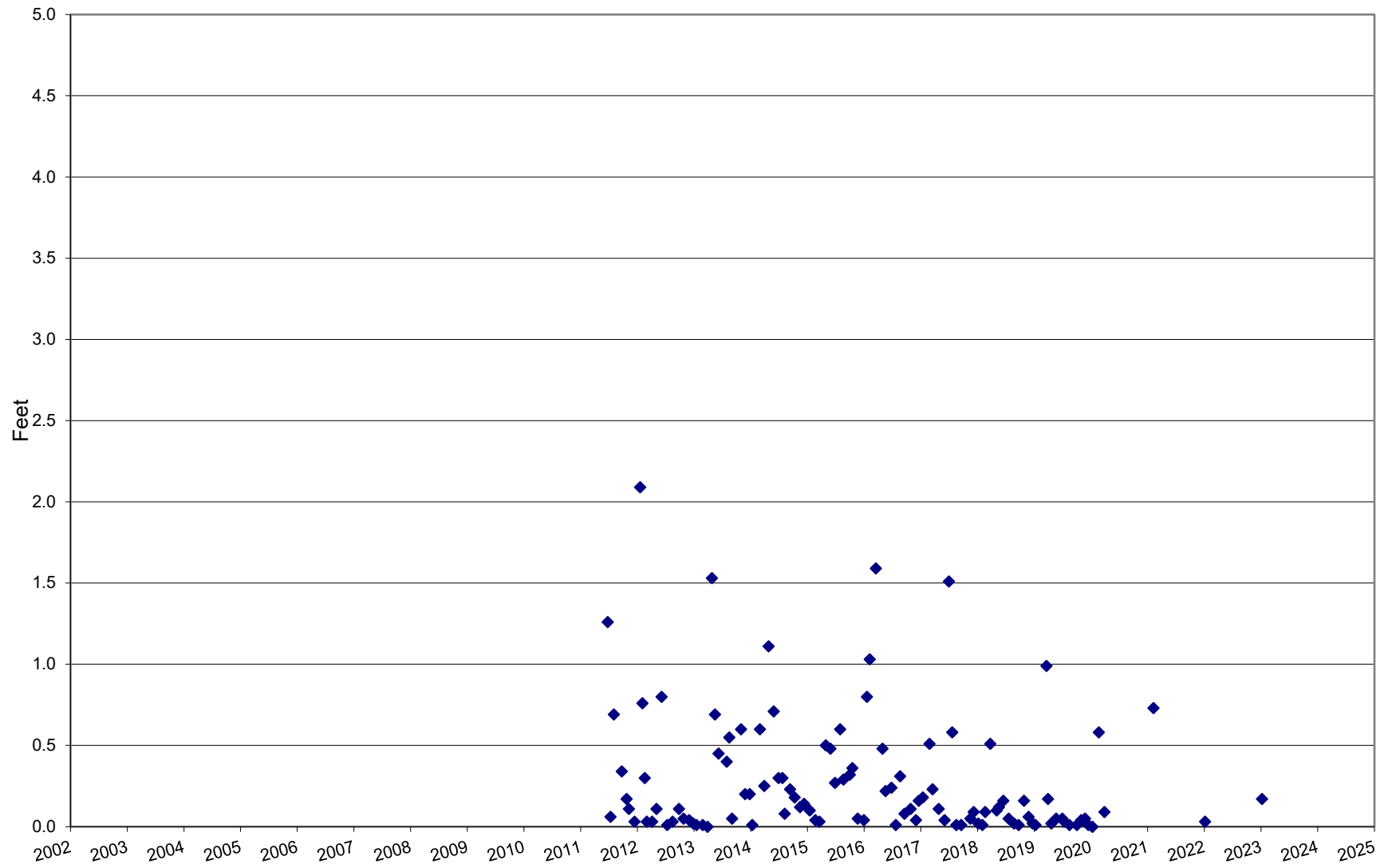
MW-20



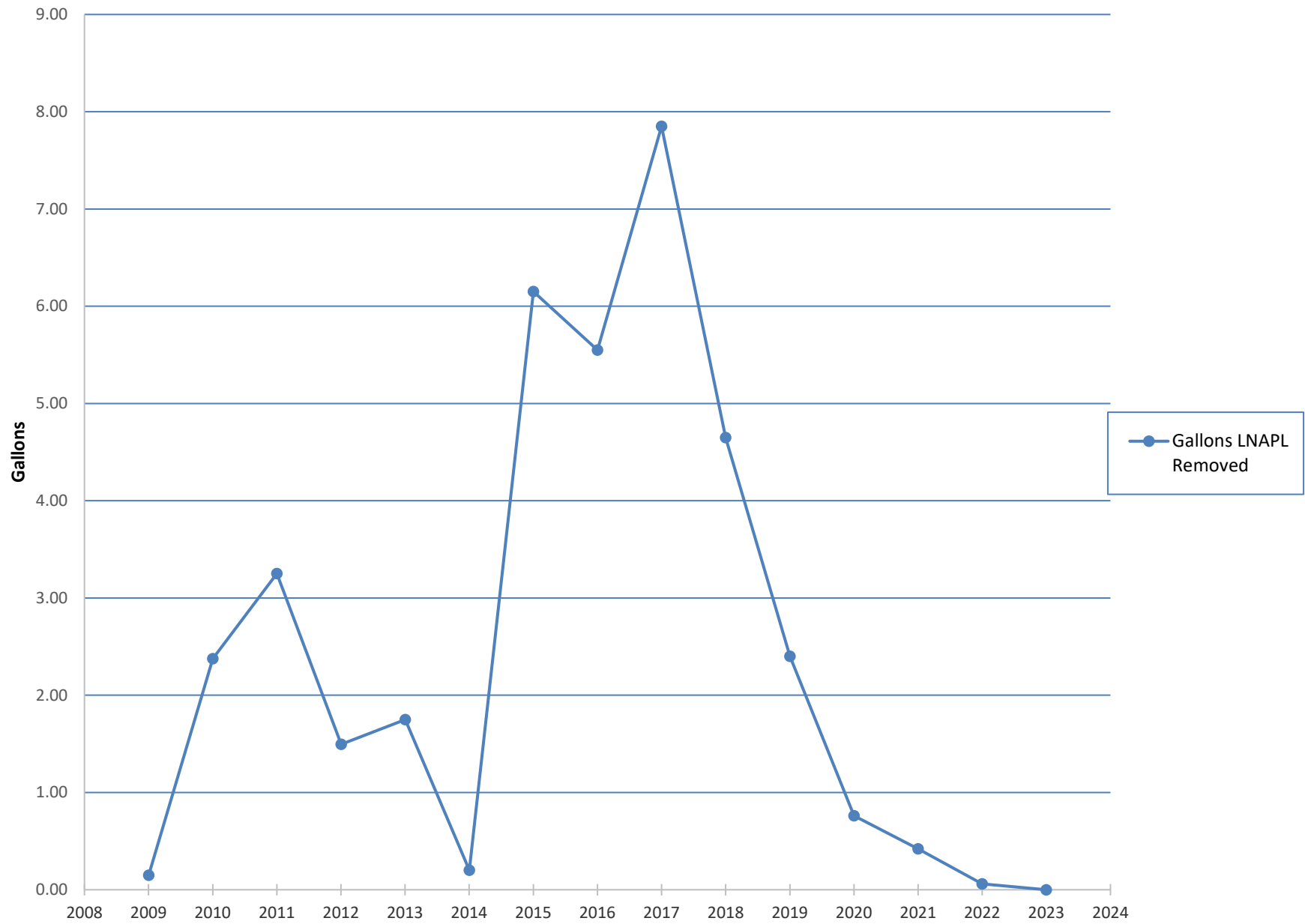
MW-20



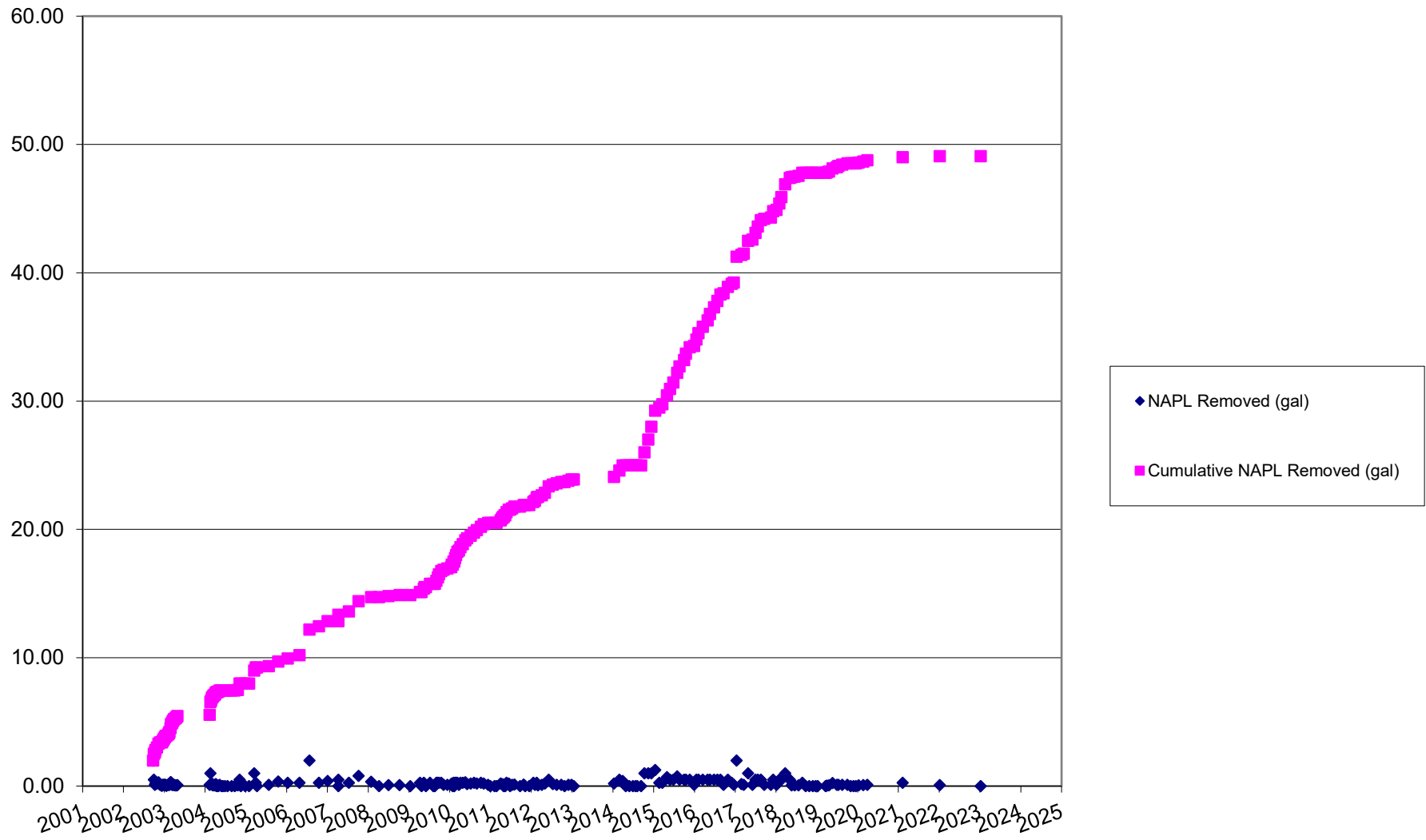
MW-20 NAPL Thickness (ft)



