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August 20, 2024

Mr. Sam Meng, Site Manager
Department of Ecology
PO Box 47775
Olympia, Washington 98504-7775

Subject: **Submittal of Semi-Annual 2024 Groundwater Monitoring Report**
January through June 2024
NuStar Vancouver Facility
Vancouver, Washington
File No. 19001-009-33/34

Dear Mr. Meng:

Enclosed please find the *Semi-Annual Groundwater Monitoring Report: January through June 2024*. The report was prepared on behalf of NuStar Terminals Services, Inc. (NuStar) by GeoEngineers, Inc. (GeoEngineers) and presents data collected from January through June 2024.

If you have any questions or would like to discuss this further, please contact me at 503-807-3835.

Sincerely,
GeoEngineers, Inc.

Stephanie Bosze Salisbury, LG
Associate Geologist

SBS:mce:lmm

cc:

Ms. Victoria Wark, Evergreen Resources Management Operations (electronic deliverable)
Ms. Patty Boyden, Port of Vancouver (electronic deliverable)
Mr. Richard Roché, Parametrix (electronic deliverable)
Mr. R.J. Sherman, P.G., Kinder Morgan (electronic deliverable)

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Semi-Annual Groundwater Monitoring Report

January through June 2024
NuStar Vancouver Facility
2565 NW Harborside Drive, Port of Vancouver
Vancouver, Washington

for

NuStar Terminals Services, Inc.

August 20, 2024

GeoEngineers
Earth Science + Technology

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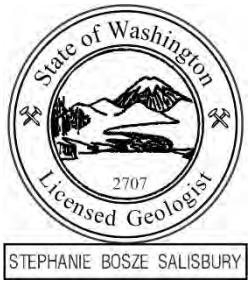
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1.0 INTRODUCTION

This semi-annual groundwater monitoring report was prepared by GeoEngineers, Inc. (GeoEngineers) on behalf of NuStar Terminals Services, Inc. (NuStar) for the NuStar Vancouver Facility (Facility) in Vancouver, Washington (Figure 1)[1]. This report presents the results of the groundwater monitoring activities completed at the Facility during the first and second quarters of 2024. Additionally, the report includes a summary and evaluation of interim action monitoring data for the reporting period.

The Facility is located at the Port of Vancouver (POV) Terminal No. 2 in Vancouver, Washington (Figure 1). The Facility Site Plan is shown on Figure 2. The property address is 2565 NW Harborside Drive, Port of Vancouver, Vancouver, Washington 98660 (Latitude: N45° 38.26', Longitude: W122° 42.20'). The property is owned by the POV and leased by NuStar; the current extent of the leasehold is shown on Figure 2. The Facility is on the north shore of the Columbia River. Land adjacent to the Facility is industrial property also owned by the POV. The Facility is approximately 19 acres in size located on Clark County Tax Lot Numbers: 151979-000, 502010-002, 502010-000, and a portion of 502020-000, as well as a portion of the Washington Department of Natural Resources tideland area managed by the POV.

2.0 GROUNDWATER MONITORING FIELD ACTIVITIES

The groundwater monitoring event was performed in accordance with the Groundwater Monitoring Plan (GWMP; Ash Creek, 2008), approved by the Washington State Department of Ecology (Ecology) in a letter to NuStar dated July 30, 2009. The monitoring program for the first and second quarters of 2024 is summarized in Table 1. Two monitoring events were conducted during this period: the first quarter 2024 groundwater monitoring event was conducted from March 4 through 8, 2024. The second quarter 2024 monitoring event was conducted from June 10 through 14, 2024.

2.1. Water Level Measurements

First quarter 2024 groundwater levels were measured March 4, 2024, and second quarter groundwater levels were measured on June 10, 2024. The depth to groundwater was measured at Facility monitoring wells, multi-level groundwater monitoring (MGMS) wells and selected off-leasehold wells (MW-F, MW-14, MW17, MW-23i, MW-25i, MW-26, MW-32s, MW-32i, S-1, and S2). Monitoring well locations are shown on Figure 2.

Depth to groundwater and groundwater elevation data are summarized in Table 2. The wells are screened in three different groundwater zones: Shallow, Intermediate, and Deep as defined in the Remedial Investigation report for the Facility (Apex, 2013).

2.2. Monitoring Well Sampling and Analysis

The sampling and analysis program for first and second quarters of 2024 is summarized in Table 1. Groundwater monitoring data sheets for the sampling events are included in Appendix A. For quality

[1] Although Sunoco LP acquired NuStar Energy L.P. on May 3, 2024, to date no operating entities' names have changed.

assurance/quality control (QA/QC), sample duplicates were collected from wells MW-7, MW-12, MW-19, and MGMS3-40 during the first and second quarters of 2024 sampling events.

For both sampling events, the samples were uniquely labeled, stored in insulated coolers with ice, and transported under chain-of-custody protocol to Apex Laboratories of Tigard, Oregon, for laboratory analysis. Samples were analyzed for halogenated volatile organic compounds (HVOCs) by U.S. Environmental Protection Agency (EPA) Method 8260D. Groundwater analytical results for both events are shown in Table 3. Historical HVOC data are tabulated in Appendix B.

The terminal handled and distributed bulk fertilizer products, primarily urea but also mono-ammonium phosphate, continuously from 2014 to September 2020. The former contract with the fertilizer supplier has been terminated and it is unlikely fertilizer will be handled at the terminal in the future under a new contract. Urea cannot be directly measured in water but can be estimated by analysis of the primary urea constituents: ammonia, nitrate, and nitrite. To evaluate for urea in groundwater during the first and second quarters of 2024, Facility monitoring wells were sampled for nitrate as nitrogen and nitrite as nitrogen by EPA Method 300.0 and ammonia as nitrogen by EPA Method 4500-NH3. Groundwater analytical results for both events are shown with historical results in Table 4.

Samples from select wells were also analyzed for total organic carbon (TOC) and ethene, ethane, and methane to assist in evaluating remedial parameters related to the interim action measures discussed in Section 5.0. Samples collected during the first and second quarter events were subcontracted to ALS Environmental of Kelso, Washington using chain-of-custody protocols for TOC analysis using EPA Method 5310C. Apex Laboratories subcontracted to Air Technology Laboratories of City of Industry, California, using chain-of-custody protocols, for laboratory analysis of ethene, ethane, and methane by Method RSK-175 for samples collected during both the first and second quarter 2024 events. Chains-of-custody and subcontract orders between Apex Laboratories and subcontracted laboratories are included in the analytical laboratory reports from Apex Laboratories, which are presented in Appendix C.

3.0 GROUNDWATER ELEVATIONS

Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the first quarter 2024 are shown on Figures 3 and 4, respectively. Groundwater elevations and estimated elevation contours for the Shallow and Intermediate Zone wells for the second quarter 2024 are shown on Figures 5 and 6, respectively.

3.1. First Quarter 2024

Shallow Zone. On March 4, 2024, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Monitoring well MW-32s was not gauged during the first quarter gauging event due to a vehicle being parked over the well monument. Well MW-32s was successfully gauged and sampled on March 6, 2024. The observed depths to groundwater in these Shallow Zone wells ranged from 23.64 to 32.94 feet below the top of casing (BTOC), and the corresponding groundwater elevations in these wells ranged from 6.28 to 8.22 feet above mean sea level (MSL; Table 2).

During the first quarter 2024 monitoring event, gauging of the Shallow Zone wells was completed between 7:31 AM and 9:42 AM. During the gauging activities, the water level in the adjacent Columbia River

increased by 1.06 feet. River stage data are based on the Columbia River Datum (CRD)[2] and were obtained from the nearest National Oceanographic and Atmospheric Administration (NOAA) tide station (Station ID 9440083), which is located approximately 0.5 mile upstream of the Facility.

As shown in Table 2, groundwater elevations in the Shallow Zone were calculated to be an average of 0.08 feet higher in March 2024 than during the previous monitoring event in December 2023. During the first quarter 2024 gauging event, and generally consistent with previous gauging data, there was a groundwater divide extending from wells MW-8 and MW-10 located in the northwest corner of the Facility to well MW-3 located in the east/southeast corner of the Facility. To the south/southeast of the MW-8, MW-10 and MW-3 areas, groundwater flow is south toward the river. To the north/northeast of wells MW-8, MW-10 and MW-3, groundwater flow is to the northeast (Figure 3).

Intermediate Zone. On March 4, 2024, depth-to-groundwater measurements were made at Intermediate Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. Monitoring well MW-32i was not gauged during the first quarter gauging event due to a vehicle being parked over the well monument. Well MW-32i was successfully gauged on March 6, 2024. Groundwater levels in Intermediate Zone wells were measured during a predicted tidal inflection to minimize the magnitude of tidal influence on water levels during the gauging event. Water levels were measured from Intermediate Zone wells between 11:03 AM and 11:24 AM on March 4, 2024. During the time interval in which Intermediate Zone wells were gauged, water levels in the adjacent Columbia River increased by 0.09 feet.

During the March 4, 2024 water level measurements, the observed depths to groundwater in the Intermediate Zone wells ranged from 23.93 to 27.99 feet BTOC, with groundwater elevations ranging from 6.42 to 7.99 feet above MSL (Table 2). As shown in Table 2, groundwater elevations in the Intermediate Zone were calculated to be an average of 0.58 feet lower in March 2024 than during the previous monitoring event in December 2023. During the March 2024 gauging event, the Intermediate Zone groundwater gradient beneath the Facility was flat with a slight gradient south toward the river (Figure 4).

Deep Zone. Depth to groundwater was measured in well MW-24d, which is screened from 210 to 230 feet below ground surface (bgs), within the Troutdale Formation. Depth to water in well MW-24d was 26.20 feet BTOC, corresponding to an elevation of 7.71 feet above MSL. A groundwater potentiometric map was not prepared for Deep Zone groundwater.

3.2. Second Quarter 2024

Shallow Zone. On June 10, 2024, depth-to-groundwater measurements were made at Shallow Zone monitoring wells in accordance with the groundwater monitoring plan provided in Table 1. The observed depths to groundwater in these Shallow Zone wells ranged from 23.04 to 31.07 feet BTOC, with groundwater elevations ranging from 7.18 to 8.62 feet above MSL (Table 2).

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[2] Columbia River Datum (CRD) is the adopted fixed low water reference plane for this area. CRD is a U.S. Army Corps of Engineers non-tidal datum defined at distinct river miles relative to the North American Vertical Datum of 1988 (NAVD88) and is used as chart datum above river mile 23 on the Columbia River. Datums are computed using observations from the low river stages of the year, generally August through October due to the masking of the tidal signal from strong seasonal river runoff during other portions of the year. Depending on river flow, water levels can be significantly higher than CRD. As of 2014, the U.S. Army Corps of Engineers provided updated offsets for CRD that have been applied to this station.

