MAUL FOSTER ALONGI

109 East 13th Street | Vancouver, WA 98660 | 360 694 2691 | www.maulfoster.com

December 27, 2019
Project No. 9085.10.12

Matt Graves, LG
Port of Vancouver USA
3103 Northwest Lower River Road
Vancouver, Washington 98660

Re: Terminal 1 October 2019 Groundwater Monitoring

Dear Mr. Graves:

In October 2019, on behalf of the Port of Vancouver (Port), Maul Foster & Alongi, Inc. (MFA) completed groundwater monitoring at the Terminal 1 property located at 200 Columbia Street in Vancouver, Washington (Terminal 1) (see Figure 1). The purpose of this investigation was to gather supplemental data to assist the Port with planning related to future redevelopment of Terminal 1. MFA collected groundwater samples from six monitoring wells to support evaluation of potential seasonal variability in groundwater quality.

Previous investigations at Terminal 1 include Ecology & Environment, Inc.'s subsurface investigation conducted in November 2008, and Hahn and Associates, Inc.'s (HAI) initial and follow-up soil and groundwater investigations in 2015 and 2016 (E&E, 2009; HAI, 2016). MFA conducted subsurface investigations at Block D in 2017 and 2018 (MFA, 2017d, 2018e); Block B in 2017 and 2018 (MFA, 2017b, 2018b); and Blocks A and C in 2018 (MFA, 2018a,d). HAI collected groundwater samples from monitoring wells MW-1-37 through MW-5-34 in June 2015 and February 2016 (a groundwater analytical data table from these sampling events is included as Attachment A). MFA collected groundwater samples from these wells in November 2016, February 2017, February 2018, and February 2019 (MFA, 2017c, 2018c, 2019). Monitoring well MW-6-30 was installed in Block C in July 2018 and sampled in August 2018 (MFA, 2018d). All groundwater analytical data from MFA's groundwater sampling events to date are included in Table 1, including the August 2018 event at MW-6-30.

One detection of total chromium in a groundwater sample collected by HAI from well MW-2-40 in June 2015 led to the addition of hexavalent chromium analysis during subsequent groundwater sampling events. The Washington State Model Toxics Control Act (MTCA) Method A groundwater cleanup level (CUL) for unrestricted land use for hexavalent chromium is 48 ug/L. Since MFA began sampling in 2016, hexavalent chromium was detected once at a concentration of 5 ug/L. Because of the lack of frequent detections of hexavalent chromium in groundwater at Terminal 1, including a single detection much less than the MTCA CUL, groundwater was not analyzed for hexavalent chromium during the October 2019 sampling event.

## FIELD ACTIVITIES

MFA conducted the groundwater monitoring at the six monitoring wells on October 28 and October 29, 2019. The wells were initially opened to allow the water level to equilibrate with the ambient air pressure, followed by measurement of the static water level, using a water level indicator. The water levels were measured from the north side of the casing and were recorded on the water field sampling data sheets, which are included as Attachment B.

Each monitoring well was purged of groundwater before it was sampled. The MW-1-37, MW-3-35, and MW-6-30 well casings were purged using low-flow purging methods with a peristaltic pump and dedicated tubing. Low-flow purging was not implemented at MW-2-40 because the well did not yield sufficient groundwater to permit sustained pumping of groundwater from the well. Instead, a new, disposable plastic bailer was used, and MW-2-40 was purged dry after removal of about 1.3 pore volumes of groundwater. Low flow purging was not implemented at wells MW-4-34 and MW-5-35 because the groundwater levels were below the depth capability of the peristaltic pump. The two wells were purged dry using a new, disposable plastic bailer at each well. Approximately two pore volumes were removed from wells MW-4-34 and MW-5-35.

Water quality parameter measurements were collected during low-flow and bailer purging with a flow-through cell and an in-line, multiprobe meter at approximately three- to five-minute intervals. Water levels were also measured during purging to monitor drawdown. Parameter measurements recorded during purging included purge volume, water level, temperature, specific conductivity, dissolved oxygen, pH, oxygen reduction potential, and turbidity.

Once monitoring parameters had stabilized, sampling was conducted using the peristaltic pump at MW-1-37, MW-3-35, and MW-6-30. At MW-2-40, MW-4-34, and MW-5-35, sampling was conducted with a disposable bailer upon sufficient recharge of groundwater into the well casing.

Laboratory-supplied containers appropriate for the analytical suite were properly filled, labeled, capped, and preserved consistent with method requirements. The sample bottles were then transferred to a chilled cooler for shipment to Apex Laboratories, LLC, in Portland, Oregon, under standard chain-of-custody procedures.

Approximately 10 gallons of purge water and decontamination water were generated during the monitoring event. The waste was disposed of at the Port's aboveground storage tank beneath the West 26th Avenue overpass in Vancouver, Washington.

## ANALYTICAL WORK

The groundwater samples were analyzed for the following:

- Diesel- and oil-range total petroleum hydrocarbons (TPH) by method Northwest (NW) TPH-Dx
- Gasoline-range TPH by method NWTPH-Gx
- Priority pollutant 13 total and dissolved metals by U.S. Environmental Protection Agency (USEPA) Method 6020
- Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270D
- Volatile organic compounds by USEPA 8260B

Groundwater analytical laboratory results are included as Attachment C. Results are compared to the Washington State MTCA Method A groundwater CULs for unrestricted land use or, if Method A CULs are not available, to Method B CULs. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned (see Attachment D for the data validation memorandum).

Consistent with Washington Administrative Code 173-340-708(8), mixtures of carcinogenic PAHs (cPAHs) are considered as single hazardous substances in evaluation of compliance with CULs such that the toxicity of a particular congener is expressed relative to the most toxic congener (benzo(a)pyrene). The toxicity of cPAHs as a group was assessed using a toxic equivalency approach. Each congener in the group is assigned a toxic equivalency factor (TEF) corresponding to the toxicity of that congener relative to the toxicity of benzo(a)pyrene. For example, a congener that is equal in toxicity to benzo(a)pyrene would have a TEF of 1. Similarly, a congener that is half as toxic as benzo(a)pyrene would have a TEF of 0.5, and so on. Multiplying the concentration of a congener by its TEF produces the concentration for that congener that is equivalent in toxicity to the benzo(a)pyrene concentration, known as the toxicity equivalent concentration (TEC). Computing the TEC for each congener (Ci in the equation below) in a sample, followed by summing all TEC values, results in a single cPAH total TEC (i.e., cPAH TTEC) that can be compared to the CUL. The following formula represents the summation approach:

$$\text{cPAH TTEC} = \sum_{i=1}^{k} \text{Ci x TEFi}$$

cPAH TTECs were qualified and calculated as follows:

- Congeners qualified as non-detect and flagged with a "U" are used in the TTEC calculation at one-half the associated value.

- Congeners qualified as estimated and flagged with a "J" are used without modification in the TTEC calculation.
- Typically, if all congeners in a chemical group are undetected, the group sum is reported as undetected; however, based on the limited data set for Terminal 1, this action was not completed.

Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were summed to compare to the MTCA Method A CUL for naphthalenes.

Consistent with Ecology Implementation Memorandum No. 4 (Ecology, 2004), the diesel- and oil-range TPH results were summed for a total detection value and were calculated as follows:

- Diesel and oil results qualified as non-detect and flagged with a "U" are used in the total calculation at one-half the associated value.
- Diesel and oil results qualified as estimated and flagged with a "J" are used in the total calculation without modification.

## RESULTS

Table 1 provides the analytical results for the sampling events conducted from November 2016 through October 2019. Water level and groundwater elevation data for these events are provided in Table 2.

### Groundwater Flow Direction

During the October 2019 sampling event, groundwater was encountered in the monitoring wells at approximately 25 to 29 feet below the top of casing (see Table 2). The groundwater level surface shown on Figure 2 indicates that the dominant groundwater flow direction (as indicated with arrows on the figure) is north-northeast, away from the Columbia River. The groundwater elevation at MW-3-35 is less than at MW-4-34, indicating a slight groundwater flow gradient south toward the Columbia River in the southeast portion of the property. A similar groundwater flow direction was documented during the February 2019 monitoring event.

During the February 2018 sampling event, the groundwater flow direction was south-southeast, toward the Columbia River. During the monitoring events conducted in November 2016 and February 2017, the groundwater flow direction was north-northwest, away from the Columbia River.

This variability in groundwater flow direction may be a function of the Columbia River surface water elevation. At a high river stage, groundwater at Terminal 1 likely is recharged by the

Columbia River and flows north. At low river stage, groundwater at Terminal 1 flows south and discharges to the Columbia River.

## Petroleum Hydrocarbons

The following is a summary of the October 2019 results:

- Gasoline-range TPH was detected only at MW-3-35 at a concentration less than the CUL.
- Diesel-range TPH was detected only at MW-3-35 at a concentration greater than the CUL.
- Oil-range TPH was detected only at MW-1-37 at a concentration greater than the CUL.
- The sum of the diesel- and oil-range hydrocarbon concentrations[1] exceeded the CUL at MW-1-37 and MW-3-35.

The following is a summary of the complete dataset, including sampling conducted by HAI in June 2015 and February 2016 and sampling conducted by MFA from November 2016 to October 2019:

- At MW-1-37, after a period of non-detections, oil was detected in October 2019.
- At MW-2-40, detections of diesel have been sporadic; diesel was detected in 2015, 2017, and February 2019 but not in 2016, 2018, or October 2019. Oil was detected at a maximum concentration in November 2016, decreased in 2017, and has not been detected since then.
- At MW-3-35, detections of gasoline and diesel have also been sporadic. Gasoline and diesel exceeded the CULs in 2015 and February 2016, were not detected in November 2016, were detected at generally increasing concentrations from February 2017 to February 2019, and decreased in concentration in October 2019. Oil was detected once in February 2018 at a concentration greater than the CUL.
- At MW-4-34, petroleum hydrocarbons have not been detected.
- At MW-5-35, oil was detected once in February 2018 at a concentration greater than the CUL.

[1] Note that oil-range TPH were not actually detected at MW-2-40 and MW-3-35. The sum of the diesel- and oil-range TPH uses half the reporting limit for non-detected results, which was the case for the oil-range TPH in this instance.

- At MW-6-30, oil was detected once in August 2018 at a concentration greater than the CUL.

The sporadic nature of detections and CUL exceedances may be related to the groundwater flow direction relative to contaminated soil that may be acting as a source of groundwater contamination.

- When groundwater beneath Terminal 1 was flowing toward the Columbia River in February 2018, CUL exceedances occurred at the downgradient well MW-3-35 but not at the upgradient well MW-2-40.
- Conversely, when groundwater beneath Terminal 1 was flowing north, away from the Columbia River, CUL exceedances occurred at downgradient well MW-2-40 but not at the upgradient well MW-3-35.

### Primary Pollutant Metals

Of the listed 13 priority pollutant metals, only arsenic was detected at a concentration greater than its CUL, at MW-1-37, MW-4-34, and MW-5-35. All other metals either were not detected or were detected below the CULs (Table 1).

The 2016 to 2019 data include total and dissolved arsenic concentration CUL exceedances at MW-1-37 through MW-5-35. This is consistent with the HAI 2015 and 2016 investigations, which included total arsenic CUL exceedances at the same wells (HAI, 2016). At MW-5-35, a slight increase in concentration is apparent. No trend in concentration is apparent at MW-1-37, MW-2-40, MW-3-35, and MW-4-34. To date, total and dissolved arsenic have not been detected at MW-6-30.

### Volatile Organic Compounds

Only acetone at MW-2-40 and naphthalene at MW-3-35 were detected at concentrations less than the CULs during the October 2019 sampling event (Table 1). The naphthalene concentration exceeded the CUL at MW-3-35 during the February 2019 sampling event. This CUL exceedance corresponds with the highest gasoline- and oil-range TPH concentrations detected in February 2019 at MW-3-35.

### Polycyclic Aromatic Hydrocarbons

PAHs were detected at MW-1-37, MW-3-35 (MW-3-35 and MW-3-35-DUP), MW-4-34, and MW-6-30 during the October 2019 sampling event. The dibenzofuran detection at MW-3-35 exceeded the CUL; the concentration appears to fluctuate consistent with gasoline- and oil-range TPH concentrations at MW-3-35. Prior CUL exceedances include benzo(a)pyrene and the cPAH TTEC in February 2019 at MW-2-40, the cPAH TTEC in February 2018 at MW-3-35, and naphthalenes in February 2019 at MW-3-35.

## SUMMARY

CUL exceedances in the October 2019 groundwater samples collected at Terminal 1 are limited to the combined diesel- and oil-range hydrocarbons from MW-1-37 and MW-3-35; arsenic from MW-1-37, MW-4-34, and MW-5-35; and dibenzofuran from MW-3-35. These exceedances were generally consistent with previous monitoring events. The groundwater flow direction beneath Terminal 1 appears to fluctuate from discharging to the Columbia River (February 2018) to flowing away from the Columbia River (November 2016, February 2017, and October 2019). The fluctuations in flow direction may account for the spatial and temporal fluctuations of diesel- and oil-range hydrocarbon CUL exceedances at MW-2-40 and MW-3-35.

Sincerely,

Maul Foster & Alongi, Inc.

Emily Hess, LG
Project Geologist

Meaghan Pollock
Staff Geologist

Attachments: Limitations
References
Tables
Figures
A—HAI Analytical Tables
B—Water Field Sampling Data Sheets
C—Laboratory Analytical Report
D—Data Validation Memorandum

# LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

E&E. 2009. Terminal 1 phase II environmental assessment report, Port of Vancouver, USA, Vancouver, Washington. Prepared by Ecology & Environment, Inc. March.

Ecology. 2004. Memorandum (re: determining compliance with Method A cleanup levels for diesel and heavy oil) to file. Implementation memorandum no. 4. Prepared by T. Nord, Washington State Department of Ecology. June.

HAI. 2016. Subsurface investigation report, Port of Vancouver, USA—Terminal 1 property. Prepared by Hahn and Associates, Inc. May 18.

MFA. 2017a. Contaminated media management plan, Terminal 1, Port of Vancouver. Maul Foster & Alongi, Inc., Vancouver, Washington. April 12.

MFA. 2017b. Letter (re: former hotel soil sampling—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver, from K. Roslund and M. Hughes, Maul Foster & Alongi, Inc., Vancouver, Washington. June 14.

MFA. 2017c. Letter (re: Terminal 1 November 2016 and February 2017 groundwater monitoring) to M. Graves, Port of Vancouver, from K. Roslund and E. Hess, Maul Foster & Alongi, Inc., Vancouver, Washington. June 16.

MFA. 2017d. Letter (re: Block D baseline environmental assessment—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver, from D. Weatherby and E. Hess, Maul Foster & Alongi, Inc., Vancouver, Washington. October 9.

MFA. 2018a. Letter (re: Block A Phase II environmental assessment—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver, from D. Weatherby and C. Schweitzer, Maul Foster & Alongi, Inc., Vancouver, Washington. May 11.

MFA. 2018b. Letter (re: Block B soil sampling—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver, from D. Weatherby and C. Schweitzer, Maul Foster & Alongi, Inc., Vancouver, Washington. May 11.

MFA. 2018c. Letter (re: Terminal 1 February 2018 groundwater monitoring) to M. Graves, Port of Vancouver USA, Vancouver, Washington, from D. Weatherby and C. Schweitzer, Maul Foster & Alongi, Inc., Vancouver, Washington. May 24.

MFA. 2018d. Letter (re: Block C phase II environmental assessment—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver USA, Vancouver, Washington, from D. Weatherby and C. Schweitzer, Maul Foster & Alongi, Inc., Vancouver, Washington. November 7.

MFA. 2018e. Letter (re: Block D soil excavation sampling—Port of Vancouver USA Terminal 1) to M. Graves, Port of Vancouver USA, Vancouver, Washington, from D. Weatherby and C. Schweitzer, Maul Foster & Alongi, Inc., Vancouver, Washington. November 21.

MFA. 2019. Letter (re: Terminal 1 February 2019 groundwater monitoring) to M. Graves, Port of Vancouver USA, Vancouver, Washington, from D. Weatherby and E. Hess, Maul Foster & Alongi, Inc., Vancouver, Washington. March 27.

# TABLES

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**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-1-37 | | | | | MW-2-40 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 |
| Collection Date: | | 11/28/2016 | 02/23/2017 | 02/15/2018 | 02/21/2019 | 10/28/2019 | 11/29/2016 | 02/24/2017 | 02/15/2018 | 02/22/2019 | 10/29/2019 |
| **Total Petroleum Hydrocarbons (ug/L)** | | | | | | | | | | | |
| Gasoline-range | 1,000[b] | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 277 | 100 U |
| Diesel-range | 500 | 206 U | 80.9 U | 189 U | 222 U | 230 U | 211 U | 368 | 213 U | 526 | 303 U |
| Oil-range | 500 | 412 U | 202 U | 377 U | 444 U | 603 | 1,520 | 262 | 426 U | 412 U | 606 U |
| Diesel + Oil[c] | 500 | ND | ND | ND | ND | 718 | 1,626 | 630 | ND | 732 | ND |
| **Total Metals (ug/L)** | | | | | | | | | | | |
| Antimony | 6.4 | 1 U | 0.5 U | 1 U | 1 U | 1 U | 1 U | 0.5 U | 1 U | 1 U | 1 U |
| Arsenic | 5 | 4.12 | 4.04 | 10.6 | 8.78 | 11.8 | 11.6 | 2.06 | 3.19 | 10.9 | 3.01 J |
| Beryllium | 32 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.211 | 0.105 | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 50 | 1 U | 0.255 | 1 U | 1 U | 1 U | 17.8 | 0.289 | 1.26 | 3.12 | 1 U |
| Chromium (hexavalent) | 48 | 5 UJ | 2 UJ | 5 UJ | -- | -- | 5 U | 2 U | 5 UJ | -- | -- |
| Copper | 640 | 1 U | 0.508 | 1 U | 1.01 | 1 U | 17 | 1.55 | 2.13 | 4.33 | 2.11 |
| Lead | 15 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 4.96 | 0.1 U | 0.4 | 1.05 | 0.2 U |
| Mercury | 2 | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U |
| Nickel | 320 | 1 U | 0.5 U | 1.04 | 1 U | 1 U | 5.94 | 3.66 | 3.51 | 4.35 | 1.08 J |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U |
| Zinc | 4,800 | 4 U | 5.02 | 4 U | 4 U | 4 U | 14 | 3.81 | 5.51 | 8.32 | 4 UJ |
| **Dissolved Metals (ug/L)** | | | | | | | | | | | |
| Antimony | 6.4 | 1 U | 0.5 U | 1 U | 1 U | 1 U | 1 U | 0.5 U | 1 U | 1 U | 1 U |
| Arsenic | 5 | 1.97 | 3.32 | 6.86 | 5.93 | 9.97 | 4.08 | 1.62 | 2.71 | 5.22 | 4.16 J |
| Beryllium | 32 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.155 | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 50 | 1 U | 0.1 U | 1 U | 1 U | 1 U | 1 U | 0.241 | 1 U | 1 U | 1 U |
| Chromium (hexavalent) | 48 | -- | -- | -- | 5 U | -- | -- | -- | -- | 5 U | -- |
| Copper | 640 | 1 U | 0.5 U | 1 U | 1 U | 1 U | 1 U | 2.27 | 1 U | 1.22 | 1.23 |
| Lead | 15 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Mercury | 2 | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U |
| Nickel | 320 | 1 U | 0.5 U | 1 U | 1 U | 1 U | 2.54 | 4.57 | 3.19 | 2.16 | 1.78 J |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1.07 | 1 U | 1 U | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U |
| Zinc | 4,800 | 4 U | 2 U | 4 U | 4 U | 4 U | 4 U | 2.6 | 6.56 | 4 U | 9.12 J |