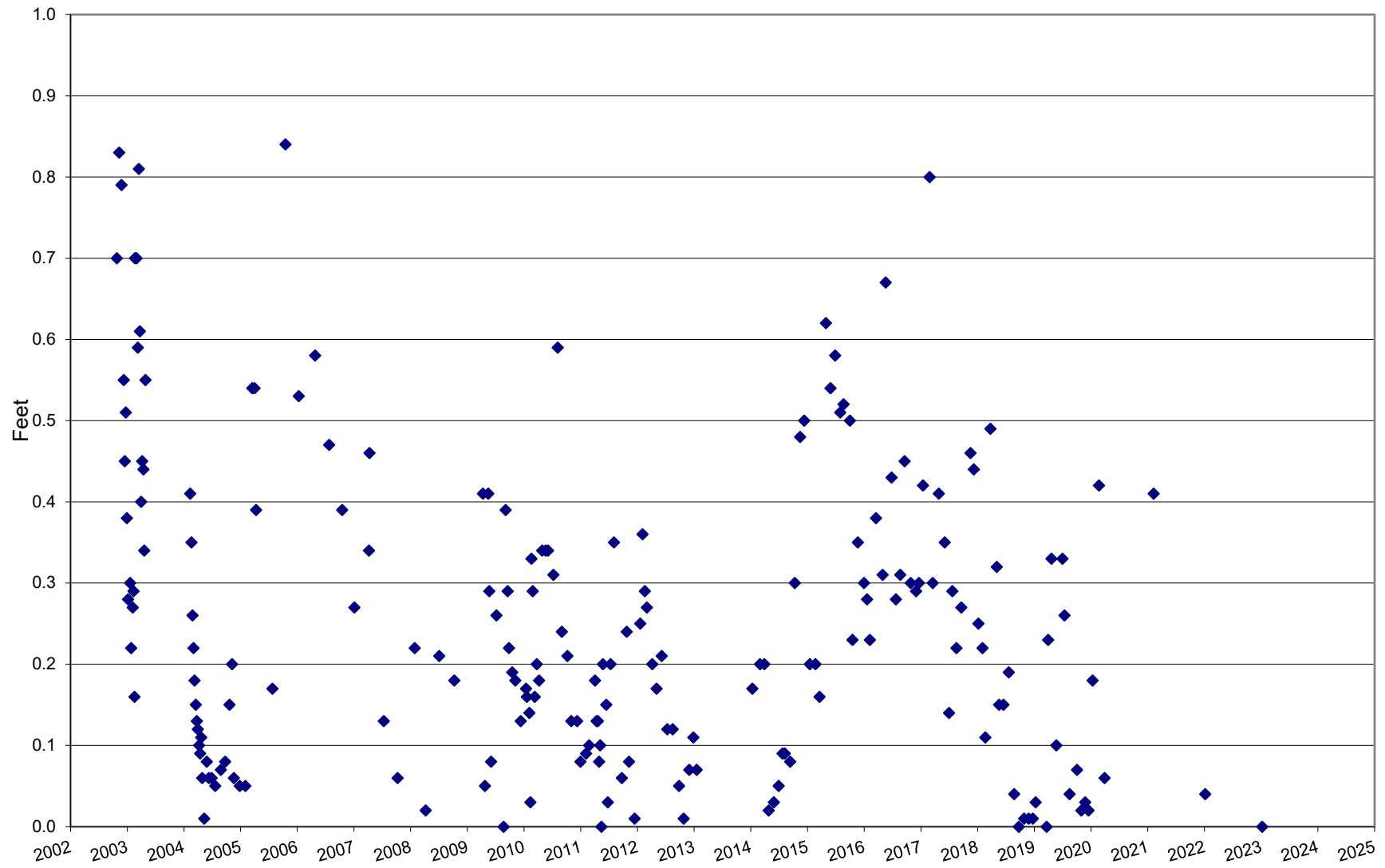
HC-10



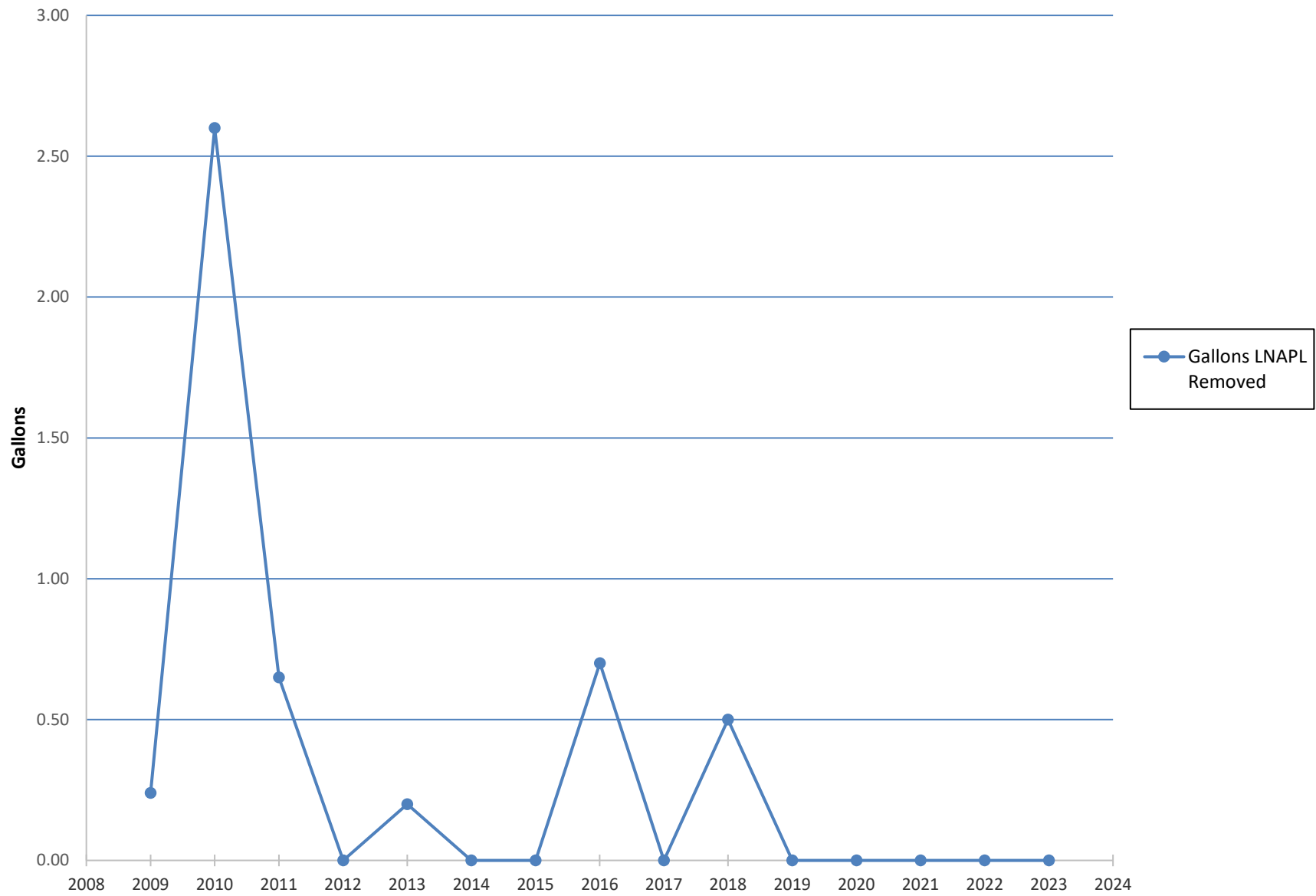
HC-10



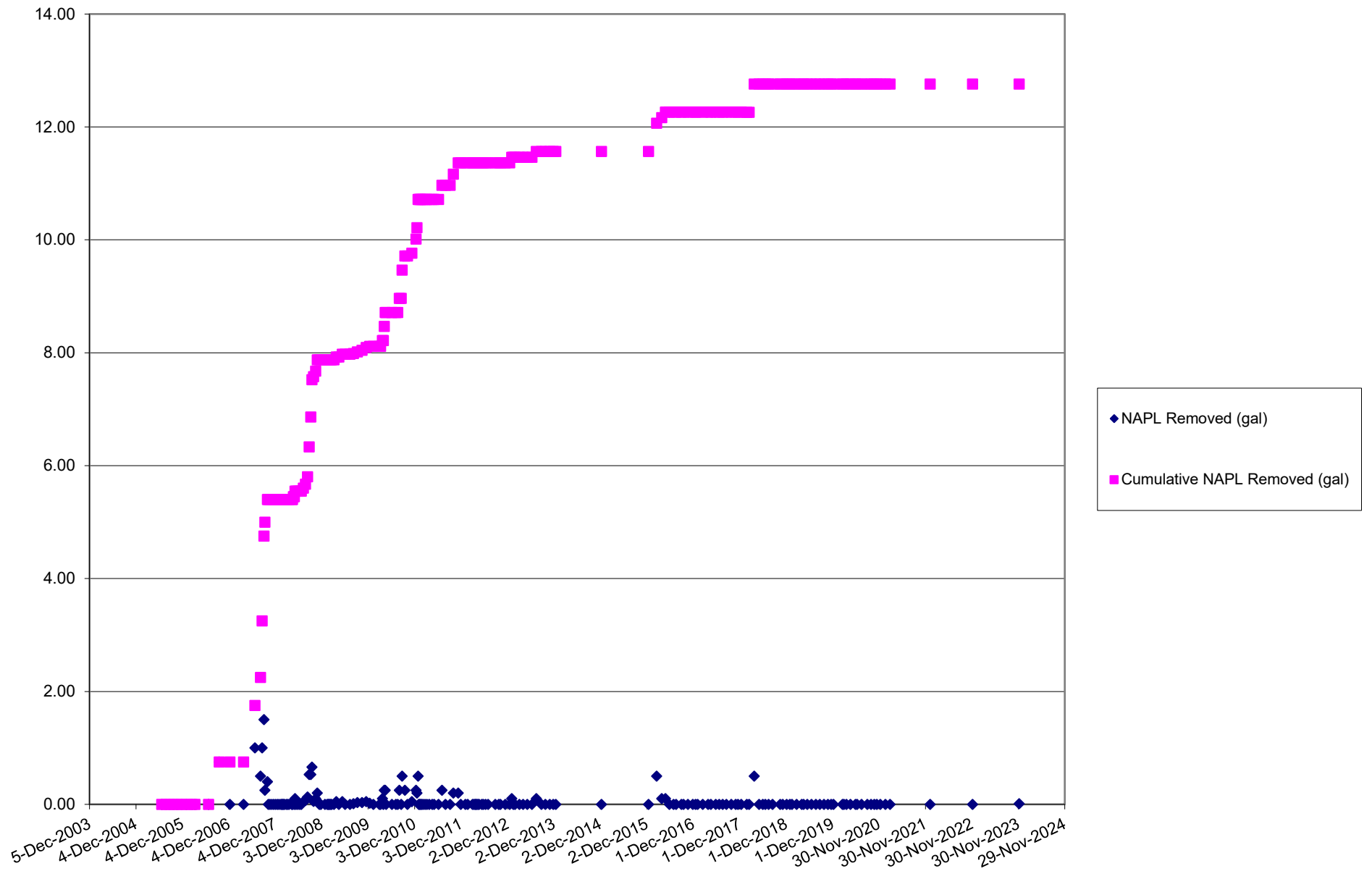
HC-10 NAPL Thickness (ft)