During the second quarter 2024 monitoring event, gauging of the Shallow Zone wells was completed between 8:16 AM and 11:06 AM. During the gauging activities, the water level in the adjacent Columbia River decreased by a net of 0.50 feet. As shown in Table 2, groundwater elevations in June 2024 were calculated to be an average of 0.48 feet higher than during the previous gauging event in March 2024.

During the second quarter groundwater monitoring event, there was a slight groundwater trough trending in the central portion of the site (from northwest to southeast, between wells MW-26, MW-9, MP-1, MW-7, MW-5, MW-2 and MW-6) with groundwater across the remainder of the site being generally flat (as shown on Figure 5). This is somewhat atypical as groundwater flow in the Shallow Zone from the majority of the terminal is typically toward the river. However, occasionally during or following periods of elevated precipitation, groundwater flow may be observed with a flat or even northerly/northeasterly flow over short durations of time.

Intermediate Zone. During the June 10, 2024 gauging event, depth to groundwater was measured in Intermediate Zone wells between 8:14 AM and 8:55 AM. During this time period, water levels in the adjacent Columbia River increased by a net 0.06 feet. The observed depths to groundwater in Intermediate Zone wells ranged from 23.52 to 26.30 feet BTOC, and groundwater elevations in these wells ranged from 7.77 to 8:43 feet above MSL (Table 2). As shown in Table 2, groundwater elevations on average were calculated to be an average of 0.55 feet higher in June 2024 than the previous monitoring event in March 2024. During the June 10, 2024 gauging event, intermediate groundwater flow beneath the Facility was flat with a very slight gradient towards the river (Figure 6).

Deep Zone. Depth to groundwater in Deep Zone well MW-24d was 25.76 feet BTOC, corresponding to an elevation of 8.15 feet above MSL (Table 2).

4.0 GROUNDWATER SAMPLE ANALYTICAL RESULTS

Complete copies of the laboratory reports for the first and second quarter 2024 groundwater monitoring events, including the quality assurance evaluation report and chain-of-custody documentation, are included in Appendix C.

4.1. First Quarter 2024

The March 2024 monitoring program included the collection of groundwater samples from the wells listed in Table 1[3]. Groundwater samples from these wells were analyzed for HVOCs, nitrate as nitrogen, nitrite as nitrogen, and ammonia as nitrogen. The HVOC and nitrate/nitrite/ammonia results for the first quarter 2024 are summarized in Tables 3 and 4, respectively; HVOC data are shown on Figure 7, and nitrate and ammonia results are shown on Figure 8.

[3] Beginning first quarter 2024, Kinder Morgan wells KMW-4 through KMW-6 have been added to the project scope. The wells are owned and maintained by Kinder Morgan; split samples are collected by GeoEngineers for HVOC and fertilizer COPC analysis during the Kinder Morgan sampling activities.

4.2. Second Quarter 2024

The June 2024 monitoring program included the collection of groundwater samples from the wells listed in Table 1. The groundwater samples were analyzed for HVOCs, nitrate as nitrogen, nitrite as nitrogen, and ammonia as nitrogen. The sample results for the second quarter 2024 are summarized in Tables 3 and 4; HVOC data are shown on Figure 9, and nitrate and ammonia results are shown on Figure 10.

4.3. Evaluation of Results

HVOC and fertilizer constituent concentration trend plots for each monitoring well are provided in Appendices D and E, respectively. Monitoring results demonstrate decreasing HVOC concentration trends in Shallow and Intermediate Zone groundwater in 29 of 33 monitoring wells. HVOC concentration trends were flat to moderately increasing for trichloroethene (TCE) and tetrachloroethene (PCE) in wells EX, MW-17, MW-19, and MGMS3-132. The concentrations of PCE and TCE in wells MW-17 and MGMS3-132 have consistently been variable and relatively low (i.e., PCE ranging from less than 1 microgram per liter [µg/L] to 16.3 µg/L for MGMS3-132 and TCE ranging from less than the reporting limit of 0.5 µg/L to 28.2 µg/L for MW-17); therefore, it is difficult to identify a discernable concentration trend for the wells. The increasing HVOC trends may be the result of the conversion of chlorinated hydrocarbon mass from PCE to TCE during reductive dechlorination. A discussion of reductive dechlorination and total molar ethene mass is presented in Section 5.3.

Ammonia, nitrate, and nitrite results are provided in Table 4 and on Figures 8 and 10. The highest concentrations of ammonia and nitrate were generally found in the western areas of the leasehold, or to the immediate west of the NuStar leasehold, in Shallow Zone groundwater. The only exception being well MW-1, in which ammonia was elevated relative to the other monitoring wells in the area. It should be noted that the wells surrounding MW-1 (MGMS3, MW-5, and EW-1) each continue to have relatively low concentrations of ammonia and nitrate during the first half of 2024. Furthermore, groundwater data collected during a soil and groundwater investigation during the fall of 2023 indicate that fertilizer constituents in groundwater from a boring about 100 feet east of well MW-1 are also very low. Concentrations of ammonia and nitrate in the Intermediate Zone groundwater were more consistent throughout the Facility and were generally one to two orders of magnitude lower than concentrations in Shallow Zone groundwater. This is consistent with the HVOC data at the facility, as there is silty soil that acts as a semi-permeable barrier between shallow and intermediate groundwater beneath the leasehold and migration of contaminates from shallow to intermediate groundwater is minimal (Ash Creek, 2009a).

Fertilizer products have historically been stored at the Facility, although the specific products and storage areas have changed over time. Historical fertilizer handling operations ceased in late August 2008. The Facility obtained a new contract in 2014, and, at that time, resumed fertilizer handling and distribution processes. This fertilizer handling continued until the contract was terminated, and the last shipment was received in September 2020. There is currently no active receiving, handling, or distribution of fertilizer products at the NuStar Facility. Historical nitrate results are included in both Table 4 and Appendix E.

Trend plots depicting the concentrations of ammonia and nitrate since October 2020 are provided in Appendix E. For some monitoring wells, older fertilizer data are available (and are referenced in Table 4); however, the trend plots are intended to show fertilizer constituent concentration trends after fertilizer was no longer stored or handled at the Facility, thus do not depict pre-September 2020 data. Where ammonia or nitrate are not shown on the trend plots, the constituent(s) has remained below method reporting limits during the monitoring period. While the results are still preliminary, significant reductions of nitrate and/or

ammonia have been observed in several wells in which concentrations were elevated in September 2020 (i.e., EX, MW-1 (nitrate only), MW-8, MW-9, MW-10, MW-14, MW-26, and MP-1). With the exception of well MW-1, these wells are located in the western portion of the Facility (or off the leasehold to the west), consistent with our understanding of the most elevated fertilizer constituent concentrations at the Facility. For wells MW-7, MW-12, MW-13 and MW-16, concentration trends indicate that either nitrate or ammonia (not both) have increased since fertilizer handing stopped in September 2020. Groundwater concentrations from the remaining wells are either low (less than 1.0 mg/L) or have remained relatively constant since fertilizer handling has ceased. In each monitoring well, there is a strong seasonable variability in fertilizer constituent concentration. The trend patterns for nitrate and ammonia are not identical and are in some instances inversely related (e.g., wells MW-12 and MW-13).

In accordance with the 2019 Agreed Order DE 15806, a Supplemental Remedial Investigation (SRI) was initiated in the first semi-annual 2021 reporting period to further assess the nature and extent of ammonia, nitrates, and nitrites in groundwater at the Facility. The results of the SRI groundwater investigation were submitted to Ecology in a Draft Phase I SRI Upland Soil and Groundwater Investigation Report in June 2023. In that report, additional investigation was proposed to further evaluate potential sources as well as the nature and extent of fertilizer constituents in groundwater at the Facility. Ecology approved the work scope with some additional comments/recommendations and the field investigation was completed in October/November 2023. More information on the additional SRI investigation is provided in Section 7.0.

5.0 INTERIM ACTION MEASURE ACTIVITIES

Several interim actions have been implemented at the Facility, as listed below.

- Between 2000 and 2005, a remediation system operated at the Facility that included: (1) a re-circulating system to treat groundwater, and (2) vapor extraction to treat soil. The interim action system pumped groundwater from extraction wells installed near the river, treated the pumped water with potassium permanganate, and then filtered and pumped the water into a series of injection wells along the railroad tracks. For soil, a soil vapor extraction (SVE) system withdrew soil vapors from wells IW-1, IN-2, IN-3, IN-4, EX-1, EX-3, EX-4, and EX-5 (see Figure 2). This SVE system was inactivated in 2005 because it no longer was removing significant HVOC mass.
- Bioremediation injections for remediation of Facility groundwater and the installation of an SVE system for the remediation of HVOCs in vadose-zone soils were completed in the spring/summer of 2008 (Figure 11). These activities are herein referred to as the 2008 interim action. This SVE system has been operating since 2008.
- The SVE system was expanded and additional bioremediation injections were completed during the summer of 2011, which is referred to herein as the 2011 interim action (Figures 11 and 13). Details of the 2008 and 2011 interim actions are provided in the Interim Action Installation Report (Ash Creek, 2009b) and the 2011 Interim Action Evaluation Report (Ash Creek, 2012), respectively.
- Additional bioremediation injections were completed in 2016 adjacent to the seawall at the Facility in accordance with the 2015 Interim Action Work Plan (Apex, 2016). The locations of the 2016 bioremediation injections are shown onFigure 12. This work is referred to as the 2016 interim action. The Interim Action Summary Report (Apex, 2017) describes the scope and preliminary results of the 2016 interim action.

The 2008, 2011, and 2016 interim actions and results to date are described in the following subsections.

5.1. Summary of 2008 and 2011 Interim Actions

The 2008 interim action consisted of an SVE system in the vadose zone and enhanced anaerobic bioremediation of the Shallow Zone groundwater. The 2008 enhanced bioremediation locations and the SVE system layout are shown in Appendix F. The 2008 SVE system removed approximately 3,150 pounds of HVOCs between startup in September 2008 and the expansion in 2011. The mass removal rate at startup in 2008 was 58.8 pounds per day (lbs/day). The removal rate decreased to an average of 1.7 lbs/day by the third quarter of 2011. A mass removal chart for the 2008 SVE system is provided in Appendix F.

A soil and groundwater investigation in 2010 indicated that the 2008 interim action had reduced HVOCs in vadose-zone soils by 90 percent for PCE and 98 percent for TCE and had reduced total molar ethene concentrations in source area groundwater by 77 percent (Ash Creek, 2011). The investigation results were summarized in an appendix to the *2011 Interim Action Work Plan* (Work Plan; Ash Creek 2011) that was submitted to Ecology on March 25, 2011. The Work Plan included a proposal for the expansion of the SVE system to include 17 additional SVE well locations, additional bioremediation injections in the 2008 interim action area, and bioremediation injections in an expanded interim action area. On May 23, 2011, Ecology approved the Work Plan. The bioinjection activities were conducted from July 21 through August 31, 2011, and the SVE installation activities were conducted from August 2 through 5, 2011, and August 29 through October 3, 2011. The 2008 and 2011 bioremediation injection locations are shown on Figure 11.