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**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-1-37 | | | | | MW-2-40 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 |
| Collection Date: | | 11/28/2016 | 02/23/2017 | 02/15/2018 | 02/21/2019 | 10/28/2019 | 11/29/2016 | 02/24/2017 | 02/15/2018 | 02/22/2019 | 10/29/2019 |
| **Volatile Organic Compounds (ug/L)** | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1,1-Trichloroethane | 200 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1,2,2-Tetrachloroethane | 0.219 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1,2-Trichloroethane | 0.768 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1-Dichloroethene | 400 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | NV | 2 U | 1 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| 1,2,3-Trichloropropane | 0.00146 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 1.51 | 2 U | 1 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| 1,2,4-Trimethylbenzene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | 0.0547 | 5 U | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| 1,2-Dibromoethane | 0.01 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dichlorobenzene | 720 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dichloroethane | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,2-Dichloropropane | 1.22 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,3,5-Trimethylbenzene | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | NV | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,3-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 8.1 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 2,2-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | 4,800 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | NV | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 11 U | 55 U | 10 U |
| 4-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | 640 | 10 U | 20 U | 10 U | 10 U | 10 U | 10 U | 20 U | 10 U | 10 U | 10 U |
| Acetone | 7,200 | 20 U | 50 U | 20 U | 20 U | 20 U | 20 U | 50 U | 23 | 27.3 | 33.4 |
| Acrylonitrile | 0.081 | -- | 5 U | 2 U | 2 U | 2 U | -- | 5 U | 2 U | 2 U | 2 U |
| Benzene | 5 | 0.2 U | 0.3 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.3 U | 0.2 U | 0.2 U | 0.2 U |
| Bromobenzene | NV | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Bromodichloromethane | 0.706 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromoform | 5.54 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | 11.2 | 5 U | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 UJ | 5 U |
| Carbon disulfide | 800 | -- | 2 U | 10 U | 10 U | 10 U | -- | 2 U | 10 U | 10 U | 10 U |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-1-37 | | | | | MW-2-40 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 |
| Collection Date: | | 11/28/2016 | 02/23/2017 | 02/15/2018 | 02/21/2019 | 10/28/2019 | 11/29/2016 | 02/24/2017 | 02/15/2018 | 02/22/2019 | 10/29/2019 |
| Carbon tetrachloride | 0.625 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 160 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Chlorobromomethane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NV | 5 U | 1 U | 5 U | 5 UJ | 5 U | 5 U | 1 U | 10 U | 5 U | 5 U |
| Chloroform | 1.41 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | NV | 5 UJ | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| cis-1,2-Dichloroethene | 16 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| cis-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 0.521 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 700 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Freon 113 | 240,000 | -- | 1 U | -- | -- | -- | -- | 1 U | -- | -- | -- |
| Hexachlorobutadiene | 0.561 | 5 U | 1 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| Isopropylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylene | 1,000 | 1 U | 2 U | 1 U | 1 U | 1 U | 1 U | 2 U | 1 U | 1 U | 1 U |
| Methyl tert-butyl ether | 20 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride | 5 | 3 U | 20 U | 3 U | 3 U | 10 U | 3 U | 20 U | 3 U | 3 U | 10 U |
| Naphthalene | 160 | 2 U | 1 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| n-Butylbenzene | 400 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 800 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| o-Xylene | 1,600 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| sec-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| Toluene | 1,000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-dichloroethene | 160 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| trans-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| Trichlorofluoromethane | 2,400 | 2 U | 1 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| Vinyl chloride | 0.2 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-1-37 | | | | | MW-2-40 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-1-37 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 | MW-2-40 |
| Collection Date: | | 11/28/2016 | 02/23/2017 | 02/15/2018 | 02/21/2019 | 10/28/2019 | 11/29/2016 | 02/24/2017 | 02/15/2018 | 02/22/2019 | 10/29/2019 |
| **Polycyclic Aromatic Hydrocarbons (ug/L)** | | | | | | | | | | | |
| 1-Methylnaphthalene | NV[d] | 0.087 U | 0.0487 U | 0.0762 U | 0.08 U | 0.0808 U | 0.0825 U | 0.048 U | 0.086 U | 0.0833 U | 0.101 U |
| 2-Methylnaphthalene | NV[d] | 0.087 U | 0.0487 U | 0.0762 U | 0.08 U | 0.0808 U | 0.0825 U | 0.048 U | 0.086 U | 0.0833 U | 0.101 U |
| Acenaphthene | 960 | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.0417 U | 0.0506 U |
| Acenaphthylene | NV | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.0417 U | 0.0506 U |
| Anthracene | 4,800 | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.0417 U | 0.0506 U |
| Benzo(a)anthracene | NV[e] | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0446 | 0.0412 U | 0.048 U | 0.043 U | 0.215 J | 0.0506 U |
| Benzo(a)pyrene | 0.1 | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0458 | 0.0412 U | 0.048 U | 0.043 U | 0.255 | 0.0506 U |
| Benzo(b)fluoranthene | NV[e] | 0.0435 U | 0.0487 U | 0.0418 J | 0.04 U | 0.0702 J | 0.0412 U | 0.048 U | 0.043 U | 0.407 J | 0.0506 U |
| Benzo(ghi)perylene | NV | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0464 | 0.0412 U | 0.048 U | 0.043 U | 0.188 | 0.0506 U |
| Benzo(k)fluoranthene | NV[e] | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.134 J | 0.0506 U |
| Chrysene | NV[e] | 0.0435 U | 0.0487 U | 0.043 J | 0.04 U | 0.0643 | 0.0412 U | 0.048 U | 0.043 U | 0.357 J | 0.0506 U |
| Dibenzo(a,h)anthracene | NV[e] | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.0492 | 0.0506 U |
| Dibenzofuran | 16 | 0.0435 U | -- | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | -- | 0.043 U | 0.0417 U | 0.0506 U |
| Fluoranthene | 640 | 0.0435 U | 0.0487 U | 0.0629 | 0.04 U | 0.0965 | 0.0412 U | 0.048 U | 0.043 U | 0.481 | 0.0506 U |
| Fluorene | 640 | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0404 U | 0.0412 U | 0.048 U | 0.043 U | 0.0417 U | 0.0506 U |
| Indeno(1,2,3-cd)pyrene | NV[e] | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0534 | 0.0412 U | 0.048 U | 0.043 U | 0.219 | 0.0506 U |
| Naphthalene | 160 | 0.087 U | 0.0487 U | 0.0762 U | 0.08 U | 0.0808 U | 0.0825 U | 0.048 U | 0.086 U | 0.0833 U | 0.101 U |
| Phenanthrene | NV | 0.0435 U | 0.0487 U | 0.0381 U | 0.04 U | 0.0447 | 0.0412 U | 0.048 | 0.043 U | 0.271 | 0.0506 U |
| Pyrene | 480 | 0.0435 U | 0.0487 U | 0.0624 | 0.04 U | 0.0974 | 0.0412 U | 0.048 | 0.043 U | 0.469 | 0.0506 U |
| Naphthalenes[f] | 160 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cPAH TTEC[g] | 0.1 | ND | ND | 0.0313 J | ND | 0.0673 | ND | ND | ND | 0.361 J | ND |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-3-35 | | | | | | | | | | MW-4-34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 |
| Collection Date: | | 11/28/2016 | | 02/24/2017 | | 02/15/2018 | | 02/21/2019 | | 10/28/2019 | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 |
| **Total Petroleum Hydrocarbons (ug/L)** | | | | | | | | | | | | | | | | |
| Gasoline-range | 1,000[b] | 100 U | 100 U | 100 U | 100 U | 761 | 791 | 975 | 920 | 267 | 254 | 100 U | 100 U | 100 U | 100 U | 100 U |
| Diesel-range | 500 | 200 U | 192 U | 206 | 180 | 698 | 868 | 1,480 | 1,260 | 432 | 460 | 192 U | 85.4 U | 200 U | 217 U | 204 U |
| Oil-range | 500 | 400 U | 385 U | 206 U | 201 U | 783 | 388 U | 426 U | 430 U | 435 U | 412 U | 385 U | 213 U | 400 U | 435 U | 408 U |
| Diesel + Oil[c] | 500 | ND | ND | 309 | 281 | 1,481 | 1,062 | 1,693 | 1,475 | 650 | 666 | ND | ND | ND | ND | ND |
| **Total Metals (ug/L)** | | | | | | | | | | | | | | | | |
| Antimony | 6.4 | 1 U | 1 U | 0.5 U | 0.5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.5 U | 1 U | 1 U | 1 U |
| Arsenic | 5 | 1 U | 1 U | 3.78 | 4.06 | 3.78 | 4.18 | 5.27 | 4.78 J | 3.13 | 3.08 | 10.1 | 6.07 | 9.12 | 8.23 | 7.84 |
| Beryllium | 32 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 50 | 1.1 | 1 U | 0.146 | 0.171 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2.83 | 0.4 | 1 U | 1 U | 1 U |
| Chromium (hexavalent) | 48 | 5 UJ | 5 UJ | 2 UJ | 2 UJ | 5 UJ | 5 UJ | -- | -- | -- | -- | 5 J | 2 UJ | 5 UJ | -- | -- |
| Copper | 640 | 1.02 | 1.38 | 0.5 U | 0.5 U | 1 U | 1 U | 1.18 | 1.1 | 1 U | 1 U | 3.47 | 0.617 | 1.23 | 1.33 | 3.47 |
| Lead | 15 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.578 | 0.1 U | 0.411 | 0.219 | 0.4 |
| Mercury | 2 | 0.08 U | 0.08 U | 0.1 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U |
| Nickel | 320 | 5.43 | 4.47 | 4.39 | 4.32 | 4.54 | 4.34 | 3.29 | 3.3 | 3.49 | 3.49 | 5.74 | 2.7 | 1.38 | 1 U | 1.25 |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.2 U | 0.101 | 0.119 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.2 U | 0.5 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U |
| Zinc | 4,800 | 15 | 14.3 | 14.9 | 14.2 | 4 U | 4 U | 4 U | 4 U | 9.08 J | 9.01 J | 5.51 | 2 U | 4 U | 4 U | 4.35 |
| **Dissolved Metals (ug/L)** | | | | | | | | | | | | | | | | |
| Antimony | 6.4 | 1 U | 1 U | 0.57 | 0.5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.5 U | 1 U | 1 U | 1 U |
| Arsenic | 5 | 1 U | 1 U | 4.25 | 4.02 | 4.03 | 4.11 | 6.27 | 5.94 J | 3.02 | 3.01 | 3.5 | 6.27 | 8.41 | 8.09 | 8.01 |
| Beryllium | 32 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | 50 | 1 U | 1 U | 0.1 U | 0.1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.309 | 1 U | 1 U | 1 U |
| Chromium (hexavalent) | 48 | -- | -- | -- | -- | -- | -- | 5 | 5 U | -- | -- | -- | -- | -- | 5 U | -- |
| Copper | 640 | 1 U | 1 U | 0.5 U | 0.5 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 0.5 U | 1 U | 1 U | 1 U |
| Lead | 15 | 0.2 U | 0.2 U | 0.1 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Mercury | 2 | 0.08 U | 0.08 U | 0.1 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U |
| Nickel | 320 | 5.18 | 5.01 | 4.27 | 4.32 | 4.37 | 4.53 | 3.95 | 4.33 | 3.5 | 4.14 | 6.02 | 2.46 | 1.28 | 1.37 | 1.59 |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.2 U | 0.238 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.2 U | 0.5 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U |
| Zinc | 4,800 | 15.3 | 14.6 | 14.1 | 14.5 | 4 U | 4 U | 4 U | 4 U | 12.7 J | 16.4 J | 4 U | 2 U | 4 U | 8.45 | 4 U |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-3-35 | | | | | | | | | | MW-4-34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 |
| Collection Date: | | 11/28/2016 | | 02/24/2017 | | 02/15/2018 | | 02/21/2019 | | 10/28/2019 | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 |
| **Volatile Organic Compounds (ug/L)** | | | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1,1-Trichloroethane | 200 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1,2,2-Tetrachloroethane | 0.219 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1,2-Trichloroethane | 0.768 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1-Dichloroethene | 400 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,1-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | NV | 2 U | 2 U | 1 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| 1,2,3-Trichloropropane | 0.00146 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 1.51 | 2 U | 2 U | 1 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| 1,2,4-Trimethylbenzene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | 0.0547 | 5 U | 5 U | 1 U | 1 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| 1,2-Dibromoethane | 0.01 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dichlorobenzene | 720 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,2-Dichloroethane | 5 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| 1,2-Dichloropropane | 1.22 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,3,5-Trimethylbenzene | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | NV | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 1,3-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | 8.1 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| 2,2-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Butanone | 4,800 | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 2-Hexanone | NV | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Isopropyltoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| 4-Methyl-2-pentanone | 640 | 10 U | 10 U | 20 U | 20 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 20 U | 10 U | 10 U | 10 U |
| Acetone | 7,200 | 20 U | 20 U | 50 U | 50 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 50 U | 20 U | 20 U | 20 U |
| Acrylonitrile | 0.081 | -- | -- | 5 U | 5 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | -- | 5 U | 2 U | 2 U | 2 U |
| Benzene | 5 | 0.2 U | 0.2 U | 0.3 U | 0.3 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.3 U | 0.2 U | 0.2 U | 0.2 U |
| Bromobenzene | NV | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Bromodichloromethane | 0.706 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromoform | 5.54 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Bromomethane | 11.2 | 5 U | 5 U | 1 U | 1 U | 5 U | 5 U | 5 UJ | 5 UJ | 5 U | 5 U | 5 U | 1 U | 5 U | 5 UJ | 5 U |
| Carbon disulfide | 800 | -- | -- | 2 U | 2 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | -- | 2 U | 10 U | 10 U | 10 U |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-3-35 | | | | | | | | | | MW-4-34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 |
| Collection Date: | | 11/28/2016 | | 02/24/2017 | | 02/15/2018 | | 02/21/2019 | | 10/28/2019 | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 |
| Carbon tetrachloride | 0.625 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 160 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Chlorobromomethane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloroethane | NV | 5 U | 5 U | 1 U | 1 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 10 U | 5 U | 5 U |
| Chloroform | 1.41 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Chloromethane | NV | 5 U | 5 U | 1 U | 1 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| cis-1,2-Dichloroethene | 16 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| cis-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 0.521 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dibromomethane | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Dichlorodifluoromethane | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 700 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| Freon 113 | 240,000 | -- | -- | 1 U | 1 U | -- | -- | -- | -- | -- | -- | -- | 1 U | -- | -- | -- |
| Hexachlorobutadiene | 0.561 | 5 U | 5 U | 1 U | 1 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 1 U | 5 U | 5 U | 5 U |
| Isopropylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| m,p-Xylene | 1,000 | 1 U | 1 U | 2 U | 2 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 2 U | 1 U | 1 U | 1 U |
| Methyl tert-butyl ether | 20 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Methylene chloride | 5 | 3 U | 3 U | 20 U | 20 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U | 20 U | 3 U | 3 U | 10 U |
| Naphthalene | 160 | 2 U | 2 U | 1 U | 1 U | 148 | 147 | 217 | 216 | 105 | 103 | 2 U | 1 U | 2 U | 2 U | 2 U |
| n-Butylbenzene | 400 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| n-Propylbenzene | 800 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| o-Xylene | 1,600 | 0.5 U | 0.5 U | 1 U | 1 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U |
| sec-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Styrene | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| tert-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 5 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| Toluene | 1,000 | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| trans-1,2-dichloroethene | 160 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| trans-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U |
| Trichloroethene | 5 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |
| Trichlorofluoromethane | 2,400 | 2 U | 2 U | 1 U | 1 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 2 U | 1 U | 2 U | 2 U | 2 U |
| Vinyl chloride | 0.2 | 0.5 U | 0.5 U | 1 U | 1 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.4 U | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-3-35 | | | | | | | | | | MW-4-34 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-DUP-35 | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-3-35 | MW-3-35-DUP | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 | MW-4-34 |
| Collection Date: | | 11/28/2016 | | 02/24/2017 | | 02/15/2018 | | 02/21/2019 | | 10/28/2019 | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 |
| **Polycyclic Aromatic Hydrocarbons (ug/L)** | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | NV[d] | 0.326 J | 1.11 J | 1.04 | 1.09 | 27.2 | 21 | 33.4 | 23.7 | 12.8 | 13.8 | 0.0784 U | 0.0506 U | 0.0769 U | 0.0792 U | 0.092 U |
| 2-Methylnaphthalene | NV[d] | 0.124 J | 0.613 J | 0.697 | 0.894 | 35.6 | 27.4 | 39.8 | 26.6 | 2.03 | 2.1 | 0.0784 U | 0.0506 U | 0.0769 U | 0.0792 U | 0.092 U |
| Acenaphthene | 960 | 3.25 J | 6.69 J | 15.2 | 15.8 | 113 | 88.7 | 134 | 93.3 | 62.5 | 71.4 | 0.0392 U | 0.0506 U | 0.0385 U | 0.112 | 0.13 |
| Acenaphthylene | NV | 0.0404 U | 0.0408 U | 0.129 | 0.0936 | 0.495 U | 0.4 U | 0.522 U | 0.422 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Anthracene | 4,800 | 0.114 J | 0.173 J | 0.439 | 0.457 | 1.14 | 1.07 | 1.91 | 1.28 | 1.02 | 1.04 | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Benzo(a)anthracene | NV[e] | 0.0404 U | 0.0408 U | 0.0643 | 0.0624 | 0.249 J | 0.253 J | 0.153 J | 0.0717 J | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Benzo(a)pyrene | 0.1 | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.0553 | 0.0561 | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Benzo(b)fluoranthene | NV[e] | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.108 J | 0.101 J | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Benzo(ghi)perylene | NV | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.0396 U | 0.04 U | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Benzo(k)fluoranthene | NV[e] | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.0461 J | 0.0454 J | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Chrysene | NV[e] | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.234 J | 0.226 J | 0.123 J | 0.0527 J | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Dibenzo(a,h)anthracene | NV[e] | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.0396 U | 0.04 U | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Dibenzofuran | 16 | 1.71 J | 3.04 J | -- | -- | 40 | 31.8 | 51.7 | 34.9 | 20 | 23.5 | 0.0392 U | -- | 0.0385 U | 0.0396 U | 0.046 U |
| Fluoranthene | 640 | 0.691 J | 0.969 J | 2.71 | 2.54 | 6.41 | 6.26 | 5.97 J | 3.52 J | 2.53 | 3.15 | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Fluorene | 640 | 0.0854 J | 0.32 J | 1.47 | 1.65 | 37.1 | 31.9 | 50.4 | 32.4 | 20.8 | 24.6 | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Indeno(1,2,3-cd)pyrene | NV[e] | 0.0404 U | 0.0408 U | 0.0536 U | 0.052 U | 0.0396 U | 0.04 U | 0.0444 U | 0.0444 U | 0.444 U | 0.426 U | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Naphthalene | 160 | 0.87 J | 3.66 J | 2.95 | 3.23 | 97.5 | 75.2 | 115 | 83.5 | 25.8 | 28.6 | 0.0784 U | 0.0506 U | 0.0769 U | 0.127 | 0.126 |
| Phenanthrene | NV | 1.32 J | 2.44 J | 5.86 | 6.08 | 50.4 | 47.7 | 55 | 36 | 21.9 | 27 | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.047 |
| Pyrene | 480 | 0.387 J | 0.542 J | 1.68 | 1.85 | 3.51 | 3.44 | 3.22 J | 1.82 J | 1.31 | 1.64 | 0.0392 U | 0.0506 U | 0.0385 U | 0.0396 U | 0.046 U |
| Naphthalenes[f] | 160 | 1.32 | 5.38 | 4.69 | 5.21 | 160 | 124 | 188 | 134 | 40.6 | 44.5 | ND | ND | ND | 0.206 | 0.218 |
| cPAH TTEC[g] | 0.1 | ND | ND | 0.0442 | 0.0429 | 0.102 J | 0.102 J | 0.0476 J | 0.0388 J | ND | ND | ND | ND | ND | ND | ND |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-5-35 | | | | | MW-6 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-6 | MW-6-30 | MW-6-30 |
| Collection Date: | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 | 08/02/2018 | 02/21/2019 | 10/28/2019 |
| **Total Petroleum Hydrocarbons (ug/L)** | | | | | | | | | |
| Gasoline-range | 1,000[b] | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U |
| Diesel-range | 500 | 200 U | 81.5 U | 190 U | 202 U | 202 U | 211 U | 222 U | 217 U |
| Oil-range | 500 | 400 U | 204 U | 939 | 404 U | 404 U | 1,760 | 444 U | 435 U |
| Diesel + Oil[c] | 500 | ND | ND | 1,034 | ND | ND | 1,866 | ND | ND |
| **Total Metals (ug/L)** | | | | | | | | | |
| Antimony | 6.4 | 1 U | 0.5 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Arsenic | 5 | 1.77 | 2.33 | 3.8 | 6.01 | 7.46 | 1 U | 1 U | 1 U |
| Beryllium | 32 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.333 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Chromium | 50 | 1 U | 0.529 | 1 U | 1 U | 2.94 | -- | 1 U | 1 U |
| Chromium (hexavalent) | 48 | 5 UJ | 2 UJ | 5 UJ | -- | -- | -- | -- | -- |
| Copper | 640 | 1.92 | 0.576 | 1 U | 1 U | 5.04 | -- | 1 U | 1.23 |
| Lead | 15 | 0.2 U | 0.1 U | 0.322 | 0.2 U | 3.23 | 2.96 | 0.2 U | 0.51 |
| Mercury | 2 | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | -- | 0.08 U | 0.08 U |
| Nickel | 320 | 8.89 | 6.22 | 1 U | 1 U | 5.26 | -- | 1 U | 1 U |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Zinc | 4,800 | 18.7 | 3.5 | 4 U | 4 U | 24.1 | -- | 4 U | 4 UJ |
| **Dissolved Metals (ug/L)** | | | | | | | | | |
| Antimony | 6.4 | 1 U | 0.5 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Arsenic | 5 | 1 U | 2.48 | 3.67 | 5.18 | 5.63 | 1 U | 1 U | 1 U |
| Beryllium | 32 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Cadmium | 5 | 0.489 | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Chromium | 50 | 1 U | 0.405 | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Chromium (hexavalent) | 48 | -- | -- | -- | 5 U | -- | -- | 5 U | -- |
| Copper | 640 | 1.16 | 0.5 U | 1 U | 1 U | 1 U | -- | 1 U | 1.23 |
| Lead | 15 | 0.2 U | 0.1 U | 0.289 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Mercury | 2 | 0.08 U | 0.1 U | 0.08 U | 0.08 U | 0.08 U | -- | 0.08 U | 0.08 U |
| Nickel | 320 | 11.1 | 5.9 | 1 U | 1 U | 3.65 | -- | 1 U | 1 U |
| Selenium | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Silver | 80 | 0.2 U | 0.1 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Thallium | 0.16 | 0.2 U | 0.5 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Zinc | 4,800 | 17.3 | 3.42 | 4 U | 4 U | 10.3 | -- | 4 U | 10.7 J |

MAUL FOSTER ALONGI

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-5-35 | | | | | MW-6 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-6 | MW-6-30 | MW-6-30 |
| Collection Date: | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 | 08/02/2018 | 02/21/2019 | 10/28/2019 |
| **Volatile Organic Compounds (ug/L)** | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 1.68 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| 1,1,1-Trichloroethane | 200 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| 1,1,2,2-Tetrachloroethane | 0.219 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,1,2-Trichloroethane | 0.768 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,1-Dichloroethane | 7.68 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| 1,1-Dichloroethene | 400 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| 1,1-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 1,2,3-Trichlorobenzene | NV | 2 U | 1 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U |
| 1,2,3-Trichloropropane | 0.00146 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 1,2,4-Trichlorobenzene | 1.51 | 2 U | 1 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U |
| 1,2,4-Trimethylbenzene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 1,2-Dibromo-3-chloropropane | 0.0547 | 5 U | 1 U | 5 U | 5 U | 5 U | -- | 5 U | 5 U |
| 1,2-Dibromoethane | 0.01 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,2-Dichlorobenzene | 720 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,2-Dichloroethane | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| 1,2-Dichloropropane | 1.22 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,3,5-Trimethylbenzene | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 1,3-Dichlorobenzene | NV | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 1,3-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 1,4-Dichlorobenzene | 8.1 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| 2,2-Dichloropropane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 2-Butanone | 4,800 | 10 U | 10 U | 10 U | 10 U | 10 U | -- | 10 U | 10 U |
| 2-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 2-Hexanone | NV | 10 U | 10 U | 10 U | 10 U | 10 U | -- | 10 U | 10 U |
| 4-Chlorotoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 4-Isopropyltoluene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| 4-Methyl-2-pentanone | 640 | 10 U | 20 U | 10 U | 10 U | 10 U | -- | 10 U | 10 U |
| Acetone | 7,200 | 20 U | 50 U | 20 U | 20 U | 20 U | -- | 20 U | 20 U |
| Acrylonitrile | 0.081 | -- | 5 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U |
| Benzene | 5 | 0.2 U | 0.3 U | 0.2 U | 0.2 U | 0.2 U | -- | 0.2 U | 0.2 U |
| Bromobenzene | NV | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| Bromodichloromethane | 0.706 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Bromoform | 5.54 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Bromomethane | 11.2 | 5 U | 1 U | 5 U | 5 U | 5 U | -- | 5 U | 5 U |
| Carbon disulfide | 800 | -- | 2 U | 10 U | 10 U | 10 U | -- | 10 U | 10 U |

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[(a)] | MW-5-35 | | | | | MW-6 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-6 | MW-6-30 | MW-6-30 |
| Collection Date: | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 | 08/02/2018 | 02/21/2019 | 10/28/2019 |
| Carbon tetrachloride | 0.625 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Chlorobenzene | 160 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| Chlorobromomethane | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Chloroethane | NV | 5 U | 1 U | 5 U | 5 UJ | 5 U | -- | 5 UJ | 5 U |
| Chloroform | 1.41 | 1 U | 1 | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Chloromethane | NV | 5 U | 1 U | 5 U | 5 U | 5 U | -- | 5 U | 5 U |
| cis-1,2-Dichloroethene | 16 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| cis-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Dibromochloromethane | 0.521 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Dibromomethane | 80 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Dichlorodifluoromethane | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Ethylbenzene | 700 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| Freon 113 | 240,000 | -- | 1 U | -- | -- | -- | -- | -- | -- |
| Hexachlorobutadiene | 0.561 | 5 U | 1 U | 5 U | 5 U | 5 U | -- | 5 U | 5 U |
| Isopropylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| m,p-Xylene | 1,000 | 1 U | 2 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Methyl tert-butyl ether | 20 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Methylene chloride | 5 | 3 U | 20 U | 3 U | 3 U | 10 U | -- | 3 U | 10 U |
| Naphthalene | 160 | 2 U | 1 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U |
| n-Butylbenzene | 400 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| n-Propylbenzene | 800 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| o-Xylene | 1,600 | 0.5 U | 1 U | 0.5 U | 0.5 U | 0.5 U | -- | 0.5 U | 0.5 U |
| sec-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Styrene | 1,600 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| tert-Butylbenzene | 800 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Tetrachloroethene | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| Toluene | 1,000 | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| trans-1,2-dichloroethene | 160 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| trans-1,3-Dichloropropene | NV | 1 U | 1 U | 1 U | 1 U | 1 U | -- | 1 U | 1 U |
| Trichloroethene | 5 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |
| Trichlorofluoromethane | 2,400 | 2 U | 1 U | 2 U | 2 U | 2 U | -- | 2 U | 2 U |
| Vinyl chloride | 0.2 | 0.5 U | 1 U | 0.4 U | 0.4 U | 0.4 U | -- | 0.4 U | 0.4 U |

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**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

| Location: | MTCA[a] | MW-5-35 | | | | | MW-6 | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name: | | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-5-35 | MW-6 | MW-6-30 | MW-6-30 |
| Collection Date: | | 11/28/2016 | 02/24/2017 | 02/14/2018 | 02/21/2019 | 10/29/2019 | 08/02/2018 | 02/21/2019 | 10/28/2019 |
| **Polycyclic Aromatic Hydrocarbons (ug/L)** | | | | | | | | | |
| 1-Methylnaphthalene | NV[d] | 0.0784 U | 0.0524 U | 0.0755 U | 0.0842 U | 0.086 U | 0.08 U | 0.0842 U | 0.0833 U |
| 2-Methylnaphthalene | NV[d] | 0.0784 U | 0.0524 U | 0.0755 U | 0.0842 U | 0.086 U | 0.08 U | 0.0842 U | 0.0833 U |
| Acenaphthene | 960 | 0.0392 U | 0.0524 U | 0.0477 | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0455 |
| Acenaphthylene | NV | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Anthracene | 4,800 | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Benzo(a)anthracene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Benzo(a)pyrene | 0.1 | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Benzo(b)fluoranthene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Benzo(ghi)perylene | NV | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Benzo(k)fluoranthene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Chrysene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Dibenzo(a,h)anthracene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Dibenzofuran | 16 | 0.0392 U | -- | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Fluoranthene | 640 | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Fluorene | 640 | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Indeno(1,2,3-cd)pyrene | NV[e] | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Naphthalene | 160 | 0.0784 U | 0.0524 U | 0.0815 | 0.0842 U | 0.086 U | 0.08 U | 0.0842 U | 0.0833 U |
| Phenanthrene | NV | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Pyrene | 480 | 0.0392 U | 0.0524 U | 0.0377 U | 0.0421 U | 0.043 U | 0.04 U | 0.0421 U | 0.0417 U |
| Naphthalenes[f] | 160 | ND | ND | ND | ND | ND | ND | ND | ND |
| cPAH TTEC[g] | 0.1 | ND | ND | ND | ND | ND | ND | ND | ND |

**Table 1**
**Groundwater Analytical Results**
**Port of Vancouver Terminal 1**
**Vancouver, Washington**

NOTES:
Shading indicates CUL exceedance.
-- = not analyzed.
cPAH = carcinogenic polycyclic aromatic hydrocarbon.
CUL = cleanup level.
ft bgs = feet below ground surface.
J = estimated result.
MTCA = Model Toxics Control Act.
ND = not detected above method reporting limit.
NV = no value.
TTEC = total toxicity equivalent concentration.
U = not detected at or above method reporting limit.
ug/L = micrograms per liter.
UJ = estimated, non-detect.
[a]MTCA A CUL unless no value, then lowest of MTCA B carcinogenic/noncarcinogenic.
[b]MTCA CUL, no detectable benzene.
[c]Diesel + Oil = sum of diesel-range hydrocarbons and oil-range hydrocarbons; half of the reporting limit is used when results are not detected.
[d]Analyte is evaluated against MTCA A CUL as constituent of naphthalenes. MTCA B CUL is not applicable.
[e]Analyte is evaluated against MTCA A CUL as constituent of cPAH TTEC. MTCA B CUL is not applicable.
[f]The sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene, with half the reporting limit value for non-detect results.
[g]The sum of the seven defined cPAHs, with half the reporting limit used for non-detect results.

# Table 2
# Groundwater Elevations
# Port of Vancouver Terminal 1
# Vancouver, Washington

| Location | TOC Reference Elevation (feet) | Date | Water Level (feet below TOC) | Water Level Elevation (feet) |
|---|---|---|---|---|
| MW-1-37 | 29.06 | 11/28/2016 | 20.76 | 8.30 |
| | | 02/23/2017 | 16.94 | 12.12 |
| | | 02/14/2018 | 20.34 | 8.72 |
| | | 02/21/2019 | 22.34 | 6.72 |
| | | 10/28/2019 | 25.12 | 3.94 |
| MW-2-40 | 31.53 | 11/28/2016 | 29.62 | 1.91 |
| | | 02/23/2017 | 20.74 | 10.79 |
| | | 02/14/2018 | 20.10 | 11.43 |
| | | 02/21/2019 | 26.60 | 4.93 |
| | | 10/28/2019 | 28.83 | 2.70 |
| MW-3-35 | 30.50 | 11/28/2016 | 21.63 | 8.87 |
| | | 02/23/2017 | 17.51 | 12.99 |
| | | 02/14/2018 | 22.20 | 8.30 |
| | | 02/21/2019 | 23.97 | 6.53 |
| | | 10/28/2019 | 26.72 | 3.78 |
| MW-4-34 | 31.34 | 11/28/2016 | 23.10 | 8.24 |
| | | 02/23/2017 | 18.89 | 12.45 |
| | | 02/14/2018 | 22.57 | 8.77 |
| | | 02/21/2019 | 24.63 | 6.71 |
| | | 10/28/2019 | 27.07 | 4.27 |
| MW-5-35 | 32.10 | 11/28/2016 | 23.84 | 8.26 |
| | | 02/23/2017 | 19.57 | 12.53 |
| | | 02/14/2018 | 23.28 | 8.82 |
| | | 02/21/2019 | 25.22 | 6.88 |
| | | 10/28/2019 | 27.37 | 4.73 |
| MW-6-30 | 33.38 | 02/21/2019 | 26.72 | 6.66 |
| | | 10/28/2019 | 29.46 | 3.92 |

NOTES:
Elevation datum is National Geodetic Vertical Datum 1929.
TOC = top of casing.

# FIGURES


Site Address: 200 Columbia Street, Vancouver, Washington
Source: Taxlots obtained from Clark County GIS, US Geological Survey (1990) 7.5-minute topographic quadrangle: Portland
Section DLC51, Township 2 North, Range 1 East

# Figure 1
# Terminal 1 Location

Port of Vancouver
Vancouver, Washington

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0 1,000 2,000
Feet

Path: X:\9085.10 Port of Vancouver\Projects\Fig1-1_Site Location.mxd
Print Date: 9/9/2016
Approved By: K. Roslund
Produced By: estrandhagen
Project: 9085.10.02-01


Source: Aerial photograph (2016) and tax lots (2016) obtained from Clark County GIS; Monitoring well locations are approximate. (HAI. 2016. Subsurface investigation report, Port of Vancouver, USA – Terminal 1 Property. Hahn and Associates, Inc. May 18.)