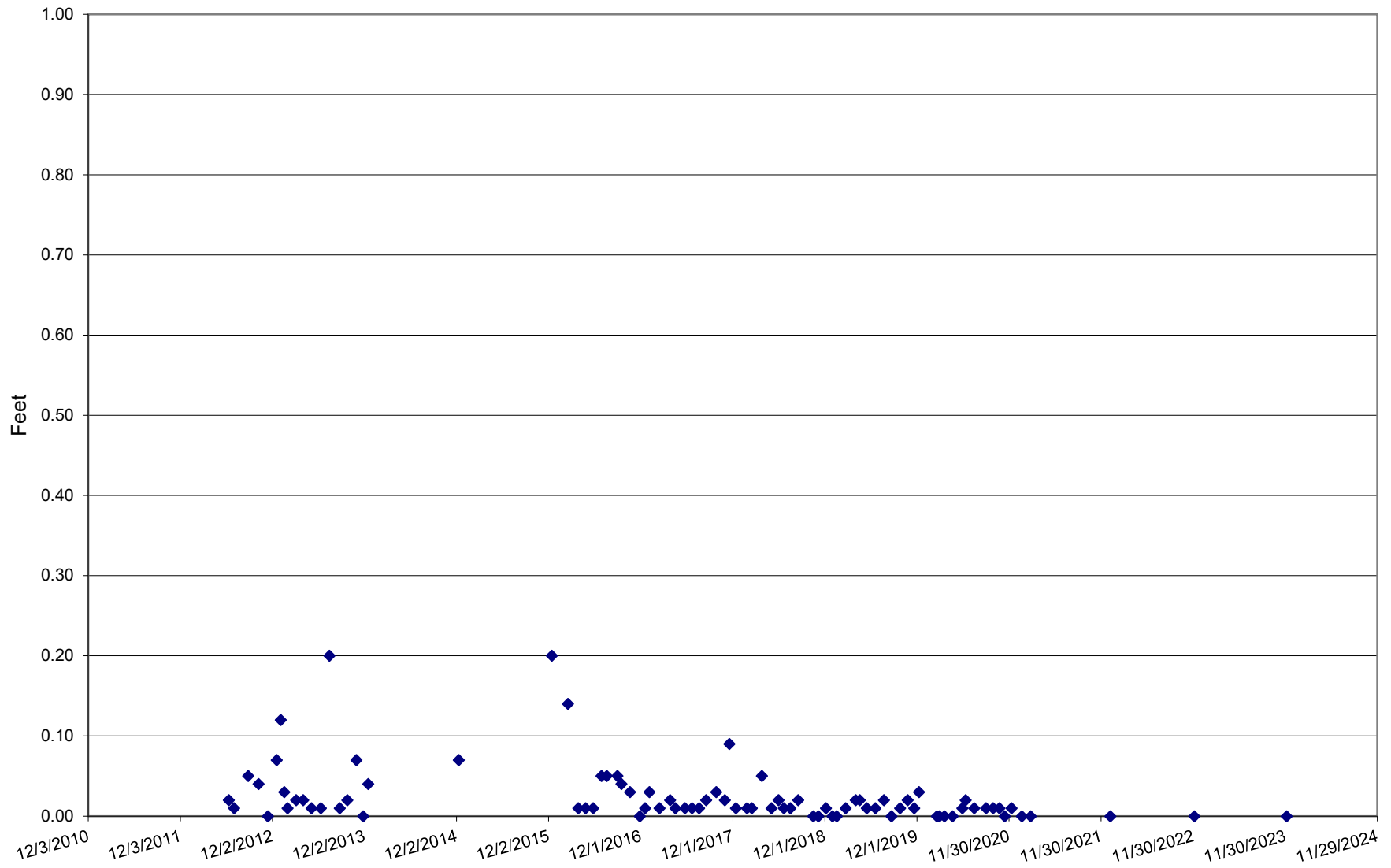
BE-4



BE-4



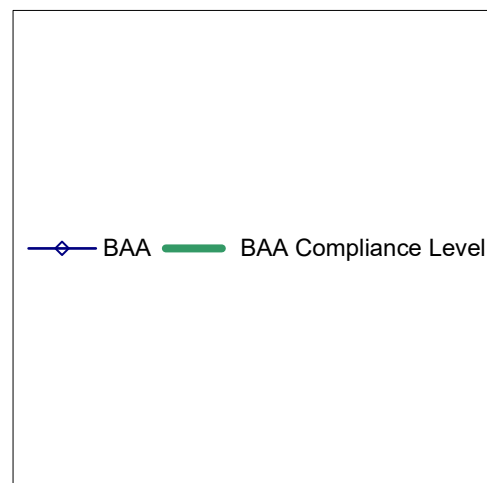
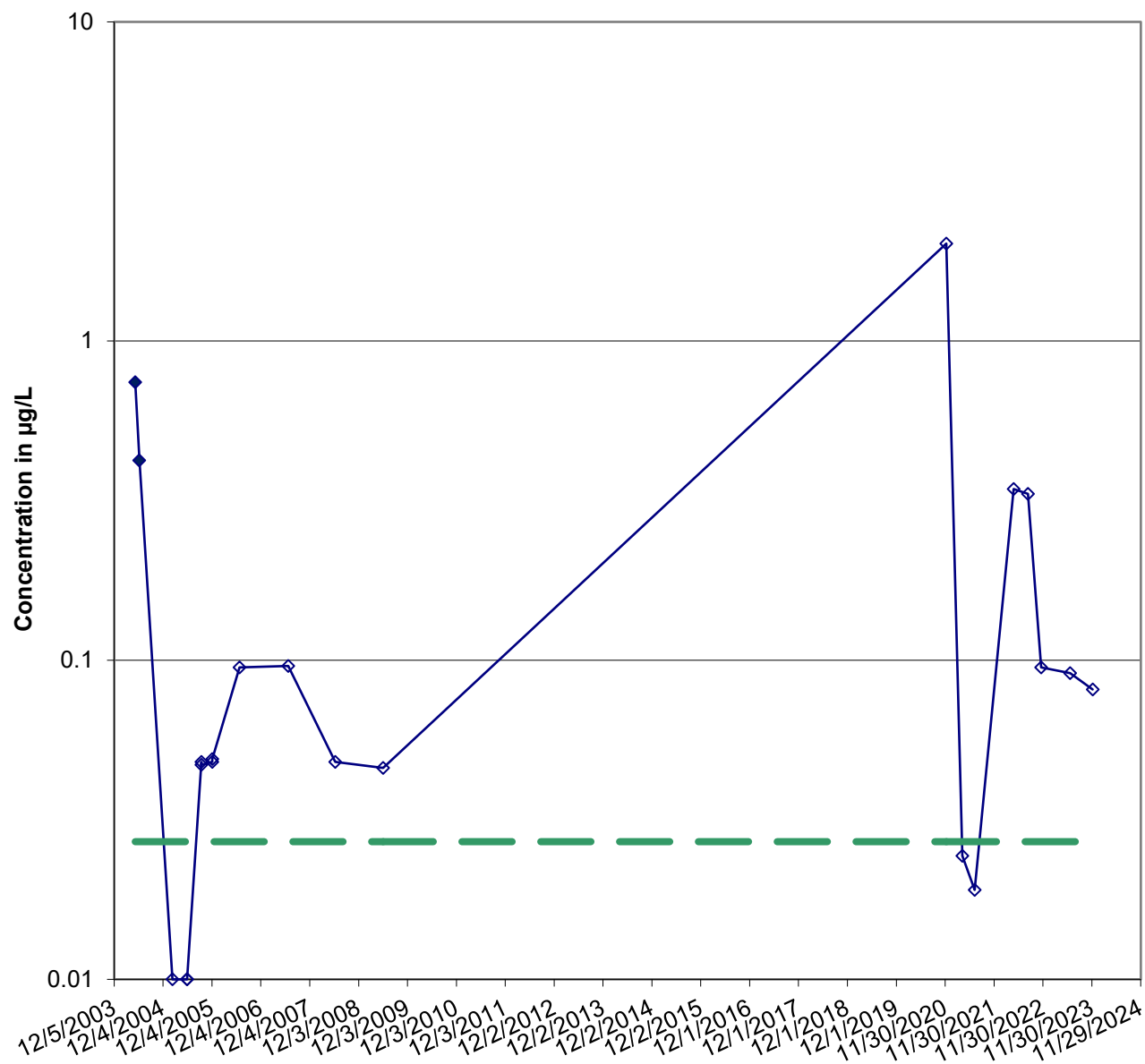
BE-4 NAPL Thickness (ft)



Appendix E

Chemical Concentration Versus Time Plots

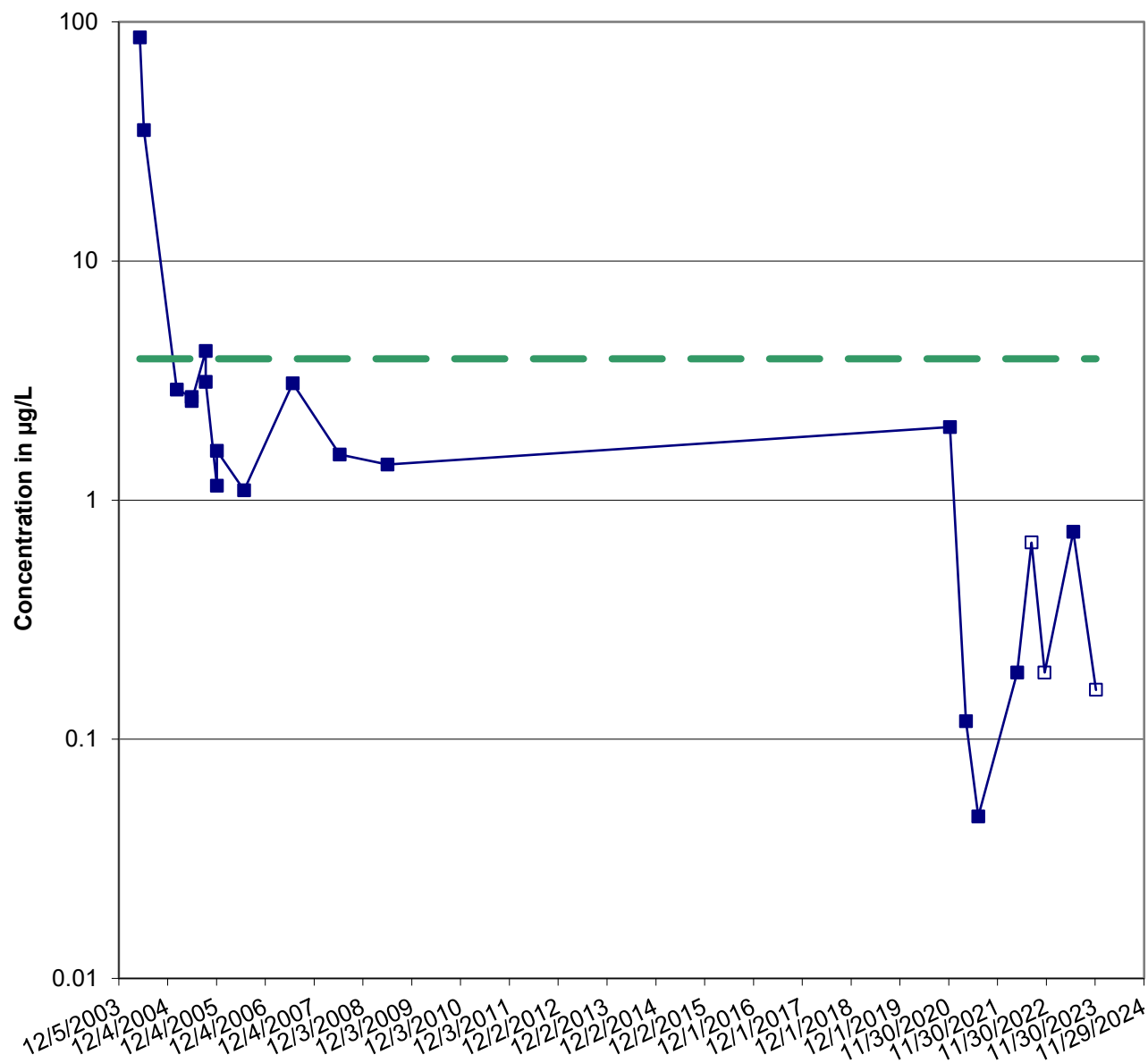
HC-5



Note:

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

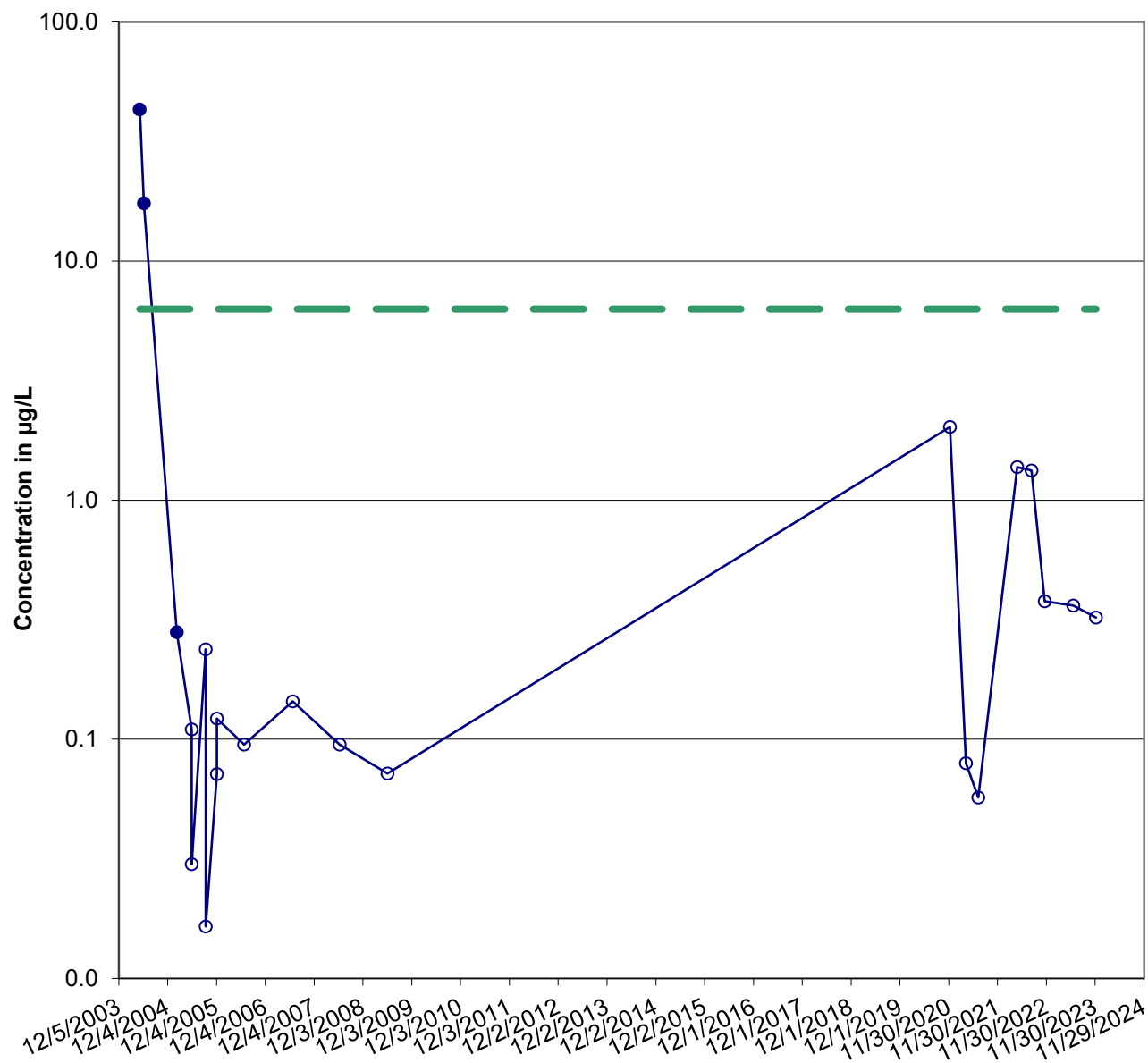
HC-5



Note:

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

HC-5



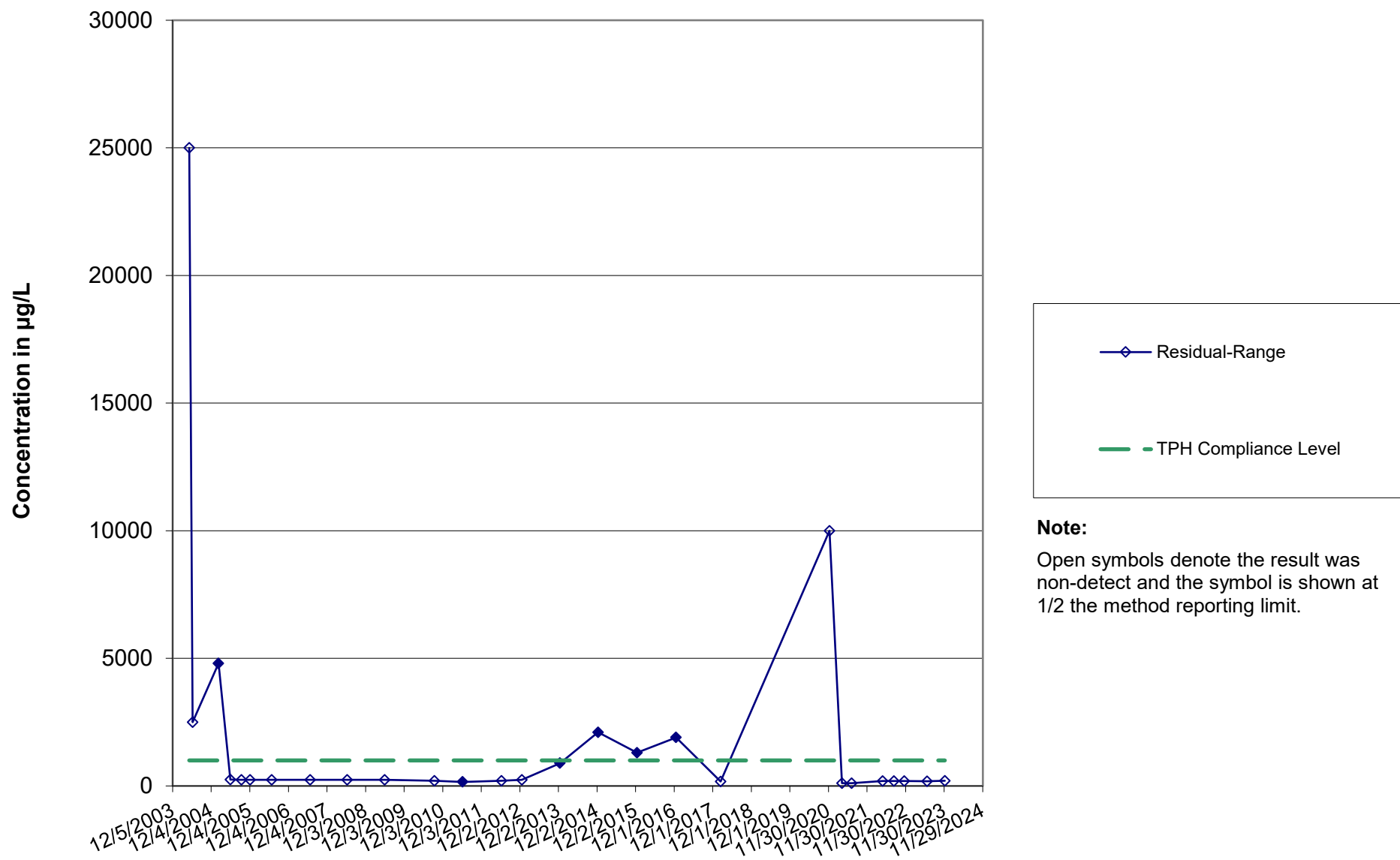
—○— Phenanthrene

— Phenanthrene Compliance Level

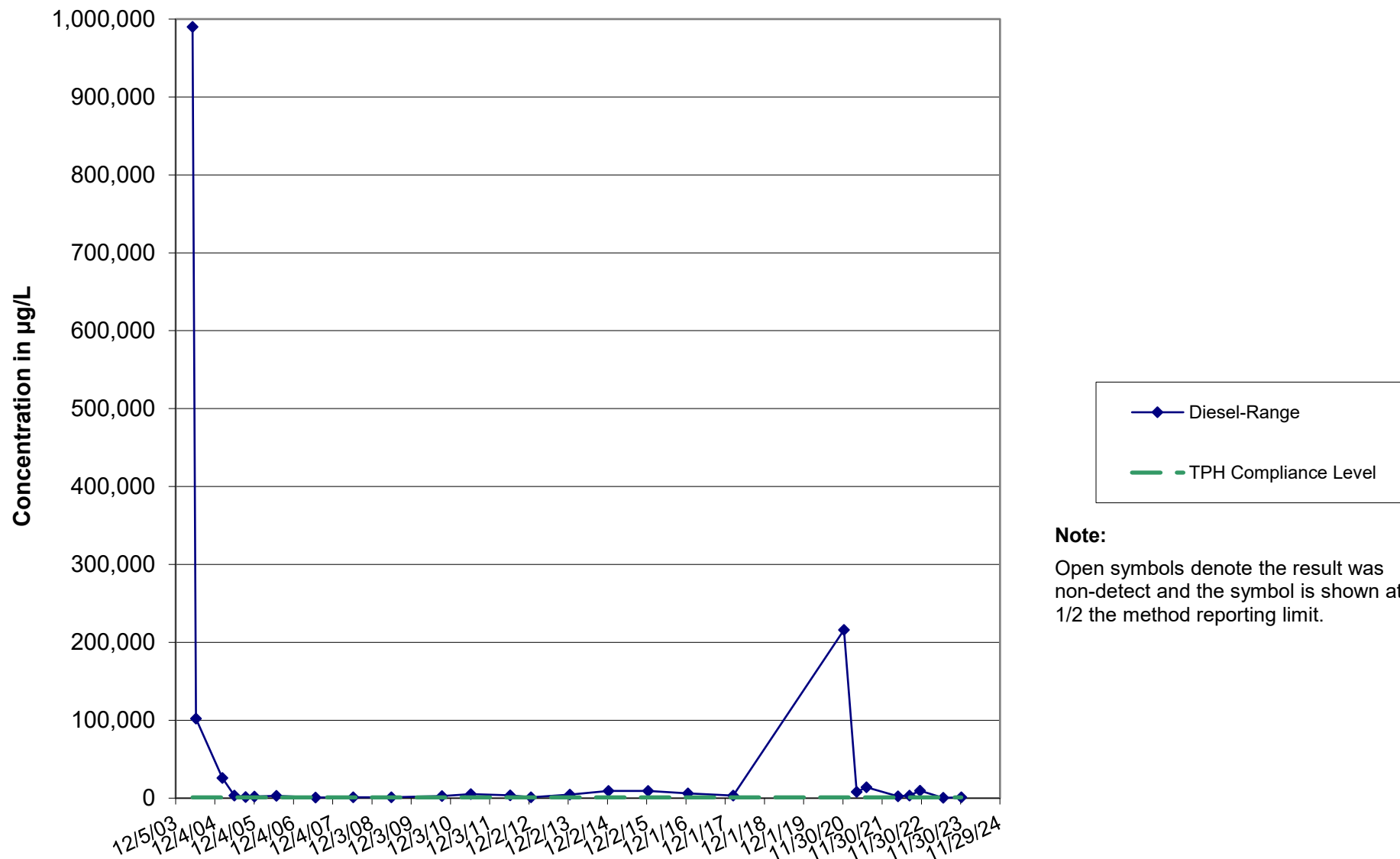
Note:

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

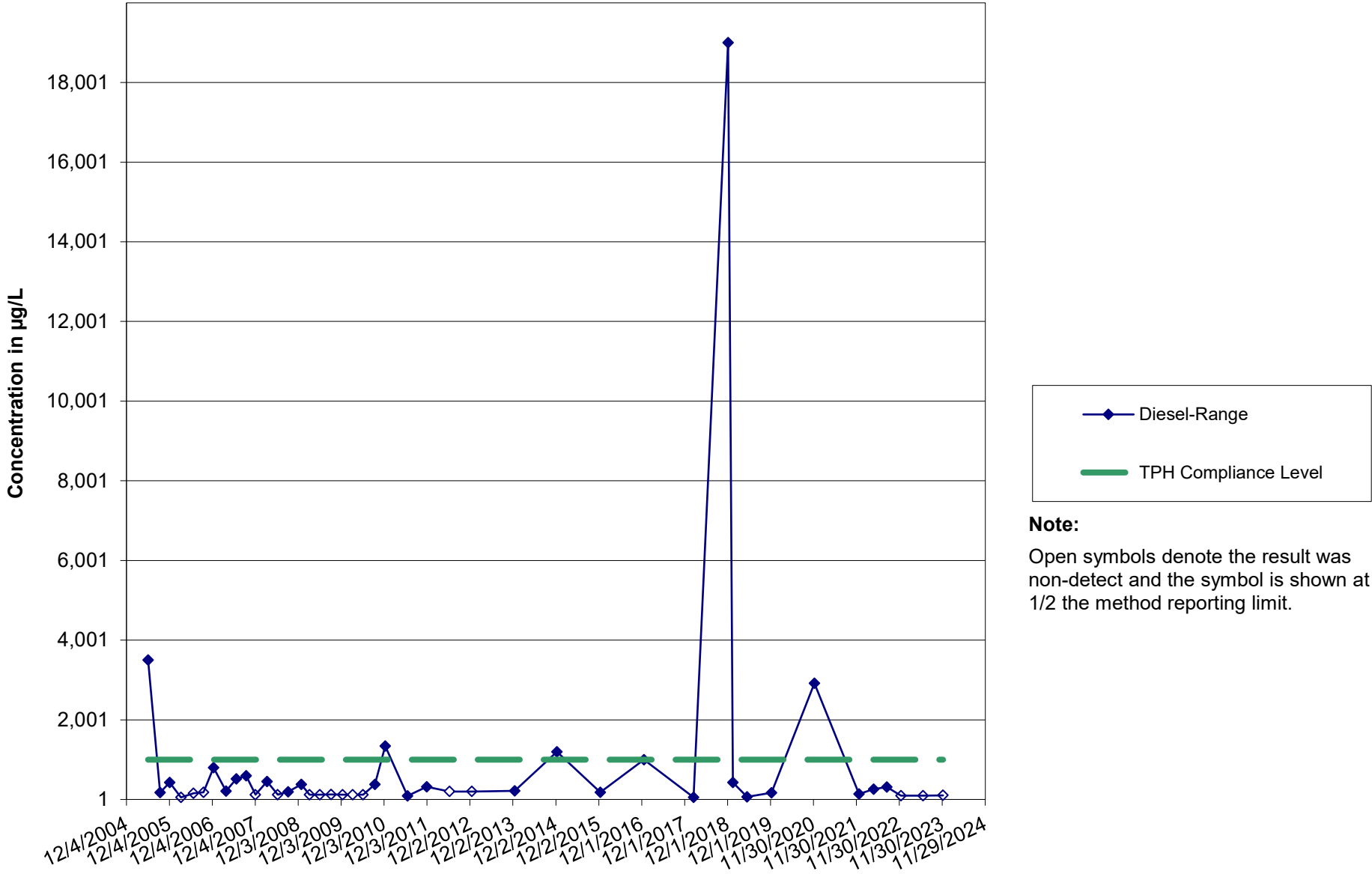
HC-5



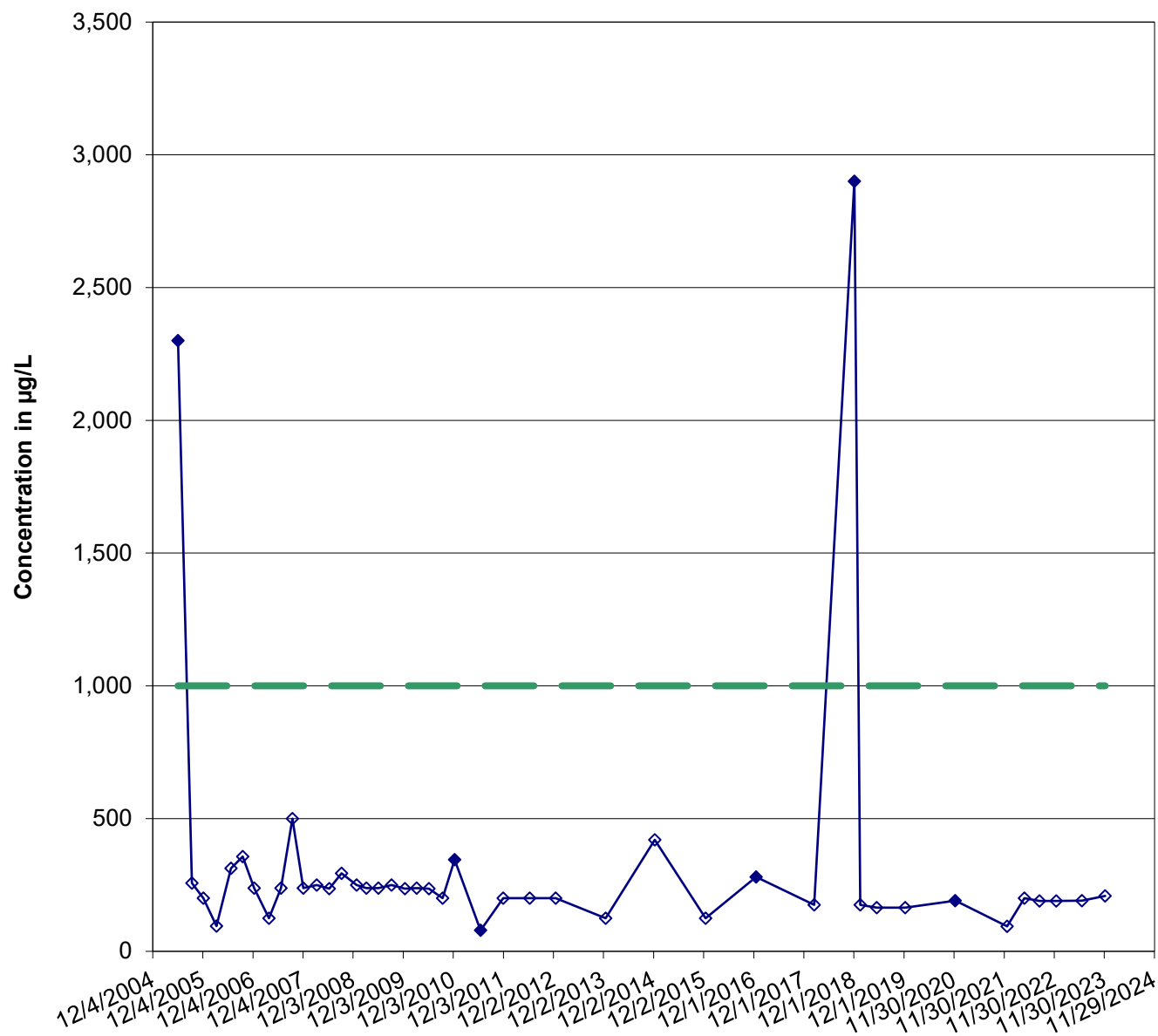
HC-5



BE-1



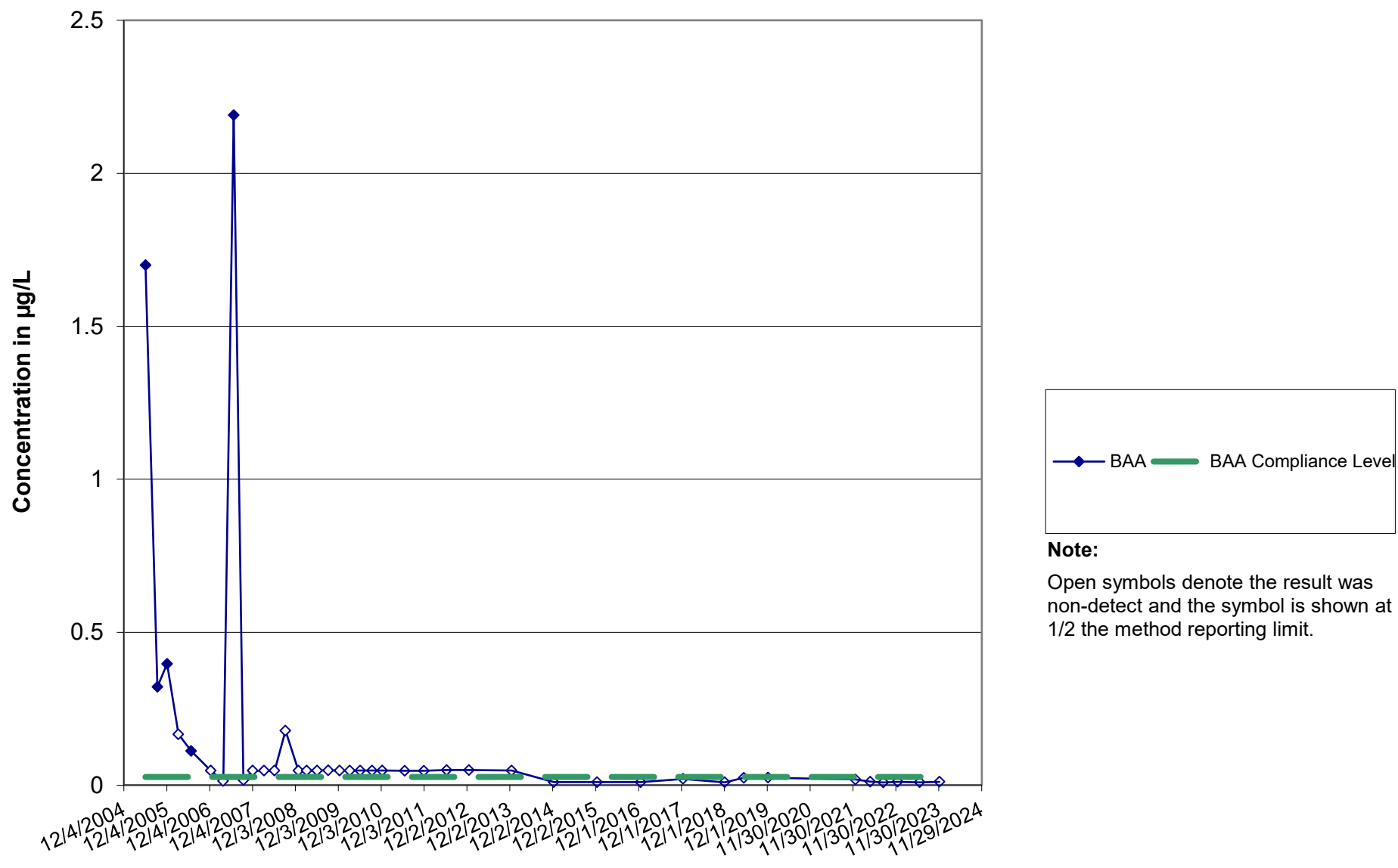
BE-1



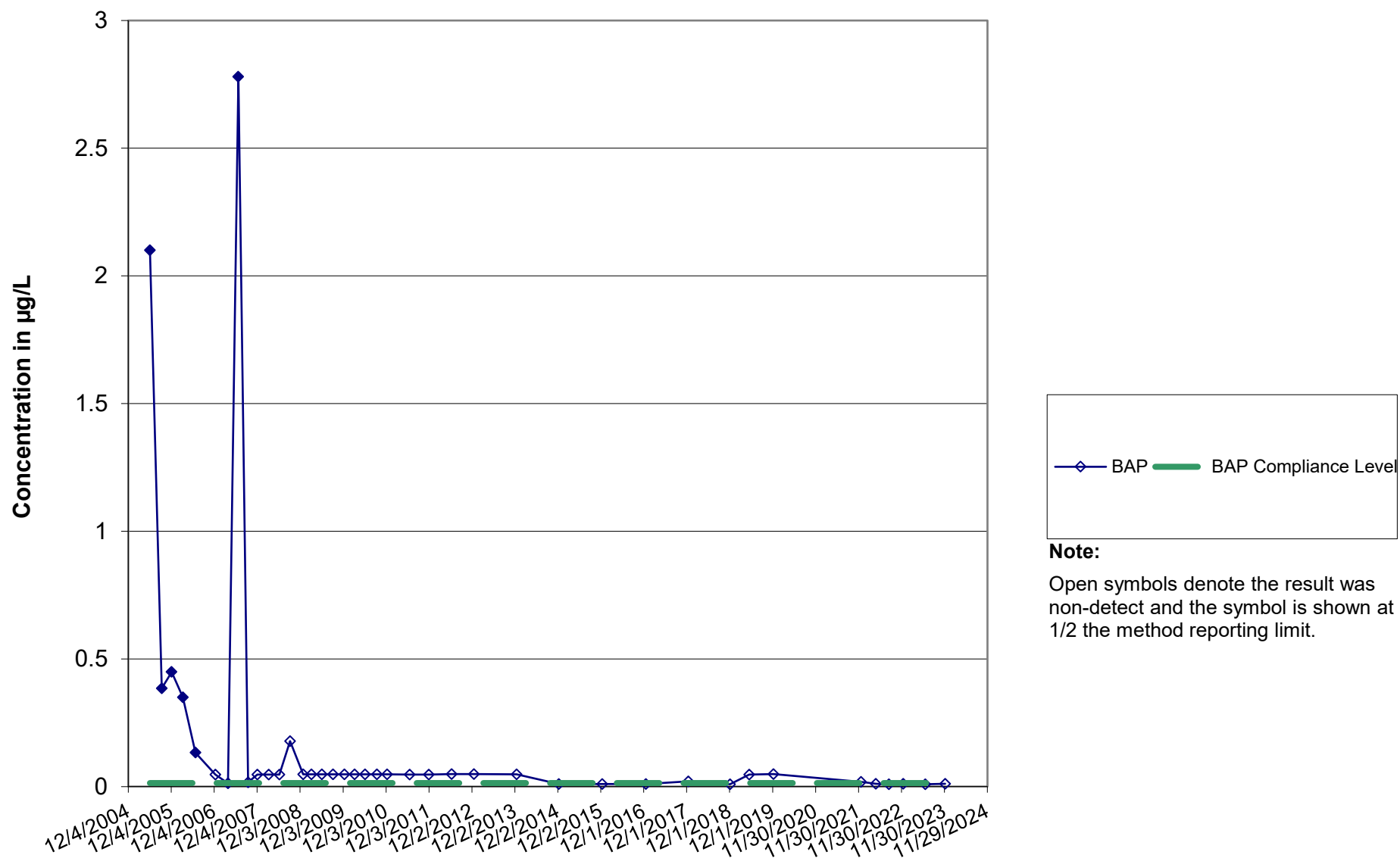
Note:

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

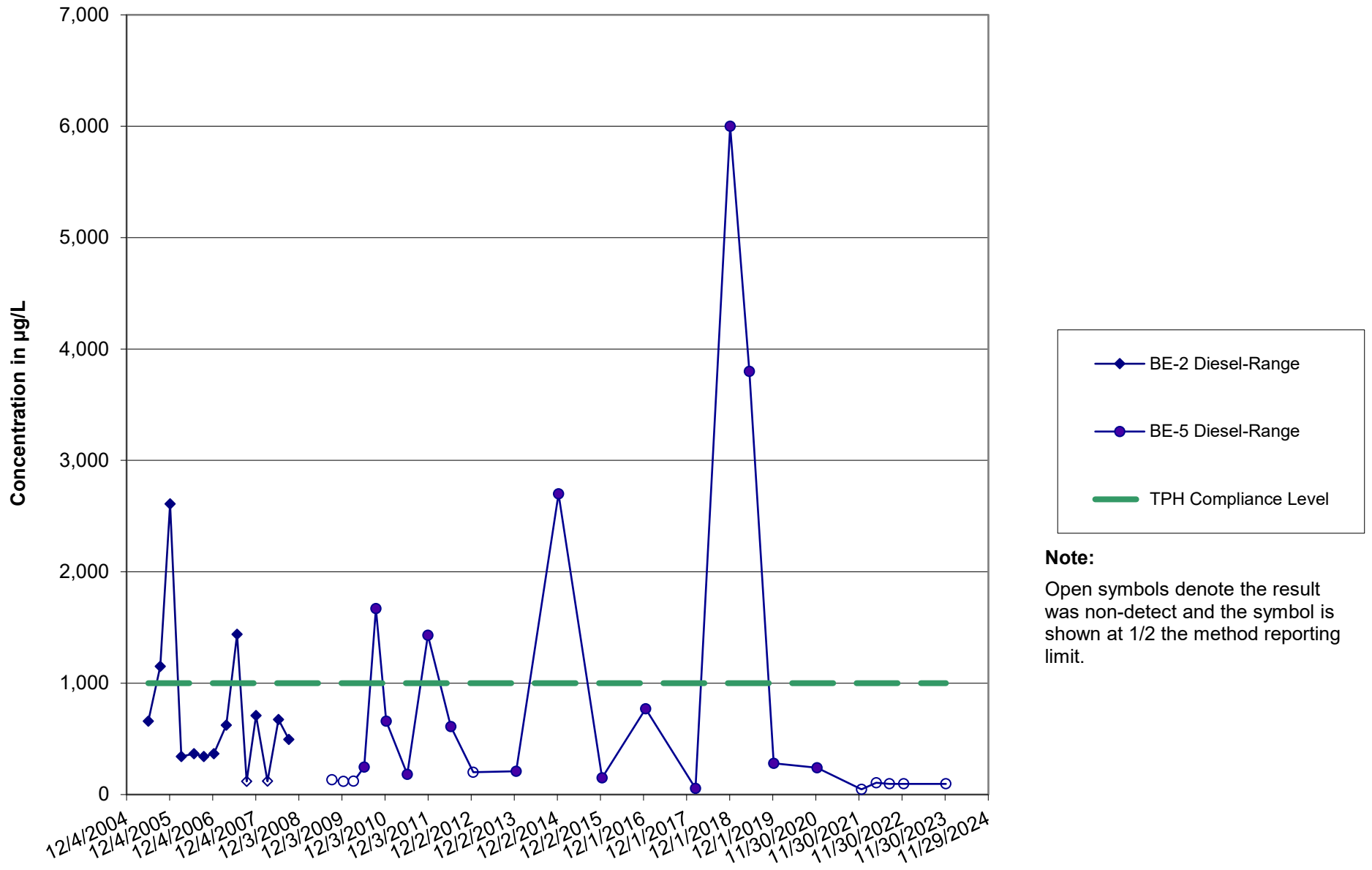
BE-1



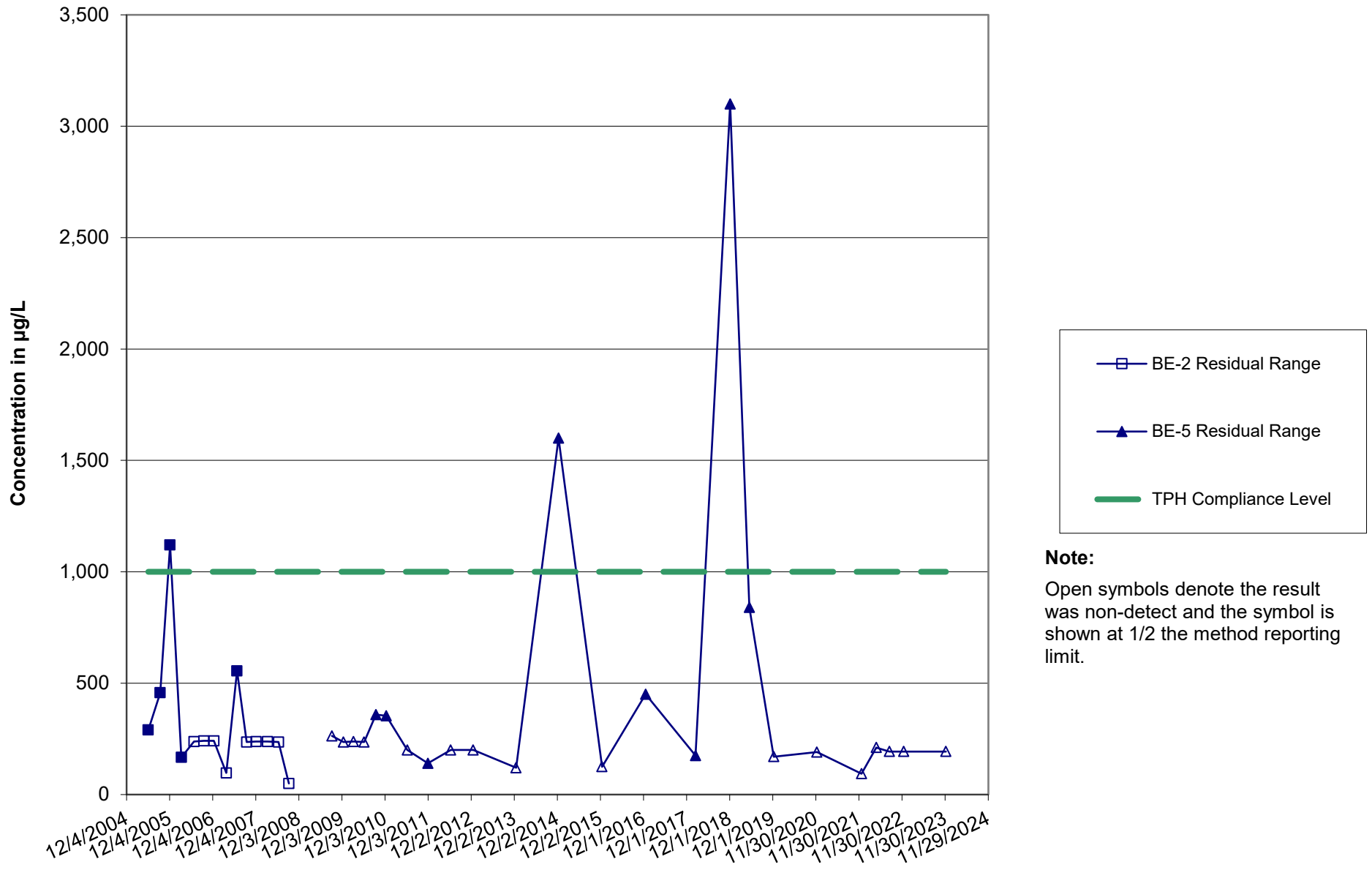
BE-1



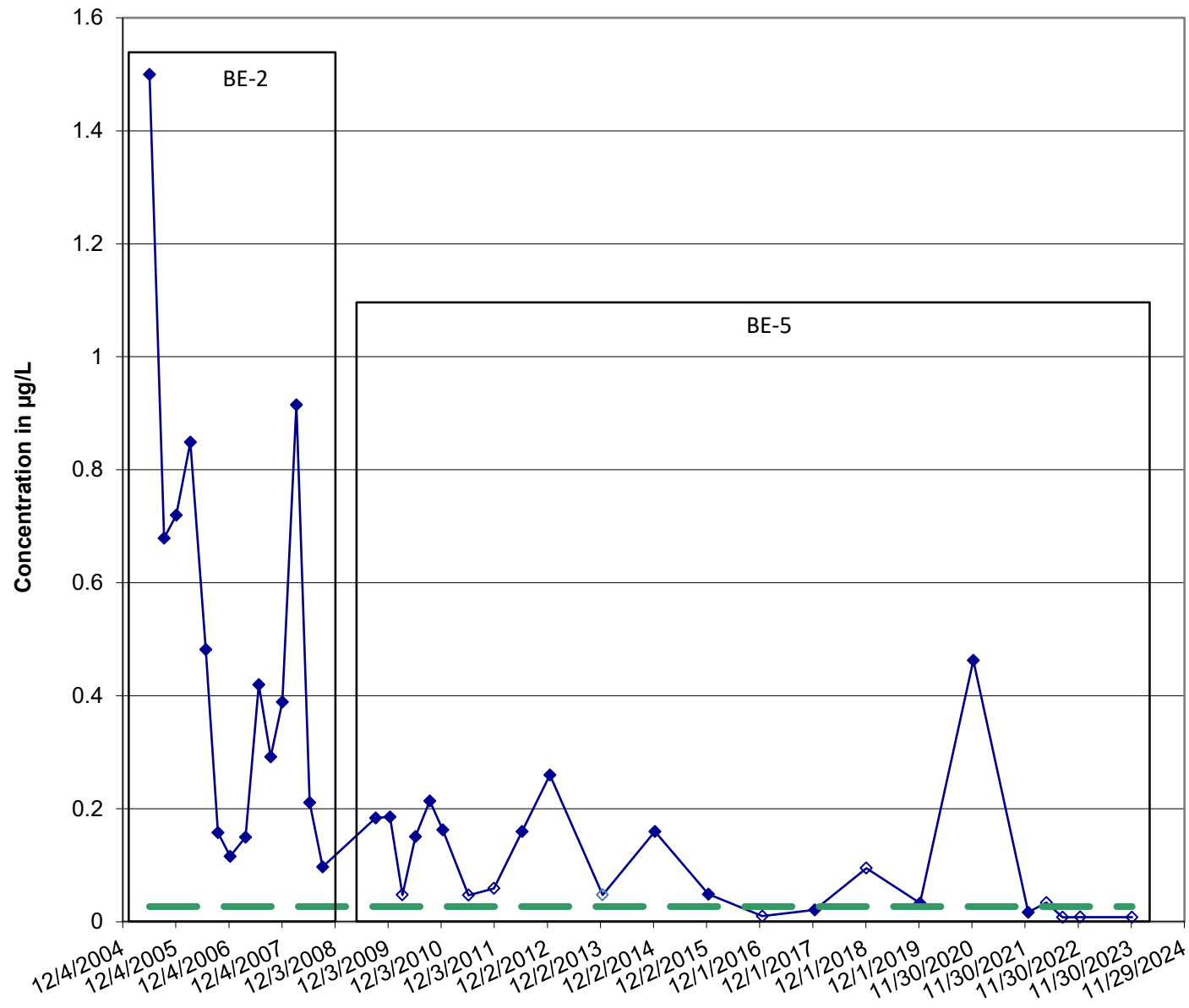
BE-2 and BE-5