The initial Facility SVE system installed in 2008, herein referred to as the 2008 SVE system, was comprised of 17 wells, divided among five branches, which were connected by a network of underground piping as shown on drawings provided in Appendix F. As part of the 2011 SVE system expansion, Branches 4 and 5 were disconnected from the other system branches and were connected to a new blower unit located approximately 150 feet to the northeast of the railroad tracks (Figure 13). The wells and piping associated with Branches 4 and 5 and the associated blower unit are herein referred to as the North System. The current status of the North System is discussed in Section 5.3.2.

In August 2011, 17 additional SVE well pairs (for a total of 34 additional SVE wells) were installed within and to the south of Warehouse No. 2625 (a.k.a. the Butler Building), in general accordance with the Work Plan (Ash Creek 2011; Figure 13). For each well pair, one well is screened in vadose-zone soils from 10 to 15 feet bgs and the second well is screened in vadose-zone soils from 15 to 25 feet bgs. These 17 well pairs, along with the Branch 1 through 3 wells from the 2008 SVE system, are piped underground to a blower unit located outside of the southeast corner of Warehouse No. 2625. These SVE wells, associated underground piping, and the blower unit are herein referred to as the South System. The of The South System is still utilized, although has recently been out of operation for repair as discussed in Section 5.3.2.

5.2. Summary of 2016 Interim Action

NuStar and the POV submitted a joint Feasibility Study (FS) to Ecology in March 2014 (Apex and Parametrix, 2014). To avoid potential delays in groundwater treatment while working through the FS and the associated regulatory approval process, NuStar proposed to implement a portion of the recommended remedial action for the NuStar source area as an interim action. The details of the proposed interim action were submitted to Ecology in an *Interim Action Work Plan* on September 15, 2015. After a 30-day public comment period from May 12 to June 10, 2016, the Work Plan was approved on June 14, 2016. The interim action consisted

of bioremediation injections along the southern portion of the NuStar terminal near the seawall. Per Ecology's request, the interim action also included baseline sediment and surface water sampling in the Columbia River. Additionally, enhanced bioremediation injections were implemented in an isolated area to the northwest of the NuStar terminal (the Northwest [NW] Area), which has been less responsive to monitored natural attenuation than at the NuStar terminal. The NW Area bioremediation injections were completed as a joint project between NuStar and the POV.

The NW Area injections were completed in July 2016 and included the injection of 52,000 gallons of bioremediation oil substrate (EOS®PRO, diluted with water) into the Shallow Zone groundwater through 30 boreholes in the vicinity of and between (NuStar) monitoring wells MW-14 and MW-26. Figure 12 illustrates the approximate boring locations in the NW Area. The same substrate material was injected at the NuStar terminal in August and September 2016 and included the injection of 100,000 gallons of EOSPRO (diluted with water) into 72 borings along the southern portion of the Facility, adjacent to the seawall. Figure 12 identifies the approximate locations of the injection borings near the NuStar seawall. In accordance with the approved *Interim Action Work Plan*, a summary of the groundwater injection and surface/water sampling activities was provided to Ecology in an *Interim Action Summary Report* on June 29, 2017 (Apex, 2017). The report included the results of the baseline surface water and sediment sampling as well as the results of two quarters of post interim action groundwater monitoring. A brief evaluation of the groundwater monitoring results from the interim action area is summarized in Section 5.3 below.

5.3. Interim Action Monitoring and Evaluation

This section summarizes the scope and results of groundwater monitoring that has been performed to evaluate the effectiveness of interim actions. Effectiveness is evaluated by reviewing HVOC and ethene concentration trends and TOC concentrations in groundwater. Effectiveness of the SVE system is evaluated based on the mass removal rate.

5.3.1. Enhanced Bioremediation Injections

Groundwater samples collected from wells EX, MP-1, MW-7, MW-12, MW-13, MW-14, MW-19, MW-24i, MW-26, MGMS1-43, MGMS2-40, and MGMS3-43 during the first and second quarters 2024 sampling events were analyzed for TOC by EPA Method 5310D and ethene by Method RSK-175, to evaluate the performance of the bioremediation injections.

In addition to the laboratory analysis of groundwater samples, field measurements of oxidation-reduction potential (ORP) and dissolved oxygen (DO) were collected from the monitoring wells during the first and second quarters 2024 monitoring events. Table 5 shows the results of interim action groundwater monitoring from the February 2007 baseline event through the second quarter 2024 monitoring event. Wells MW-24i and MGMS2-40 are not located within the 2008 interim action injection area but are located within the footprint of the 2011 and 2016 interim action areas; therefore, interim action monitoring data for these wells are presented from the second quarter 2011 baseline event through the second quarter 2024. Wells MW-13, MW-14, MW-19, MW-26, MGMS-1, and MGMS-3 are not located within the 2008 or 2011 interim action areas but are within the 2016 interim action area; therefore, monitoring data for those wells are presented from September 2016 through June 2024.

A discussion of reductive dechlorination of HVOCs in groundwater from prior to the 2008 interim action through the second quarter 2024 is provided below.

5.3.1.1. HVOC Concentrations Evaluation

Bioremediation injections in the primary source area at the Facility were initiated in 2008 and expanded in 2011[4]; bioremediation injections along the riverbank and in the NW Area were completed in 2016. Additionally, seven injection boreholes were advanced in 2016 in the area of wells MP-1 and EX[5], located on the western side of the (former) primary source area. The following paragraphs evaluate the results to date in each of these areas.

Primary Source Area. Concentration trend plots for PCE, TCE, total dichloroethene (DCE), and vinyl chloride (VC) in 2008/2011 interim action area wells EX, MGMS2-40, MP-1, and MW-7 are provided in Appendix G. HVOC data are included from the baseline monitoring event that was completed prior to the 2008 interim action (first quarter 2007; second quarter 2007 for well MGMS2-40) through June 2024. Except for well EX, which was replaced after it was determined to have been damaged in first quarter 2019, subsequent to a sampling event in December 2018, concentrations of PCE and TCE have decreased in the interim action monitoring wells. The concentrations of PCE and TCE in wells MW-7 and MGMS2-40 have been reduced by more than 75 percent since the interim measures were initiated. The concentrations of PCE and TCE in well MP-1 have decreased by approximately 90 percent and 92 percent, respectively, between the February 2007 baseline event and the June 2024 monitoring event. The concentrations of PCE and TCE in well EX decreased by more than 99 percent between the February 2007 baseline event and the December 2018 monitoring event and are currently lower than the concentrations observed during the February 2007 baseline event.

Monitoring well EX was identified as damaged during the first quarter of 2019 and was decommissioned during the third quarter 2019. The December 2018 sampling event was the last sampling event for well EX prior to the well decommissioning. In April 2021, a replacement monitoring well was installed adjacent to the abandoned well location. HVOC concentrations in samples collected from the replacement monitoring well EX between the second half of 2021 and June 2024 have been higher than the concentrations measured in the adjacent location during the last monitoring event in December 2018 but concentrations are trending downwards. This well will continue to be monitored to determine if concentrations trends are consistent with historical results from the abandoned well.

Another indicator of effective treatment of chlorinated ethenes is a decrease in the total molar chloroethene concentration (the molar concentration of PCE, TCE, DCE, and VC combined). The use of total molar concentrations allows an assessment of changes in the total number of related contaminant molecules as the reductive dechlorination process transitions from the relatively heavy PCE to the progressively lighter TCE, DCE, and VC. Molar concentration trend plots for the interim action wells are provided in Appendix G. Between the February 2007 baseline event and the June 2024 monitoring event, total molar concentrations in wells MP-1, MW-7 and MGMS2-40 decreased between 73 percent (well MGMS2-40) to approximately 99 percent (well MW-7). Between the first sampling event in 2009 and the December 2018 monitoring event, total molar concentrations in well EX decreased over 99 percent. In the first 13 samples collected from well EX (June 2021 to June 2024) after the replacement well was installed, the total molar ethene concentration in groundwater was higher in seven of the samples relative to February 2007 concentrations. The total molar concentrations in well EX during the last four quarterly monitoring events were lower than the 2007 baseline concentration. Concentration trends will continue to be evaluated in

[4] The description of the primary source area or "source area" is detailed in the Revised Remedial Investigation Report (Ash Creek, 2009a); the location is identified on Figure 2 of this report.

[5] Monitoring well EX has historically been referred to as EX-1 or EX. It is now referred to as EX.

well EX to determine if those concentrations continue to trend downward. Additional HVOC investigation was completed during the fourth quarter 2023 in this area as part of Phase II of the SRI. The data from the investigation are currently being evaluated and will provide more information about HVOC concentrations in the vicinity of well EX and the primary source area. and to further understand the remedial progress from interim actions conducted to date.

Riverbank Area. Wells MW-12, MW-13, MW-19, MGMS1-43, and MGMS3-40 are located within the 2016 riverbank interim action area and, therefore, are useful for evaluating the effectiveness of the 2016 interim action. Concentration trend plots for PCE, TCE, DCE, and VC in these wells are provided in Appendix G. As shown on the trend plots, monitoring results from the 2016 interim action area indicate reductions in concentrations of PCE and TCE of over 97 percent in groundwater from wells MW-12, MW-13, and MGMS3-40 after the 2016 enhanced bioremediation injections. For example, concentrations of PCE and TCE in well MW-13 in June 2016, prior to the injection event, were 2,470 and 1,820 µg/L, respectively. By June 2024, PCE and TCE were detected at 21.2 and 8.94 µg/L, respectively. DCE concentrations have also decreased. The DCE concentration in well MW-13 has been reduced by approximately 89 percent since the 2016 enhanced bioremediation injections; concentrations of DCE in well MGMS1-43 has decreased by more than 84 percent since 2007 and over 31 percent since 2016. Concentrations of DCE in well MGMS3-40 have decreased by more than 99 percent since 2007 and over 99 percent since 2016.

Unlike wells MW-12 and MW-13, HVOC concentrations in well MW-19 have not shown a discernable response to the 2016 oil injections. Well MW-19 is in an area of consistently flat groundwater gradient, and it appears, based on the TOC readings from this well (see Table 5), that the oil substrate did not reach the area of this well. However, the presence of VC (and ethene) in the groundwater samples from the well supports that reductive dechlorination is occurring near the well.