## Legend

- Water Level Monitoring Network Well (with Groundwater Elevation in Feet, City of Vancouver Datum)
- Shallow Groundwater Elevation Contour (0.25 feet)
- Groundwater Flow Direction
- Blocks
- Tax Lot

# Figure 2
# Groundwater Elevation
# October 28, 2019

Port of Vancouver
Vancouver, Washington

0 50 100
Feet

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Path: X:\9085.10 Port of Vancouver\Projects\Fig3_Groundwater Elevation_20191112.mxd
Print Date: 11/12/2019
Approved By: mpollock
Produced By: sturner
Project: 9085.10.02-01

# ATTACHMENT A

## HAI ANALYTICAL TABLES

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | E & E (2008 Sample) | HAI (2015 and 2016 Samples) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | SB03 [4] | MW-1-37 | | | MW-2-40 | | MW-3-35 | | |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 29 | 27 - 37 | | | 30 - 40 | | 25 - 35 | | |
| | | | | | | | Sample Number => | GW003 (24 - 29) | 8832-150616-102 | 8832-150616-103 (DUP) | 8832-160210-105 | 8832-150617-107 | 8832-160210-104 | 8832-150616-100 | 8832-160209-102 | 8832-160209-103 (DUP) |
| | | | | | | | Sample Date => | 25-Nov-08 | 16-Jun-15 | 16-Jun-15 | 10-Feb-16 | 17-Jun-15 | 10-Feb-16 | 16-Jun-15 | 9-Feb-16 | 9-Feb-16 |
| | WA Method A Cleanup for Groundwater [1] | Benzene (Non Detect) [1] | WA Method B Ground Water Cancer [2] | WA Method B Ground Water Non Cancer [2] | WDOE Vapor Intrusion Screening Level Cancer [3] | WDOE Vapor Intrusion Screening Level Non Cancer [3] | Units | Analytical Results | | | | | | | | |
| **Total and Dissolved Metals by EPA Method 6020** | | | | | | | | | | | | | | | | |
| Antimony | | | | 6.4 | | | µg/L | U | 0.5 U | - | 1 U | **0.989 J** | 1 U | 0.5 U | 1 U | 1 U |
| Arsenic | 5 | | 0.0583 | 4.8 | | | µg/L | 3.6 | 3.48 | - | 3.76 | 14 | 2.19 | 4.53 | 6.56 | 6.44 |
| Arsenic (filtered) | 5 | | 0.0583 | 4.8 | | | µg/L | - | - | - | - | 1.22 | - | - | - | 4.07 |
| Beryllium | | | | 32 | | | µg/L | U | 0.1 U | - | 0.2 U | **1.01** | 0.2 U | 0.1 U | 0.2 U | 0.2 U |
| Cadmium | 5 | | | 8 | | | µg/L | U | 0.04 U | - | 0.2 U | **0.689** | 0.2 U | **0.1 J** | 0.2 U | 0.2 U |
| Chromium (VI) | | | | 48 | | | µg/L | - | 5 H UJ | - | 5 U | **7** | 5 U | 5 H UJ | 5 U | **0.0061** |
| Chromium (III+VI) | 50 | | | | | | µg/L | **20.5** | 0.5 U | - | 1 U | 319 | 1 U | 0.5 U | 1 U | 1 U |
| Chromium (III+VI) (filtered) | 50 | | | | | | µg/L | - | - | - | - | 0.5 U | - | - | - | - |
| Copper | | | | 320 | | | µg/L | **32.2** | **0.589 J** | - | 1 U | **140** | **4.26** | **1.71 J** | **1.49** | **1.89** |
| Lead | 15 | | | | | | µg/L | **7.36** | **0.1 J** | - | 0.2 U | 34.4 | **0.211** | **0.267** | **0.211** | **0.211** |
| Lead (filtered) | 15 | | | | | | µg/L | - | - | - | - | 0.1 U | - | - | - | - |
| Mercury | 2 | | | | | 0.89 | µg/L | U | 0.04 U | - | 0.08 U | **0.0831** | 0.08 U | 0.04 U | 0.08 U | 0.08 U |
| Nickel | | | | 320 | | | µg/L | 13 | **0.778 J** | - | 1 U | **52** | **3.21** | **8.91** | **7.51** | **7.84** |
| Selenium | | | | 80 | | | µg/L | U | **0.667 J** | - | 1 U | **2.01** | 1 U | **0.978 J** | 1 U | 1 U |
| Silver | | | | 80 | | | µg/L | U | 0.1 U | - | 0.2 U | **0.233** | 0.2 U | 0.1 U | 0.2 U | 0.2 U |
| Thallium | | | | 0.16 | | | µg/L | U | 0.1 U | - | 0.2 U | 0.233 | 0.2 U | 0.1 U | **0.2 U** | **0.2 U** |
| Zinc | | | | 4,800 | | | µg/L | **76.1** | 2 U | - | 4 U | **103** | 4 U | **12.7** | **33.5** | **33.5** |
| **Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270D** | | | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | | | 1.51 | 560 | | | µg/L | U | 0.0415 U | - | 0.0860 U | 0.0392 U | 0.182 U | 26.1 | 68.9 | 70.7 |
| 2-Methylnaphthalene | | | | 32 | | | µg/L | U | 0.0415 U | - | 0.0860 U | 0.0392 U | 0.182 U | **49.9 J** | **94.5** | **94.3** |
| Acenaphthene | | | | 960 | | | µg/L | U | 0.0166 U | - | 0.0430 U | 0.0313 U | 0.0909 U | **85.8** | **223** | **226** |
| Acenaphthylene | | | | | | | µg/L | U | 0.0166 U | - | 0.0430 U | 0.0157 U | 0.0909 U | **5.15** | **3.60** | **3.79** |
| Anthracene | | | | 4,800 | | | µg/L | U | 0.0166 U | - | 0.0430 U | 0.0157 U | 0.0909 U | **0.866** | **2.46** | **2.24** |
| Benz(a)anthracene | | | 0.12 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0192 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Benzo(a) pyrene | 0.1 | | 0.012 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0282 J** | 0.0909 U | 0.333 U | 1.63 U | 1.34 U |
| Benzo(b)fluoranthene | | | 0.12 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0305 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Benzo(g,h,i)perylene | | | | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0219 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Benzo(k)fluoranthene | | | 1.2 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0168 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Chrysene | | | 12 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0258 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Dibenz(a,h)anthracene | | | 0.012 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | 0.0157 U | 0.0909 U | 0.333 U | 1.63 U | 1.34 U |
| Dibenzofuran | | | | 16 | | | µg/L | U | 0.0166 U | - | 0.0430 U | 0.0157 U | 0.0909 U | **34.8 J** | **75.1** | **75.5** |
| Fluoranthene | | | | 640 | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.036** | **0.0995** | **2.71** | **10.5** | **10.8** |
| Fluorene | | | | 640 | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0313** | **0.0909 U** | **30.4** | **58.5** | **59.3** |
| Indeno(1,2,3-c,d)pyrene | | | 0.12 | | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0192 J** | **0.0909 U** | 0.333 U | 1.63 U | 1.34 U |
| Naphthalene | 160 | | | 160 | 8.93 | 167 | µg/L | U | **0.0627 J** | - | 0.0860 U | **0.286** | **0.182 U** | 149 | 464 | 426 |
| Phenanthrene | | | | | | | µg/L | U | 0.0415 U | - | 0.0430 U | **0.0431 J** | **0.0909 U** | **33.2** | **79.2** | **80.0** |
| Pyrene | | | | 480 | | | µg/L | U | 0.0166 U | - | 0.0430 U | **0.0392** | **0.0988** | **1.28** | **5.62** | **5.88** |
| Total Carcinogenic PAH TEF Value [6] | 0.1 | | | | | | µg/L | U | **0.00001** | - | **0.000030315** | **0.00002** | **6.40845E-05** | **0.0002** | **0.00114915** | **0.0009447** |
| **Total Petroleum Hydrocarbons by NWTPH-Dx and NWTPH-Gx** | | | | | | | | | | | | | | | | |
| Diesel Range Organics | 500 | | | | | | µg/L | U | 105 U | 102 U | 196 U | **140 J** | 196 U | 795 F-13 | 858 F-17 | 693 F-17 |
| Oil Range Organics | 500 | | | | | | µg/L | U | 211 U | 204 U | 392 U | 194 U | 392 U | 213 U | 435 U | 430 U |
| Gasoline Range Organics | | 1,000 | | | | | µg/L | U | 50 U | - | 100 U | 50 U | 100 U | 1,360 F-13 | 1,300 F-13 | 1,340 F-13 |
| **Volatile Organic Compounds (VOCs) by EPA Method 8260B** | | | | | | | | | | | | | | | | |
| 1,1,1,2-tetrachloroethane | | | 1.68 | 240 | 7.4 | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1,1-trichloroethane | 200 | | | 16,000 | | 5,240 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1,2,2-tetrachloroethane | | | 0.219 | 160 | 6.2 | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1,2-trichloroethane | | | 0.768 | 32 | 7.71 | 4.51 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1-dichloroethane | | | 7.68 | 1,600 | 11.2 | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1-dichloroethene | | | | 400 | | 130 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,1-dichloropropene | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| 1,2,3-trichlorobenzene | | | | | | | µg/L | U | 1 U | - | 2 U | 1 U | 2 U | 1 U | 2 U | 2 U |
| 1,2,3-trichloropropane | | | 0.00146 | 32 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 2 U | 0.5 U | 1 U | 1 U |
| 1,2,4-trichlorobenzene | | | 1.51 | 80 | | 39.2 | µg/L | U | 1 U | - | 2 U | 1 U | 2 U | 1 U | 2 U | 2 U |
| 1,2,4-trimethylbenzene | | | | | | 28.4 | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| 1,2-dibromo-3-chloropropane | | | 0.0547 | 1.6 | | | µg/L | U | 2.5 U | - | 5 U | 2.5 U | 5 U | 2.5 U | 5 U | 5 U |
| 1,2-dibromoethane | 0.01 | | 0.0219 | 72 | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,2-dichlorobenzene | | | | 720 | | 2,570 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,2-dichloroethane | 5 | | 0.481 | 48 | 4.2 | 140 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,2-dichloropropane | | | 1.22 | 720 | 3.89 | 28.4 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,3,5-trimethylbenzene | | | | 80 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | E & E (2008 Sample) | HAI (2015 and 2016 Samples) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | SB03 [4] | MW-1-37 | | | MW-2-40 | | MW-3-35 | | |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 29 | 27 - 37 | | | 30 - 40 | | 25 - 35 | | |
| | | | | | | | Sample Number => | GW003 (24 - 29) | 8832-150616-102 | 8832-150616-103 (DUP) | 8832-160210-105 | 8832-150617-107 | 8832-160210-104 | 8832-150616-100 | 8832-160209-102 | 8832-160209-103 (DUP) |
| | | | | | | | Sample Date => | 25-Nov-08 | 16-Jun-15 | 16-Jun-15 | 10-Feb-16 | 17-Jun-15 | 10-Feb-16 | 16-Jun-15 | 9-Feb-16 | 9-Feb-16 |
| | **WA Method A Cleanup for Groundwater** [1] | **Benzene (Non Detect)** [1] | **WA Method B Ground Water Cancer** [2] | **WA Method B Ground Water Non Cancer** [2] | **WDOE Vapor Intrusion Screening Level Cancer** [3] | **WDOE Vapor Intrusion Screening Level Non Cancer** [3] | **Units** | **Analytical Results** | | | | | | | | |
| 1,3-dichlorobenzene | | | | | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 1,3-dichloropropane | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| 1,4-dichlorobenzene | | | 8.1 | 560 | 4.85 | 7,810 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| 2,2-dichloropropane | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | - | 0.5 U | 1 U | 1 U |
| Methyl Ethyl Ketone | | | | 4,800 | | 1,740,000 | µg/L | U | 5 U | - | - | 5 U | - | 5 U | - | - |

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | E & E (2008 Sample) | HAI (2015 and 2016 Samples) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | SB03 [4] | MW-1-37 | | | MW-2-40 | | MW-3-35 | | |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 29 | 27 - 37 | | | 30 - 40 | | 25 - 35 | | |
| | | | | | | | Sample Number => | GW003 (24 - 29) | 8832-150616-102 | 8832-150616-103 (DUP) | 8832-160210-105 | 8832-150617-107 | 8832-160210-104 | 8832-150616-100 | 8832-160209-102 | 8832-160209-103 (DUP) |
| | | | | | | | Sample Date => | 25-Nov-08 | 16-Jun-15 | 16-Jun-15 | 10-Feb-16 | 17-Jun-15 | 10-Feb-16 | 16-Jun-15 | 9-Feb-16 | 9-Feb-16 |
| | WA Method A Cleanup for Groundwater [1] | Benzene (Non Detect) [1] | WA Method B Ground Water Cancer [2] | WA Method B Ground Water Non Cancer [2] | WDOE Vapor Intrusion Screening Level Cancer [3] | WDOE Vapor Intrusion Screening Level Non Cancer [3] | Units | Analytical Results | | | | | | | | |
| **Volatile Organic Compounds (VOCs) by EPA Method 8260B** | | | | | | | | | | | | | | | | |
| 2-chlorotoluene | | | | 160 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| 2-hexanone (MBK) | | | | | | | µg/L | U | 5 U | - | 10 U | 5 U | 10 U | 5 U | 10 U | 10 U |
| 4-chlorotoluene | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Acetone | | | | 7,200 | | | ug/L | U | 10 U | - | 20 U | **21** | **48.4** | 10 U | 20 U | 20 U |
| Benzene | 5 | | 0.795 | 32 | 2.4 | 103 | µg/L | U | 0.125 U | - | 0.2 U | 0.125 U | 0.2 U | 0.125 U | 0.2 U | 0.2 U |
| Bromobenzene | | | | | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Bromochloromethane | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Bromodichloromethane | | | 0.706 | 160 | 1.84 | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Bromoform | | | 5.54 | 160 | 200 | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Bromomethane | | | | 11.2 | | 13 | µg/L | U | 5 UJ | - | 5 U | 5 UJ | 5 U | 5 UJ | 5 U | 5 U |
| Carbon tetrachloride | | | 0.625 | 32 | 0.539 | 59.2 | µg/L | U | 0.25 U | - | 1 U | 0.25 U | 1 U | 0.25 U | 1 U | 1 U |
| Chlorobenzene | | | | 160 | | 286 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Chlorodibromomethane | | | 0.521 | 160 | 1.84 | | µg/L | U | 0.5 U | - | - | 0.5 U | - | 0.5 U | - | - |
| Chloroethane | | | | | | | µg/L | U | 5 UJ | - | 5 U | 5 UJ | 5 U | 5 UJ | 5 U | 5 U |
| Chloroform | | | 1.41 | 80 | 1.2 | 495 | µg/L | U | 0.5 U | - | 1 U | **0.88 J** | **1 U** | 0.5 U | 1 U | 1 U |
| Chloromethane | | | | | | 153 | µg/L | U | 2.5 U | - | 5 U | 2.5 U | 5 U | 2.5 U | 5 U | 5 U |
| cis-1,2-dichloroethene | | | | 16 | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| cis-1,3-dichloropropene | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 2 U | 0.5 U | 1 U | 1 U |
| Dibromomethane | | | | 80 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Dichlorodifluoromethane | | | | 1,600 | | 5.66 | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Dichloromethane | 5 | | 21.9 | 48 | | | µg/L | U | 2.5 U | - | - | 2.5 U | - | 2.5 U | - | - |
| Ethylbenzene | 700 | | | 800 | | 2,780 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Hexachlorobutadiene | | | 0.561 | 8 | 0.81 | | µg/L | U | 2.5 U | - | 5 U | 2.5 U | 5 U | 2.5 U | 5 U | 5 U |
| Isopropylbenzene | | | | 800 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| MTBE | 20 | | 24.3 | | 610 | 87,000 | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| 4-Methyl-2-pentanol | | | | | | | µg/L | U | 5 U | - | 10 U | 5 U | 10 U | 5 U | 10 U | 10 U |
| Naphthalene | 160 | | | 160 | 8.93 | 167 | µg/L | U | 1 U | - | 2 U | 1 U | 2 U | **227** | **385** | **271** |
| n-butylbenzene | | | | 400 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| n-propylbenzene | | | | 800 | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| p-isopropyltoluene | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| sec-butylbenzene | | | | 800 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Styrene | | | | 1,600 | | 8,100 | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Trichloroethene | 5 | | 0.54 | 4 | 1.55 | 3.84 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| tert-butylbenzene | | | | 800 | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Tetrachloroethene | 5 | | 20.8 | 48 | 22.9 | 43.5 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Toluene | 1,000 | | | 640 | | 15,600 | µg/L | 1.44 | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| trans-1,2-dichloroethene | | | | 160 | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| trans-1,3-dichloropropene | | | | | | | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Trichlorofluoromethane | | | | 2,400 | | 120 | µg/L | U | 1 U | - | 2 U | 1 U | 2 U | 1 U | 2 U | 2 U |
| Vinyl chloride | 0.2 | | | 24 | 0.347 | 56.7 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Xylene (m & p) | | | | | | 310 | µg/L | U | 0.5 U | - | 1 U | 0.5 U | 1 U | 0.5 U | 1 U | 1 U |
| Xylene (o) | | | | 1,600 | | 440 | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |
| Xylene Total | 1,000 | | | 1,600 | | | µg/L | U | 0.25 U | - | 0.5 U | 0.25 U | 0.5 U | 0.25 U | 0.5 U | 0.5 U |

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | HAI (2015 and 2016 Samples) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | MW-4-34 | | MW-5-34 | | Equipment Blank [5] | Trip Blank |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 34 | | 24 - 34 | | - | - |
| | | | | | | | Sample Number => | 8832-150616-101 | 8832-160209-101 | 8832-150617-104 | 8832-160209-100 | 8832-150617-105 | 8832-160209- |
| | | | | | | | Sample Date => | 16-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 |
| | WA Method A Cleanup for Groundwater [1] | Benzene (Non Detect) [1] | WA Method B Ground Water Cancer [2] | WA Method B Ground Water Non Cancer [2] | WDOE Vapor Intrusion Screening Level Cancer [3] | WDOE Vapor Intrusion Screening Level Non Cancer [3] | Units | Analytical Results | | | | | |
| **Total and Dissolved Metals by EPA Method 6020** | | | | | | | | | | | | | |
| Antimony | | | | 6.4 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | - |
| Arsenic | 5 | | 0.0583 | 4.8 | | | µg/L | **5.38** | **10.8** | **5.5** | **6.14** | - | - |
| Arsenic (filtered) | 5 | | 0.0583 | 4.8 | | | µg/L | **4.88** | **9.87** | **4.59** | **5.89** | - | - |
| Beryllium | | | | 32 | | | µg/L | 0.1 U | 0.2 U | 0.1 U | 0.2 U | - | - |
| Cadmium | 5 | | | 8 | | | µg/L | 0.04 U | 0.2 U | **0.189 J** | 0.2 U | - | - |
| Chromium (VI) | | | | 48 | | | µg/L | 5 H UJ | 5 U | 5 U | 5 U | - | - |
| Chromium (III+VI) | 50 | | | | | | µg/L | **0.856 J** | 1 U | **2.31** | **1.49** | - | - |
| Chromium (III+VI) (filtered) | 50 | | | | | | µg/L | - | - | - | - | - | - |
| Copper | | | | 320 | | | µg/L | **2.03** | 1 U | **4.98** | **2.37** | - | - |
| Lead | 15 | | | | | | µg/L | **1.52** | **0.211** | **4.92** | **0.644** | - | - |
| Lead (filtered) | 15 | | | | | | µg/L | - | - | - | - | - | - |
| Mercury | 2 | | | | | 0.89 | µg/L | 0.04 U | 0.08 U | 0.04 U | 0.08 U | - | - |
| Nickel | | | | 320 | | | µg/L | **3.91** | **2.08** | **10.9** | **1.8** | - | - |
| Selenium | | | | 80 | | | µg/L | **0.678 J** | 1 U | 0.5 U | 1 U | - | - |
| Silver | | | | 80 | | | µg/L | 0.1 U | 0.2 U | 0.1 U | 0.2 U | - | - |
| Thallium | | | | 0.16 | | | µg/L | 0.1 U | 0.2 U | 0.1 U | 0.2 U | - | - |
| Zinc | | | | 4,800 | | | µg/L | **8.31** | 4 U | **25.5** | **9.19** | - | - |
| **Polyaromatic Hydrocarbons (PAHs) by EPA Method 8270D** | | | | | | | | | | | | | |
| 1-Methylnaphthalene | | | 1.51 | 560 | | | µg/L | 0.0433 U | 0.0850 U | 0.04 U | 0.0851 U | 0.0395 U | 0.0395 U |
| 2-Methylnaphthalene | | | | 32 | | | µg/L | 0.0433 U | 0.0850 U | 0.04 U | 0.0851 U | 0.0395 U | 0.0395 U |
| Acenaphthene | | | | 960 | | | µg/L | **0.0242 J** | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Acenaphthylene | | | | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Anthracene | | | | 4,800 | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Benz(a)anthracene | | | 0.12 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Benzo(a) pyrene | 0.1 | | 0.012 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Benzo(b)fluoranthene | | | 0.12 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Benzo(g,h,i)perylene | | | | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Benzo(k)fluoranthene | | | 1.2 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Chrysene | | | 12 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Dibenz(a,h)anthracene | | | 0.012 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Dibenzofuran | | | | 16 | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Fluoranthene | | | | 640 | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Fluorene | | | | 640 | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Indeno(1,2,3-c,d)pyrene | | | 0.12 | | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Naphthalene | 160 | | | 160 | 8.93 | 167 | µg/L | **0.152** | **0.133** | **0.169** | **0.283** | 0.0395 U | 0.0395 U |
| Phenanthrene | | | | | | | µg/L | 0.0433 U | 0.0850 U | 0.04 U | 0.0851 U | 0.0395 U | 0.0395 U |
| Pyrene | | | | 480 | | | µg/L | 0.0173 U | 0.0340 U | 0.016 U | 0.0340 U | 0.0158 U | 0.0158 U |
| Total Carcinogenic PAH TEF Value [6] | 0.1 | | | | | | µg/L | **2.08465E-05** | **0.00002115** | **0.00001** | **0.00002115** | **0.00001** | **0.00001** |
| **Total Petroleum Hydrocarbons by NWTPH-Dx and NWTPH-Gx** | | | | | | | | | | | | | |
| Diesel Range Organics | 500 | | | | | | µg/L | **120 J** | 211 U, F-13 | 110 U | 213 U | 100 U | 100 U |
| Oil Range Organics | 500 | | | | | | µg/L | 211 U | 421 U | 220 U | 426 U | 200 U | 200 U |
| Gasoline Range Organics | | 1,000 | | | | | µg/L | 50 U | 100 U, F-13 | 50 U | 100 U | - | - |
| **Volatile Organic Compounds (VOCs) by EPA Method 8260B** | | | | | | | | | | | | | |
| 1,1,1,2-tetrachloroethane | | | 1.68 | 240 | 7.4 | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,1,1-trichloroethane | 200 | | | 16,000 | | 5,240 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,1,2,2-tetrachloroethane | | | 0.219 | 160 | 6.2 | | µg/L | 0.25 U | 0.5 U | 0.25 U | 1 U | - | 0.5 U |
| 1,1,2-trichloroethane | | | 0.768 | 32 | 7.71 | 4.51 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,1-dichloroethane | | | 7.68 | 1,600 | 11.2 | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,1-dichloroethene | | | | 400 | | 130 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,1-dichloropropene | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| 1,2,3-trichlorobenzene | | | | | | | µg/L | 1 U | 2 U | 1 U | 2 U | - | 2 U |
| 1,2,3-trichloropropane | | | 0.00146 | 32 | | | µg/L | 0.5 U | 1 U | 0.5 U | 2 U | - | 1 U |
| 1,2,4-trichlorobenzene | | | 1.51 | 80 | | 39.2 | µg/L | 1 U | 2 U | 1 U | 2 U | - | 2 U |
| 1,2,4-trimethylbenzene | | | | | | 28.4 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| 1,2-dibromo-3-chloropropane | | | 0.0547 | 1.6 | | | µg/L | 2.5 U | 5 U | 2.5 U | 5 U | - | 5 U |
| 1,2-dibromoethane | 0.01 | | 0.0219 | 72 | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,2-dichlorobenzene | | | | 720 | | 2,570 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,2-dichloroethane | 5 | | 0.481 | 48 | 4.2 | 140 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,2-dichloropropane | | | 1.22 | 720 | 3.89 | 28.4 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,3,5-trimethylbenzene | | | | 80 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | HAI (2015 and 2016 Samples) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | MW-4-34 | | MW-5-34 | | Equipment Blank [5] | Trip Blank |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 34 | | 24 - 34 | | - | - |
| | | | | | | | Sample Number => | 8832-150616-101 | 8832-160209-101 | 8832-150617-104 | 8832-160209-100 | 8832-150617-105 | 8832-160209- |
| | | | | | | | Sample Date => | 16-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 |
| | WA Method A Cleanup for Groundwater [1] | Benzene (Non Detect) [1] | WA Method B Ground Water Cancer [2] | WA Method B Ground Water Non Cancer [2] | WDOE Vapor Intrusion Screening Level Cancer [3] | WDOE Vapor Intrusion Screening Level Non Cancer [3] | Units | Analytical Results | | | | | |
| 1,3-dichlorobenzene | | | | | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 1,3-dichloropropane | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| 1,4-dichlorobenzene | | | 8.1 | 560 | 4.85 | 7,810 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| 2,2-dichloropropane | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Methyl Ethyl Ketone | | | | 4,800 | | 1,740,000 | µg/L | 5 U | - | 5 U | - | - | - |

**Table 5 - Summary of Groundwater Testing Results: Metals, Polynuclear Aromatic Hydrocarbons, Total Petroleum Hydrocarbons, and Volatile Organic Compounds**

Port of Vancouver, USA
Terminal 1 Property
Vancouver, WA

| | | | | | | | | HAI (2015 and 2016 Samples) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Well Location => | MW-4-34 | | MW-5-34 | | Equipment Blank [5] | Trip Blank |
| | | | | | | | Screen Interval (feet bgs) => | 24 - 34 | | 24 - 34 | | - | - |
| | | | | | | | Sample Number => | 8832-150616-101 | 8832-160209-101 | 8832-150617-104 | 8832-160209-100 | 8832-150617-105 | 8832-160209- |
| | | | | | | | Sample Date => | 16-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 | 17-Jun-15 | 9-Feb-16 |
| | WA Method A Cleanup for Groundwater [1] | Benzene (Non Detect) [1] | WA Method B Ground Water Cancer [2] | WA Method B Ground Water Non Cancer [2] | WDOE Vapor Intrusion Screening Level Cancer [3] | WDOE Vapor Intrusion Screening Level Non Cancer [3] | Units | Analytical Results | | | | | |
| **Volatile Organic Compounds (VOCs) by EPA Method 8260B** | | | | | | | | | | | | | |
| 2-chlorotoluene | | | | 160 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| 2-hexanone (MBK) | | | | | | | µg/L | 5 U | 10 U | 5 U | 10 U | - | 10 U |
| 4-chlorotoluene | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Acetone | | | | 7,200 | | | ug/L | 10 U | 20 U | 10 U | 20 U | - | 20 U |
| Benzene | 5 | | 0.795 | 32 | 2.4 | 103 | µg/L | 0.125 U | 0.2 U | 0.125 U | 0.2 U | - | 0.2 U |
| Bromobenzene | | | | | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 | - | 0.5 U |
| Bromochloromethane | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Bromodichloromethane | | | 0.706 | 160 | 1.84 | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Bromoform | | | 5.54 | 160 | 200 | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Bromomethane | | | | 11.2 | | 13 | µg/L | 5 UJ | 5 U | 5 UJ | 5 U | - | 5 U |
| Carbon tetrachloride | | | 0.625 | 32 | 0.539 | 59.2 | µg/L | 0.25 U | 1 U | 0.25 U | 1 U | - | 1 U |
| Chlorobenzene | | | | 160 | | 286 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| Chlorodibromomethane | | | 0.521 | 160 | 1.84 | | µg/L | 0.5 U | - | 0.5 U | - | - | - |
| Chloroethane | | | | | | | µg/L | 5 UJ | 5 U | 5 UJ | 0.5 U | - | 5 U |
| Chloroform | | | 1.41 | 80 | 1.2 | 495 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Chloromethane | | | | | | 153 | µg/L | 2.5 U | 5 U | 2.5 U | 5 U | - | 5 U |
| cis-1,2-dichloroethene | | | | 16 | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| cis-1,3-dichloropropene | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 2 U | - | 1 U |
| Dibromomethane | | | | 80 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Dichlorodifluoromethane | | | | 1,600 | | 5.66 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Dichloromethane | 5 | | 21.9 | 48 | | | µg/L | 2.5 U | - | 2.5 U | 1 U | - | - |
| Ethylbenzene | 700 | | | 800 | | 2,780 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| Hexachlorobutadiene | | | 0.561 | 8 | 0.81 | | µg/L | 2.5 U | 5 U | 2.5 U | 5 U | - | 5 U |
| Isopropylbenzene | | | | 800 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| MTBE | 20 | | 24.3 | | 610 | 87,000 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| 4-Methyl-2-pentanol | | | | | | | µg/L | 5 U | 10 U | 5 U | 10 U | - | 10 U |
| Naphthalene | 160 | | | 160 | 8.93 | 167 | µg/L | 1 U | 2 U | 1 U | 2 U | - | 2 U |
| n-butylbenzene | | | | 400 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| n-propylbenzene | | | | 800 | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| p-isopropyltoluene | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| sec-butylbenzene | | | | 800 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Styrene | | | | 1,600 | | 8,100 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Trichloroethene | 5 | | 0.54 | 4 | 1.55 | 3.84 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| tert-butylbenzene | | | | 800 | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Tetrachloroethene | 5 | | 20.8 | 48 | 22.9 | 43.5 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| Toluene | 1,000 | | | 640 | | 15,600 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| trans-1,2-dichloroethene | | | | 160 | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| trans-1,3-dichloropropene | | | | | | | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Trichlorofluoromethane | | | | 2,400 | | 120 | µg/L | 1 U | 2 U | 1 U | 2 U | - | 2 U |
| Vinyl chloride | 0.2 | | | 24 | 0.347 | 56.7 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| Xylene (m & p) | | | | | | 310 | µg/L | 0.5 U | 1 U | 0.5 U | 1 U | - | 1 U |
| Xylene (o) | | | | 1,600 | | 440 | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |
| Xylene Total | 1,000 | | | 1,600 | | | µg/L | 0.25 U | 0.5 U | 0.25 U | 0.5 U | - | 0.5 U |

Notes:

bgs = below ground surface
**bold** - detected concentration
Color = concentrations exceeding one or more cleanup levels.
EPA = Environmental Protection Agency
J - Estimated value
PAHs = polyaromatic hydrocarbons
TEF = Toxicity Equivalency Factor
U = Not detected
µg/L = micrograms per liter
VOCs = volatile organic compounds

1 = MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.
2 = MTCA Cleanup Regulation, Method B Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.
3 = Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Review Draft October 2009, updated April 6, 2015.
4 = Ecology and Environment, Inc. November 2008 temporary well point location.
5 = Equipment blank collected upon groundwater sample collection at the MW-5-34 well location, prior to sampling MW-4-34.
6 = TEF values calculated as described in WAC 173-340-708(8); When the individual PAH concentration was reported as non-detected, then the TEF was multiplied by half the Reporting Level
F-13 = The chromatographic pattern does not resemble the fuel standard used for quantitation.
F-17 = No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
H = Sample was analyzed outside of the recommended hold time.