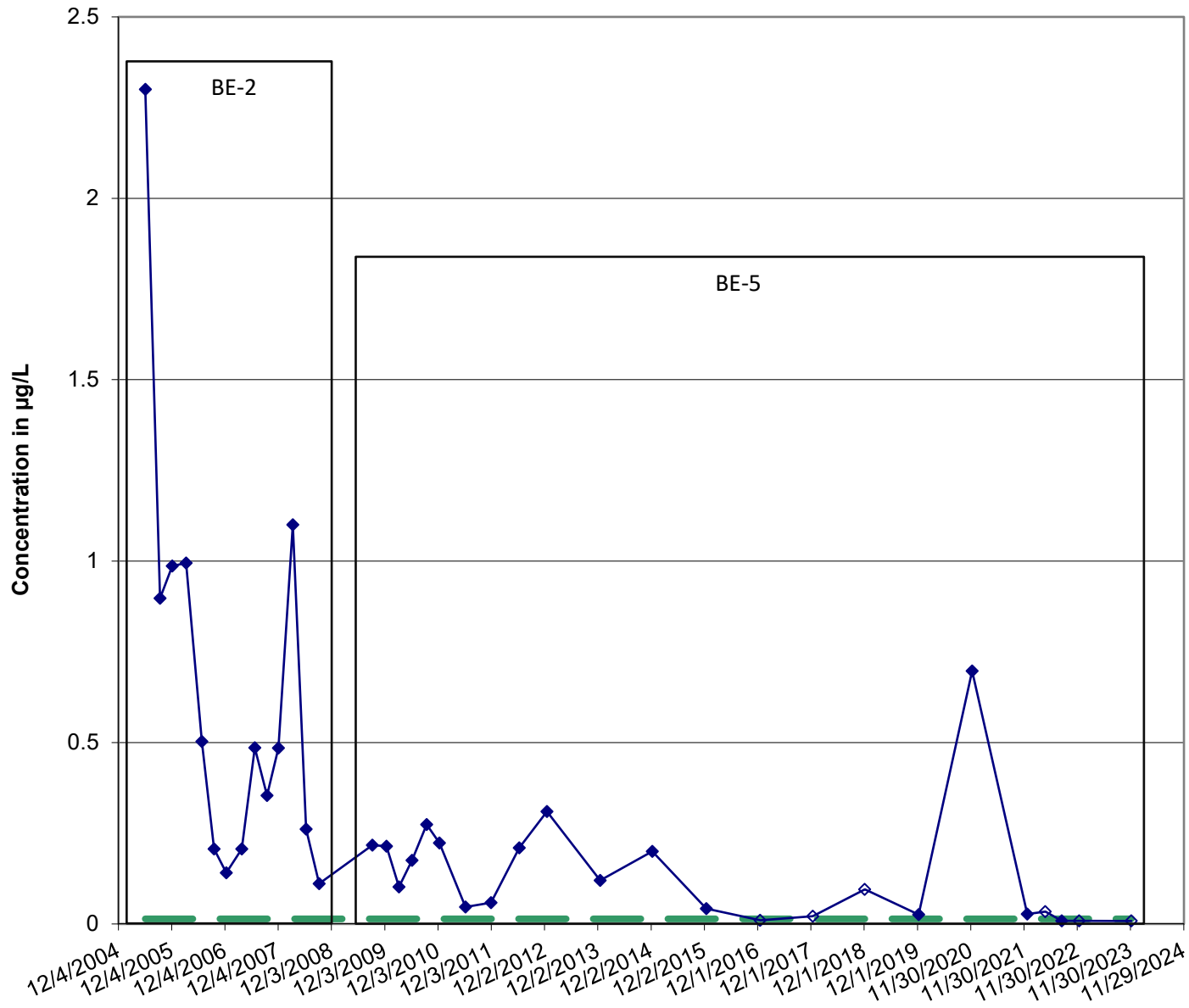
BE-2 and BE-5



BE-2 and BE-5



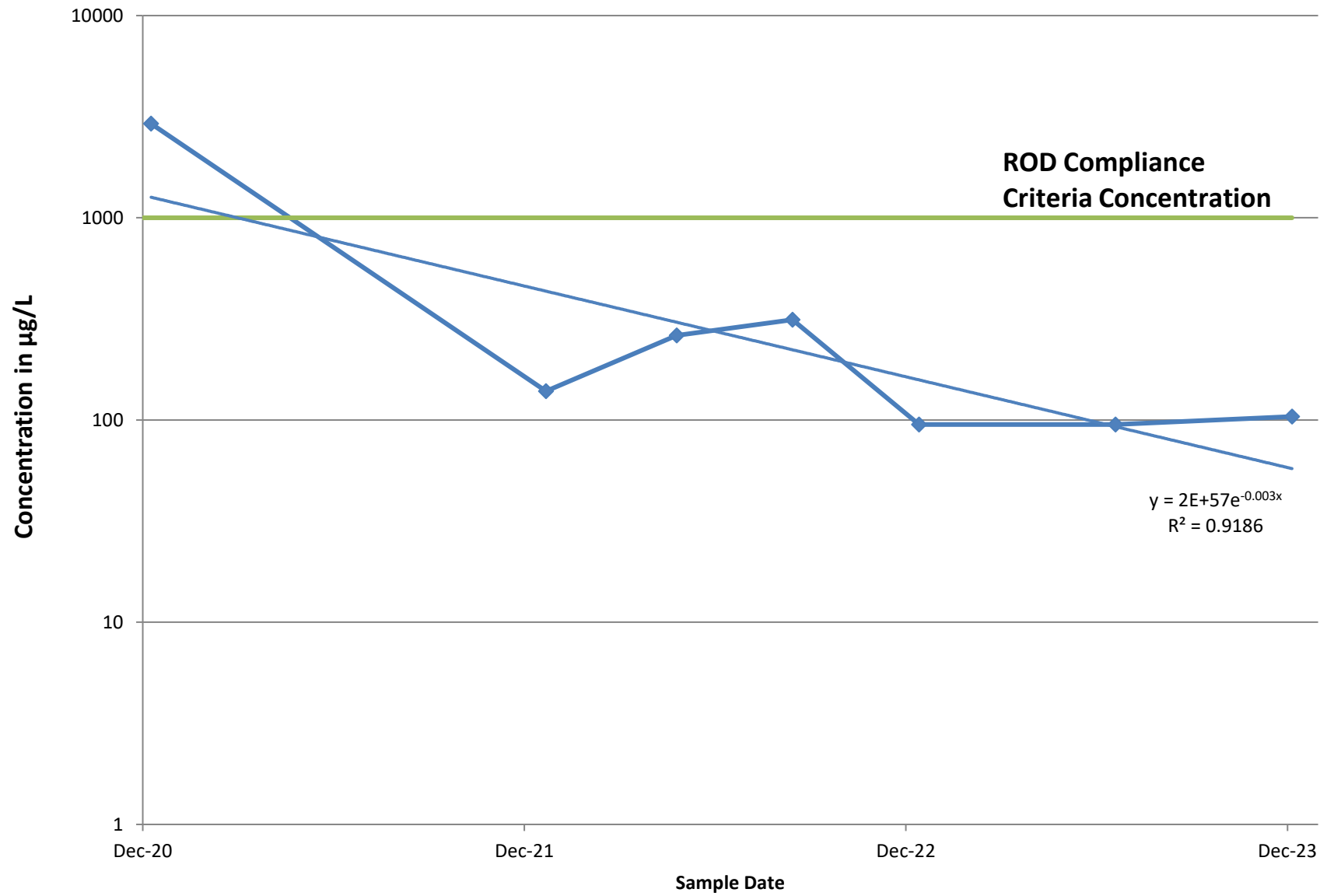
BE-2 and BE-5



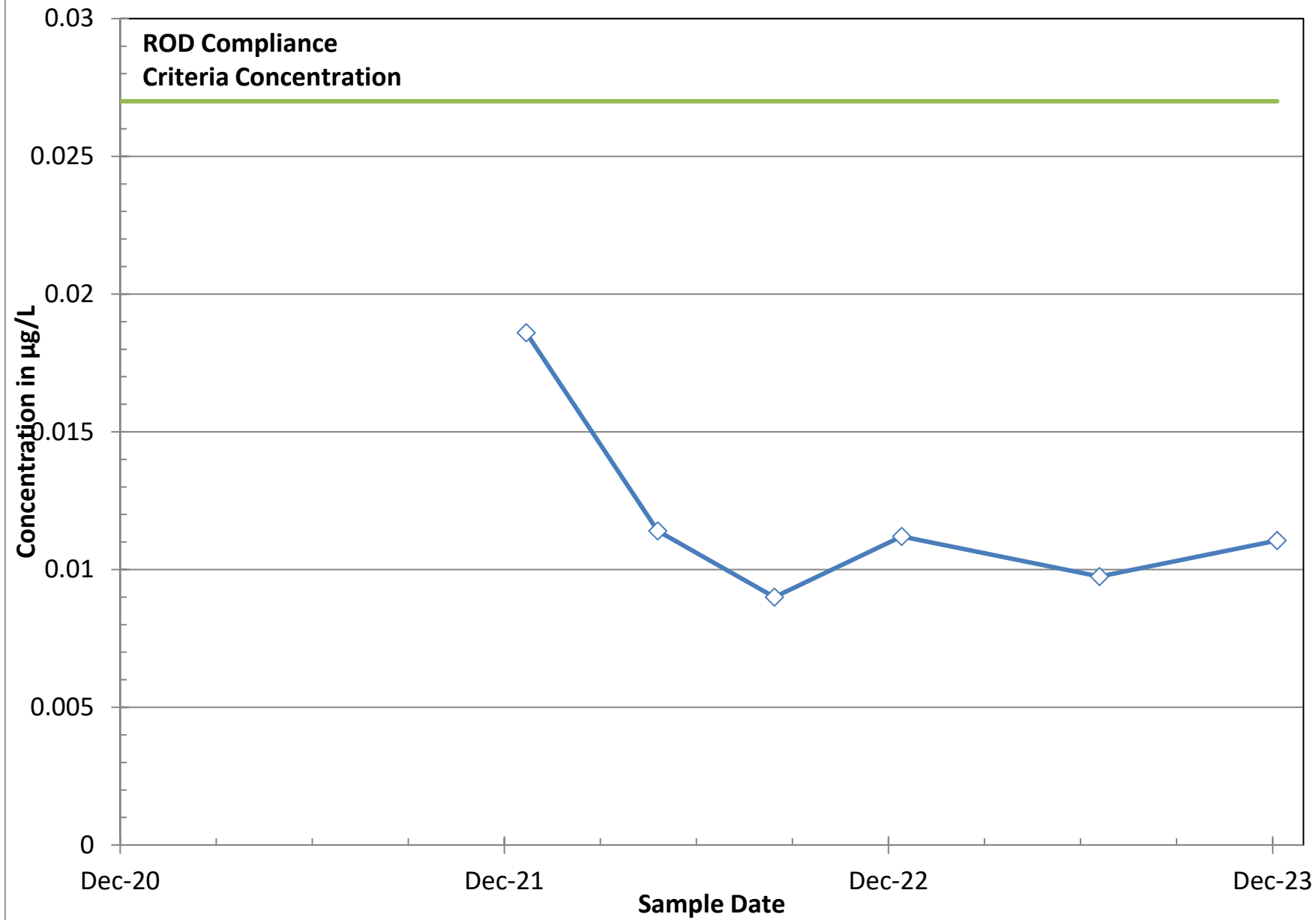
Appendix F

Four-Year Chemical Concentration Trend Plots