The first and second quarters 2024 results showed a continued decrease of ethene in most of the riverbank wells suggesting that the oil substrate is becoming depleted and enhanced reductive dechlorination has slowed significantly in response. Additional discussion of ethene production is provided in the sections below. Future quarterly monitoring will be utilized to further evaluate these concentration trends, both in the Shallow Zone source area as well as outside of the source area treatment zone and in Intermediate Zone groundwater.

Northwest Area. Wells MW-14 and MW-26 are located within the 2016 NW Area interim action area and, therefore, are useful for evaluating the effectiveness of the interim action in this area. Concentration trend plots for PCE, TCE, DCE, and VC in these wells are provided in Appendix G. Response to the 2016 interim action injections was delayed and reduced in these wells, likely due to the typically flat or north/northwest groundwater gradient slowing the spread of the oil substrate. However, the average concentrations of PCE and TCE in wells MW-14 and MW-26 are lower post-2016 injections than the average concentrations of PCE and TCE were prior to the 2016 injections. These results indicate that although injections were not as effective in the NW Area, there still has been moderate success at decreasing concentrations. It should also be noted that the total molar ethene concentrations in both wells have continued to decrease, as shown on the trend plots in Appendix G.

Wells MW-14 and MW-26 are located on the periphery of the injection area, limiting their utility in monitoring the effectiveness of the injections. Continued quarterly groundwater monitoring will be conducted to further evaluate concentration trends. Additional soil and groundwater HVOC investigation was conducted in the NW Area during the fourth quarter of 2023 and the results are currently being evaluated. The additional

data will provide updated information on the nature and extent of HVOCs off site to the northwest of the NuStar leasehold and will be summarized for Ecology in the SRI.

5.3.1.2. Ethene Evaluation

Ethene is an end product of the reductive dechlorination process. The detection of ethene confirms the completion of the reductive dechlorination pathway and the destruction of the target HVOCs at the Facility. Ethene degrades quickly in most natural environments; therefore, observing increases in ethene concentration can be difficult. During the first semi-annual 2024 monitoring period, ethene was detected in three of the twelve 2016 interim action area monitoring wells sampled (MW-12, MW-13, and MGMS3-40). Further discussion of ethene results is provided below.

Primary Source Area. While the focus of the 2016 interim actions was not located in the area historically identified as the "primary source area," there was some overlap between the 2008/2011 interim action injection areas and the 2016 interim action injection area, namely in the vicinity of wells MP-1 and EX. Concentrations of ethene in well MP-1 reached a maximum of 328 µg/L in March 2017, decreased to 83.2 µg/L in June 2017, and then decreased to below reporting limits (1.0 to 13 µg/L) in the samples collected since then (September 2017 through June 2024). These data suggest that the 2016 bioremediation substrate injected near well MP-1 was effective for stimulating reductive dechlorination; however, the mass of substrate may be diminished.

Ethene was detected in well EX during six consecutive sampling events following the 2016 interim actions, with the highest concentration measured in June 2018 (99.2 µg/L). In the September 2018 monitoring event, ethene was detected an order of magnitude lower (2.9 µg/L) and has not been detected in well EX during the subsequent 12 sampling events. Well EX was not sampled between December 2018 and June 2021; due to damage to the well, the well was decommissioned in September 2019 and a replacement well was installed adjacent to the former well on April 15, 2021.

Monitoring well MGMS2-40 is located near, but outside of, the 2016 interim action injection area, and within the footprint of the 2011 interim action injection area. Ethene concentrations in well MGMS2-40 increased in response to the 2011 injections and remained elevated, although with variability, through March 2018. Ethene was not detected in well MGMS2-40 in the July 2018 sample but was detected during subsequent monitoring event samples through December 2020, at concentrations ranging from 1.4 to 78 µg/L. Ethene has not been detected (<1.0 µg/L) since the December 2020 monitoring event.

Riverbank Area. Prior to the 2016 interim action injections, ethene was not present in groundwater in wells located in the 2016 interim action area, including wells MW-12, MW-13, MW-19, and MGMS3-40, as shown in Table 5. Since the completion of the 2016 interim action injections, ethene has been detected in the four 2016 interim action area wells. The presence of ethene suggests that the 2016 injections have successfully resulted in the complete reductive dechlorination of the PCE and TCE. A summary of the presence and persistence of ethene in each riverbank area interim action well is provided below; ethene concentrations are tabulated in Table 5:

- Ethene concentrations in well MW-12 increased from non-detect, prior to the 2016 interim action, to 75.2 µg/L in March 2017, and remained elevated between March 2017 and September 2017. Concentrations of ethene in well MW-12 have been variable since November 2017, with concentrations ranging from below reporting limits (ranging between 1.0 and 13.0 µg/L) up to 200 µg/L. The

concentration of ethene in well MW-12 during this reporting period was 120 µg/L in March 2024 and 2.3 µg/L in June 2024.

- PCE and TCE concentrations in MW-13 have decreased significantly between September 2016 and June 2024 (from 5,090 µg/L and 951 µg/L, respectively, to 212 µg/L and 89.4 µg/L, respectively), but it was not until November 2017 that ethene was detected in the well. Beginning in November 2017, concentrations of ethene rose to a maximum concentration of 500 µg/L in July 2018 and then decreased to 7.1 µg/L by December 2018. Since December 2018, the concentrations of ethene in MW-13 have been variable ranging from below the reporting limit of 1.0 µg/L (multiple events) to 240 µg/L in September 2021. The ethene concentrations in MW-13 during March and June 2024 were 11 µg/L and 8.2 µg/L, respectively.
- Ethene was first detected in well MW-19 during the September 2017 monitoring event and was detected consistently until December 2019, with the highest concentration (271 µg/L) detected during the June 2018 sampling event. Concentrations have since decreased and have been below the reporting limit (1.0 µg/L) since the October 2020 sampling event, except for low detections during the June 2021, September 2021, September 2022, and December 2023 sampling events (all ranging from 1.3 µg/L to 1.4 µg/L). As previously stated, VC concentrations in groundwater samples collected from well MW-19 during the June 2018 monitoring event were the highest since the well was first sampled in 2002. Since then, VC has consistently been detected in well MW-19, but at variable concentrations (i.e., no discernable increasing or decreasing trend). Collectively, these data confirm reductive dechlorination around well MW-19 and that chlorinated HVOC mass is being degraded.
- Ethene was detected in well MGMS3-40 during the first monitoring event after the 2016 injections (December 2016) and has been detected during the subsequent monitoring events through June 2024, at concentrations ranging from 1.2 µg/L to 242 µg/L. The only exceptions were the December 2019 and December 2021 sampling events when concentrations of ethene were below the reporting limit (1.0 µg/L).

NW Area. Ethene concentrations in wells MW-14 and MW-26 have not been detected above the reporting limit (1.0 to 13 µg/L) since ethene monitoring was initiated in September 2016. As stated above, these wells are located on the periphery of the injection area, limiting their utility in monitoring the effectiveness of the injections.

5.3.1.3. Total Organic Carbon Evaluation

The presence of elevated TOC indicates that the bioremediation injections have increased the electron donor carbon source needed to reductively dechlorinate the HVOCs present in groundwater at the Facility. While a baseline monitoring event was not conducted prior to the 2016 injection event, TOC data are available for wells MP-1 and MW-12 (riverbank area) for the event prior to the injections (June 2016) and the two events concurrent with and following the injections (September and December 2016). TOC was further analyzed between March 2017 and June 2024 at select wells. TOC results are tabulated in Table 5. A discussion of the TOC results is provided below.

Primary Source Area. Seven bioremediation injection points were located near well MP-1 during the 2016 interim action. In well MP-1, TOC values increased by over three orders of magnitude between June and September 2016, with concentrations remaining elevated during the December 2016 event. During the March 2017 event, the TOC values remained stable from the previous event; however, TOC values decreased in June 2017 by an order of magnitude and further decreased in September 2017 by another

order of magnitude before remaining stable to slightly decreasing through June 2024. At well EX, the TOC concentration increased by two orders of magnitude following the 2016 interim action injections, then decreased an order of magnitude during the June 2017 event and remained relatively consistent, until the well was decommissioned, at concentrations ranging between 11 and 44 milligrams per liter (mg/L). When the replacement well was sampled for the first time in June 2021, the TOC concentration had decreased to 5.32 mg/L and has remained at similar levels since, ranging from 1.20 mg/L (September 2023) to 6.10 mg/L (March 2024). These results indicate utilization of the oil substrate in the dechlorination of HVOCs, supporting the significant decreases in HVOC concentrations observed following the 2016 bioremediation injections in this area.

Riverbank Area. The following describes TOC results in the riverbank portion of the 2016 interim action area (wells MW-12, MW-13, MW-19, MGMS3-40, and MGMS1-43).

- In groundwater collected from well MW-12, TOC concentrations increased by over three orders of magnitude between June and September 2016, with concentrations remaining elevated during the December 2016 monitoring event. Between December 2016 and March 2017, TOC concentrations in well MW-12 decreased by an order of magnitude and then gradually decreased another order of magnitude between June 2017 and June 2018. While there is seasonal variability in TOC concentrations in this well (with the most elevated concentrations typically in September), the overall TOC concentration in well MW-12 has decreased from July 2018 to June 2024.
- At well MW-13, TOC concentrations were elevated during the September 2016 sampling event, and then decreased by three orders of magnitude by the November 2017 event. Since November 2017, TOC concentrations in well MW-13 have steadily decreased through the June 2024 sampling event.
- At well MW-19, TOC values were low (one to two orders of magnitude below concentrations observed in wells MP-1 and MW-12) from September 2016 through November 2017, then increased by an order of magnitude during the March 2018 through September 2018 events. TOC concentrations decreased by up to an order of magnitude during most of 2019 and then increased again (between 14 and 40 µg/L) during the 2020 monitoring events. Since March 2021, the concentration of TOC in well MW-19 has remained relatively steady and below 10 µg/L.
- At well MGMS3-40, TOC concentrations increased during the September and December 2016 groundwater monitoring events, then decreased by an order of magnitude during the March 2017 event and have remained stable below 10 µg/L through June 2024.
- At well MGMS1-43, the TOC concentration in groundwater has remained relatively low and steady from September 2016 through June 2024 and does not appear to have been significantly influenced from the oil injections in 2016.

With the exception of well MGMS1-43, TOC concentrations in riverbank area wells indicate utilization of the oil substrate in the dechlorination of HVOCs, which is supported by decreasing HVOC concentrations in most riverbank area wells.

NW Area. In wells MW-14 and MW-26, TOC concentrations did not increase after the September 2016 injections. TOC levels in these wells have historically been low and stable. Concentrations of TOC in well MW-14 increased an order of magnitude, from 5.06 mg/L in September 2018 to 50 mg/L in December 2019 before decreasing to 4.22 mg/L in June 2020 and remained low and stable through the June 2024 sampling event (concentrations typically near or less than 3.0 mg/L).