# ATTACHMENT B

## WATER FIELD SAMPLING DATA SHEETS

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-1-37 |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/28/2019 |
| **Sampling Event** | October 2019 | **Sample Name** | MW-1-37 |
| **Sub Area** | | **Sample Depth** | 32 |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:25 | 37.01 | | 25.12 | | 11.89 | 1.94 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 3:41:00 PM | 0.1 | 0.1 | 6.79 | 16.2 | 544.1 | 5.25 | 145.1 | 4.89 |
| | 3:45:00 PM | 0.2 | 0.1 | 6.83 | 16.2 | 542.1 | 5.26 | 141.1 | 8.92 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 3:49:00 PM | 0.3 | 0.1 | 6.75 | 16 | 553.1 | 5.17 | 141.2 | 7.13 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Cloudy, colorless, faint organic-like odor.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 3:49:00 PM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began purging at 15:28.
Water level varied from 25.38 to 25.28 feet below top of casing during purging. Water sputtering from tubing.

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-2-40 |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/29/2019 |
| **Sampling Event** | October 2019 | **Sample Name** | MW-2-40 |
| **Sub Area** | | **Sample Depth** | 37 |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:27 | 39.05 | | 28.83 | | 10.22 | 1.67 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (3) Disposible Bailer | 11:06:00 AM | 0.25 | | 6.24 | 14.6 | 1053 | 4.39 | 176.6 | 1.33 |
| | 11:09:00 AM | 0.75 | | 6.37 | 14.7 | 1057 | 2.44 | 169.6 | 2.62 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 11:14:00 AM | 1.5 | | 6.42 | 15.4 | 1050 | 2 | 166.4 | 7.5 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear, colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (3) Disposable Bailer | Groundwater | 9:45:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 7 | |

### General Sampling Comments

Began bailing at 11:00 on 10/28/2019.
Took 9 bails to get dry on 10/28/2019.
Returned on 10/29/2019 to sample. Water level = 34.87'
Well cap under pressure when removed on 10/28 and 10/29.

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-3-35 | | | | |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock | | | | |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/28/2019 | | | | |
| **Sampling Event** | October 2019 | **Sample Name** | MW-3-35 | | | | |
| **Sub Area** | | **Sample Depth** | 30 | | | | |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | | **Northing** | | **TOC** | |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:33 | 34.82 | | 26.72 | | 8.1 | 1.32 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 8:59:00 AM | 0.13 | 0.13 | 5.55 | 11.4 | 990 | 2.85 | 193.3 | 0.88 |
| | 9:03:00 AM | 0.27 | 0.14 | 5.66 | 12.8 | 982 | 1.41 | 188.6 | 0.58 |
| | 9:07:00 AM | 0.38 | 0.11 | 5.82 | 13.2 | 979 | 0.64 | 185.9 | 0.42 |
| | 9:11:00 AM | 0.52 | 0.14 | 5.95 | 13.3 | 986 | 0.55 | 182.5 | 0.86 |
| | 9:15:00 AM | 0.66 | 0.14 | 6.1 | 13.3 | 984 | 0.43 | 179.5 | 0.93 |
| | 9:19:00 AM | 0.8 | 0.14 | 6.12 | 13.3 | 980 | 0.4 | 178.3 | 1.25 |
| Final Field Parameters | 9:23:00 AM | 0.94 | 0.14 | 6.2 | 13.2 | 976 | 0.34 | 176.2 | 1.38 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear, colorless, faint hydrocarbon-like odor.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 9:23:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began purging at 08:55
Also collected duplicate sample MW-3-35-DUP at this location.
Water level varied from 26.91 to 26.85 feet below top of casing during purging.

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-3-35 |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/28/2019 |
| **Sampling Event** | October 2019 | **Sample Name** | MW-3-35-DUP |
| **Sub Area** | | **Sample Depth** | 30 |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:33 | 34.82 | | 26.72 | | 8.1 | 1.32 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 8:59:00 AM | 0.13 | 0.13 | 5.55 | 11.4 | 990 | 2.85 | 193.3 | 0.88 |
| | 9:03:00 AM | 0.27 | 0.14 | 5.66 | 12.8 | 982 | 1.41 | 188.6 | 0.58 |
| | 9:07:00 AM | 0.38 | 0.11 | 5.82 | 13.2 | 979 | 0.64 | 185.9 | 0.42 |
| | 9:11:00 AM | 0.52 | 0.14 | 5.95 | 13.3 | 986 | 0.55 | 182.5 | 0.86 |
| | 9:15:00 AM | 0.66 | 0.14 | 6.1 | 13.3 | 984 | 0.43 | 179.5 | 0.93 |
| | 9:19:00 AM | 0.8 | 0.14 | 6.12 | 13.3 | 980 | 0.4 | 178.3 | 1.25 |
| Final Field Parameters | 9:23:00 AM | 0.94 | 0.14 | 6.2 | 13.2 | 976 | 0.34 | 176.2 | 1.38 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear, colorless, faint hydrocarbon-like odor.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 9:23:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began purging at 08:55
This is a duplicate sample of MW-3-35
Water level varied from 26.91 to 26.85 feet below top of casing during purging.

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-4-34 | | | | |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock | | | | |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/29/2019 | | | | |
| **Sampling Event** | October 2019 | **Sample Name** | MW-4-34 | | | | |
| **Sub Area** | | **Sample Depth** | 29 | | | | |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | | **Northing** | | **TOC** | |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:31 | 34.34 | | 27.07 | | 7.27 | 1.19 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (3) Disposible Bailer | 3:00:00 PM | 1.25 | | 6.28 | 15.7 | 786 | 1.63 | 168.3 | 103.8 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 3:07:00 PM | 2.5 | | 6.43 | 15.7 | 838 | 1.64 | 160.6 | 155.1 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Cloudy with needle-like, sand-sized particles, colorless, faint organic-like odor.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (3) Disposable Bailer | Groundwater | 9:05:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began puring with peristaltic pump at 14:45 on 10/28/19. Switched to bailing due to lack of flow with peristaltic pump. Began bailing at 14:55. Took 10 bails to dry on 10/28/2019.
Returned on 10/29/2019 to sample. Water level = 27.15'

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-5-35 |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/29/2019 |
| **Sampling Event** | October 2019 | **Sample Name** | MW-5-35 |
| **Sub Area** | | **Sample Depth** | 30 |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:41 | 34.18 | | 27.37 | | 6.81 | 1.11 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (3) Disposible Bailer | 1:56:00 PM | 1 | | 6.22 | 14.5 | 555.9 | 1.49 | 159.2 | 6.62 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 2:18:00 PM | 2 | | 6.4 | 14.2 | 561 | 1.62 | 150.2 | 32.9 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Cloudy, colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (3) Disposable Bailer | Groundwater | 8:10:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began purging with peristaltic pump at 13:15 on 10/28/2019.
Switched to bailing at 13:50 due to lack of flow with peristaltic pump. Took 10 bails to dry on 10/28/2019.
Returned on 10/29/2019 to sample. Water level = 27.47'.

# Maul Foster & Alongi, Inc.

109 East 13th Street, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | Port of Vancouver | **Sample Location** | MW-6-30 |
| **Project #** | 9085.10.12 | **Sampler** | M. Pollock |
| **Project Name** | Terminal 1 | **Sampling Date** | 10/28/2019 |
| **Sampling Event** | October 2019 | **Sample Name** | MW-6-30 |
| **Sub Area** | | **Sample Depth** | 31 |
| **FSDS QA:** | E. Hess 11/6/2019 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/28/2019 | 8:37 | 32.17 | | 29.46 | | 2.71 | 0.44 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 11:36:00 AM | 0.3 | 0.3 | 6.4 | 13.9 | 232.8 | 1.94 | 140.3 | 2.95 |
| | 11:40:00 AM | 0.52 | 0.22 | 6.4 | 13.9 | 238.6 | 1.32 | 137.7 | 0.39 |
| | 11:44:00 AM | 0.74 | 0.22 | 6.38 | 14.1 | 234.5 | 1.15 | 133.8 | 0.25 |
| | 11:48:00 AM | 0.96 | 0.22 | 6.32 | 14.1 | 239.2 | 1.11 | 132 | 0.22 |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 11:52:00 AM | 1.18 | 0.22 | 6.3 | 14.1 | 239.3 | 1.08 | 130.7 | 0.15 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear, colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 11:52:00 AM | VOA-Glass | 3 | No |
| | | | Amber Glass | 4 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | 1 | Yes |
| | | | Total Bottles | 9 | |

### General Sampling Comments

Began purging at 11:32. Water level consistently 29.55 feet below top of casing during purging.

# ATTACHMENT C

## LABORATORY ANALYTICAL REPORT

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

Wednesday, November 13, 2019

David Weatherby
Maul Foster & Alongi, INC.
2001 NW 19th Ave, STE 200
Portland, OR 97209

RE: A9J1033 - POV-Terminal 1 - 9085.10.12

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 A9J1033, which was received by the laboratory on 10/29/2019 at 12:45:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@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 | 0.3 degC | Cooler #2 | 0.1 degC |
| Cooler #3 | 1.9 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.

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Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

*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.*

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

# ANALYTICAL REPORT FOR SAMPLES

## SAMPLE INFORMATION

| Client Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| MW-1-37 | A9J1033-01 | Water | 10/28/19 15:49 | 10/29/19 12:45 |
| MW-2-40 | A9J1033-02 | Water | 10/29/19 09:45 | 10/29/19 12:45 |
| MW-3-35 | A9J1033-03 | Water | 10/28/19 09:23 | 10/29/19 12:45 |
| MW-4-34 | A9J1033-04 | Water | 10/29/19 09:05 | 10/29/19 12:45 |
| MW-5-35 | A9J1033-05 | Water | 10/29/19 08:10 | 10/29/19 12:45 |
| MW-6-30 | A9J1033-06 | Water | 10/28/19 11:52 | 10/29/19 12:45 |
| MW-3-35-DUP | A9J1033-07 | Water | 10/28/19 09:23 | 10/29/19 12:45 |

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| Diesel | ND | --- | 0.230 | mg/L | 1 | 10/31/19 08:20 | NWTPH-Dx | |
| **Oil** | **0.603** | --- | 0.460 | mg/L | 1 | 10/31/19 08:20 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 102 %* | | *Limits: 50-150 %* | *1* | *10/31/19 08:20* | *NWTPH-Dx* | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| Diesel | ND | --- | 0.303 | mg/L | 1 | 10/31/19 08:40 | NWTPH-Dx | |
| Oil | ND | --- | 0.606 | mg/L | 1 | 10/31/19 08:40 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 108 %* | | *Limits: 50-150 %* | *1* | *10/31/19 08:40* | *NWTPH-Dx* | |
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| **Diesel** | **0.432** | --- | 0.217 | mg/L | 1 | 10/31/19 09:00 | NWTPH-Dx | **F-17** |
| Oil | ND | --- | 0.435 | mg/L | 1 | 10/31/19 09:00 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 104 %* | | *Limits: 50-150 %* | *1* | *10/31/19 09:00* | *NWTPH-Dx* | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| Diesel | ND | --- | 0.204 | mg/L | 1 | 10/31/19 09:21 | NWTPH-Dx | |
| Oil | ND | --- | 0.408 | mg/L | 1 | 10/31/19 09:21 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 110 %* | | *Limits: 50-150 %* | *1* | *10/31/19 09:21* | *NWTPH-Dx* | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| Diesel | ND | --- | 0.202 | mg/L | 1 | 10/31/19 09:41 | NWTPH-Dx | |
| Oil | ND | --- | 0.404 | mg/L | 1 | 10/31/19 09:41 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 109 %* | | *Limits: 50-150 %* | *1* | *10/31/19 09:41* | *NWTPH-Dx* | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| Diesel | ND | --- | 0.217 | mg/L | 1 | 10/31/19 10:00 | NWTPH-Dx | |
| Oil | ND | --- | 0.435 | mg/L | 1 | 10/31/19 10:00 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 113 %* | | *Limits: 50-150 %* | *1* | *10/31/19 10:00* | *NWTPH-Dx* | |
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | **Batch: 9101761** | | |
| **Diesel** | **0.460** | --- | 0.206 | mg/L | 1 | 10/31/19 10:20 | NWTPH-Dx | **F-17** |
| Oil | ND | --- | 0.412 | mg/L | 1 | 10/31/19 10:20 | NWTPH-Dx | |
| *Surrogate: o-Terphenyl (Surr)* | | *Recovery: 108 %* | | *Limits: 50-150 %* | *1* | *10/31/19 10:20* | *NWTPH-Dx* | |

Apex Laboratories

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | 10/30/19 11:42 | NWTPH-Gx (MS) | |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 105 %* | *Limits: 50-150 %* | | *1* | *10/30/19 11:42* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *106 %* | *50-150 %* | | *1* | *10/30/19 11:42* | *NWTPH-Gx (MS)* | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | 10/30/19 12:09 | NWTPH-Gx (MS) | |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 107 %* | *Limits: 50-150 %* | | *1* | *10/30/19 12:09* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *104 %* | *50-150 %* | | *1* | *10/30/19 12:09* | *NWTPH-Gx (MS)* | |
| **MW-3-35 (A9J1033-03RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| **Gasoline Range Organics** | **0.267** | --- | 0.100 | mg/L | 1 | 10/31/19 19:10 | NWTPH-Gx (MS) | **F-12** |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 98 %* | *Limits: 50-150 %* | | *1* | *10/31/19 19:10* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *104 %* | *50-150 %* | | *1* | *10/31/19 19:10* | *NWTPH-Gx (MS)* | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | 10/30/19 12:36 | NWTPH-Gx (MS) | |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 105 %* | *Limits: 50-150 %* | | *1* | *10/30/19 12:36* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *107 %* | *50-150 %* | | *1* | *10/30/19 12:36* | *NWTPH-Gx (MS)* | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | 10/30/19 13:03 | NWTPH-Gx (MS) | |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 105 %* | *Limits: 50-150 %* | | *1* | *10/30/19 13:03* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *106 %* | *50-150 %* | | *1* | *10/30/19 13:03* | *NWTPH-Gx (MS)* | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | 10/30/19 15:18 | NWTPH-Gx (MS) | |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 104 %* | *Limits: 50-150 %* | | *1* | *10/30/19 15:18* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *105 %* | *50-150 %* | | *1* | *10/30/19 15:18* | *NWTPH-Gx (MS)* | |
| **MW-3-35-DUP (A9J1033-07RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| **Gasoline Range Organics** | **0.254** | --- | 0.100 | mg/L | 1 | 10/31/19 19:36 | NWTPH-Gx (MS) | **F-12** |
| *Surrogate: 4-Bromofluorobenzene (Sur)* | | *Recovery: 96 %* | *Limits: 50-150 %* | | *1* | *10/31/19 19:36* | *NWTPH-Gx (MS)* | |
| *1,4-Difluorobenzene (Sur)* | | *103 %* | *50-150 %* | | *1* | *10/31/19 19:36* | *NWTPH-Gx (MS)* | |

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.*

Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 11:42 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 104 %* | *Limits: 80-120 %* | *1* | *10/30/19 11:42* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *99 %* | *80-120 %* | *1* | *10/30/19 11:42* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *99 %* | *80-120 %* | *1* | *10/30/19 11:42* | *EPA 8260C* | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| **Acetone** | **33.4** | --- | 20.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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**503-718-2323**
**EPA ID: OR01039**

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:09 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *103 %* | *Limits: 80-120 %* | *1* | *10/30/19 12:09* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/30/19 12:09* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *100 %* | *80-120 %* | *1* | *10/30/19 12:09* | *EPA 8260C* | |
| **MW-3-35 (A9J1033-03RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35 (A9J1033-03RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Methylene chloride | ND | --- | 3.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| **Naphthalene** | **105** | --- | 2.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35 (A9J1033-03RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:10 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *106 %* | *Limits: 80-120 %* | *1* | *10/31/19 19:10* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *101 %* | *80-120 %* | *1* | *10/31/19 19:10* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/31/19 19:10* | *EPA 8260C* | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**503-718-2323**
**EPA ID: OR01039**

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|---|---|---|
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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 12:36 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *105 %* | *Limits: 80-120 %* | *1* | *10/30/19 12:36* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *99 %* | *80-120 %* | *1* | *10/30/19 12:36* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/30/19 12:36* | *EPA 8260C* | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 13:03 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *105 %* | *Limits: 80-120 %* | *1* | *10/30/19 13:03* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/30/19 13:03* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/30/19 13:03* | *EPA 8260C* | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101746** | | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/30/19 15:18 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *105 %* | *Limits:* *80-120 %* | *1* | *10/30/19 15:18* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *99 %* | *80-120 %* | *1* | *10/30/19 15:18* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | *80-120 %* | *1* | *10/30/19 15:18* | *EPA 8260C* | |
| **MW-3-35-DUP (A9J1033-07RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35-DUP (A9J1033-07RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |

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Philip Nerenberg, Lab Director

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35-DUP (A9J1033-07RE1)** | | | | **Matrix: Water** | | **Batch: 9101792** | | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Methylene chloride | ND | --- | 3.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| **Naphthalene** | **103** | --- | 2.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | 10/31/19 19:36 | EPA 8260C | |
| *Surrogate: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *106 %* | *Limits:* | *80-120 %* | *1* | *10/31/19 19:36* | *EPA 8260C* | |
| *Toluene-d8 (Surr)* | | | *102 %* | | *80-120 %* | *1* | *10/31/19 19:36* | *EPA 8260C* | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | | *80-120 %* | *1* | *10/31/19 19:36* | *EPA 8260C* | |

Apex Laboratories

Philip Nerenberg, Lab Director

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Acenaphthene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Anthracene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Benz(a)anthracene** | **0.0446** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Benzo(a)pyrene** | **0.0458** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Benzo(b)fluoranthene** | **0.0702** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | **M-05** |
| Benzo(k)fluoranthene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Benzo(g,h,i)perylene** | **0.0464** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Chrysene** | **0.0643** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Dibenzofuran | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Fluoranthene** | **0.0965** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Fluorene | ND | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Indeno(1,2,3-cd)pyrene** | **0.0534** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| 1-Methylnaphthalene | ND | --- | 0.0808 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| 2-Methylnaphthalene | ND | --- | 0.0808 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| Naphthalene | ND | --- | 0.0808 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Phenanthrene** | **0.0447** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| **Pyrene** | **0.0974** | --- | 0.0404 | ug/L | 1 | 10/30/19 20:49 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *66 %* | *Limits: 44-120 %* | *1* | *10/30/19 20:49* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *86 %* | *50-133 %* | *1* | *10/30/19 20:49* | *EPA 8270D (SIM)* | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Acenaphthene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Anthracene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Chrysene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |

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Philip Nerenberg, Lab Director

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Dibenzofuran | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Fluoranthene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Fluorene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| 1-Methylnaphthalene | ND | --- | 0.101 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| 2-Methylnaphthalene | ND | --- | 0.101 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Naphthalene | ND | --- | 0.101 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Phenanthrene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| Pyrene | ND | --- | 0.0506 | ug/L | 1 | 10/30/19 21:14 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *81 %* | *Limits: 44-120 %* | *1* | *10/30/19 21:14* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *58 %* | *50-133 %* | *1* | *10/30/19 21:14* | *EPA 8270D (SIM)* | |
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| **Acenaphthene** | **62.5** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Anthracene** | **1.02** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Chrysene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Dibenzofuran** | **20.0** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Fluoranthene** | **2.53** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Fluorene** | **20.8** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **1-Methylnaphthalene** | **12.8** | --- | 0.889 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **2-Methylnaphthalene** | **2.03** | --- | 0.889 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Naphthalene** | **25.8** | --- | 0.889 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Phenanthrene** | **21.9** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| **Pyrene** | **1.31** | --- | 0.444 | ug/L | 10 | 10/30/19 21:39 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *65 %* | *Limits: 44-120 %* | *10* | *10/30/19 21:39* | *EPA 8270D (SIM)* | |

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Philip Nerenberg, Lab Director

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| *Surrogate: p-Terphenyl-d14 (Surr)* | | | *Recovery: 97 %* | *Limits: 50-133 %* | *10* | *10/30/19 21:39* | *EPA 8270D (SIM)* | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| **Acenaphthene** | **0.130** | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Anthracene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Chrysene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Dibenzofuran | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Fluoranthene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Fluorene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| 1-Methylnaphthalene | ND | --- | 0.0920 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| 2-Methylnaphthalene | ND | --- | 0.0920 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| **Naphthalene** | **0.126** | --- | 0.0920 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| **Phenanthrene** | **0.0470** | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| Pyrene | ND | --- | 0.0460 | ug/L | 1 | 10/30/19 22:04 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | | *Recovery: 86 %* | *Limits: 44-120 %* | *1* | *10/30/19 22:04* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *92 %* | *50-133 %* | *1* | *10/30/19 22:04* | *EPA 8270D (SIM)* | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Acenaphthene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Anthracene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |

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Philip Nerenberg, Lab Director

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Chrysene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Dibenzofuran | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Fluoranthene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Fluorene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| 1-Methylnaphthalene | ND | --- | 0.0860 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| 2-Methylnaphthalene | ND | --- | 0.0860 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Naphthalene | ND | --- | 0.0860 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Phenanthrene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| Pyrene | ND | --- | 0.0430 | ug/L | 1 | 10/30/19 22:29 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *79 %* | *Limits: 44-120 %* | *1* | *10/30/19 22:29* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *72 %* | *50-133 %* | *1* | *10/30/19 22:29* | *EPA 8270D (SIM)* | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| **Acenaphthene** | **0.0455** | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Anthracene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Chrysene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Dibenzofuran | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Fluoranthene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Fluorene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| 1-Methylnaphthalene | ND | --- | 0.0833 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| 2-Methylnaphthalene | ND | --- | 0.0833 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Naphthalene | ND | --- | 0.0833 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| Phenanthrene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| Pyrene | ND | --- | 0.0417 | ug/L | 1 | 11/01/19 15:32 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *66 %* | *Limits: 44-120 %* | *1* | *11/01/19 15:32* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *87 %* | *50-133 %* | *1* | *11/01/19 15:32* | *EPA 8270D (SIM)* | |
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | **Batch: 9101758** | | |
| **Acenaphthene** | **71.4** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Acenaphthylene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Anthracene** | **1.04** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Benz(a)anthracene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Benzo(a)pyrene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Benzo(b)fluoranthene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Benzo(k)fluoranthene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Benzo(g,h,i)perylene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Chrysene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Dibenz(a,h)anthracene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Dibenzofuran** | **23.5** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Fluoranthene** | **3.15** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Fluorene** | **24.6** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **1-Methylnaphthalene** | **13.8** | --- | 0.851 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **2-Methylnaphthalene** | **2.10** | --- | 0.851 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Naphthalene** | **28.6** | --- | 0.851 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Phenanthrene** | **27.0** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| **Pyrene** | **1.64** | --- | 0.426 | ug/L | 10 | 11/01/19 15:57 | EPA 8270D (SIM) | |
| *Surrogate: 2-Fluorobiphenyl (Surr)* | | *Recovery:* | *64 %* | *Limits: 44-120 %* | *10* | *11/01/19 15:57* | *EPA 8270D (SIM)* | |
| *p-Terphenyl-d14 (Surr)* | | | *94 %* | *50-133 %* | *10* | *11/01/19 15:57* | *EPA 8270D (SIM)* | |