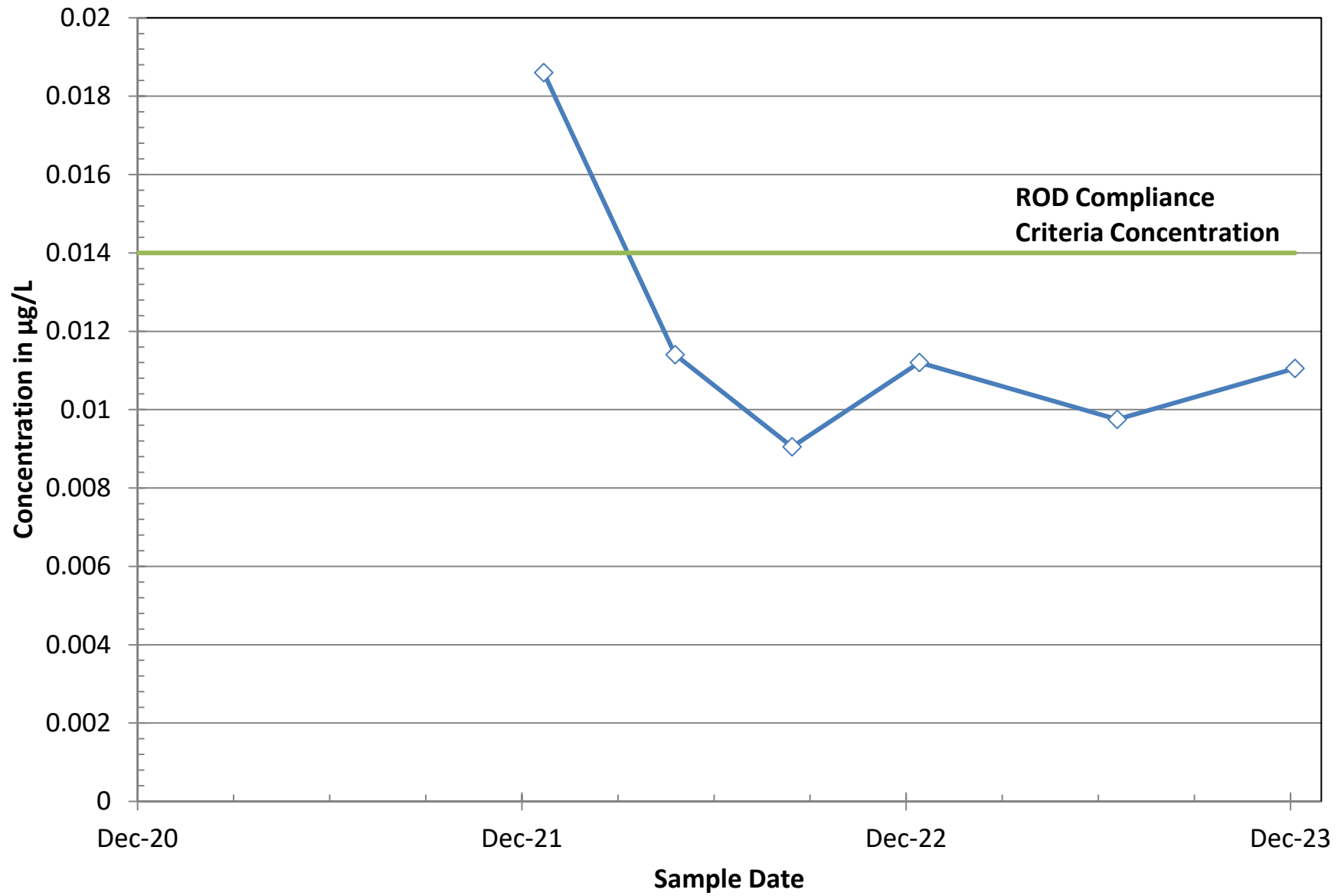
BE-1 TPH



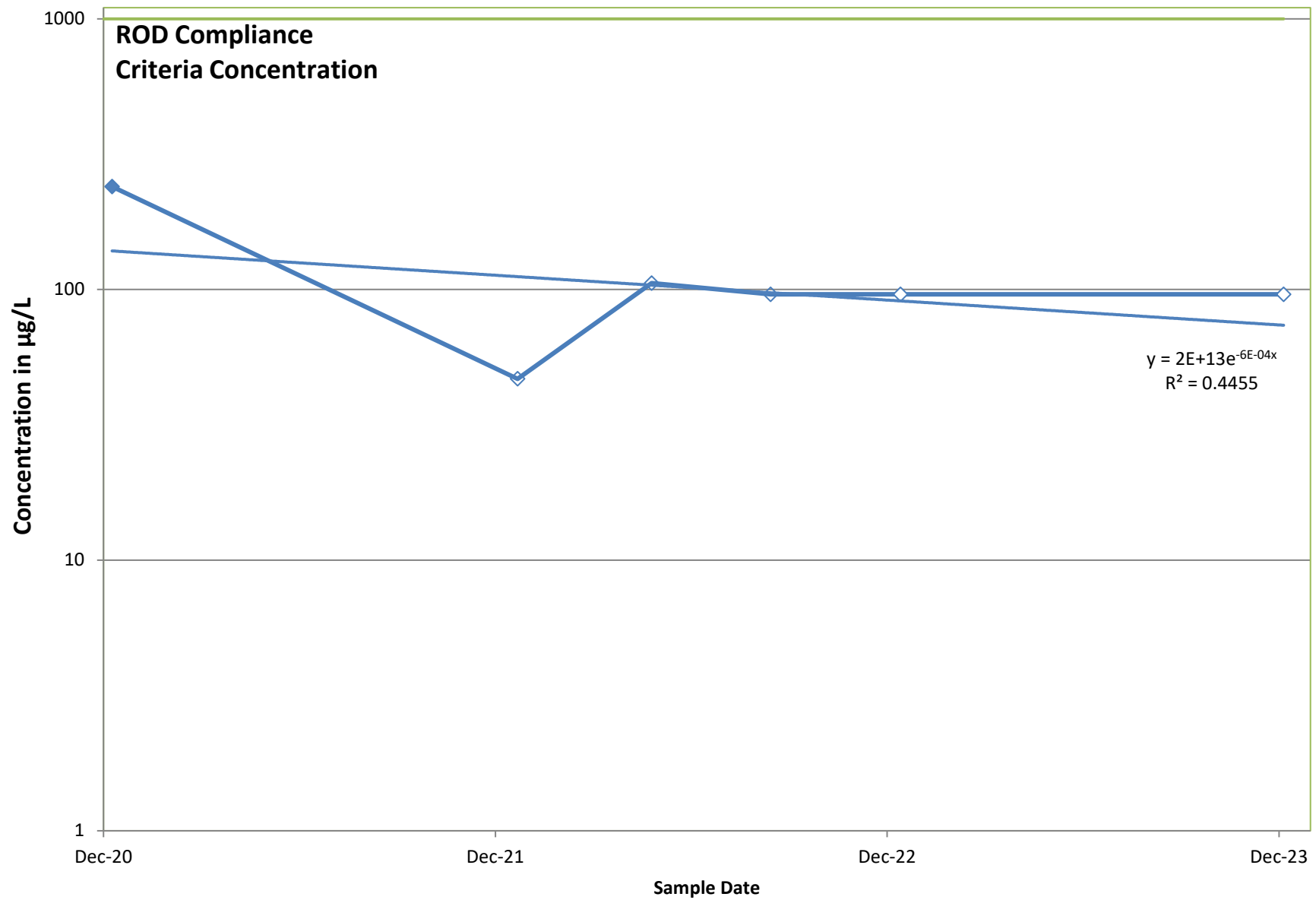
BE-1 BAA



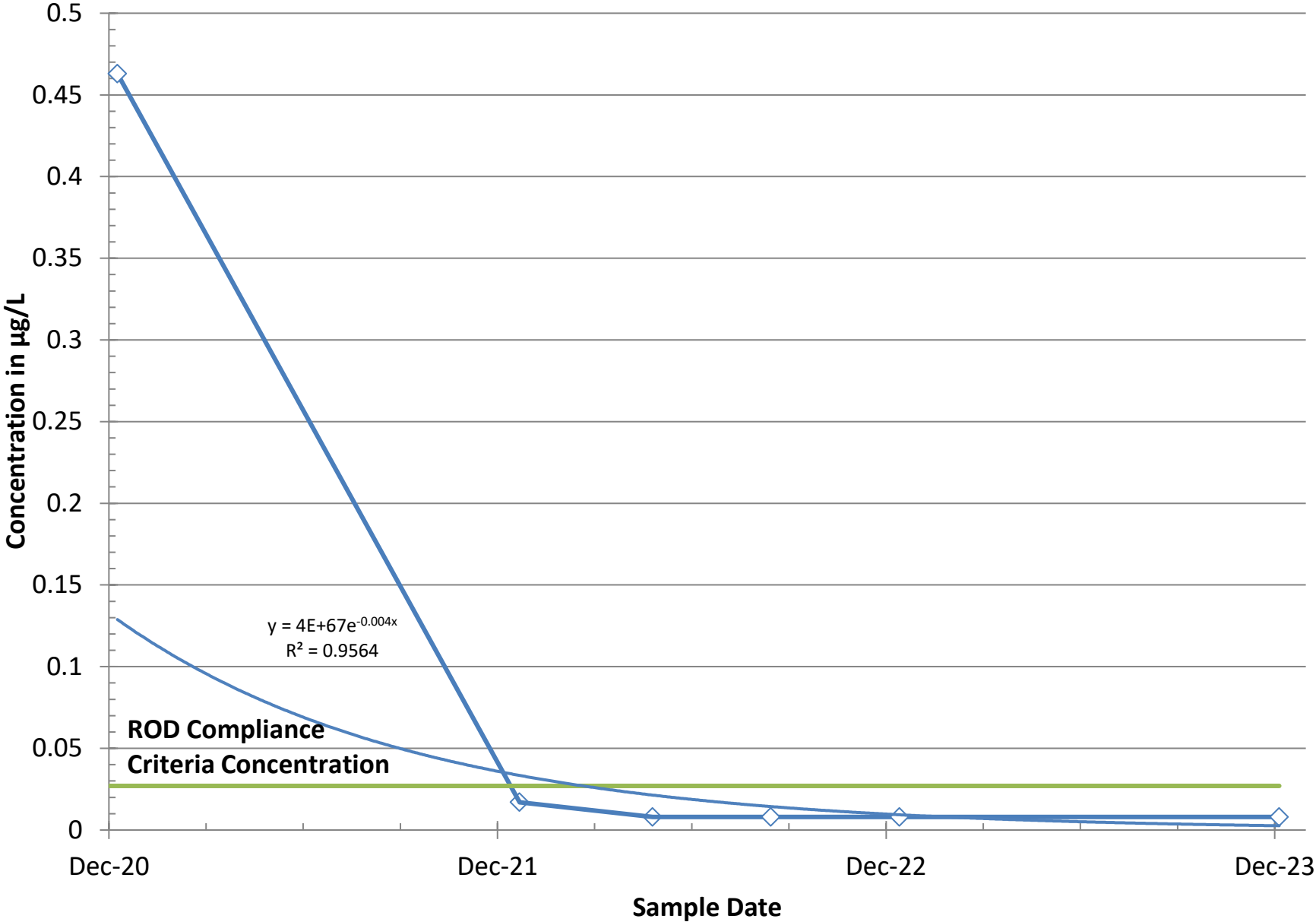
BE-1 BAP



BE-5 TPH



BE-5 BAA



BE-5 BAP