Summary of Enhanced Bioremediation Results Following the 2016 Interim Action. The 2016 groundwater interim action was implemented in July through September 2016 and included over 72 bioremediation injections at the NuStar Facility and 30 bioremediation injections at the off-Facility NW Area. Since implementation, groundwater in the 2016 interim action area has been monitored for 20 quarters for indicators of reductive dechlorination. The results from the third and fourth quarters 2023 sampling events are consistent with previous events and indicate that reductive dechlorination is occurring. Specifically:

- Up to three orders of magnitude reduction of PCE and TCE concentrations have been observed between the September 2016 and June 2024 monitoring events in many of the 2016 interim action area wells.
- Observed trends in breakdown product concentrations are consistent with reductive dechlorination of chlorinated ethene compounds.
- After the 2016 injections, ethene was first detected in four riverbank interim action monitoring wells in March 2017. Detections of ethene in Facility wells have continued through June 2024, although concentrations are decreasing over time in most of the wells. TOC concentrations are also decreasing and are below 10 mg/L in the majority of wells, indicating that an additional injection event may be needed in the area to further reduce HVOC concentrations and achieve remediation goals. The additional HVOC investigation data collected during the Phase 2 supplemental remedial investigation will aid in future HVOC remediation decisions.
- As identified above, wells MW-14 and MW-26 are located on the periphery of the injection area in the NW Area and provide limited utility in evaluating the effectiveness of the 2016 interim action in this area. However, HVOCs and total molar ethene concentrations in these wells have continued to decrease supporting that reductive dechlorination is occurring in this area.

5.3.2. SVE Systems—Monitoring and Mass Removal Evaluation

The following paragraphs summarize the monitoring and analytical results as well as the total HVOC mass removal for the North and South SVE Systems at the Facility. Field vapor measurements are collected with a photoionization detector (PID). Effluent vapor samples from the SVE systems are collected into Summa™ canisters and submitted to Eurofins Air Toxics Inc. in Folsom, California, for analysis of HVOCs by EPA Method TO-15.

The North SVE System has been non-operational since May 2017 and a replacement blower is required to return the North SVE system to operation. The north system monitoring data from 2017 indicate that the majority of VOC mass in the vadose zone is beneath the South SVE area and that future mass removal from the North SVE area is likely very minimal. The North SVE wells and piping are still in place and could be returned to use with a replacement blower, should future need arise. The majority of the SVE wells are currently connected to the South SVE system, which while temporary inoperable (see paragraph below), will resume operations in July 2024.

As described in the *Second Semi-Annual Groundwater Monitoring* Report (GeoEngineers, 2024), The South SVE system was turned off after the November 2023 system monitoring event, for the duration of the heavy rain season, and was scheduled to be restarted in March 2024. During the March 2024 operations and maintenance event, field staff were not able to restart the system. After two attempts to troubleshoot and repair the system, a remediation contractor was hired to repair the system and perform some additional routine maintenance. The repair work is scheduled for early July 2024 and will be summarized in the next semi-annual report. Upon repair of the South System blower, monitoring and sampling will continue on a

bi-monthly basis until the wet season commences, likely in November 2024. The North SVE System operational and analytical data through May 2017 are provided in Tables 6 and 7, respectively. The South SVE System operational and analytical data through November 10, 2023, are provided in Tables 8 and 9, respectively.

SVE System Mass Removal. The approximate HVOC mass removed by the North and South SVE Systems is presented in Tables 10 and 11 and on Figures 14 and 15, respectively. The North and South Systems have removed approximately 232 and 5,127 pounds of HVOCs, respectively, since startup in October 2011. Including the mass removed from the 2008 SVE System, the total mass removal by SVE at the Facility to date is approximately 8,540 pounds (through November 10, 2023). HVOC data from the recent Phase II SRI investigation indicate that residual VOCs are still present in fine grained soils of the former source area and additional SVE operation is warranted.

6.0 INFRASTRUCTURE MAINTENANCE

The following section describes maintenance and upgrades at the Facility.

6.1. SVE System

After the November 2023 South system monitoring event, the system was intentionally turned off for the remainder of the heavy rain season (with the intent that it remain off through March 2024). The shutdown was intended to: (1) allow the concentrations of vapor in the system to be evaluated after a prolonged system shutdown, and (2) reduce the risk of condensate water leaking from the system due to unseen but probable corrosion. The system was closely inspected during the second quarter of 2023 for holes, corrosion, or other locations where condensate water could leak from the system; no such weak spots were identified. While the majority of the system is made from PVE or stainless steel, there are parts that are susceptible to corrosion and the fertilizer constituents historically handled in the area are known to be corrosive. Over the years, several system parts have had to be replaced or upgraded due to corrosion. Shutting the system down during the wet season was intended to preclude any unanticipated leaking from the system.

As discussed in Section 5.3.2, field staff were unable to start the system during the scheduled operations and maintenance event in March 2024. After attempting to troubleshoot the issue without success, a remediation contractor was hired for the repair. The system repair is scheduled for third quarter 2024; upon successful repair and start-up of the system, operations and maintenance will continue on a bi-monthly basis until the system is shut down again for the wet season (likely in November 2024).

7.0 FUTURE ACTIVITIES AND SUPPLEMENTAL REMEDIAL INVESTIGATION

Groundwater monitoring, conducted on a quarterly basis, and reporting on a semi-annual basis, will continue in accordance with the *Groundwater Monitoring Plan* approved by Ecology in 2008 (Ash Creek, 2008).

Upon repair and restarting of the South SVE system during July 2024, SVE system operations and maintenance will continue bi-monthly until the system is shut down (likely in late November) for the heavy

rain season. The monitoring results will be provided to Ecology in the next semi-annual groundwater monitoring report.

In 2019, Ecology issued Agreed Order DE 15806 for a Supplemental Remedial Investigation for the presence of metals in site media due to operations at the adjacent Kinder Morgan Bulk Terminal and ammonia, nitrates, and nitrites due to fertilizer operations at NuStar. As a requirement of the Agreed Order, NuStar, the POV, and Kinder Morgan (the Parties) submitted a *Draft Supplemental Remedial Investigation Work Plan* (SRIWP) to Ecology in February 2020 (Cascadia, 2020), proposing a stormwater, soil, groundwater, and sediment investigation to evaluate the nature and extent of metals and fertilizer constituents in site media. The Work Plan also included additional delineation of HVOCs in groundwater to the west of well MW-26 and of HVOCs in site sediment. The Parties responded to Ecology's comments and provided a revised Draft SRIWP to Ecology in June 2020. The Parties received additional comments from Ecology in July 2020. On December 18, 2020, a final SRIWP was submitted to Ecology and was approved by the agency on December 21, 2020. In accordance with the Order, implementation of the SRIWP was completed from March through May 2021. The POV conducted additional soil, groundwater, stormwater and riverbank investigation during the fourth quarter 2021 and first quarter 2022 as part of a Baseline Assessment. The Baseline Assessment was conducted to document environmental conditions in the Kinder Morgan operational areas at the time the Kinder Morgan lease ended on December 31, 2021 and prior to a new lessee, Metro Ports, taking over the leasehold and copper handling operations in January 2022.[6] The results of the SRI have been presented to Ecology during online meetings during the first half of 2022 and the results of the sediment investigation were submitted to Ecology in a *Phase I SRI Results Sediment Report* on November 22, 2022. A *Draft Phase SRI Upland Soil and Groundwater Investigation* report was submitted to Ecology on June 9, 2023 (GeoEngineers, Antea Group and Parametrix [GeoEngineers et al., 2023]), documenting the soil and groundwater investigation conducted during 2021, the POV baseline assessment, and a work plan for additional (Phase II) upland and riverbank investigation. Ecology provided comments on the report as well as additional recommendations for the Phase II scope, on August 1, 2023. While the report was not formally approved, the Parties accepted Ecology's additional recommendations for investigation, and the Work Plan was conceptually approved by Ecology.

The NuStar portion of the SRI Phase II field investigation was implemented from October 23 through December 1, 2023, and included the collection of soil and groundwater samples from 45 vertical borings at and in the vicinity of the NuStar leasehold and one angled boring near the shoreline adjacent to the NuStar leasehold. The borings from the Phase II SRI investigation were sampled for HVOCs, fertilizer constituents, or both. Two of the borings, located at the top of the riverbank, between building 2655 and the river (see Figure 2), were jointly advanced and converted to monitoring wells NKM-1 and NKM-2 by NuStar and Kinder Morgan. As discussed in Section 4.0, these two monitoring wells, NKW-1 and NKW-2, along with three wells installed by Kinder Morgan (KMW4 through KMW-6; see Figure 2) have been incorporated into the NuStar quarterly monitoring program beginning in the first quarter 2024 and the analytical results from those wells will continue to be summarized in future semi-annual reports. Well installation and construction information will be summarized in the SRI report.

[6] It is our understanding that as of January 1, 2023, Vancouver Bulk Terminal (VBT) is now the operator of the bulk mineral storage facility located immediately to the north and west of the NuStar leasehold.

The results of the SRI Phase II investigation were presented to Ecology at an in-person meeting in Vancouver, Washington, on May 9, 2024. Representatives for NuStar requested that Ecology evaluate the VOC and fertilizer data presented to confirm that the data are complete to evaluate the nature and extent of COPCs in the SRI. Representatives for Kinder Morgan also presented their data at the meeting and noted that they would like to conduct additional riverbank and upland sampling during the summer of 2024. Representatives for the Port of Vancouver also noted at the meeting that the Port would be conducting a stormpond interim action during the summer of 2024. The interim action will include the removal and disposal of sediments from the Terminal 4 stormwater treatment pond. At the end of the additional data collection period, the parties should have sufficient data to prepare the SRI report, potentially during the third or fourth quarter 2024.