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| **Arsenic** | **11.8** | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | 10/30/19 19:14 | EPA 6020A | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| **Arsenic** | **3.01** | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| **Copper** | **2.11** | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| **Nickel** | **1.08** | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | 10/30/19 19:19 | EPA 6020A | |
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |

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Philip Nerenberg

Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | | | |
| **Arsenic** | **3.13** | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| **Nickel** | **3.49** | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| **Zinc** | **9.08** | --- | 4.00 | ug/L | 1 | 10/30/19 19:24 | EPA 6020A | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **Arsenic** | **7.84** | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **Copper** | **3.47** | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **Lead** | **0.400** | --- | 0.200 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **Nickel** | **1.25** | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **Zinc** | **4.35** | --- | 4.00 | ug/L | 1 | 10/30/19 19:28 | EPA 6020A | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Arsenic** | **7.46** | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |

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Philip Nerenberg

Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | | | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Chromium** | **2.94** | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Copper** | **5.04** | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Lead** | **3.23** | --- | 0.200 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Nickel** | **5.26** | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **Zinc** | **24.1** | --- | 4.00 | ug/L | 1 | 10/30/19 19:42 | EPA 6020A | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Arsenic | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| **Copper** | **1.23** | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| **Lead** | **0.510** | --- | 0.200 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | 10/30/19 19:47 | EPA 6020A | |
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | | | |
| Batch: 9101742 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| **Arsenic** | **3.08** | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |

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Philip Nerenberg, Lab Director

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | | | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| **Nickel** | **3.49** | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |
| **Zinc** | **9.01** | --- | 4.00 | ug/L | 1 | 10/30/19 20:01 | EPA 6020A | |

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Philip Nerenberg

Philip Nerenberg, Lab Director

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## ANALYTICAL SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-1-37 (A9J1033-01)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| **Arsenic** | **9.97** | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | 10/30/19 20:15 | EPA 6020A (Diss) | |
| **MW-2-40 (A9J1033-02)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| **Arsenic** | **4.16** | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| **Copper** | **1.23** | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| **Nickel** | **1.78** | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| **Zinc** | **9.12** | --- | 4.00 | ug/L | 1 | 10/30/19 20:19 | EPA 6020A (Diss) | |
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |

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Philip Nerenberg, Lab Director

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35 (A9J1033-03)** | | | | **Matrix: Water** | | | | |
| **Arsenic** | **3.02** | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| **Nickel** | **3.50** | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| **Zinc** | **12.7** | --- | 4.00 | ug/L | 1 | 10/30/19 20:24 | EPA 6020A (Diss) | |
| **MW-4-34 (A9J1033-04)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| **Arsenic** | **8.01** | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | Q-42 |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| **Nickel** | **1.59** | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | 10/30/19 20:28 | EPA 6020A (Diss) | |
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| **Arsenic** | **5.63** | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |

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## ANALYTICAL SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-5-35 (A9J1033-05)** | | | | **Matrix: Water** | | | | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| **Nickel** | **3.65** | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| **Zinc** | **10.3** | --- | 4.00 | ug/L | 1 | 10/30/19 20:42 | EPA 6020A (Diss) | |
| **MW-6-30 (A9J1033-06)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Arsenic | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| **Copper** | **1.23** | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| **Zinc** | **10.7** | --- | 4.00 | ug/L | 1 | 10/30/19 20:56 | EPA 6020A (Diss) | |
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | | | |
| Batch: 9101755 | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| **Arsenic** | **3.01** | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |

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Philip Nerenberg

Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## ANALYTICAL SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Sample Result | Detection Limit | Reporting Limit | Units | Dilution | Date Analyzed | Method Ref. | Notes |
|---|---|---|---|---|---|---|---|---|
| **MW-3-35-DUP (A9J1033-07)** | | | | **Matrix: Water** | | | | |
| Copper | ND | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Lead | ND | --- | 0.200 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| **Nickel** | **4.14** | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Silver | ND | --- | 0.200 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |
| **Zinc** | **16.4** | --- | 4.00 | ug/L | 1 | 10/30/19 21:01 | EPA 6020A (Diss) | |

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101761 - EPA 3510C (Fuels/Acid Ext.)** | | | | | | | **Water** | | | | | |
| **Blank (9101761-BLK1)** | | | Prepared: 10/30/19 12:57 | | Analyzed: 10/31/19 07:20 | | | | | | | |
| **NWTPH-Dx** | | | | | | | | | | | | |
| Diesel | ND | --- | 0.182 | mg/L | 1 | --- | --- | --- | --- | --- | --- | |
| Oil | ND | --- | 0.364 | mg/L | 1 | --- | --- | --- | --- | --- | --- | |
| *Surr: o-Terphenyl (Surr)* | | *Recovery: 110 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| **LCS (9101761-BS1)** | | | Prepared: 10/30/19 12:57 | | Analyzed: 10/31/19 07:40 | | | | | | | |
| **NWTPH-Dx** | | | | | | | | | | | | |
| Diesel | 1.03 | --- | 0.200 | mg/L | 1 | 1.25 | --- | 82 | 58-115% | --- | --- | |
| *Surr: o-Terphenyl (Surr)* | | *Recovery: 108 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| **LCS Dup (9101761-BSD1)** | | | Prepared: 10/30/19 12:57 | | Analyzed: 10/31/19 08:00 | | | | | | | **Q-19** |
| **NWTPH-Dx** | | | | | | | | | | | | |
| Diesel | 1.17 | --- | 0.200 | mg/L | 1 | 1.25 | --- | 94 | 58-115% | 13 | 20% | |
| *Surr: o-Terphenyl (Surr)* | | *Recovery: 108 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | | | Water | | | |
| **Blank (9101746-BLK1)** | | | Prepared: 10/30/19 08:00 | | Analyzed: 10/30/19 11:15 | | | | | | | |
| **NWTPH-Gx (MS)** | | | | | | | | | | | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | --- | --- | --- | --- | --- | --- | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery:* | *103 %* | *Limits:* | *50-150 %* | | *Dilution:* | *1x* | | | | |
| *1,4-Difluorobenzene (Sur)* | | | *106 %* | | *50-150 %* | | | *"* | | | | |
| **LCS (9101746-BS2)** | | | Prepared: 10/30/19 08:00 | | Analyzed: 10/30/19 10:48 | | | | | | | |
| **NWTPH-Gx (MS)** | | | | | | | | | | | | |
| Gasoline Range Organics | 0.486 | --- | 0.100 | mg/L | 1 | 0.500 | --- | 97 | 80-120% | --- | --- | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery:* | *100 %* | *Limits:* | *50-150 %* | | *Dilution:* | *1x* | | | | |
| *1,4-Difluorobenzene (Sur)* | | | *99 %* | | *50-150 %* | | | *"* | | | | |
| **Duplicate (9101746-DUP1)** | | | Prepared: 10/30/19 11:16 | | Analyzed: 10/30/19 13:57 | | | | | | | |
| **QC Source Sample: MW-3-35 (A9J1033-03)** | | | | | | | | | | | | |
| **NWTPH-Gx (MS)** | | | | | | | | | | | | |
| Gasoline Range Organics | ND | --- | 0.500 | mg/L | 5 | --- | 0.320 | --- | --- | *** | 30% | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery:* | *105 %* | *Limits:* | *50-150 %* | | *Dilution:* | *1x* | | | | |
| *1,4-Difluorobenzene (Sur)* | | | *105 %* | | *50-150 %* | | | *"* | | | | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101792-BLK1)** | | | Prepared: 10/31/19 08:50 | | Analyzed: 10/31/19 11:25 | | | | | | | |
| NWTPH-Gx (MS) | | | | | | | | | | | | |
| Gasoline Range Organics | ND | --- | 0.100 | mg/L | 1 | --- | --- | --- | --- | --- | --- | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery: 92 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| *1,4-Difluorobenzene (Sur)* | | *102 %* | *50-150 %* | | *"* | | | | | | | |
| **LCS (9101792-BS2)** | | | Prepared: 10/31/19 08:50 | | Analyzed: 10/31/19 10:58 | | | | | | | |
| NWTPH-Gx (MS) | | | | | | | | | | | | |
| Gasoline Range Organics | 0.464 | --- | 0.100 | mg/L | 1 | 0.500 | --- | 93 | 80-120% | --- | --- | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery: 96 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| *1,4-Difluorobenzene (Sur)* | | *101 %* | *50-150 %* | | *"* | | | | | | | |
| **Duplicate (9101792-DUP1)** | | | Prepared: 10/31/19 11:05 | | Analyzed: 10/31/19 20:30 | | | | | | | |
| QC Source Sample: Non-SDG (A9J1093-06) | | | | | | | | | | | | |
| Gasoline Range Organics | ND | --- | 5.00 | mg/L | 50 | --- | ND | --- | --- | --- | 30% | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery: 93 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| *1,4-Difluorobenzene (Sur)* | | *101 %* | *50-150 %* | | *"* | | | | | | | |
| **Duplicate (9101792-DUP2)** | | | Prepared: 10/31/19 11:05 | | Analyzed: 10/31/19 23:37 | | | | | | | **T-02** |
| QC Source Sample: Non-SDG (A9J1079-04) | | | | | | | | | | | | |
| Gasoline Range Organics | ND | --- | 1.00 | mg/L | 10 | --- | ND | --- | --- | --- | 30% | |
| *Surr: 4-Bromofluorobenzene (Sur)* | | *Recovery: 95 %* | *Limits: 50-150 %* | | *Dilution: 1x* | | | | | | | |
| *1,4-Difluorobenzene (Sur)* | | *103 %* | *50-150 %* | | *"* | | | | | | | |

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101746-BLK1)** | | | Prepared: 10/30/19 08:00 | | Analyzed: 10/30/19 11:15 | | | | | | | |
| EPA 8260C | | | | | | | | | | | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101746-BLK1)** | | | Prepared: 10/30/19 08:00 | | Analyzed: 10/30/19 11:15 | | | | | | | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Methylene chloride | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Xylenes, total | ND | --- | 1.50 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101746-BLK1)** | | | Prepared: 10/30/19 08:00 Analyzed: 10/30/19 11:15 | | | | | | | | | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 104 %* | *Limits: 80-120 %* | | | | *Dilution: 1x* | | | | |
| *Toluene-d8 (Surr)* | | | *100 %* | *80-120 %* | | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *97 %* | *80-120 %* | | | | *"* | | | | |
| **LCS (9101746-BS1)** | | | Prepared: 10/30/19 08:00 Analyzed: 10/30/19 10:21 | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | 38.6 | --- | 20.0 | ug/L | 1 | 40.0 | --- | 97 | 80-120% | --- | --- | |
| Acrylonitrile | 21.0 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| Benzene | 21.4 | --- | 0.200 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Bromobenzene | 20.7 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| Bromochloromethane | 21.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Bromodichloromethane | 21.5 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| Bromoform | 19.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 97 | 80-120% | --- | --- | |
| Bromomethane | 19.0 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 95 | 80-120% | --- | --- | |
| 2-Butanone (MEK) | 43.2 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 108 | 80-120% | --- | --- | |
| n-Butylbenzene | 23.6 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 118 | 80-120% | --- | --- | |
| sec-Butylbenzene | 22.1 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 111 | 80-120% | --- | --- | |
| tert-Butylbenzene | 22.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 112 | 80-120% | --- | --- | |
| Carbon disulfide | 21.4 | --- | 10.0 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Carbon tetrachloride | 23.1 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 116 | 80-120% | --- | --- | |
| Chlorobenzene | 20.7 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| Chloroethane | 20.1 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| Chloroform | 21.2 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| Chloromethane | 20.6 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 2-Chlorotoluene | 21.8 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 109 | 80-120% | --- | --- | |
| 4-Chlorotoluene | 22.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 112 | 80-120% | --- | --- | |
| Dibromochloromethane | 20.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 1,2-Dibromo-3-chloropropane | 20.0 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2-Dibromoethane (EDB) | 21.6 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| Dibromomethane | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| 1,2-Dichlorobenzene | 21.5 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| 1,3-Dichlorobenzene | 21.7 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 109 | 80-120% | --- | --- | |
| 1,4-Dichlorobenzene | 19.5 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 98 | 80-120% | --- | --- | |
| Dichlorodifluoromethane | 21.8 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 109 | 80-120% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **LCS (9101746-BS1)** | | | Prepared: 10/30/19 08:00 | | Analyzed: 10/30/19 10:21 | | | | | | | |
| 1,1-Dichloroethane | 20.6 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 1,2-Dichloroethane (EDC) | 20.8 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| 1,1-Dichloroethene | 20.9 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| cis-1,2-Dichloroethene | 21.5 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| trans-1,2-Dichloroethene | 21.2 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| 1,2-Dichloropropane | 20.6 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 1,3-Dichloropropane | 20.9 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| 2,2-Dichloropropane | 25.0 | --- | 1.00 | ug/L | 1 | 20.0 | --- | **125** | **80-120%** | --- | --- | Q-56 |
| 1,1-Dichloropropene | 23.6 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 118 | 80-120% | --- | --- | |
| cis-1,3-Dichloropropene | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| trans-1,3-Dichloropropene | 23.2 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 116 | 80-120% | --- | --- | |
| Ethylbenzene | 21.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Hexachlorobutadiene | 22.6 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 113 | 80-120% | --- | --- | |
| 2-Hexanone | 43.3 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 108 | 80-120% | --- | --- | |
| Isopropylbenzene | 22.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 112 | 80-120% | --- | --- | |
| 4-Isopropyltoluene | 22.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 112 | 80-120% | --- | --- | |
| Methylene chloride | 22.1 | --- | 10.0 | ug/L | 1 | 20.0 | --- | 110 | 80-120% | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | 42.9 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 107 | 80-120% | --- | --- | |
| Methyl tert-butyl ether (MTBE) | 22.5 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 113 | 80-120% | --- | --- | |
| Naphthalene | 20.7 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| n-Propylbenzene | 21.5 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| Styrene | 21.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| 1,1,1,2-Tetrachloroethane | 21.5 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| 1,1,2,2-Tetrachloroethane | 20.2 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| Tetrachloroethene (PCE) | 21.2 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| Toluene | 20.0 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2,3-Trichlorobenzene | 23.6 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 118 | 80-120% | --- | --- | |
| 1,2,4-Trichlorobenzene | 22.9 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 114 | 80-120% | --- | --- | |
| 1,1,1-Trichloroethane | 21.9 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 110 | 80-120% | --- | --- | |
| 1,1,2-Trichloroethane | 20.9 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| Trichloroethene (TCE) | 20.5 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Trichlorofluoromethane | 21.6 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| 1,2,3-Trichloropropane | 20.0 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2,4-Trimethylbenzene | 22.6 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 113 | 80-120% | --- | --- | |

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Philip Nerenberg, Lab Director

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**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **LCS (9101746-BS1)** | | | Prepared: 10/30/19 08:00 Analyzed: 10/30/19 10:21 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | 22.9 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 115 | 80-120% | --- | --- | |
| Vinyl chloride | 21.4 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| m,p-Xylene | 45.7 | --- | 1.00 | ug/L | 1 | 40.0 | --- | 114 | 80-120% | --- | --- | |
| o-Xylene | 23.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 117 | 80-120% | --- | --- | |
| Xylenes, total | 69.2 | --- | 1.50 | ug/L | 1 | 60.0 | --- | 115 | 80-120% | --- | --- | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | *Recovery: 99 %* | | *Limits: 80-120 %* | | | *Dilution: 1x* | | | | | |
| *Toluene-d8 (Surr)* | | *99 %* | | *80-120 %* | | | *"* | | | | | |
| *4-Bromofluorobenzene (Surr)* | | *99 %* | | *80-120 %* | | | *"* | | | | | |
| **Duplicate (9101746-DUP1)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 13:57 | | | | | | | | | |
| **QC Source Sample: MW-3-35 (A9J1033-03)** | | | | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | ND | --- | 100 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Acrylonitrile | ND | --- | 10.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Benzene | ND | --- | 1.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Bromobenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Bromochloromethane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Bromodichloromethane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Bromoform | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Bromomethane | ND | --- | 25.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 2-Butanone (MEK) | ND | --- | 50.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| n-Butylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| sec-Butylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| tert-Butylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Carbon disulfide | ND | --- | 50.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Carbon tetrachloride | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Chlorobenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Chloroethane | ND | --- | 25.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Chloroform | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Chloromethane | ND | --- | 25.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 2-Chlorotoluene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 4-Chlorotoluene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Dibromochloromethane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 25.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |

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Philip Nerenberg, Lab Director

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**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101746-DUP1)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 13:57 | | | | | | | | | |
| **QC Source Sample: MW-3-35 (A9J1033-03)** | | | | | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Dibromomethane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichlorobenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,3-Dichlorobenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,4-Dichlorobenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Dichlorodifluoromethane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethane | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloroethane (EDC) | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethene | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| cis-1,2-Dichloroethene | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| trans-1,2-Dichloroethene | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloropropane | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,3-Dichloropropane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 2,2-Dichloropropane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloropropene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| cis-1,3-Dichloropropene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| trans-1,3-Dichloropropene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Ethylbenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Hexachlorobutadiene | ND | --- | 25.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 2-Hexanone | ND | --- | 50.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Isopropylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 4-Isopropyltoluene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Methylene chloride | ND | --- | 50.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 50.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Naphthalene | **77.0** | --- | 10.0 | ug/L | 5 | --- | 73.8 | --- | --- | 4 | 30% | |
| n-Propylbenzene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Styrene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Tetrachloroethene (PCE) | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Toluene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichlorobenzene | ND | --- | 10.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101746-DUP1)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 13:57 | | | | | | | | | |
| **QC Source Sample: MW-3-35 (A9J1033-03)** | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | --- | 10.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1-Trichloroethane | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2-Trichloroethane | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Trichloroethene (TCE) | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Trichlorofluoromethane | ND | --- | 10.0 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichloropropane | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,2,4-Trimethylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| 1,3,5-Trimethylbenzene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Vinyl chloride | ND | --- | 2.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| m,p-Xylene | ND | --- | 5.00 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| o-Xylene | ND | --- | 2.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| Xylenes, total | ND | --- | 7.50 | ug/L | 5 | --- | ND | --- | --- | --- | 30% | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *104 %* | *Limits:* | *80-120 %* | | *Dilution:* | *1x* | | | | |
| *Toluene-d8 (Surr)* | | | *100 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *98 %* | | *80-120 %* | | | *"* | | | | |
| **Matrix Spike (9101746-MS1)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 15:45 | | | | | | | | | |
| **QC Source Sample: MW-6-30 (A9J1033-06)** | | | | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | 41.4 | --- | 20.0 | ug/L | 1 | 40.0 | ND | 104 | 39-160% | --- | --- | |
| Acrylonitrile | 21.9 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 109 | 63-135% | --- | --- | |
| Benzene | 22.9 | --- | 0.200 | ug/L | 1 | 20.0 | ND | 114 | 79-120% | --- | --- | |
| Bromobenzene | 22.1 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 110 | 80-120% | --- | --- | |
| Bromochloromethane | 22.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 111 | 78-123% | --- | --- | |
| Bromodichloromethane | 22.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 113 | 79-125% | --- | --- | |
| Bromoform | 20.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 101 | 66-130% | --- | --- | |
| Bromomethane | 20.0 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 100 | 53-141% | --- | --- | |
| 2-Butanone (MEK) | 45.0 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 112 | 56-143% | --- | --- | |
| n-Butylbenzene | 24.8 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 124 | 75-128% | --- | --- | |
| sec-Butylbenzene | 23.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 117 | 77-126% | --- | --- | |
| tert-Butylbenzene | 23.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 118 | 78-124% | --- | --- | |
| Carbon disulfide | 22.7 | --- | 10.0 | ug/L | 1 | 20.0 | ND | 114 | 64-133% | --- | --- | |
| Carbon tetrachloride | 24.8 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 124 | 72-136% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101746-MS1)** | | | Prepared: 10/30/19 11:16 | | Analyzed: 10/30/19 15:45 | | | | | | | |
| **QC Source Sample: MW-6-30 (A9J1033-06)** | | | | | | | | | | | | |
| Chlorobenzene | 21.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 109 | 80-120% | --- | --- | |
| Chloroethane | 22.8 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 114 | 60-138% | --- | --- | |
| Chloroform | 22.3 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 112 | 79-124% | --- | --- | |
| Chloromethane | 21.2 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 106 | 50-139% | --- | --- | |
| 2-Chlorotoluene | 23.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 116 | 79-122% | --- | --- | |
| 4-Chlorotoluene | 23.5 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 117 | 78-122% | --- | --- | |
| Dibromochloromethane | 21.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 107 | 74-126% | --- | --- | |
| 1,2-Dibromo-3-chloropropane | 21.4 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 107 | 62-128% | --- | --- | |
| 1,2-Dibromoethane (EDB) | 22.8 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 114 | 77-121% | --- | --- | |
| Dibromomethane | 21.8 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 109 | 79-123% | --- | --- | |
| 1,2-Dichlorobenzene | 22.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 113 | 80-120% | --- | --- | |
| 1,3-Dichlorobenzene | 22.9 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 115 | 80-120% | --- | --- | |
| 1,4-Dichlorobenzene | 20.5 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 102 | 79-120% | --- | --- | |
| Dichlorodifluoromethane | 23.1 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 115 | 32-152% | --- | --- | |
| 1,1-Dichloroethane | 21.9 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 109 | 77-125% | --- | --- | |
| 1,2-Dichloroethane (EDC) | 21.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 109 | 73-128% | --- | --- | |
| 1,1-Dichloroethene | 22.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 114 | 71-131% | --- | --- | |
| cis-1,2-Dichloroethene | 22.9 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 114 | 78-123% | --- | --- | |
| trans-1,2-Dichloroethene | 22.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 114 | 75-124% | --- | --- | |
| 1,2-Dichloropropane | 21.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 108 | 78-122% | --- | --- | |
| 1,3-Dichloropropane | 22.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 111 | 80-120% | --- | --- | |
| 2,2-Dichloropropane | 24.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 122 | 60-139% | --- | --- | Q-54b |
| 1,1-Dichloropropene | 25.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | **126** | **79-125%** | --- | --- | Q-01 |
| cis-1,3-Dichloropropene | 20.5 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 103 | 75-124% | --- | --- | |
| trans-1,3-Dichloropropene | 23.7 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 119 | 73-127% | --- | --- | |
| Ethylbenzene | 22.6 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 113 | 79-121% | --- | --- | |
| Hexachlorobutadiene | 23.9 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 119 | 66-134% | --- | --- | |
| 2-Hexanone | 45.6 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 114 | 57-139% | --- | --- | |
| Isopropylbenzene | 24.1 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 120 | 72-131% | --- | --- | |
| 4-Isopropyltoluene | 23.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 118 | 77-127% | --- | --- | |
| Methylene chloride | 22.0 | --- | 10.0 | ug/L | 1 | 20.0 | ND | 110 | 74-124% | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | 45.4 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 114 | 67-130% | --- | --- | |
| Methyl tert-butyl ether (MTBE) | 23.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 117 | 71-124% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101746-MS1)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 15:45 | | | | | | | | | |
| **QC Source Sample: MW-6-30 (A9J1033-06)** | | | | | | | | | | | | |
| Naphthalene | 22.7 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 114 | 61-128% | --- | --- | |
| n-Propylbenzene | 22.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 114 | 76-126% | --- | --- | |
| Styrene | 22.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 113 | 78-123% | --- | --- | |
| 1,1,1,2-Tetrachloroethane | 22.9 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 115 | 78-124% | --- | --- | |
| 1,1,2,2-Tetrachloroethane | 21.1 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 106 | 71-121% | --- | --- | |
| Tetrachloroethene (PCE) | 22.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 114 | 74-129% | --- | --- | |
| Toluene | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 106 | 80-121% | --- | --- | |
| 1,2,3-Trichlorobenzene | 25.4 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 127 | 69-129% | --- | --- | |
| 1,2,4-Trichlorobenzene | 24.7 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 124 | 69-130% | --- | --- | |
| 1,1,1-Trichloroethane | 23.6 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 118 | 74-131% | --- | --- | |
| 1,1,2-Trichloroethane | 22.2 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 111 | 80-120% | --- | --- | |
| Trichloroethene (TCE) | 21.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 109 | 79-123% | --- | --- | |
| Trichlorofluoromethane | 23.2 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 116 | 65-141% | --- | --- | |
| 1,2,3-Trichloropropane | 20.8 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 104 | 73-122% | --- | --- | |
| 1,2,4-Trimethylbenzene | 23.9 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 119 | 76-124% | --- | --- | |
| 1,3,5-Trimethylbenzene | 24.0 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 120 | 75-124% | --- | --- | |
| Vinyl chloride | 23.1 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 115 | 58-137% | --- | --- | |
| m,p-Xylene | 48.1 | --- | 1.00 | ug/L | 1 | 40.0 | ND | 120 | 80-121% | --- | --- | |
| o-Xylene | 24.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | **123** | **78-122%** | --- | --- | Q-01 |
| Xylenes, total | 72.8 | --- | 1.50 | ug/L | 1 | 60.0 | ND | 121 | 79-121% | --- | --- | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 98 %* | | *Limits: 80-120 %* | | | *Dilution: 1x* | | | | |
| *Toluene-d8 (Surr)* | | | *98 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *99 %* | | *80-120 %* | | | *"* | | | | |
| **Matrix Spike (9101746-MS2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 20:41 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | 893 | --- | 400 | ug/L | 20 | 800 | ND | 112 | 39-160% | --- | --- | |
| Acrylonitrile | 404 | --- | 40.0 | ug/L | 20 | 400 | ND | 101 | 63-135% | --- | --- | |
| Benzene | 421 | --- | 4.00 | ug/L | 20 | 400 | ND | 105 | 79-120% | --- | --- | |
| Bromobenzene | 407 | --- | 10.0 | ug/L | 20 | 400 | ND | 102 | 80-120% | --- | --- | |
| Bromochloromethane | 415 | --- | 20.0 | ug/L | 20 | 400 | ND | 104 | 78-123% | --- | --- | |
| Bromodichloromethane | 417 | --- | 20.0 | ug/L | 20 | 400 | ND | 104 | 79-125% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101746-MS2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 20:41 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| Bromoform | 375 | --- | 20.0 | ug/L | 20 | 400 | ND | 94 | 66-130% | --- | --- | |
| Bromomethane | 363 | --- | 100 | ug/L | 20 | 400 | ND | 91 | 53-141% | --- | --- | |
| 2-Butanone (MEK) | 830 | --- | 200 | ug/L | 20 | 800 | ND | 104 | 56-143% | --- | --- | |
| n-Butylbenzene | 456 | --- | 20.0 | ug/L | 20 | 400 | ND | 114 | 75-128% | --- | --- | |
| sec-Butylbenzene | 431 | --- | 20.0 | ug/L | 20 | 400 | ND | 108 | 77-126% | --- | --- | |
| tert-Butylbenzene | 433 | --- | 20.0 | ug/L | 20 | 400 | ND | 108 | 78-124% | --- | --- | |
| Carbon disulfide | 416 | --- | 200 | ug/L | 20 | 400 | ND | 104 | 64-133% | --- | --- | |
| Carbon tetrachloride | 452 | --- | 20.0 | ug/L | 20 | 400 | ND | 113 | 72-136% | --- | --- | |
| Chlorobenzene | 401 | --- | 10.0 | ug/L | 20 | 400 | ND | 100 | 80-120% | --- | --- | |
| Chloroethane | 711 | --- | 100 | ug/L | 20 | 400 | 329 | 96 | 60-138% | --- | --- | |
| Chloroform | 414 | --- | 20.0 | ug/L | 20 | 400 | ND | 104 | 79-124% | --- | --- | |
| Chloromethane | 430 | --- | 100 | ug/L | 20 | 400 | ND | 108 | 50-139% | --- | --- | |
| 2-Chlorotoluene | 427 | --- | 20.0 | ug/L | 20 | 400 | ND | 107 | 79-122% | --- | --- | |
| 4-Chlorotoluene | 432 | --- | 20.0 | ug/L | 20 | 400 | ND | 108 | 78-122% | --- | --- | |
| Dibromochloromethane | 397 | --- | 20.0 | ug/L | 20 | 400 | ND | 99 | 74-126% | --- | --- | |
| 1,2-Dibromo-3-chloropropane | 391 | --- | 100 | ug/L | 20 | 400 | ND | 98 | 62-128% | --- | --- | |
| 1,2-Dibromoethane (EDB) | 421 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 77-121% | --- | --- | |
| Dibromomethane | 408 | --- | 20.0 | ug/L | 20 | 400 | ND | 102 | 79-123% | --- | --- | |
| 1,2-Dichlorobenzene | 421 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 80-120% | --- | --- | |
| 1,3-Dichlorobenzene | 420 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 80-120% | --- | --- | |
| 1,4-Dichlorobenzene | 383 | --- | 10.0 | ug/L | 20 | 400 | ND | 96 | 79-120% | --- | --- | |
| Dichlorodifluoromethane | 454 | --- | 20.0 | ug/L | 20 | 400 | 12.8 | 110 | 32-152% | --- | --- | |
| 1,1-Dichloroethane | 432 | --- | 8.00 | ug/L | 20 | 400 | 28.8 | 101 | 77-125% | --- | --- | |
| 1,2-Dichloroethane (EDC) | 405 | --- | 8.00 | ug/L | 20 | 400 | ND | 101 | 73-128% | --- | --- | |
| 1,1-Dichloroethene | 420 | --- | 8.00 | ug/L | 20 | 400 | ND | 105 | 71-131% | --- | --- | |
| cis-1,2-Dichloroethene | 422 | --- | 8.00 | ug/L | 20 | 400 | ND | 106 | 78-123% | --- | --- | |
| trans-1,2-Dichloroethene | 416 | --- | 8.00 | ug/L | 20 | 400 | ND | 104 | 75-124% | --- | --- | |
| 1,2-Dichloropropane | 400 | --- | 10.0 | ug/L | 20 | 400 | ND | 100 | 78-122% | --- | --- | |
| 1,3-Dichloropropane | 412 | --- | 20.0 | ug/L | 20 | 400 | ND | 103 | 80-120% | --- | --- | |
| 2,2-Dichloropropane | 420 | --- | 20.0 | ug/L | 20 | 400 | ND | 105 | 60-139% | --- | --- | Q-54b |
| 1,1-Dichloropropene | 462 | --- | 20.0 | ug/L | 20 | 400 | ND | 116 | 79-125% | --- | --- | |
| cis-1,3-Dichloropropene | 371 | --- | 20.0 | ug/L | 20 | 400 | ND | 93 | 75-124% | --- | --- | |
| trans-1,3-Dichloropropene | 435 | --- | 20.0 | ug/L | 20 | 400 | ND | 109 | 73-127% | --- | --- | |