8.0 REFERENCES

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TABLES

GeoEngineers

Table 1

Groundwater Monitoring Plan—First and Second Quarters 2024

NuStar Vancouver Facility

Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells		Notes
			First Quarter	Second Quarter	
Groundwater monitoring includes depth-to-water measurement.	MW-1	Shallow	☑	☑	
	MW-2	Shallow	☑	☑	
	MW-3	Shallow	☑	☑	
	MW-5	Shallow	☑	☑	
	MW-6	Shallow	☑	☑	
	MW-7	Shallow	☑	☑	
	MW-8	Shallow	☑	☑	
	MW-9	Shallow	☑	☑	
	MW-10	Shallow	☑	☑	
	MW-12	Shallow	☑	☑	
	MW-13	Shallow	☑	☑	
	MW-14	Shallow	☑	☑	
	MW-15	Shallow	☐	☑	
	MW-16	Shallow	☑	☑	
	MW-17	Shallow	☑	☑	
	MW-18i	Intermediate	☑	☑	
	MW-19	Shallow	☑	☑	
	MW-19i	Intermediate	☑	☑	
	MW-20i	Intermediate	☑	☑	
	MW-21i-40	Intermediate	☑	☑	
	MW-21i-105	Intermediate	☑	☑	
	MW-22i	Intermediate	☑	☑	
	MW-23i	Intermediate	☑	☑	
	MW-24i	Intermediate	☑	☑	
	MW-24d	Deep	☑	☑	
	MW-25i	Intermediate	☑	☑	
	MW-26	Shallow	☑	☑	
	MW-30i	Intermediate	☐	☐	
	MW-31i	Intermediate	☐	☐	
	MW-32s	Shallow	☑	☐	
	MW-32i	Intermediate	☐	☐	
	MGMS1-3(43)	Shallow	☑	☑	
	MGMS1-2 (60)	Intermediate	☑	☑	
	MGMS1-1(110)	Lower Intermediate	☐	☑	
	MGMS2-4(40)	Shallow	☑	☑	
	MGMS2-3 (60)	Intermediate	☑	☑	
	MGMS2-2(110)	Lower Intermediate	☐	☑	
	MGMS2-1(132)	Lower Intermediate	☐	☑	
	MGMS3-4(40)	Shallow	☑	☑	
	MGMS3-3(60)	Intermediate	☑	☑	
	MGMS3-2(101)	Lower Intermediate	☐	☑	
	MGMS3-1(132)	Lower Intermediate	☐	☑	
	MW-E	Shallow	☐	☐	
	MW-F	Shallow	☐	☐	
	EW-1	Shallow	☑	☑	

Table 1

Groundwater Monitoring Plan—First and Second Quarters 2024

NuStar Vancouver Facility

Vancouver, Washington

Monitoring Program	Well ID	Groundwater Zone	Included Monitoring Wells		Notes
			First Quarter	Second Quarter	
Groundwater monitoring includes depth-to-water measurement.	EX	Shallow	☑	☑	
	MP-1	Shallow	☑	☑	
	MP-2	Shallow	☐	☐	
	MP-3	Shallow	☐	☐	
	MP-4	Shallow	☐	☐	
	S-1	Intermediate	☑	☑	
	S-2	Shallow	☑	☑	
	NKW-1	Shallow	☑	☑	
	NKW-2	Shallow	☑	☑	
	KMW-4	Shallow	☑	☑	
	KMW-5	Shallow	☑	☑	
	KMW-6	Intermediate	☑	☑	

Notes:

1. ☑ Included in sampling program represented in this report.
2. ☐ Not included in sampling program represented in this report; water level measurement only.
3. Wells MW-E, MW-G, MW-30i, MW-31i, and MW-32i are sampled by the Port of Vancouver.
4. Wells KMW-4, KMW-5, and KMW-6 are owned and maintaned by Kinder Morgan.
   Field scientiests with GeoEngineers collect split samples from these wells during the Kinder Morgan sampling activities.

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
Groundwater Monitoring Wells			
MW-1 (32.60)	9/11/2023	28.73	3.87
	12/11/2023	24.48	8.12
	3/4/2024	25.23	7.37
	6/10/2024	24.47	8.13
MW-2 (34.04)	9/11/2023	30.12	3.92
	12/11/2023	26.14	7.90
	3/4/2024	26.28	7.76
	6/10/2024	26.55	7.49
MW-3 (34.41)	9/11/2023	29.87	4.54
	12/11/2023	26.23	8.18
	3/4/2024	26.19	8.22
	6/10/2024	25.79	8.62
MW-5 (33.86)	9/11/2023	29.26	4.60
	12/11/2023	26.93	6.93
	3/4/2024	26.31	7.55
	6/10/2024	25.94	7.92
MW-6 (32.83) 1.44-1.82	9/11/2023	28.31	4.52
	12/11/2023	24.83	8.00
	3/4/2024	24.98	7.85
	6/10/2024	25.65	7.18
MW-7 (33.74)	9/11/2023	28.88	4.86
	12/11/2023	27.20	6.54
	3/4/2024	26.26	7.48
	6/10/2024	25.89	7.85
MW-8 (33.69)	9/11/2023	28.12	5.57
	12/11/2023	26.29	7.40
	3/4/2024	25.72	7.97
	6/10/2024	25.49	8.20
MW-9 (33.98)	9/11/2023	29.08	4.90
	12/11/2023	27.38	6.60
	3/4/2024	26.39	7.59
	6/10/2024	26.21	7.77
MW-10 (34.37)	9/11/2023	28.81	5.56
	12/11/2023	27.54	6.83
	3/4/2024	26.34	8.03
	6/10/2024	26.24	8.13

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-12	9/11/2023	27.47	3.96
(31.43)	12/11/2023	23.17	8.26
	3/4/2024	24.06	7.37
	6/10/2024	23.32	8.11
MW-13	9/11/2023	28.63	4.52
(33.15)	12/11/2023	25.48	7.67
	3/4/2024	25.65	7.50
	6/10/2024	25.10	8.05
MW-14	9/11/2023	29.05	4.74
(33.79)	12/11/2023	27.37	6.03
	3/4/2024	26.42	7.37
	6/10/2024	26.14	7.65
MW-15	9/11/2023	33.89	5.33
(39.22)	12/11/2023	32.36	6.86
	3/4/2024	32.94	6.28
	6/10/2024	31.07	8.15
MW-16	9/11/2023	29.23	3.82
(33.05)	12/11/2023	25.01	8.04
	3/4/2024	25.51	7.54
	6/10/2024	24.88	8.17
MW-17	9/11/2023	27.91	4.74
(32.65)	12/11/2023	24.98	7.67
	3/4/2024	24.81	7.84
	6/10/2024	24.24	8.41
MW-18i	9/11/2023	30.48	2.92
(33.40)	12/11/2023	25.23	8.17
	3/4/2024	25.59	7.81
	6/10/2024	25.15	8.25
MW-19	9/11/2023	28.97	4.62
(33.59)	12/11/2023	26.53	7.06
	3/4/2024	26.05	7.54
	6/10/2024	25.57	8.02
MW-19i	9/11/2023	30.79	2.83
(33.62)	12/11/2023	25.46	8.16
	3/4/2024	25.88	7.74
	6/10/2024	25.43	8.19

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-20i (32.81)	9/11/2023	29.94	2.87
	12/11/2023	24.68	8.13
	3/4/2024	25.09	7.72
	6/10/2024	24.63	8.18
MW21i-40 (33.66)	9/11/2023	30.79	2.87
	12/11/2023	25.56	8.10
	3/4/2024	26.17	7.49
	6/10/2024	25.79	7.87
MW-21i-105 (33.99)	9/11/2023	31.05	2.94
	12/11/2023	25.86	8.13
	3/4/2024	26.21	7.78
	6/10/2024	25.48	8.51
MW-22i (34.39)	9/11/2023	31.46	2.93
	12/11/2023	25.38	9.01
	3/4/2024	26.62	7.77
	6/10/2024	26.17	8.22
MW-23i (33.64)	9/11/2023	30.04	3.60
	12/11/2023	25.45	8.19
	3/4/2024	25.85	7.79
	6/10/2024	25.40	8.24
MW-24i (33.82)	9/11/2023	31.1	2.72
	12/11/2023	25.42	8.40
	3/4/2024	25.83	7.99
	6/10/2024	25.39	8.43
MW-25i (33.58)	9/11/2023	30.92	2.66
	12/11/2023	25.91	7.67
	3/4/2024	25.84	7.74
	6/10/2024	25.40	8.18
MW-26 (33.73)	9/11/2023	28.82	4.91
	12/11/2023	27.48	6.25
	3/4/2024	26.33	7.40
	6/10/2024	26.13	7.60
MW-24d (33.91)	9/11/2023	31.28	2.63
	12/11/2023	25.55	8.36
	3/4/2024	26.20	7.71
	6/10/2024	25.76	8.15

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
EW-1 (31.20)	9/11/2023	27.27	3.93
	12/11/2023	22.83	8.37
	3/4/2024	23.64	7.56
	6/10/2024	23.04	8.16
EX (33.24)	9/11/2023	28.61	4.63
	12/11/2023	26.38	6.86
	3/4/2024	25.79	7.45
	6/10/2024	25.32	7.92
MP-1 (33.71)	9/11/2023	28.89	4.82
	12/11/2023	26.91	6.80
	3/4/2024	26.17	7.54
	6/10/2024	25.79	7.92
Secor Interim Action Pilot Study Wells			
S-1 (32.69)	9/11/2023	30.05	2.64
	12/11/2023	24.47	8.22
	3/4/2024	24.90	7.79
	6/10/2024	24.45	8.24
S-2 (32.90)	9/11/2023	29.48	3.42
	12/11/2023	24.90	8.00
	3/4/2024	25.33	7.57
	6/10/2024	24.80	8.10
Multi-Level Monitoring Wells			
MGMS1-3 (43)* (32.82)	9/11/2023	28.68	4.14
	12/11/2023	25.38	7.44
	3/4/2024	25.58	7.24
	6/10/2024	24.71	8.11
MGMS1-2(60)* (32.82)	9/11/2023	30.09	2.73
	12/11/2023	24.86	7.96
	3/4/2024	25.25	7.57
	6/10/2024	24.78	8.04
MGMS1-1(110)* (32.82)	9/11/2023	29.95	2.87
	12/11/2023	24.81	8.01
	3/4/2024	25.25	7.57
	6/10/2024	24.78	8.04
MGMS2-4(40)* (32.46)	9/11/2023	28.16	4.30
	12/11/2023	25.76	6.70
	3/4/2024	25.71	6.75
	6/10/2024	24.91	7.55

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MGMS2-3(60)* (32.46)	9/11/2023	30.39	2.07
	12/11/2023	24.83	7.63
	3/4/2024	25.25	7.21
	6/10/2024	24.69	7.77
MGMS2-2(110)* (32.46)	9/11/2023	29.98	2.48
	12/11/2023	24.82	7.64
	3/4/2024	25.25	7.21
	6/10/2024	24.69	7.77
MGMS2-1(132)* (32.46)	9/11/2023	29.93	2.53
	12/11/2023	24.82	7.64
	3/4/2024	25.25	7.21
	6/10/2024	24.69	7.77
MGMS3-4(40)* (31.60)	9/11/2023	28.83	2.77
	12/11/2023	23.63	7.97
	3/4/2024	24.54	7.06
	6/10/2024	23.64	7.96
MGMS3-3(60)* (31.60)	9/11/2023	28.93	2.67
	12/11/2023	23.99	7.61
	3/4/2024	23.93	7.67
	6/10/2024	23.52	8.08
MGMS3-2(101)* (31.60)	9/11/2023	29.19	2.41
	12/11/2023	23.52	8.08
	3/4/2024	23.94	7.66
	6/10/2024	23.52	8.08
MGMS3-1(132)* (31.60)	9/11/2023	29.43	2.17
	12/11/2023	23.51	8.09
	3/4/2024	23.96	7.64
	6/10/2024	23.52	8.08
Port of Vancouver Wells			
MW-30i (29.77)	03/27/17	11.42	18.35
	06/12/17	15.55	14.22
	09/25/17	26.36	3.41
	11/06/17	Well Abandoned	
MW-31i** (31.33)	9/11/2023	NM	NM
	12/11/2023	NM	NM
	3/4/2024	NM	NM
	6/10/2024	NM	NM