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Philip Nerenberg, Lab Director

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101746-MS2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 20:41 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| Ethylbenzene | 417 | --- | 10.0 | ug/L | 20 | 400 | ND | 104 | 79-121% | --- | --- | |
| Hexachlorobutadiene | 443 | --- | 100 | ug/L | 20 | 400 | ND | 111 | 66-134% | --- | --- | |
| 2-Hexanone | 840 | --- | 200 | ug/L | 20 | 800 | ND | 105 | 57-139% | --- | --- | |
| Isopropylbenzene | 440 | --- | 20.0 | ug/L | 20 | 400 | ND | 110 | 72-131% | --- | --- | |
| 4-Isopropyltoluene | 433 | --- | 20.0 | ug/L | 20 | 400 | ND | 108 | 77-127% | --- | --- | |
| Methylene chloride | 426 | --- | 200 | ug/L | 20 | 400 | ND | 106 | 74-124% | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | 829 | --- | 200 | ug/L | 20 | 800 | ND | 104 | 67-130% | --- | --- | |
| Methyl tert-butyl ether (MTBE) | 438 | --- | 20.0 | ug/L | 20 | 400 | ND | 109 | 71-124% | --- | --- | |
| Naphthalene | 412 | --- | 40.0 | ug/L | 20 | 400 | ND | 103 | 61-128% | --- | --- | |
| n-Propylbenzene | 419 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 76-126% | --- | --- | |
| Styrene | 416 | --- | 20.0 | ug/L | 20 | 400 | ND | 104 | 78-123% | --- | --- | |
| 1,1,1,2-Tetrachloroethane | 426 | --- | 8.00 | ug/L | 20 | 400 | ND | 106 | 78-124% | --- | --- | |
| 1,1,2,2-Tetrachloroethane | 402 | --- | 10.0 | ug/L | 20 | 400 | ND | 100 | 71-121% | --- | --- | |
| Tetrachloroethene (PCE) | 416 | --- | 8.00 | ug/L | 20 | 400 | ND | 104 | 74-129% | --- | --- | |
| Toluene | 395 | --- | 20.0 | ug/L | 20 | 400 | ND | 99 | 80-121% | --- | --- | |
| 1,2,3-Trichlorobenzene | 463 | --- | 40.0 | ug/L | 20 | 400 | ND | 116 | 69-129% | --- | --- | |
| 1,2,4-Trichlorobenzene | 451 | --- | 40.0 | ug/L | 20 | 400 | ND | 113 | 69-130% | --- | --- | |
| 1,1,1-Trichloroethane | 436 | --- | 8.00 | ug/L | 20 | 400 | ND | 109 | 74-131% | --- | --- | |
| 1,1,2-Trichloroethane | 412 | --- | 10.0 | ug/L | 20 | 400 | ND | 103 | 80-120% | --- | --- | |
| Trichloroethene (TCE) | 402 | --- | 8.00 | ug/L | 20 | 400 | ND | 100 | 79-123% | --- | --- | |
| Trichlorofluoromethane | 444 | --- | 40.0 | ug/L | 20 | 400 | ND | 111 | 65-141% | --- | --- | |
| 1,2,3-Trichloropropane | 399 | --- | 20.0 | ug/L | 20 | 400 | ND | 100 | 73-122% | --- | --- | |
| 1,2,4-Trimethylbenzene | 443 | --- | 20.0 | ug/L | 20 | 400 | ND | 111 | 76-124% | --- | --- | |
| 1,3,5-Trimethylbenzene | 450 | --- | 20.0 | ug/L | 20 | 400 | ND | 113 | 75-124% | --- | --- | |
| Vinyl chloride | 427 | --- | 8.00 | ug/L | 20 | 400 | ND | 107 | 58-137% | --- | --- | |
| m,p-Xylene | 884 | --- | 20.0 | ug/L | 20 | 800 | ND | 111 | 80-121% | --- | --- | |
| o-Xylene | 451 | --- | 10.0 | ug/L | 20 | 400 | ND | 113 | 78-122% | --- | --- | |
| Xylenes, total | 1340 | --- | 30.0 | ug/L | 20 | 1200 | ND | 111 | 79-121% | --- | --- | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 98 %* | | *Limits: 80-120 %* | | | *Dilution: 1x* | | | | |
| *Toluene-d8 (Surr)* | | | *98 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *99 %* | | *80-120 %* | | | *"* | | | | |
| **Matrix Spike Dup (9101746-MSD2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 21:08 | | | | | | | | | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike Dup (9101746-MSD2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 21:08 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| Acetone | 971 | --- | 400 | ug/L | 20 | 800 | ND | 121 | 39-160% | 8 | 30% | |
| Acrylonitrile | 437 | --- | 40.0 | ug/L | 20 | 400 | ND | 109 | 63-135% | 8 | 30% | |
| Benzene | 424 | --- | 4.00 | ug/L | 20 | 400 | ND | 106 | 79-120% | 0.7 | 30% | |
| Bromobenzene | 404 | --- | 10.0 | ug/L | 20 | 400 | ND | 101 | 80-120% | 0.7 | 30% | |
| Bromochloromethane | 428 | --- | 20.0 | ug/L | 20 | 400 | ND | 107 | 78-123% | 3 | 30% | |
| Bromodichloromethane | 424 | --- | 20.0 | ug/L | 20 | 400 | ND | 106 | 79-125% | 2 | 30% | |
| Bromoform | 378 | --- | 20.0 | ug/L | 20 | 400 | ND | 94 | 66-130% | 0.7 | 30% | |
| Bromomethane | 363 | --- | 100 | ug/L | 20 | 400 | ND | 91 | 53-141% | 0.06 | 30% | |
| 2-Butanone (MEK) | 920 | --- | 200 | ug/L | 20 | 800 | ND | 115 | 56-143% | 10 | 30% | |
| n-Butylbenzene | 467 | --- | 20.0 | ug/L | 20 | 400 | ND | 117 | 75-128% | 2 | 30% | |
| sec-Butylbenzene | 440 | --- | 20.0 | ug/L | 20 | 400 | ND | 110 | 77-126% | 2 | 30% | |
| tert-Butylbenzene | 445 | --- | 20.0 | ug/L | 20 | 400 | ND | 111 | 78-124% | 3 | 30% | |
| Carbon disulfide | 426 | --- | 200 | ug/L | 20 | 400 | ND | 106 | 64-133% | 2 | 30% | |
| Carbon tetrachloride | 450 | --- | 20.0 | ug/L | 20 | 400 | ND | 113 | 72-136% | 0.4 | 30% | |
| Chlorobenzene | 403 | --- | 10.0 | ug/L | 20 | 400 | ND | 101 | 80-120% | 0.5 | 30% | |
| Chloroethane | 738 | --- | 100 | ug/L | 20 | 400 | 329 | 102 | 60-138% | 4 | 30% | |
| Chloroform | 421 | --- | 20.0 | ug/L | 20 | 400 | ND | 105 | 79-124% | 2 | 30% | |
| Chloromethane | 429 | --- | 100 | ug/L | 20 | 400 | ND | 107 | 50-139% | 0.3 | 30% | |
| 2-Chlorotoluene | 431 | --- | 20.0 | ug/L | 20 | 400 | ND | 108 | 79-122% | 0.8 | 30% | |
| 4-Chlorotoluene | 449 | --- | 20.0 | ug/L | 20 | 400 | ND | 112 | 78-122% | 4 | 30% | |
| Dibromochloromethane | 401 | --- | 20.0 | ug/L | 20 | 400 | ND | 100 | 74-126% | 0.9 | 30% | |
| 1,2-Dibromo-3-chloropropane | 413 | --- | 100 | ug/L | 20 | 400 | ND | 103 | 62-128% | 5 | 30% | |
| 1,2-Dibromoethane (EDB) | 435 | --- | 10.0 | ug/L | 20 | 400 | ND | 109 | 77-121% | 3 | 30% | |
| Dibromomethane | 415 | --- | 20.0 | ug/L | 20 | 400 | ND | 104 | 79-123% | 2 | 30% | |
| 1,2-Dichlorobenzene | 423 | --- | 10.0 | ug/L | 20 | 400 | ND | 106 | 80-120% | 0.5 | 30% | |
| 1,3-Dichlorobenzene | 428 | --- | 10.0 | ug/L | 20 | 400 | ND | 107 | 80-120% | 2 | 30% | |
| 1,4-Dichlorobenzene | 383 | --- | 10.0 | ug/L | 20 | 400 | ND | 96 | 79-120% | 0 | 30% | |
| Dichlorodifluoromethane | 462 | --- | 20.0 | ug/L | 20 | 400 | 12.8 | 112 | 32-152% | 2 | 30% | |
| 1,1-Dichloroethane | 442 | --- | 8.00 | ug/L | 20 | 400 | 28.8 | 103 | 77-125% | 2 | 30% | |
| 1,2-Dichloroethane (EDC) | 420 | --- | 8.00 | ug/L | 20 | 400 | ND | 105 | 73-128% | 4 | 30% | |
| 1,1-Dichloroethene | 430 | --- | 8.00 | ug/L | 20 | 400 | ND | 107 | 71-131% | 2 | 30% | |
| cis-1,2-Dichloroethene | 436 | --- | 8.00 | ug/L | 20 | 400 | ND | 109 | 78-123% | 3 | 30% | |
| trans-1,2-Dichloroethene | 425 | --- | 8.00 | ug/L | 20 | 400 | ND | 106 | 75-124% | 2 | 30% | |

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Philip Nerenberg, Lab Director

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**EPA ID: OR01039**

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike Dup (9101746-MSD2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 21:08 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| 1,2-Dichloropropane | 408 | --- | 10.0 | ug/L | 20 | 400 | ND | 102 | 78-122% | 2 | 30% | |
| 1,3-Dichloropropane | 425 | --- | 20.0 | ug/L | 20 | 400 | ND | 106 | 80-120% | 3 | 30% | |
| 2,2-Dichloropropane | 424 | --- | 20.0 | ug/L | 20 | 400 | ND | 106 | 60-139% | 1 | 30% | Q-54b |
| 1,1-Dichloropropene | 468 | --- | 20.0 | ug/L | 20 | 400 | ND | 117 | 79-125% | 1 | 30% | |
| cis-1,3-Dichloropropene | 384 | --- | 20.0 | ug/L | 20 | 400 | ND | 96 | 75-124% | 3 | 30% | |
| trans-1,3-Dichloropropene | 451 | --- | 20.0 | ug/L | 20 | 400 | ND | 113 | 73-127% | 4 | 30% | |
| Ethylbenzene | 422 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 79-121% | 1 | 30% | |
| Hexachlorobutadiene | 424 | --- | 100 | ug/L | 20 | 400 | ND | 106 | 66-134% | 4 | 30% | |
| 2-Hexanone | 924 | --- | 200 | ug/L | 20 | 800 | ND | 116 | 57-139% | 10 | 30% | |
| Isopropylbenzene | 445 | --- | 20.0 | ug/L | 20 | 400 | ND | 111 | 72-131% | 1 | 30% | |
| 4-Isopropyltoluene | 438 | --- | 20.0 | ug/L | 20 | 400 | ND | 110 | 77-127% | 1 | 30% | |
| Methylene chloride | 430 | --- | 200 | ug/L | 20 | 400 | ND | 107 | 74-124% | 0.9 | 30% | |
| 4-Methyl-2-pentanone (MiBK) | 913 | --- | 200 | ug/L | 20 | 800 | ND | 114 | 67-130% | 10 | 30% | |
| Methyl tert-butyl ether (MTBE) | 452 | --- | 20.0 | ug/L | 20 | 400 | ND | 113 | 71-124% | 3 | 30% | |
| Naphthalene | 424 | --- | 40.0 | ug/L | 20 | 400 | ND | 106 | 61-128% | 3 | 30% | |
| n-Propylbenzene | 427 | --- | 10.0 | ug/L | 20 | 400 | ND | 107 | 76-126% | 2 | 30% | |
| Styrene | 427 | --- | 20.0 | ug/L | 20 | 400 | ND | 107 | 78-123% | 3 | 30% | |
| 1,1,1,2-Tetrachloroethane | 426 | --- | 8.00 | ug/L | 20 | 400 | ND | 106 | 78-124% | 0.05 | 30% | |
| 1,1,2,2-Tetrachloroethane | 419 | --- | 10.0 | ug/L | 20 | 400 | ND | 105 | 71-121% | 4 | 30% | |
| Tetrachloroethene (PCE) | 411 | --- | 8.00 | ug/L | 20 | 400 | ND | 103 | 74-129% | 1 | 30% | |
| Toluene | 396 | --- | 20.0 | ug/L | 20 | 400 | ND | 99 | 80-121% | 0.4 | 30% | |
| 1,2,3-Trichlorobenzene | 462 | --- | 40.0 | ug/L | 20 | 400 | ND | 116 | 69-129% | 0.2 | 30% | |
| 1,2,4-Trichlorobenzene | 458 | --- | 40.0 | ug/L | 20 | 400 | ND | 114 | 69-130% | 2 | 30% | |
| 1,1,1-Trichloroethane | 435 | --- | 8.00 | ug/L | 20 | 400 | ND | 109 | 74-131% | 0.1 | 30% | |
| 1,1,2-Trichloroethane | 424 | --- | 10.0 | ug/L | 20 | 400 | ND | 106 | 80-120% | 3 | 30% | |
| Trichloroethene (TCE) | 394 | --- | 8.00 | ug/L | 20 | 400 | ND | 98 | 79-123% | 2 | 30% | |
| Trichlorofluoromethane | 436 | --- | 40.0 | ug/L | 20 | 400 | ND | 109 | 65-141% | 2 | 30% | |
| 1,2,3-Trichloropropane | 395 | --- | 20.0 | ug/L | 20 | 400 | ND | 99 | 73-122% | 0.9 | 30% | |
| 1,2,4-Trimethylbenzene | 448 | --- | 20.0 | ug/L | 20 | 400 | ND | 112 | 76-124% | 1 | 30% | |
| 1,3,5-Trimethylbenzene | 455 | --- | 20.0 | ug/L | 20 | 400 | ND | 114 | 75-124% | 1 | 30% | |
| Vinyl chloride | 441 | --- | 8.00 | ug/L | 20 | 400 | ND | 110 | 58-137% | 3 | 30% | |
| m,p-Xylene | 906 | --- | 20.0 | ug/L | 20 | 800 | ND | 113 | 80-121% | 2 | 30% | |
| o-Xylene | 465 | --- | 10.0 | ug/L | 20 | 400 | ND | 116 | 78-122% | 3 | 30% | |

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Philip Nerenberg

Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

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**EPA ID: OR01039**

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101746 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike Dup (9101746-MSD2)** | | | Prepared: 10/30/19 11:16 Analyzed: 10/30/19 21:08 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J0946-01RE1)** | | | | | | | | | | | | |
| Xylenes, total | 1370 | --- | 30.0 | ug/L | 20 | 1200 | ND | 114 | 79-121% | 3 | 30% | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 97 %* | *Limits: 80-120 %* | | | *Dilution: 1x* | | | | | |
| *Toluene-d8 (Surr)* | | | *98 %* | *80-120 %* | | | *"* | | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *99 %* | *80-120 %* | | | *"* | | | | | |

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101792-BLK1)** | | | Prepared: 10/31/19 08:50 Analyzed: 10/31/19 11:25 | | | | | | | | | |
| EPA 8260C | | | | | | | | | | | | |
| Acetone | ND | --- | 20.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Acrylonitrile | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzene | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromochloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromodichloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromoform | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Bromomethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Butanone (MEK) | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| n-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| sec-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| tert-Butylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Carbon disulfide | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Carbon tetrachloride | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloroethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloroform | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chloromethane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Chlorotoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibromochloromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dibromoethane (EDB) | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibromomethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,4-Dichlorobenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dichlorodifluoromethane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2-Dichloroethane (EDC) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| cis-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| trans-1,2-Dichloroethene | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101792-BLK1)** | | | Prepared: 10/31/19 08:50 | | Analyzed: 10/31/19 11:25 | | | | | | | |
| 1,2-Dichloropropane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2,2-Dichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| cis-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| trans-1,3-Dichloropropene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Ethylbenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Hexachlorobutadiene | ND | --- | 5.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Hexanone | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Isopropylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Isopropyltoluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Methylene chloride | ND | --- | 3.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 10.0 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Naphthalene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| n-Propylbenzene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Styrene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Tetrachloroethene (PCE) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Toluene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,3-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,4-Trichlorobenzene | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,1-Trichloroethane | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,1,2-Trichloroethane | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Trichloroethene (TCE) | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Trichlorofluoromethane | ND | --- | 2.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,3-Trichloropropane | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,2,4-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1,3,5-Trimethylbenzene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Vinyl chloride | ND | --- | 0.400 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| m,p-Xylene | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| o-Xylene | ND | --- | 0.500 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |

*Surr: 1,4-Difluorobenzene (Surr)* *Recovery: 104 %* *Limits: 80-120 %* *Dilution: 1x*

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## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Blank (9101792-BLK1)** | | | Prepared: 10/31/19 08:50 Analyzed: 10/31/19 11:25 | | | | | | | | | |
| *Surr: Toluene-d8 (Surr)* | | | *Recovery: 104 %* | *Limits: 80-120 %* | | | | *Dilution: 1x* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *103 %* | *80-120 %* | | | | *"* | | | | |
| **LCS (9101792-BS1)** | | | Prepared: 10/31/19 08:50 Analyzed: 10/31/19 10:31 | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | 36.7 | --- | 20.0 | ug/L | 1 | 40.0 | --- | 92 | 80-120% | --- | --- | |
| Acrylonitrile | 21.6 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| Benzene | 20.9 | --- | 0.200 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| Bromobenzene | 20.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Bromochloromethane | 23.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 119 | 80-120% | --- | --- | |
| Bromodichloromethane | 21.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 108 | 80-120% | --- | --- | |
| Bromoform | 24.8 | --- | 1.00 | ug/L | 1 | 20.0 | --- | **124** | **80-120%** | --- | --- | Q-56 |
| Bromomethane | 26.3 | --- | 5.00 | ug/L | 1 | 20.0 | --- | **132** | **80-120%** | --- | --- | Q-56 |
| 2-Butanone (MEK) | 40.5 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 101 | 80-120% | --- | --- | |
| n-Butylbenzene | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| sec-Butylbenzene | 20.1 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| tert-Butylbenzene | 18.9 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 94 | 80-120% | --- | --- | |
| Carbon disulfide | 20.5 | --- | 10.0 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Carbon tetrachloride | 20.8 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| Chlorobenzene | 20.8 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| Chloroethane | 20.2 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| Chloroform | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| Chloromethane | 18.8 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 94 | 80-120% | --- | --- | |
| 2-Chlorotoluene | 19.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 99 | 80-120% | --- | --- | |
| 4-Chlorotoluene | 19.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 99 | 80-120% | --- | --- | |
| Dibromochloromethane | 25.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | **127** | **80-120%** | --- | --- | Q-56 |
| 1,2-Dibromo-3-chloropropane | 20.0 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2-Dibromoethane (EDB) | 20.5 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Dibromomethane | 22.1 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 111 | 80-120% | --- | --- | |
| 1,2-Dichlorobenzene | 20.3 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| 1,3-Dichlorobenzene | 20.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| 1,4-Dichlorobenzene | 20.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Dichlorodifluoromethane | 21.2 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 106 | 80-120% | --- | --- | |
| 1,1-Dichloroethane | 20.3 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **LCS (9101792-BS1)** | | | Prepared: 10/31/19 08:50 Analyzed: 10/31/19 10:31 | | | | | | | | | |
| 1,2-Dichloroethane (EDC) | 20.0 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,1-Dichloroethene | 20.6 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| cis-1,2-Dichloroethene | 20.8 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| trans-1,2-Dichloroethene | 21.1 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| 1,2-Dichloropropane | 21.0 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 105 | 80-120% | --- | --- | |
| 1,3-Dichloropropane | 20.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 2,2-Dichloropropane | 18.0 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 90 | 80-120% | --- | --- | |
| 1,1-Dichloropropene | 20.5 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| cis-1,3-Dichloropropene | 20.2 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| trans-1,3-Dichloropropene | 18.8 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 94 | 80-120% | --- | --- | |
| Ethylbenzene | 20.1 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| Hexachlorobutadiene | 19.5 | --- | 5.00 | ug/L | 1 | 20.0 | --- | 97 | 80-120% | --- | --- | |
| 2-Hexanone | 39.7 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 99 | 80-120% | --- | --- | |
| Isopropylbenzene | 20.4 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| 4-Isopropyltoluene | 20.6 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| Methylene chloride | 20.2 | --- | 3.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| 4-Methyl-2-pentanone (MiBK) | 40.6 | --- | 10.0 | ug/L | 1 | 40.0 | --- | 102 | 80-120% | --- | --- | |
| Methyl tert-butyl ether (MTBE) | 18.6 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 93 | 80-120% | --- | --- | |
| Naphthalene | 18.7 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 93 | 80-120% | --- | --- | |
| n-Propylbenzene | 19.9 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 99 | 80-120% | --- | --- | |
| Styrene | 20.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 104 | 80-120% | --- | --- | |
| 1,1,1,2-Tetrachloroethane | 21.9 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 109 | 80-120% | --- | --- | |
| 1,1,2,2-Tetrachloroethane | 20.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 102 | 80-120% | --- | --- | |
| Tetrachloroethene (PCE) | 21.4 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Toluene | 19.9 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2,3-Trichlorobenzene | 20.1 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| 1,2,4-Trichlorobenzene | 19.5 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 97 | 80-120% | --- | --- | |
| 1,1,1-Trichloroethane | 19.8 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 99 | 80-120% | --- | --- | |
| 1,1,2-Trichloroethane | 21.4 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| Trichloroethene (TCE) | 21.9 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 109 | 80-120% | --- | --- | |
| Trichlorofluoromethane | 22.9 | --- | 2.00 | ug/L | 1 | 20.0 | --- | 115 | 80-120% | --- | --- | |
| 1,2,3-Trichloropropane | 20.0 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 100 | 80-120% | --- | --- | |
| 1,2,4-Trimethylbenzene | 20.7 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 103 | 80-120% | --- | --- | |
| 1,3,5-Trimethylbenzene | 20.2 | --- | 1.00 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **LCS (9101792-BS1)** | | | Prepared: 10/31/19 08:50 Analyzed: 10/31/19 10:31 | | | | | | | | | |
| Vinyl chloride | 21.3 | --- | 0.400 | ug/L | 1 | 20.0 | --- | 107 | 80-120% | --- | --- | |
| m,p-Xylene | 40.8 | --- | 1.00 | ug/L | 1 | 40.0 | --- | 102 | 80-120% | --- | --- | |
| o-Xylene | 20.1 | --- | 0.500 | ug/L | 1 | 20.0 | --- | 101 | 80-120% | --- | --- | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *104 %* | *Limits:* | *80-120 %* | | *Dilution:* | *1x* | | | | |
| *Toluene-d8 (Surr)* | | | *100 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *96 %* | | *80-120 %* | | | *"* | | | | |
| **Duplicate (9101792-DUP1)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 20:30 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1093-06)** | | | | | | | | | | | | |
| Acetone | ND | --- | 1000 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Acrylonitrile | ND | --- | 100 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Benzene | ND | --- | 10.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Bromobenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Bromochloromethane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Bromodichloromethane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Bromoform | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Bromomethane | ND | --- | 250 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 2-Butanone (MEK) | ND | --- | 500 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| n-Butylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| sec-Butylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| tert-Butylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Carbon disulfide | ND | --- | 500 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Carbon tetrachloride | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Chlorobenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Chloroethane | ND | --- | 250 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Chloroform | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Chloromethane | ND | --- | 250 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 2-Chlorotoluene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 4-Chlorotoluene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Dibromochloromethane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 250 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dibromoethane (EDB) | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Dibromomethane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichlorobenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101792-DUP1)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 20:30 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1093-06)** | | | | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,4-Dichlorobenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Dichlorodifluoromethane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethane | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloroethane (EDC) | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethene | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| cis-1,2-Dichloroethene | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| trans-1,2-Dichloroethene | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloropropane | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,3-Dichloropropane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 2,2-Dichloropropane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloropropene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| cis-1,3-Dichloropropene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| trans-1,3-Dichloropropene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Ethylbenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Hexachlorobutadiene | ND | --- | 250 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 2-Hexanone | ND | --- | 500 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Isopropylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 4-Isopropyltoluene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Methylene chloride | ND | --- | 150 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 500 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Naphthalene | ND | --- | 100 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| n-Propylbenzene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Styrene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Tetrachloroethene (PCE) | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Toluene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichlorobenzene | ND | --- | 100 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2,4-Trichlorobenzene | ND | --- | 100 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1-Trichloroethane | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2-Trichloroethane | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |

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Philip Nerenberg, Lab Director

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**6700 S.W. Sandburg Street**
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**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101792-DUP1)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 20:30 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1093-06)** | | | | | | | | | | | | |
| Trichloroethene (TCE) | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Trichlorofluoromethane | ND | --- | 100 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichloropropane | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,2,4-Trimethylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| 1,3,5-Trimethylbenzene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| Vinyl chloride | ND | --- | 20.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| m,p-Xylene | ND | --- | 50.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| o-Xylene | ND | --- | 25.0 | ug/L | 50 | --- | ND | --- | --- | --- | 30% | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 104 %* | | *Limits: 80-120 %* | | *Dilution: 1x* | | | | | |
| *Toluene-d8 (Surr)* | | | *102 %* | | *80-120 %* | | *"* | | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *102 %* | | *80-120 %* | | *"* | | | | | |
| **Duplicate (9101792-DUP2)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 23:37 | | | | | | | | | **T-02** |
| **QC Source Sample: Non-SDG (A9J1079-04)** | | | | | | | | | | | | |
| Acetone | ND | --- | 200 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Acrylonitrile | ND | --- | 20.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Benzene | ND | --- | 2.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Bromobenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Bromochloromethane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Bromodichloromethane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Bromoform | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Bromomethane | ND | --- | 50.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 2-Butanone (MEK) | ND | --- | 100 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| n-Butylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| sec-Butylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| tert-Butylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Carbon disulfide | ND | --- | 100 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Carbon tetrachloride | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Chlorobenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Chloroethane | ND | --- | 50.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Chloroform | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Chloromethane | ND | --- | 50.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 2-Chlorotoluene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101792-DUP2)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 23:37 | | | | | | | | | **T-02** |
| **QC Source Sample: Non-SDG (A9J1079-04)** | | | | | | | | | | | | |
| 4-Chlorotoluene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Dibromochloromethane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dibromo-3-chloropropane | ND | --- | 50.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dibromoethane (EDB) | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Dibromomethane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichlorobenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,3-Dichlorobenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,4-Dichlorobenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Dichlorodifluoromethane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethane | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloroethane (EDC) | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloroethene | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| cis-1,2-Dichloroethene | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| trans-1,2-Dichloroethene | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2-Dichloropropane | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,3-Dichloropropane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 2,2-Dichloropropane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1-Dichloropropene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| cis-1,3-Dichloropropene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| trans-1,3-Dichloropropene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Ethylbenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Hexachlorobutadiene | ND | --- | 50.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 2-Hexanone | ND | --- | 100 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Isopropylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 4-Isopropyltoluene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Methylene chloride | ND | --- | 30.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 4-Methyl-2-pentanone (MiBK) | ND | --- | 100 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Methyl tert-butyl ether (MTBE) | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Naphthalene | ND | --- | 20.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| n-Propylbenzene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Styrene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1,2-Tetrachloroethane | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2,2-Tetrachloroethane | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |

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Philip Nerenberg, Lab Director

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**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Duplicate (9101792-DUP2)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 23:37 | | | | | | | | | **T-02** |
| **QC Source Sample: Non-SDG (A9J1079-04)** | | | | | | | | | | | | |
| Tetrachloroethene (PCE) | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Toluene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichlorobenzene | ND | --- | 20.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2,4-Trichlorobenzene | ND | --- | 20.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1,1-Trichloroethane | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,1,2-Trichloroethane | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Trichloroethene (TCE) | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Trichlorofluoromethane | ND | --- | 20.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2,3-Trichloropropane | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,2,4-Trimethylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| 1,3,5-Trimethylbenzene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| Vinyl chloride | ND | --- | 4.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| m,p-Xylene | ND | --- | 10.0 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| o-Xylene | ND | --- | 5.00 | ug/L | 10 | --- | ND | --- | --- | --- | 30% | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | *Recovery:* | *106 %* | *Limits:* | *80-120 %* | | *Dilution:* | *1x* | | | | |
| *Toluene-d8 (Surr)* | | | *104 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *100 %* | | *80-120 %* | | | *"* | | | | |
| **Matrix Spike (9101792-MS1)** | | | Prepared: 10/31/19 11:05 Analyzed: 10/31/19 15:00 | | | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1067-01)** | | | | | | | | | | | | |
| **EPA 8260C** | | | | | | | | | | | | |
| Acetone | 56.2 | --- | 20.0 | ug/L | 1 | 40.0 | 20.0 | 91 | 39-160% | --- | --- | |
| Acrylonitrile | 22.6 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 113 | 63-135% | --- | --- | |
| Benzene | 21.8 | --- | 0.200 | ug/L | 1 | 20.0 | ND | 109 | 79-120% | --- | --- | |
| Bromobenzene | 21.1 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 105 | 80-120% | --- | --- | |
| Bromochloromethane | 24.0 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 120 | 78-123% | --- | --- | |
| Bromodichloromethane | 22.1 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 110 | 79-125% | --- | --- | |
| Bromoform | 24.3 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 122 | 66-130% | --- | --- | Q-54a |
| Bromomethane | 26.1 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 130 | 53-141% | --- | --- | Q-54 |
| 2-Butanone (MEK) | 43.2 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 108 | 56-143% | --- | --- | |
| n-Butylbenzene | 22.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 112 | 75-128% | --- | --- | |
| sec-Butylbenzene | 21.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 106 | 77-126% | --- | --- | |
| tert-Butylbenzene | 20.0 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 100 | 78-124% | --- | --- | |

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Philip Nerenberg, Lab Director

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**Tigard, OR 97223**
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**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101792-MS1)** | | | Prepared: 10/31/19 11:05 | | Analyzed: 10/31/19 15:00 | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1067-01)** | | | | | | | | | | | | |
| Carbon disulfide | 21.0 | --- | 10.0 | ug/L | 1 | 20.0 | ND | 105 | 64-133% | --- | --- | |
| Carbon tetrachloride | 22.1 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 110 | 72-136% | --- | --- | |
| Chlorobenzene | 21.6 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 108 | 80-120% | --- | --- | |
| Chloroethane | 20.2 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 101 | 60-138% | --- | --- | |
| Chloroform | 22.7 | --- | 1.00 | ug/L | 1 | 20.0 | 0.845 | 109 | 79-124% | --- | --- | |
| Chloromethane | 19.7 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 99 | 50-139% | --- | --- | |
| 2-Chlorotoluene | 20.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 103 | 79-122% | --- | --- | |
| 4-Chlorotoluene | 20.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 101 | 78-122% | --- | --- | |
| Dibromochloromethane | 25.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | **127** | **74-126%** | --- | --- | Q-54c |
| 1,2-Dibromo-3-chloropropane | 20.3 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 102 | 62-128% | --- | --- | |
| 1,2-Dibromoethane (EDB) | 20.7 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 104 | 77-121% | --- | --- | |
| Dibromomethane | 21.9 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 109 | 79-123% | --- | --- | |
| 1,2-Dichlorobenzene | 20.9 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 105 | 80-120% | --- | --- | |
| 1,3-Dichlorobenzene | 21.1 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 106 | 80-120% | --- | --- | |
| 1,4-Dichlorobenzene | 21.1 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 106 | 79-120% | --- | --- | |
| Dichlorodifluoromethane | 23.4 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 117 | 32-152% | --- | --- | |
| 1,1-Dichloroethane | 21.2 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 106 | 77-125% | --- | --- | |
| 1,2-Dichloroethane (EDC) | 20.1 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 100 | 73-128% | --- | --- | |
| 1,1-Dichloroethene | 21.5 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 108 | 71-131% | --- | --- | |
| cis-1,2-Dichloroethene | 21.4 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 107 | 78-123% | --- | --- | |
| trans-1,2-Dichloroethene | 22.1 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 110 | 75-124% | --- | --- | |
| 1,2-Dichloropropane | 21.5 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 107 | 78-122% | --- | --- | |
| 1,3-Dichloropropane | 20.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 103 | 80-120% | --- | --- | |
| 2,2-Dichloropropane | 18.7 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 93 | 60-139% | --- | --- | |
| 1,1-Dichloropropene | 21.6 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 108 | 79-125% | --- | --- | |
| cis-1,3-Dichloropropene | 19.0 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 95 | 75-124% | --- | --- | |
| trans-1,3-Dichloropropene | 18.5 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 92 | 73-127% | --- | --- | |
| Ethylbenzene | 20.9 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 104 | 79-121% | --- | --- | |
| Hexachlorobutadiene | 21.7 | --- | 5.00 | ug/L | 1 | 20.0 | ND | 108 | 66-134% | --- | --- | |
| 2-Hexanone | 41.6 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 104 | 57-139% | --- | --- | |
| Isopropylbenzene | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 107 | 72-131% | --- | --- | |
| 4-Isopropyltoluene | 21.8 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 109 | 77-127% | --- | --- | |
| Methylene chloride | 20.4 | --- | 3.00 | ug/L | 1 | 20.0 | ND | 102 | 74-124% | --- | --- | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Volatile Organic Compounds by EPA 8260C

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101792 - EPA 5030B** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101792-MS1)** | | | Prepared: 10/31/19 11:05 | | Analyzed: 10/31/19 15:00 | | | | | | | |
| **QC Source Sample: Non-SDG (A9J1067-01)** | | | | | | | | | | | | |
| 4-Methyl-2-pentanone (MiBK) | 41.1 | --- | 10.0 | ug/L | 1 | 40.0 | ND | 103 | 67-130% | --- | --- | |
| Methyl tert-butyl ether (MTBE) | 18.5 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 93 | 71-124% | --- | --- | |
| Naphthalene | 20.2 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 101 | 61-128% | --- | --- | |
| n-Propylbenzene | 20.9 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 105 | 76-126% | --- | --- | |
| Styrene | 21.3 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 106 | 78-123% | --- | --- | |
| 1,1,1,2-Tetrachloroethane | 22.2 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 111 | 78-124% | --- | --- | |
| 1,1,2,2-Tetrachloroethane | 20.4 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 102 | 71-121% | --- | --- | |
| Tetrachloroethene (PCE) | 22.3 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 112 | 74-129% | --- | --- | |
| Toluene | 20.7 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 103 | 80-121% | --- | --- | |
| 1,2,3-Trichlorobenzene | 21.5 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 107 | 69-129% | --- | --- | |
| 1,2,4-Trichlorobenzene | 21.1 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 105 | 69-130% | --- | --- | |
| 1,1,1-Trichloroethane | 20.9 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 104 | 74-131% | --- | --- | |
| 1,1,2-Trichloroethane | 21.4 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 107 | 80-120% | --- | --- | |
| Trichloroethene (TCE) | 22.8 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 114 | 79-123% | --- | --- | |
| Trichlorofluoromethane | 24.4 | --- | 2.00 | ug/L | 1 | 20.0 | ND | 122 | 65-141% | --- | --- | |
| 1,2,3-Trichloropropane | 20.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 101 | 73-122% | --- | --- | |
| 1,2,4-Trimethylbenzene | 21.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 106 | 76-124% | --- | --- | |
| 1,3,5-Trimethylbenzene | 21.2 | --- | 1.00 | ug/L | 1 | 20.0 | ND | 106 | 75-124% | --- | --- | |
| Vinyl chloride | 23.0 | --- | 0.400 | ug/L | 1 | 20.0 | ND | 115 | 58-137% | --- | --- | |
| m,p-Xylene | 42.0 | --- | 1.00 | ug/L | 1 | 40.0 | ND | 105 | 80-121% | --- | --- | |
| o-Xylene | 20.8 | --- | 0.500 | ug/L | 1 | 20.0 | ND | 104 | 78-122% | --- | --- | |
| *Surr: 1,4-Difluorobenzene (Surr)* | | | *Recovery: 105 %* | | *Limits: 80-120 %* | | | *Dilution: 1x* | | | | |
| *Toluene-d8 (Surr)* | | | *99 %* | | *80-120 %* | | | *"* | | | | |
| *4-Bromofluorobenzene (Surr)* | | | *96 %* | | *80-120 %* | | | *"* | | | | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101758 - EPA 3510C (Acid Extraction)** | | | | | | | **Water** | | | | | |
| **Blank (9101758-BLK1)** | | | Prepared: 10/30/19 11:05 Analyzed: 10/30/19 19:34 | | | | | | | | | |
| **EPA 8270D (SIM)** | | | | | | | | | | | | |
| Acenaphthene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Acenaphthylene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Anthracene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benz(a)anthracene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzo(a)pyrene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzo(b)fluoranthene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzo(k)fluoranthene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Benzo(g,h,i)perylene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chrysene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibenz(a,h)anthracene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Dibenzofuran | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Fluoranthene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Fluorene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Indeno(1,2,3-cd)pyrene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 1-Methylnaphthalene | ND | --- | 0.0364 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| 2-Methylnaphthalene | ND | --- | 0.0364 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Naphthalene | ND | --- | 0.0364 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Phenanthrene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Pyrene | ND | --- | 0.0182 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| *Surr: 2-Fluorobiphenyl (Surr)* | | | *Recovery: 99 %* | | *Limits: 44-120 %* | | | | *Dilution: 1x* | | | |
| *p-Terphenyl-d14 (Surr)* | | | *113 %* | | *50-133 %* | | | | *"* | | | |
| **LCS (9101758-BS1)** | | | Prepared: 10/30/19 11:05 Analyzed: 10/30/19 19:59 | | | | | | | | | |
| **EPA 8270D (SIM)** | | | | | | | | | | | | |
| Acenaphthene | 3.52 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 47-122% | --- | --- | |
| Acenaphthylene | 3.51 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 41-130% | --- | --- | |
| Anthracene | 3.58 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 90 | 57-123% | --- | --- | |
| Benz(a)anthracene | 3.77 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 94 | 58-125% | --- | --- | |
| Benzo(a)pyrene | 3.44 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 86 | 54-128% | --- | --- | |
| Benzo(b)fluoranthene | 3.68 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 92 | 53-131% | --- | --- | |
| Benzo(k)fluoranthene | 3.87 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 97 | 57-129% | --- | --- | |
| Benzo(g,h,i)perylene | 3.86 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 97 | 50-134% | --- | --- | |
| Chrysene | 3.81 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 95 | 59-123% | --- | --- | |

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Philip Nerenberg, Lab Director

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101758 - EPA 3510C (Acid Extraction)** | | | | | | | **Water** | | | | | |
| **LCS (9101758-BS1)** | | | Prepared: 10/30/19 11:05 Analyzed: 10/30/19 19:59 | | | | | | | | | |
| Dibenz(a,h)anthracene | 3.94 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 98 | 51-134% | --- | --- | |
| Dibenzofuran | 3.52 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 53-120% | --- | --- | |
| Fluoranthene | 3.54 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 57-128% | --- | --- | |
| Fluorene | 3.52 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 52-124% | --- | --- | |
| Indeno(1,2,3-cd)pyrene | 3.67 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 92 | 52-133% | --- | --- | |
| 1-Methylnaphthalene | 3.15 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 79 | 41-120% | --- | --- | |
| 2-Methylnaphthalene | 3.13 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 78 | 40-121% | --- | --- | |
| Naphthalene | 3.15 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 79 | 40-121% | --- | --- | |
| Phenanthrene | 3.61 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 90 | 59-120% | --- | --- | |
| Pyrene | 3.49 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 87 | 57-126% | --- | --- | |
| *Surr: 2-Fluorobiphenyl (Surr)* | | | *Recovery: 84 %* | *Limits: 44-120 %* | | | *Dilution: 1x* | | | | | |
| *p-Terphenyl-d14 (Surr)* | | | *97 %* | *50-133 %* | | | *"* | | | | | |
| **LCS Dup (9101758-BSD1)** | | | Prepared: 10/30/19 11:05 Analyzed: 10/30/19 20:24 | | | | | | | | | **Q-19** |
| **EPA 8270D (SIM)** | | | | | | | | | | | | |
| Acenaphthene | 3.56 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 89 | 47-122% | 1 | 30% | |
| Acenaphthylene | 3.57 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 89 | 41-130% | 2 | 30% | |
| Anthracene | 3.54 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 57-123% | 1 | 30% | |
| Benz(a)anthracene | 3.72 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 93 | 58-125% | 1 | 30% | |
| Benzo(a)pyrene | 3.40 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 85 | 54-128% | 1 | 30% | |
| Benzo(b)fluoranthene | 3.77 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 94 | 53-131% | 2 | 30% | |
| Benzo(k)fluoranthene | 3.74 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 94 | 57-129% | 3 | 30% | |
| Benzo(g,h,i)perylene | 3.74 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 93 | 50-134% | 3 | 30% | |
| Chrysene | 3.72 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 93 | 59-123% | 2 | 30% | |
| Dibenz(a,h)anthracene | 3.88 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 97 | 51-134% | 1 | 30% | |
| Dibenzofuran | 3.61 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 90 | 53-120% | 2 | 30% | |
| Fluoranthene | 3.56 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 89 | 57-128% | 0.7 | 30% | |
| Fluorene | 3.62 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 91 | 52-124% | 3 | 30% | |
| Indeno(1,2,3-cd)pyrene | 3.69 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 92 | 52-133% | 0.6 | 30% | |
| 1-Methylnaphthalene | 3.24 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 81 | 41-120% | 3 | 30% | |
| 2-Methylnaphthalene | 3.20 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 80 | 40-121% | 2 | 30% | |
| Naphthalene | 3.22 | --- | 0.0400 | ug/L | 1 | 4.00 | --- | 80 | 40-121% | 2 | 30% | |
| Phenanthrene | 3.59 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 90 | 59-120% | 0.5 | 30% | |
| Pyrene | 3.54 | --- | 0.0200 | ug/L | 1 | 4.00 | --- | 88 | 57-126% | 1 | 30% | |

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101758 - EPA 3510C (Acid Extraction)** | | | | | | | | **Water** | | | | |
| **LCS Dup (9101758-BSD1)** | | | | Prepared: 10/30/19 11:05 Analyzed: 10/30/19 20:24 | | | | | | | | **Q-19** |
| *Surr: 2-Fluorobiphenyl (Surr)* | | | *Recovery: 83 %* | *Limits: 44-120 %* | *Dilution: 1x* | | | | | | | |
| *p-Terphenyl-d14 (Surr)* | | | *90 %* | *50-133 %* | *"* | | | | | | | |

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| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101742 - EPA 3015A** | | | | | | | **Water** | | | | | |
| **Blank (9101742-BLK1)** | | | Prepared: 10/30/19 08:05 | | Analyzed: 10/30/19 19:05 | | | | | | | |
| **EPA 6020A** | | | | | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Arsenic | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Copper | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Lead | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Silver | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| **LCS (9101742-BS1)** | | | Prepared: 10/30/19 08:05 | | Analyzed: 10/30/19 19:10 | | | | | | | |
| **EPA 6020A** | | | | | | | | | | | | |
| Antimony | 27.2 | --- | 1.00 | ug/L | 1 | 27.8 | --- | 98 | 80-120% | --- | --- | |
| Arsenic | 52.6 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 95 | 80-120% | --- | --- | |
| Beryllium | 27.4 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 99 | 80-120% | --- | --- | |
| Cadmium | 53.0 | --- | 0.200 | ug/L | 1 | 55.6 | --- | 95 | 80-120% | --- | --- | |
| Chromium | 53.9 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 97 | 80-120% | --- | --- | |
| Copper | 55.4 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 100 | 80-120% | --- | --- | |
| Lead | 56.8 | --- | 0.200 | ug/L | 1 | 55.6 | --- | 102 | 80-120% | --- | --- | |
| Mercury | 1.13 | --- | 0.0800 | ug/L | 1 | 1.11 | --- | 102 | 80-120% | --- | --- | |
| Nickel | 55.9 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 101 | 80-120% | --- | --- | |
| Selenium | 26.2 | --- | 1.00 | ug/L | 1 | 27.8 | --- | 94 | 80-120% | --- | --- | |
| Silver | 29.0 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 104 | 80-120% | --- | --- | |
| Thallium | 27.8 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 100 | 80-120% | --- | --- | |
| Zinc | 53.5 | --- | 4.00 | ug/L | 1 | 55.6 | --- | 96 | 80-120% | --- | --- | |
| **Duplicate (9101742-DUP1)** | | | Prepared: 10/30/19 08:05 | | Analyzed: 10/30/19 19:33 | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| **EPA 6020A** | | | | | | | | | | | | |

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**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Total Metals by EPA 6020A (ICPMS)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101742 - EPA 3015A** | | | | | | | **Water** | | | | | |
| **Duplicate (9101742-DUP1)** | | | Prepared: 10/30/19 08:05 Analyzed: 10/30/19 19:33 | | | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Arsenic | **7.96** | --- | 1.00 | ug/L | 1 | --- | 7.84 | --- | --- | 1 | 20% | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | --- | 0.834 | --- | --- | *** | 20% | |
| Copper | **3.13** | --- | 1.00 | ug/L | 1 | --- | 3.47 | --- | --- | 10 | 20% | |
| Lead | **0.395** | --- | 0.200 | ug/L | 1 | --- | 0.400 | --- | --- | 1 | 20% | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Nickel | **1.36** | --- | 1.00 | ug/L | 1 | --- | 1.25 | --- | --- | 9 | 20% | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Silver | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Zinc | **4.36** | --- | 4.00 | ug/L | 1 | --- | 4.35 | --- | --- | 0.2 | 20% | |
| **Matrix Spike (9101742-MS1)** | | | Prepared: 10/30/19 08:05 Analyzed: 10/30/19 19:38 | | | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| **EPA 6020A** | | | | | | | | | | | | |
| Antimony | 27.7 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 100 | 75-125% | --- | --- | |
| Arsenic | 62.5 | --- | 1.00 | ug/L | 1 | 55.6 | 7.84 | 98 | 75-125% | --- | --- | |
| Beryllium | 28.0 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 101 | 75-125% | --- | --- | |
| Cadmium | 52.4 | --- | 0.200 | ug/L | 1 | 55.6 | ND | 94 | 75-125% | --- | --- | |
| Chromium | 54.8 | --- | 1.00 | ug/L | 1 | 55.6 | 0.834 | 97 | 75-125% | --- | --- | |
| Copper | 57.0 | --- | 1.00 | ug/L | 1 | 55.6 | 3.47 | 96 | 75-125% | --- | --- | |
| Lead | 54.3 | --- | 0.200 | ug/L | 1 | 55.6 | 0.400 | 97 | 75-125% | --- | --- | |
| Mercury | 1.10 | --- | 0.0800 | ug/L | 1 | 1.11 | ND | 99 | 75-125% | --- | --- | |
| Nickel | 55.7 | --- | 1.00 | ug/L | 1 | 55.6 | 1.25 | 98 | 75-125% | --- | --- | |
| Selenium | 28.3 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 102 | 75-125% | --- | --- | |
| Silver | 28.6 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 103 | 75-125% | --- | --- | |
| Thallium | 26.8 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 96 | 75-125% | --- | --- | |
| Zinc | 55.4 | --- | 4.00 | ug/L | 1 | 55.6 | 4.35 | 92 | 75-125% | --- | --- | |

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Philip Nerenberg, Lab Director

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|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101755 - Matrix Matched Direct Inject** | | | | | | | **Water** | | | | | |
| **Blank (9101755-BLK1)** | | | Prepared: 10/30/19 10:41 Analyzed: 10/30/19 20:05 | | | | | | | | | |
| **EPA 6020A (Diss)** | | | | | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Arsenic | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Copper | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Lead | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Nickel | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Silver | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | --- | --- | --- | --- | --- | --- | |
| **LCS (9101755-BS1)** | | | Prepared: 10/30/19 10:41 Analyzed: 10/30/19 20:10 | | | | | | | | | |
| **EPA 6020A (Diss)** | | | | | | | | | | | | |
| Antimony | 26.6 | --- | 1.00 | ug/L | 1 | 27.8 | --- | 96 | 80-120% | --- | --- | |
| Arsenic | 50.7 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 91 | 80-120% | --- | --- | |
| Beryllium | 27.0 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 97 | 80-120% | --- | --- | |
| Cadmium | 52.4 | --- | 0.200 | ug/L | 1 | 55.6 | --- | 94 | 80-120% | --- | --- | |
| Chromium | 53.3 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 96 | 80-120% | --- | --- | |
| Copper | 54.8 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 99 | 80-120% | --- | --- | |
| Lead | 53.3 | --- | 0.200 | ug/L | 1 | 55.6 | --- | 96 | 80-120% | --- | --- | |
| Mercury | 1.05 | --- | 0.0800 | ug/L | 1 | 1.11 | --- | 95 | 80-120% | --- | --- | |
| Nickel | 55.4 | --- | 1.00 | ug/L | 1 | 55.6 | --- | 100 | 80-120% | --- | --- | |
| Selenium | 26.5 | --- | 1.00 | ug/L | 1 | 27.8 | --- | 95 | 80-120% | --- | --- | |
| Silver | 28.3 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 102 | 80-120% | --- | --- | |
| Thallium | 26.8 | --- | 0.200 | ug/L | 1 | 27.8 | --- | 97 | 80-120% | --- | --- | |
| Zinc | 53.3 | --- | 4.00 | ug/L | 1 | 55.6 | --- | 96 | 80-120% | --- | --- | |
| **Duplicate (9101755-DUP1)** | | | Prepared: 10/30/19 10:41 Analyzed: 10/30/19 20:33 | | | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| **EPA 6020A (Diss)** | | | | | | | | | | | | |