Table 2

Groundwater Elevation Data: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number (TOC Elevation)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet)
MW-32s (34.34)	9/11/2023	30.13	4.21
	12/11/2023	26.52	7.82
	3/6/2024	26.90	7.44
	6/10/2024	25.79	8.55
MW-32i (34.41)	9/11/2023	31.41	3.00
	12/11/2023	26.28	8.13
	3/6/2024	27.99	6.42
	6/10/2024	26.30	8.11
MW-E ** (30.64)	9/11/2023	NM	NM
	12/11/2023	NM	NM
	3/4/2024	NM	NM
	6/10/2024	NM	NM
MW-F (34.11)	9/11/2023	NM	NM
	12/11/2023	25.91	8.20
	3/4/2024	26.62	7.49
	6/10/2024	25.95	8.16
NKM-1 (33.38)	12/11/2023	25.58	7.80
	3/4/2024	25.97	7.41
	6/10/2024	25.29	8.09
NKM-2 (33.29)	12/11/2023	25.57	7.72
	3/4/2024	25.84	7.45
	6/10/2024	25.19	8.10

Notes:

1. TOC = Top of casing; BTOC = Below top of casing.
2. Utilizes survey information from May 2023 (for select wells resurveyed). NGVD29 datum (feet mean sea level).
3. * Water levels measurement points are located at the top of the plastic fittings mounted on the well covers.
4. NM = Not measured.
5. **The casing has been modified at Port of Vancouver well MW-E and MW-31i.
   The TOC elevation has not yet been re-surveyed, so groundwater elevation data for these wells may be inaccurate.

Table 3

Groundwater Analytical Results: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl Chloride
		Concentrations in µg/L (ppb)										
MW-1	9/12/2023	5.44	<0.400	0.430	86.5	1.38	<0.500	15.3	0.450	<0.500	16.1	0.680
	12/13/2023	0.600	<0.400	<0.400	8.89	<0.400	<0.500	19.9	<0.400	<0.500	4.28	<0.200
	3/7/2024	3.00	<0.400	0.430	41.8	0.750	<0.500	9.22	<0.400	<0.500	9.90	<0.200
	6/13/2024	2.92	<0.400	<0.400	46.1	0.570	<0.500	20.1	<0.400	<0.500	11.2	<0.200
MW-2	9/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/14/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-3	9/13/2023	2.85	<0.400	<0.400	51.8	0.550	0.920	139	1.35	<0.500	29.1	<0.400
	12/13/2023	0.480	<0.400	<0.400	12.4	0.970	<0.500	143	1.75	<0.500	26.6	<0.200
	3/7/2024	0.990	<0.400	<0.400	37.0	1.31	1.10	160	1.78	<0.500	32.9	<0.200
	6/12/2024	0.740	<0.400	<0.400	26.9	1.15	0.630	137	1.51	<0.500	27.5	<0.200
MW-5	9/12/2023	0.470	<0.400	<0.400	2.32	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	1.35
	12/15/2023	0.920	<0.400	0.500	92.0	<0.400	<0.500	0.550	<0.400	<0.500	17.6	2.60
	3/7/2024	0.680	<0.400	<0.400	19.9	<0.400	<0.500	4.28	<0.400	<0.500	4.49	5.03
	6/11/2024	0.920	<0.400	<0.400	36.3	<0.400	<0.500	<0.400	<0.400	<0.500	0.800	14.0
MW-6	9/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.200
MW-7	9/12/2023	2.30	<0.400	0.620	26.8	<0.400	<0.500	65.5	<0.400	<0.500	30.5	0.250
	9/12/2023 DUP	2.47	<0.400	0.640	28.7	<0.400	<0.500	68.8	0.410	<0.500	32.7	0.280
	12/14/2023	5.53	<0.400	1.01	44.9	0.790	<0.500	123	1.00	<0.500	52.0	0.690
	12/14/2023 DUP	5.88	<0.400	0.960	47.0	0.810	<0.500	122	1.06	<0.500	53.0	0.720
	3/7/2024	1.92	<0.400	0.570	22.2	0.430	<0.500	70.0	<0.400	<0.500	36.3	0.320
	3/7/2024 DUP	1.69	<0.400	0.540	20.8	<0.400	<0.500	76.8	<0.400	<0.500	34.5	0.280
	6/11/2024	6.74	<0.400	1.63	58.7	0.720	<0.400	152	1.50	<0.500	87.9	0.660
	6/11/2024 DUP	6.34	<0.400	1.42	53.8	0.720	<0.400	179	1.40	<0.500	80.5	0.560
MW-8	9/12/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.78	<0.400	<0.500	<0.400	<0.200
	12/12/2023	<0.400	<0.400	<0.400	5.04	<0.400	<0.500	2.92	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.42	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<0.400	<0.400	<0.400	6.42	0.470	<0.500	1.64	<0.400	<0.500	<0.400	<0.200
MW-9	9/12/2023	0.640	<0.400	0.500	18.5	1.21	<0.500	158	2.31	<0.500	46.7	1.28
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	74.0	1.06	<0.500	19.3	<0.200
	3/7/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	39.8	0.570	<0.500	11.4	<0.200
	6/11/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	53.4	0.580	<0.500	13.7	<0.200
MW-10	9/12/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.71	<0.400	<0.500	1.90	<0.200
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.70	<0.400	<0.500	1.86	<0.200
	3/5/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.06	<0.400	<0.500	1.82	<0.200
	6/11/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.21	<0.400	<0.500	1.99	<0.200
MW-12	9/13/2023	94.2	<4.00	9.00	1100	<4.00	<5.00	<7.50	<4.00	<5.00	7.90	1490
	9/13/2023 DUP	105	<4.00	10.4	1310	<4.00	<5.00	<6.00	<4.00	<5.00	8.00	1690
	12/13/2023	<0.400	<0.400	<0.400	4.14	<0.400	<0.500	6.94	<0.400	<0.500	3.36	1.80
	12/13/2023 DUP	<0.400	<0.400	<0.400	4.08	<0.400	<0.500	6.84	<0.400	<0.500	3.30	1.66
	3/5/2024	98.8	<4.00	<4.00	80.2	<4.00	<5.00	<4.00	<4.00	<5.00	4.40	1360
	3/5/2024 DUP	95.9	<4.00	<4.00	79.5	<4.00	<5.00	<4.00	<4.00	<5.00	<4.00	1330
	6/13/2024	29.9	<0.400	0.440	32.8	<0.400	<0.500	3.88	<0.400	<0.500	3.90	22.8
	6/13/2024 DUP	27.2	<0.400	0.410	30.2	<0.400	<0.500	3.86	<0.400	<0.500	3.89	16.0
MW-13	9/13/2023	30.4	<2.00	16.0	204	5.05	<2.50	103	<2.00	<2.50	85.2	788
	12/13/2023	0.440	<0.400	<0.400	1.57	<0.400	<0.500	22.3	0.450	<0.500	15.4	0.650
	3/6/2024	37.6	<2.00	48.9	1400	17.3	<2.50	955	<2.00	<2.50	986	432
	6/13/2024	<4.00	<4.00	<4.00	147	<4.00	<5.00	212	<4.00	<5.00	89.4	35.9
MW-14	9/12/2023	5.85	<2.00	5.15	82.7	2.45	<2.50	119	<2.00	<2.50	324	<1.00
	12/14/2023	<0.400	<0.400	0.400	6.75	<0.400	<0.500	26.6	<0.400	<0.500	48.6	<0.200
	3/5/2024	4.30	<2.00	2.05	42.0	<2.00	<2.00	90.7	<2.00	<2.50	262	<1.00
	6/12/2024	0.410	<0.400	<0.400	5.75	<0.400	<0.500	20.6	<0.400	<0.500	39.8	<0.200
MW-15	12/5/2022	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.400
	6/15/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.580	<0.400	<0.500	<0.400	<0.400
	12/15/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.540	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200
MW-16	9/13/2023	<0.400	<0.400	<0.400	62.4	<0.400	<0.500	95.1	0.530	<0.500	14.9	<0.200
	12/14/2023	<0.400	<0.400	<0.400	10.6	<0.400	<0.500	37.6	0.460	<0.500	4.44	<0.200
	3/11/2024	<0.400	<0.400	<0.400	25.3	<0.400	<0.500	80.7	0.540	<0.500	8.94	<0.200
	6/11/2024	<0.400	<0.400	<0.400	15.0	<0.400	<0.500	35.3	<0.400	<0.500	4.02	<0.200