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101755 - Matrix Matched Direct Inject** | | | | | | | **Water** | | | | | |
| **Duplicate (9101755-DUP1)** | | | Prepared: 10/30/19 10:41 | | Analyzed: 10/30/19 20:33 | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| Antimony | ND | --- | 1.00 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Arsenic | **7.71** | --- | 1.00 | ug/L | 1 | --- | 8.01 | --- | --- | 4 | 20% | |
| Beryllium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Cadmium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Chromium | ND | --- | 1.00 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Copper | ND | --- | 1.00 | ug/L | 1 | --- | 0.539 | --- | --- | *** | **20%** | Q-05 |
| Lead | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Mercury | ND | --- | 0.0800 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Nickel | **1.49** | --- | 1.00 | ug/L | 1 | --- | 1.59 | --- | --- | 6 | 20% | |
| Selenium | ND | --- | 1.00 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Silver | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Thallium | ND | --- | 0.200 | ug/L | 1 | --- | ND | --- | --- | --- | 20% | |
| Zinc | ND | --- | 4.00 | ug/L | 1 | --- | 2.68 | --- | --- | *** | 20% | |
| **Matrix Spike (9101755-MS1)** | | | Prepared: 10/30/19 10:41 | | Analyzed: 10/30/19 20:38 | | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| **EPA 6020A (Diss)** | | | | | | | | | | | | |
| Antimony | 27.0 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 97 | 75-125% | --- | --- | |
| Arsenic | 68.9 | --- | 1.00 | ug/L | 1 | 55.6 | 8.01 | 110 | 75-125% | --- | --- | |
| Beryllium | 27.7 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 100 | 75-125% | --- | --- | |
| Cadmium | 52.9 | --- | 0.200 | ug/L | 1 | 55.6 | ND | 95 | 75-125% | --- | --- | |
| Chromium | 54.0 | --- | 1.00 | ug/L | 1 | 55.6 | ND | 97 | 75-125% | --- | --- | |
| Copper | 54.3 | --- | 1.00 | ug/L | 1 | 55.6 | 0.539 | 97 | 75-125% | --- | --- | |
| Lead | 52.2 | --- | 0.200 | ug/L | 1 | 55.6 | ND | 94 | 75-125% | --- | --- | |
| Mercury | 1.03 | --- | 0.0800 | ug/L | 1 | 1.11 | ND | 93 | 75-125% | --- | --- | |
| Nickel | 55.8 | --- | 1.00 | ug/L | 1 | 55.6 | 1.59 | 98 | 75-125% | --- | --- | |
| Silver | 27.0 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 97 | 75-125% | --- | --- | |
| Thallium | 25.8 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 93 | 75-125% | --- | --- | |
| Zinc | 54.1 | --- | 4.00 | ug/L | 1 | 55.6 | 2.68 | 93 | 75-125% | --- | --- | |
| **Matrix Spike (9101755-MS2)** | | | Prepared: 10/30/19 10:41 | | Analyzed: 10/30/19 21:06 | | | | | | | |
| **QC Source Sample: MW-3-35-DUP (A9J1033-07)** | | | | | | | | | | | | |

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Philip Nerenberg, Lab Director

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

| | | |
|---|---|---|
| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## QUALITY CONTROL (QC) SAMPLE RESULTS

### Dissolved Metals by EPA 6020A (ICPMS)

| Analyte | Result | Detection Limit | Reporting Limit | Units | Dilution | Spike Amount | Source Result | % REC | % REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 9101755 - Matrix Matched Direct Inject** | | | | | | | **Water** | | | | | |
| **Matrix Spike (9101755-MS2)** | | | Prepared: 10/30/19 10:41 | | | Analyzed: 10/30/19 21:06 | | | | | | |
| **QC Source Sample: MW-3-35-DUP (A9J1033-07)** | | | | | | | | | | | | |
| Antimony | 27.6 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 100 | 75-125% | --- | --- | |
| Arsenic | 61.6 | --- | 1.00 | ug/L | 1 | 55.6 | 3.01 | 105 | 75-125% | --- | --- | |
| Beryllium | 27.7 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 100 | 75-125% | --- | --- | |
| Cadmium | 52.4 | --- | 0.200 | ug/L | 1 | 55.6 | ND | 94 | 75-125% | --- | --- | |
| Chromium | 53.6 | --- | 1.00 | ug/L | 1 | 55.6 | ND | 96 | 75-125% | --- | --- | |
| Copper | 54.0 | --- | 1.00 | ug/L | 1 | 55.6 | ND | 97 | 75-125% | --- | --- | |
| Lead | 53.6 | --- | 0.200 | ug/L | 1 | 55.6 | ND | 97 | 75-125% | --- | --- | |
| Mercury | 1.06 | --- | 0.0800 | ug/L | 1 | 1.11 | ND | 95 | 75-125% | --- | --- | |
| Nickel | 57.6 | --- | 1.00 | ug/L | 1 | 55.6 | 4.14 | 96 | 75-125% | --- | --- | |
| Selenium | 33.2 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 119 | 75-125% | --- | --- | |
| Silver | 28.2 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 102 | 75-125% | --- | --- | |
| Thallium | 26.5 | --- | 0.200 | ug/L | 1 | 27.8 | ND | 96 | 75-125% | --- | --- | |
| Zinc | 68.4 | --- | 4.00 | ug/L | 1 | 55.6 | 16.4 | 93 | 75-125% | --- | --- | |
| **Matrix Spike (9101755-MS3)** | | | Prepared: 10/30/19 10:41 | | | Analyzed: 10/31/19 16:54 | | | | | | |
| **QC Source Sample: MW-4-34 (A9J1033-04)** | | | | | | | | | | | | |
| **EPA 6020A (Diss)** | | | | | | | | | | | | |
| Selenium | 32.9 | --- | 1.00 | ug/L | 1 | 27.8 | ND | 119 | 75-125% | --- | --- | Q-16 |

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## SAMPLE PREPARATION INFORMATION

### Diesel and/or Oil Hydrocarbons by NWTPH-Dx

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

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101761 | | | | | | | |
| A9J1033-01 | Water | NWTPH-Dx | 10/28/19 15:49 | 10/30/19 12:57 | 870mL/5mL | 1000mL/5mL | 1.15 |
| A9J1033-02 | Water | NWTPH-Dx | 10/29/19 09:45 | 10/30/19 12:57 | 660mL/5mL | 1000mL/5mL | 1.52 |
| A9J1033-03 | Water | NWTPH-Dx | 10/28/19 09:23 | 10/30/19 12:57 | 920mL/5mL | 1000mL/5mL | 1.09 |
| A9J1033-04 | Water | NWTPH-Dx | 10/29/19 09:05 | 10/30/19 12:57 | 980mL/5mL | 1000mL/5mL | 1.02 |
| A9J1033-05 | Water | NWTPH-Dx | 10/29/19 08:10 | 10/30/19 12:57 | 990mL/5mL | 1000mL/5mL | 1.01 |
| A9J1033-06 | Water | NWTPH-Dx | 10/28/19 11:52 | 10/30/19 12:57 | 920mL/5mL | 1000mL/5mL | 1.09 |
| A9J1033-07 | Water | NWTPH-Dx | 10/28/19 09:23 | 10/30/19 12:57 | 970mL/5mL | 1000mL/5mL | 1.03 |

### Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5030B

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101746 | | | | | | | |
| A9J1033-01 | Water | NWTPH-Gx (MS) | 10/28/19 15:49 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-02 | Water | NWTPH-Gx (MS) | 10/29/19 09:45 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-04 | Water | NWTPH-Gx (MS) | 10/29/19 09:05 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-05 | Water | NWTPH-Gx (MS) | 10/29/19 08:10 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-06 | Water | NWTPH-Gx (MS) | 10/28/19 11:52 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| Batch: 9101792 | | | | | | | |
| A9J1033-03RE1 | Water | NWTPH-Gx (MS) | 10/28/19 09:23 | 10/31/19 11:05 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-07RE1 | Water | NWTPH-Gx (MS) | 10/28/19 09:23 | 10/31/19 11:05 | 5mL/5mL | 5mL/5mL | 1.00 |

### Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101746 | | | | | | | |
| A9J1033-01 | Water | EPA 8260C | 10/28/19 15:49 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-02 | Water | EPA 8260C | 10/29/19 09:45 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-04 | Water | EPA 8260C | 10/29/19 09:05 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-05 | Water | EPA 8260C | 10/29/19 08:10 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-06 | Water | EPA 8260C | 10/28/19 11:52 | 10/30/19 11:16 | 5mL/5mL | 5mL/5mL | 1.00 |
| Batch: 9101792 | | | | | | | |
| A9J1033-03RE1 | Water | EPA 8260C | 10/28/19 09:23 | 10/31/19 11:05 | 5mL/5mL | 5mL/5mL | 1.00 |
| A9J1033-07RE1 | Water | EPA 8260C | 10/28/19 09:23 | 10/31/19 11:05 | 5mL/5mL | 5mL/5mL | 1.00 |

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## SAMPLE PREPARATION INFORMATION

### Volatile Organic Compounds by EPA 8260C

### Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3510C (Acid Extraction)

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101758 | | | | | | | |
| A9J1033-01 | Water | EPA 8270D (SIM) | 10/28/19 15:49 | 10/30/19 11:38 | 990mL/2mL | 1000mL/2mL | 1.01 |
| A9J1033-02 | Water | EPA 8270D (SIM) | 10/29/19 09:45 | 10/30/19 11:38 | 790mL/2mL | 1000mL/2mL | 1.27 |
| A9J1033-03 | Water | EPA 8270D (SIM) | 10/28/19 09:23 | 10/30/19 11:38 | 900mL/2mL | 1000mL/2mL | 1.11 |
| A9J1033-04 | Water | EPA 8270D (SIM) | 10/29/19 09:05 | 10/30/19 11:38 | 870mL/2mL | 1000mL/2mL | 1.15 |
| A9J1033-05 | Water | EPA 8270D (SIM) | 10/29/19 08:10 | 10/30/19 11:38 | 930mL/2mL | 1000mL/2mL | 1.08 |
| A9J1033-06 | Water | EPA 8270D (SIM) | 10/28/19 11:52 | 10/30/19 11:38 | 960mL/2mL | 1000mL/2mL | 1.04 |
| A9J1033-07 | Water | EPA 8270D (SIM) | 10/28/19 09:23 | 10/30/19 11:38 | 940mL/2mL | 1000mL/2mL | 1.06 |

### Total Metals by EPA 6020A (ICPMS)

Prep: EPA 3015A

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101742 | | | | | | | |
| A9J1033-01 | Water | EPA 6020A | 10/28/19 15:49 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-02 | Water | EPA 6020A | 10/29/19 09:45 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-03 | Water | EPA 6020A | 10/28/19 09:23 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-04 | Water | EPA 6020A | 10/29/19 09:05 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-05 | Water | EPA 6020A | 10/29/19 08:10 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-06 | Water | EPA 6020A | 10/28/19 11:52 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-07 | Water | EPA 6020A | 10/28/19 09:23 | 10/30/19 08:05 | 45mL/50mL | 45mL/50mL | 1.00 |

### Dissolved Metals by EPA 6020A (ICPMS)

Prep: Matrix Matched Direct Inject

| Lab Number | Matrix | Method | Sampled | Prepared | Sample Initial/Final | Default Initial/Final | RL Prep Factor |
|---|---|---|---|---|---|---|---|
| Batch: 9101755 | | | | | | | |
| A9J1033-01 | Water | EPA 6020A (Diss) | 10/28/19 15:49 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-02 | Water | EPA 6020A (Diss) | 10/29/19 09:45 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-03 | Water | EPA 6020A (Diss) | 10/28/19 09:23 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-04 | Water | EPA 6020A (Diss) | 10/29/19 09:05 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-05 | Water | EPA 6020A (Diss) | 10/29/19 08:10 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-06 | Water | EPA 6020A (Diss) | 10/28/19 11:52 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |
| A9J1033-07 | Water | EPA 6020A (Diss) | 10/28/19 09:23 | 10/30/19 10:41 | 45mL/50mL | 45mL/50mL | 1.00 |

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| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

# QUALIFIER DEFINITIONS

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

**Apex Laboratories**

| | |
|---|---|
| **F-12** | The result for this hydrocarbon range is primarily due to the presence of individual analyte peaks in the quantitation range. No fuel pattern detected. |
| **F-17** | No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40. |
| **M-05** | Estimated results. Peak separation for structural isomers is insufficient for accurate quantification. |
| **Q-01** | Spike recovery and/or RPD is outside acceptance limits. |
| **Q-05** | Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level. |
| **Q-16** | Reanalysis of an original Batch QC sample. |
| **Q-19** | Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis. |
| **Q-42** | Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.) |
| **Q-54** | Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +11.7%. The results are reported as Estimated Values. |
| **Q-54a** | Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +4.3%. The results are reported as Estimated Values. |
| **Q-54b** | Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +5.1%. The results are reported as Estimated Values. |
| **Q-54c** | Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +6.9%. The results are reported as Estimated Values. |
| **Q-56** | Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C |
| **T-02** | This Batch QC sample was analyzed outside of the method specified 12 hour tune window. Results are estimated. |

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Philip Nerenberg

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## REPORTING NOTES AND CONVENTIONS:

**Abbreviations:**

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

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

NR Result Not Reported

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

**Detection Limits: Limit of Detection (LOD)**

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

**Reporting Limits: Limit of Quantitation (LOQ)**

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

**Reporting Conventions:**

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

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

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

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

**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).

**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.

Apex Laboratories

Philip Nerenberg, Lab Director

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## REPORTING NOTES AND CONVENTIONS (Cont.):

**Blanks (Cont.):**

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.

**Preparation Notes:**

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

**Sampling and Preservation Notes:**

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

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

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

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

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| **Maul Foster & Alongi, INC.** | Project: **POV-Terminal 1** | |
| **2001 NW 19th Ave, STE 200** | Project Number: **9085.10.12** | **Report ID:** |
| **Portland, OR 97209** | Project Manager: **David Weatherby** | **A9J1033 - 11 13 19 1613** |

## LABORATORY ACCREDITATION INFORMATION

### TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

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

### Apex Laboratories

| Matrix | Analysis | TNI_ID | Analyte | TNI_ID | Accreditation |
|---|---|---|---|---|---|

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

### Secondary Accreditations

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

### Subcontract Laboratory Accreditations

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

### Field Testing Parameters

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

Apex Laboratories

Philip Nerenberg, Lab Director

*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.*

**Apex Laboratories, LLC**

**6700 S.W. Sandburg Street**
**Tigard, OR 97223**
**503-718-2323**
**EPA ID: OR01039**

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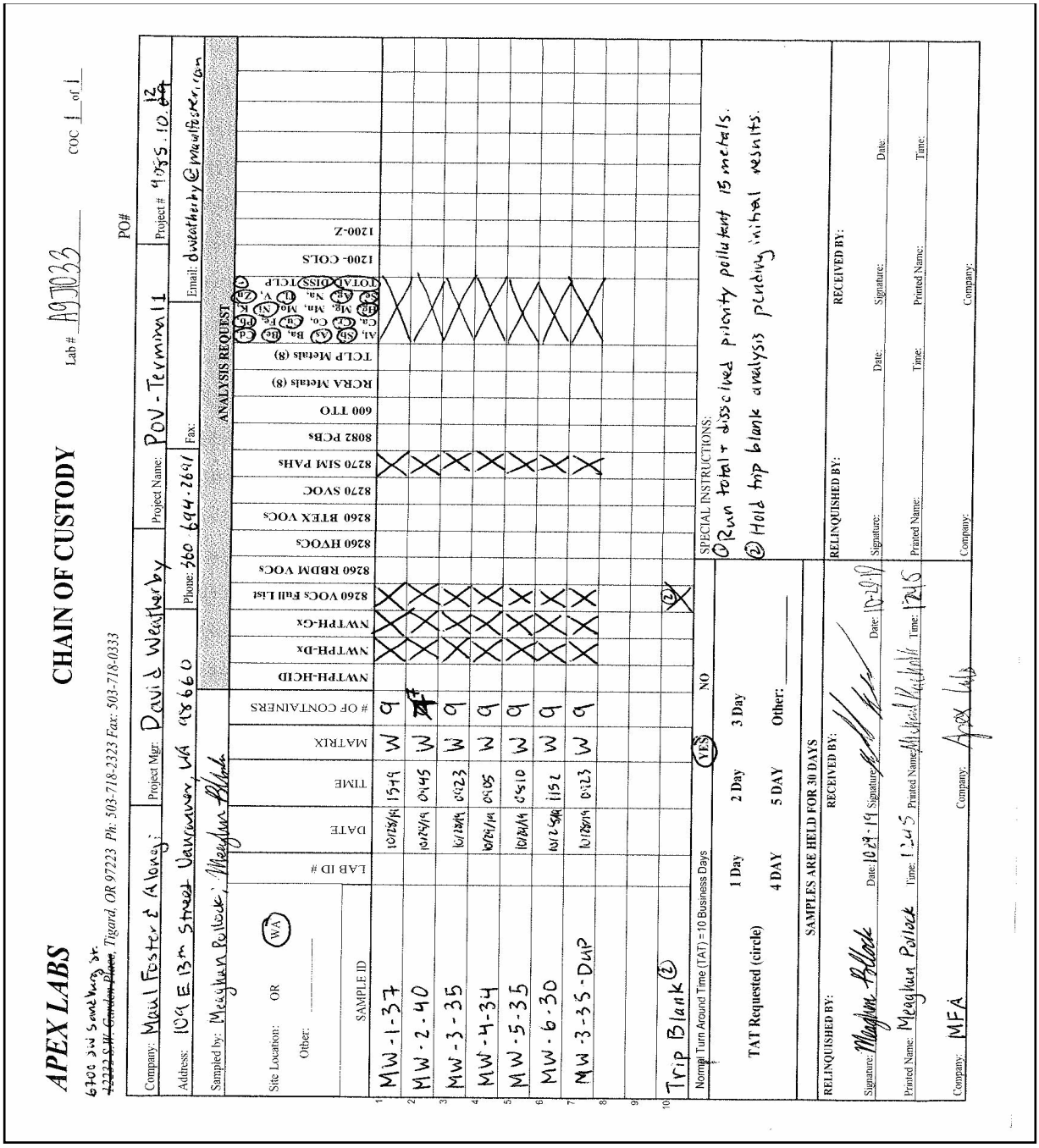


Apex Laboratories

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## APEX LABS COOLER RECEIPT FORM

**Client:** Maul Foster + Alongi Element WO#: A9J1033

**Project/Project #:** POV-Terminal 1 / 9085.10.12

**Delivery Info:**

Date/time received: 10-29-19 @ 1245 By: MK

Delivered by: Apex X Client ___ ESS ___ FedEx ___ UPS ___ Swift ___ Senvoy ___ SDS ___ Other ___

**Cooler Inspection** Date/time inspected: 10-29-19 @ 1320 By: MK

Chain of Custody included? Yes X No ___ Custody seals? Yes ___ No X

Signed/dated by client? Yes X No ___

Signed/dated by Apex? Yes X No ___

| | Cooler #1 | Cooler #2 | Cooler #3 | Cooler #4 | Cooler #5 | Cooler #6 | Cooler #7 |
|---|---|---|---|---|---|---|---|
| Temperature (°C) | 0.3 | 0.1 | 1.9 | | | | |
| Received on ice? (Y/N) | Y | Y | Y | | | | |
| Temp. blanks? (Y/N) | Y | Y | Y | | | | |
| Ice type: (Gel/Real/Other) | Real | " | " | | | | |
| Condition: | good | " | " | | | | |

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

If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA

Out of temperature samples form initiated? Yes/No/NA

**Samples Inspection:** Date/time inspected: 10/29/19 @ 1617 By: [illegible]

All samples intact? Yes X No ___ Comments:

Bottle labels/COCs agree? Yes X No ___ Comments:

COC/container discrepancies form initiated? Yes ___ No ___ NA X

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

MW-2-40 limited volume 1Cl amber

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

Comments

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

Comments:

Additional information:

TB# 2178

Labeled by: [illegible] Witness: [illegible] Cooler Inspected by: [illegible] See Project Contact Form: Y

Apex Laboratories

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Philip Nerenberg

Philip Nerenberg, Lab Director

# ATTACHMENT D

## DATA VALIDATION MEMORANDUM

# DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 9085.10.12 | NOVEMBER 22, 2019 | PORT OF VANCOUVER

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for groundwater samples collected at the Port of Vancouver Terminal 1. The samples were collected on October 28 and 29, 2019.

Apex Laboratories, LLC (Apex) performed the analyses. Apex report A9J1033 was reviewed. The analyses performed and samples analyzed are listed below. Samples submitted on hold are also indicated.

| Analysis | Reference |
|---|---|
| Diesel- and Oil-Range Hydrocarbons | NWTPH-Dx |
| Gasoline-Range Hydrocarbons | NWTPH-Gx |
| Polycyclic Aromatic Hydrocarbons | USEPA 8270D-SIM |
| Total and Dissolved Priority Pollutant Metals | USEPA 6020A |
| Volatile Organic Compounds | USEPA 8260C |

NWTPH = Northwest Total Petroleum Hydrocarbons.
SIM = selected ion monitoring.
USEPA = U.S. Environmental Protection Agency.

| Samples Analyzed | |
|---|---|
| **Report A9J1033** | |
| MW-1-37 | MW-5-35 |
| MW-2-40 | MW-6-30 |
| MW-3-35 | MW-3-35-DUP |
| MW-4-34 | Trip Blank (hold) |

## DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (USEPA) procedures (USEPA, 2017a,b) and appropriate laboratory and method-specific guidelines (Apex, 2018; USEPA, 1986).

In report A9J1033, all detected NWTPH-Dx diesel-range hydrocarbon results were flagged by Apex, based on chromatographic patterns that did not resemble the chromatographic patterns of the fuel standards used for quantitation. The results were reported as diesel-range hydrocarbons instead of a specific fuel; thus, qualification was not required.

In report A9J1033, Apex flagged all detected NWTPH-Gx gasoline-range hydrocarbon results, based on the presence of individual analyte peaks within the gasoline hydrocarbon quantitation

range. Apex noted that no fuel pattern had been detected. The results were reported as gasoline-range hydrocarbons instead of a specific fuel; thus, qualification was not required.

In report A9J1033, Apex flagged some USEPA Method 8270D-SIM results as estimated because of insufficient chromatographic peak separation. The results have been qualified by the reviewer with "J" as estimated.

| Report | Sample | Component | Original Result (ug/L) | Qualified Result (ug/L) |
|---|---|---|---|---|
| A9J1033 | MW-1-37 | Benzo(b)fluoranthene | 0.0702 | 0.0702 J |

NOTES:
J = result is estimated.
ug/L = micrograms per liter.

Total and dissolved metals results were compared. Dissolved results greater than associated total results were not qualified if the relative percent difference (RPD) was less than 20 percent. Qualification was required for the following based on dissolved metals results that were greater than the associated total metals results.

| Report | Sample | Component | Original Result (ug/L) | Qualified Result (ug/L) |
|---|---|---|---|---|
| A9J1033 | MW-2-40 | Total Arsenic | 3.01 | 3.01 J |
| | | Dissolved Arsenic | 4.16 | 4.16 J |
| | | Total Nickel | 1.08 | 1.08 J |
| | | Dissolved Nickel | 1.78 | 1.78 J |
| | | Total Zinc | 4.00 U | 4.00 UJ |
| | | Dissolved Zinc | 9.12 | 9.12 J |
| | MW-3-35 | Total Zinc | 9.08 | 9.08 J |
| | | Dissolved Zinc | 12.7 | 12.7 J |
| | MW-3-35-DUP | Total Zinc | 9.01 | 9.0 J |
| | | Dissolved Zinc | 16.4 | 16.4 J |
| | MW-6-30 | Total Zinc | 4.00 U | 4.00 UJ |
| | | Dissolved Zinc | 10.7 | 10.7 J |

NOTES:
J = result is estimated.
U = result is non-detect.
ug/L = micrograms per liter.

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the USEPA procedures (e.g., NWTPH-Dx).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

## HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

### Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

### Preservation and Sample Storage

The samples were preserved and stored appropriately.

## BLANKS

### Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. All laboratory method blanks were non-detect to reporting limits for all target analytes.

### Trip Blanks

Report A9J1033 states that a trip blank sample was submitted to Apex on hold. Samples could not be evaluated for trip contamination.

### Equipment Rinsate Blanks

Equipment rinsate blanks were not required for this sampling event, as samples were collected with single-use equipment.

## SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate percent recoveries were within acceptance limits.

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. Where MS/MSD analyses were not performed because of insufficient sample volume, batch precision and accuracy were evaluated with laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) and/or laboratory duplicate samples.

According to report A9J1033, the USEPA Method 8260C batch 9101746 MS exceeded upper percent recovery acceptance limits for 1,1-dichloropropane and o-xylene, at 126 percent and 123 percent, respectively. The sample used to prepare the MS was non-detect; thus, qualification was not required.

According to report A9J1033, the USEPA Method 8260C batch 9101792 MS exceeded the upper percent recovery acceptance limit of 126 percent for dibromochloromethane at 127 percent. The reviewer confirmed that the MS had been prepared with a sample from an unrelated project; thus, the sample matrix may not represent the project sample matrices reported in A9J1033. No qualification was required.

All remaining MS/MSD results were within acceptance limits for percent recovery and RPDs.

## LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results within five times the reporting limit were not evaluated for precision.

In report A9J1033, Apex flagged a NWTPH-Gx and USEPA Method 8260C batch 9101792 laboratory duplicate (9101792-DUP2) because of analysis outside of the recommended 12-hour tune window. The laboratory duplicate was prepared with a sample from an unrelated project and the remaining batch quality control were analyzed within the tune window; thus, qualification was not required.

All remaining laboratory duplicate RPDs were within acceptance limits.

## LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

An LCS/LCSD is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency.

Report A9J1033 states that the USEPA Method 8260C batch 9101746 LCS exceeded upper percent recovery acceptance limits of 120 percent for 2,2-dichloropropane, at 125 percent. The associated sample results were non-detect; thus, qualification was not required.

Report A9J1033 states that the USEPA Method 8260C batch 9101792 LCS exceeded upper percent recovery acceptance limits of 120 percent for bromoform, bromomethane, and dibromochloromethane ranging from 124 percent to 132 percent. The associated sample results were non-detect; thus, qualification was not required.

All remaining LCS/LCSD results were within acceptance limits for percent recovery and RPD.

## FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. According to report A9J1033, one field duplicate (MW-3-35/MW-3-35-DUP) was submitted for analysis. MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the reporting limit, or 50 percent RPD for results that are greater than five times the reporting

limit. Non-detect data are not used in the evaluation of field duplicate results. All field duplicate results met the RPD acceptance criteria.

## CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. CCV results were not reported; however, Apex flagged sample results associated with CCV results that did not meet acceptance criteria. The reviewer took no action based on quality-control sample flags for CCV exceedances when quality-control results met acceptance criteria.

## REPORTING LIMITS

Apex used routine reporting limits for non-detect results, except for samples requiring dilutions because of high analyte concentrations and/or matrix interferences.

## DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report A9J1033, Apex noted on the cooler receipt form that limited sample volume was received in the hydrochloric acid-preserved container received for sample MW-2-40. The associated NWTPH-Dx results were reported with raised reporting limits. No action was required.

According to report A9J1033, a sample collection date, matrix, and the number of containers were not provided on the chain of custody for the trip blank. The sampler was notified. No additional action was required.

No additional issues were found.

# REFERENCES

Apex. 2018. Quality systems manual. Rev. 6. Apex Laboratories, LLC, Tigard, Oregon. July 2.

USEPA. 1986. Test methods for evaluating solid waste, physical/chemical methods. EPA publication SW-846. 3d ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), and VI phase III.

USEPA. 2017a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

USEPA. 2017b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.