Table 3

Groundwater Analytical Results: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl Chloride
		Concentrations in µg/L (ppb)										
MW-17	9/13/2023	<0.400	<0.400	<0.400	**1.64**	<0.400	<0.500	**0.580**	<0.400	<0.500	**1.30**	<0.200
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**1.26**	<0.400	<0.500	**0.610**	<0.200
	3/5/2024	<0.400	<0.400	<0.400	**6.04**	<0.400	<0.500	**1.47**	<0.400	<0.500	**2.96**	<0.200
	6/12/2024	<0.400	<0.400	<0.400	**0.690**	<0.400	<0.500	**0.850**	<0.400	<0.500	**0.660**	<0.200
MW-18i	9/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**0.570**	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**1.01**	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**0.900**	<0.400	<0.500	**0.410**	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**0.960**	<0.400	<0.500	**0.420**	<0.200
MW-19	9/14/2023	<20.0	<20.0	**27.0**	**387**	<20.0	<25.0	**6120**	**33.5**	<25.0	**1130**	**23.0**
	9/14/2023 DUP	<20.0	<20.0	**25.5**	**374**	<20.0	<25.0	**5180**	**30.5**	<25.0	**1060**	**19.5**
	12/15/2023	**158**	<20.0	**25.5**	**1500**	<20.0	<25.0	**1820**	<20.0	<25.0	**856**	**58.0**
	12/15/2023 DUP	**106**	<20.0	**28.0**	**1270**	<20.0	<25.0	**1830**	<20.0	<25.0	**739**	**56.5**
	3/6/2024	**54.0**	<20.0	**26.6**	**1010**	**15.4**	<25.0	**2420**	**14.2**	<25.0	**1270**	**87.8**
	3/6/2024 DUP	**50.2**	<20.0	**27.4**	**961**	**14.0**	<25.0	**2760**	**14.4**	<25.0	**1350**	**89.2**
	6/12/2024	**66.3**	<4.00	**19.9**	**1150**	**10.9**	<5.00	**2600**	**12.6**	<5.00	**894**	**39.8**
	6/12/2024 DUP	**62.0**	<4.00	**18.8**	**1100**	**9.40**	<5.00	**2440**	**12.8**	<5.00	**896**	**36.2**
MW-19i	9/12/2023	<0.400	<0.400	<0.400	**1.02**	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<0.400	<0.400	<0.400	**0.500**	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<0.400	<0.400	<0.400	**0.610**	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<0.400	<0.400	<0.400	**0.430**	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-20i	9/13/2023	<0.400	<0.400	<0.400	**6.44**	<0.400	<0.500	**1.09**	<0.400	<0.500	**0.820**	<0.200
	12/14/2023	<0.400	<0.400	<0.400	**3.86**	<0.400	<0.500	**0.730**	<0.400	<0.500	**0.430**	<0.200
	3/7/2024	<0.400	<0.400	<0.400	**6.48**	<0.400	<0.500	**1.66**	<0.400	<0.500	**1.14**	<0.200
	6/12/2024	<0.400	<0.400	<0.400	**6.68**	<0.400	<0.500	**1.55**	<0.400	<0.500	**0.990**	<0.200
MW-21i-105	9/12/2023	**0.890**	<0.400	**0.540**	**20.7**	<0.400	<0.500	**16.9**	<0.400	<0.500	**11.0**	<0.200
	12/14/2023	**1.15**	<0.400	**0.570**	**19.3**	<0.400	<0.500	**44.5**	<0.400	<0.500	**17.2**	<0.200
	3/5/2024	**0.800**	<0.400	**0.530**	**15.9**	<0.400	<0.500	**32.3**	<0.400	<0.500	**15.1**	<0.200
	6/13/2024	**0.730**	<0.400	<0.400	**17.4**	**0.540**	<0.500	**21.6**	<0.400	<0.500	**10.9**	<0.200
MW-21i-40	9/13/2023	**1.19**	<0.400	<0.400	**27.1**	<0.400	<0.500	**21.1**	<0.400	<0.500	**9.38**	<0.200
	12/14/2023	**1.60**	<0.400	<0.400	**27.4**	**0.500**	<0.500	**26.2**	<0.400	<0.500	**11.2**	<0.200
	3/7/2024	**1.46**	<0.400	<0.400	**26.5**	<0.400	<0.500	**18.6**	<0.400	<0.500	**11.3**	<0.200
	6/13/2024	**1.10**	<0.400	<0.400	**23.0**	<0.400	<0.500	**16.3**	<0.400	<0.500	**9.18**	<0.200
MW-22i	9/12/2023	**0.530**	<0.400	<0.400	**15.6**	<0.400	<0.500	**2.81**	<0.400	<0.500	**5.83**	<0.200
	12/14/2023	**0.710**	<0.400	<0.400	**15.7**	<0.400	<0.500	**4.05**	<0.400	<0.500	**6.76**	<0.200
	3/5/2024	**0.550**	<0.400	<0.400	**15.3**	<0.400	<0.500	**2.64**	<0.400	<0.500	**5.54**	<0.200
	6/14/2024	**0.460**	<0.400	<0.400	**15.0**	<0.400	<0.500	**1.55**	<0.400	<0.500	**4.29**	<0.200
MW-23i	9/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.700	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/13/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.200
MW-24i	9/13/2023	**0.990**	<0.400	<0.400	**23.0**	<0.400	<0.500	**17.8**	<0.400	<0.500	**9.01**	<0.200
	12/11/2023	<0.400	<0.400	<0.400	**1.11**	<0.400	<0.500	**2.09**	<0.400	<0.500	**0.680**	<0.200
	3/7/2024	**1.59**	<0.400	<0.400	**16.3**	<0.400	<0.500	**16.1**	<0.400	<0.500	**9.70**	<0.200
	6/13/2024	**1.09**	<0.400	<0.400	**17.5**	<0.400	<0.500	**16.7**	<0.400	<0.500	**8.68**	<0.200
MW-24d	9/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/15/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-25i	9/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**0.430**	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**0.570**	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-26	9/14/2023	**3.25**	<2.00	<2.00	**44.3**	<2.00	<2.50	**121**	<2.00	<2.50	**208**	<1.00
	12/15/2023	**3.20**	<0.800	**0.880**	**48.7**	**1.10**	<1.00	**211**	**1.48**	<1.00	**253**	<0.400
	3/6/2024	**2.60**	<1.00	<1.00	**31.0**	<1.00	<1.25	**133**	**1.38**	<1.25	**221**	<0.500
	6/14/2024	**2.38**	<1.00	<1.00	**37.4**	**1.32**	<1.25	**160**	**1.40**	<1.25	**204**	<0.500
MW-32s	9/15/2022	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/17/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200

Table 3

Groundwater Analytical Results: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Vinyl Chloride
		Concentrations in µg/L (ppb)										
EW-1	9/12/2023	<0.400	<0.400	<0.400	0.850	<0.400	<0.500	19.9	0.480	<0.500	5.52	<0.200
	12/14/2023	<0.400	<0.400	<0.400	0.740	<0.400	<0.500	21.4	1.04	<0.500	5.83	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200
S-1	9/14/2023	0.620	<0.400	<0.400	5.89	<0.400	<0.500	1.08	<0.400	<0.500	1.69	<0.200
	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	3/6/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	6/12/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200
S-2	9/14/2023	9.75	<0.400	<0.400	57.0	0.950	<0.500	<0.400	0.920	<0.500	3.18	0.290
	12/13/2023	9.75	<0.400	<0.400	57.6	0.980	<0.500	<0.400	<0.400	<0.500	1.52	0.320
	3/6/2024	8.24	<0.400	<0.400	39.3	0.510	<0.500	<0.400	0.550	<0.500	1.12	0.280
	6/12/2024	5.70	<0.400	<0.400	30.5	0.760	<0.500	<0.400	<0.400	<0.500	0.570	<0.200
MGMS1-3(43)	9/12/2023	91.2	<8.00	22.4	2350	46.6	<10.0	126	<8.00	<10.0	339	39.4
	12/11/2023	113	<8.00	23.2	2630	42.8	<10.0	160	<8.00	<10.0	390	145 Q
	3/6/2024	119	<8.00	23.8	3090	44.6	<10.0	170	<8.00	<10.0	446	78.8
	6/12/2024	103	<4.00	18.5	2150	40.7	<5.00	98.3	<4.00	<5.00	306	36.6
MGMS1-2(60)	9/12/2023	1.37	<0.400	<0.400	19.2	<0.400	<0.500	17.6	<0.400	<0.500	14.1	0.290
	12/11/2023	<0.400	<0.400	<0.400	2.05	<0.400	<0.500	8.48	<0.400	<0.500	3.32	<0.200
	3/6/2024	1.82	<0.400	<0.400	14.8	<0.400	<0.500	18.6	<0.400	<0.500	11.0	<0.200
	6/12/2024	0.620	<0.400	<0.400	10.8	<0.400	<0.500	14.6	<0.400	<0.500	9.52	<0.200
MGMS1-1(110)	12/8/2022	5.17	<0.400	0.590	154	0.660	<0.500	17.6	<0.400	<0.500	32.5	<0.400
	6/15/2023	3.94	<0.400	<0.400	122	0.490	<0.500	12.2	<0.400	<0.500	21.4	<0.400
	12/11/2023	3.83	<0.400	<0.400	115	0.580	<0.500	16.0	<0.400	<0.500	22.0	<0.200
	6/12/2024	2.91	<0.400	<0.400	101	0.460	<0.500	13.7	<0.400	<0.500	19.4	<0.200
MGMS2-4(40)	9/11/2023	16.6	<0.400	10.8	338	2.92	<0.500	162	0.570	<0.500	101	1.11
	12/12/2023	27.6	<0.400	12.7	396	3.29	<0.500	408	4.16	<0.500	204	0.780
	3/4/2024	22.5	<0.800	12.5	331	3.60	<1.00	405	2.60	<0.100	294	0.680
	6/10/2024	25.8	<2.00	13.0	403	3.55	<2.50	315	3.10	<2.50	232	<1.00
MGMS2-3(60)	9/11/2023	0.720	<0.400	<0.400	15.2	<0.400	<0.500	8.63	<0.400	<0.500	5.48	0.530
	12/12/2023	1.19	<0.400	<0.400	24.6	<0.400	<0.500	42.3	<0.400	<0.500	18.4	0.460
	3/4/2024	0.610	<0.400	<0.400	11.3	<0.400	<0.500	16.2	<0.400	<0.500	8.51	0.240
	6/10/2024	0.630	<0.400	<0.400	15.2	<0.400	<0.500	21.0	<0.400	<0.500	9.83	0.230
MGMS2-2(110)	12/6/2022	0.590	<0.400	<0.400	17.6	<0.400	<0.500	3.48	<0.400	<0.500	3.83	3.65
	6/13/2023	<0.400	<0.400	<0.400	5.26	<0.400	<0.500	2.31	<0.400	<0.500	1.86	0.720
	12/12/2023	<0.400	<0.400	<0.400	4.57	<0.400	<0.500	3.81	<0.400	<0.500	2.16	0.670
	6/10/2024	<0.400	<0.400	<0.400	3.94	<0.400	<0.500	3.05	<0.400	<0.500	1.94	0.630
MGMS2-1(132)	12/6/2022	<0.400	<0.400	<0.400	5.72	<0.400	<0.500	3.30	<0.400	<0.500	2.11	0.980
	6/13/2023	<0.400	<0.400	<0.400	6.13	<0.400	<0.500	1.99	<0.400	<0.500	1.76	0.910
	12/12/2023	<0.400	<0.400	<0.400	6.65	<0.400	<0.500	2.91	<0.400	<0.500	2.27	1.16
	6/11/20204	<0.400	<0.400	<0.400	8.78	<0.400	<0.500	2.43	<0.400	<0.500	2.43	1.17
MGMS3-4(40)	9/11/2023	3.88 Q-42	<0.400	<0.400	32.3	<0.400	<0.500	0.410	<0.400	<0.500	<0.400	67.4
	9/11/2023 DUP	3.95 Q-42	<0.400	<0.400	27.0	<0.400	<0.500	0.420	<0.400	<0.500	<0.400	66.0
	12/13/2023	7.15	0.420	<0.400	29.2	<0.400	0.580	0.490	<0.400	<0.500	<0.400	173
	12/13/2023 DUP	7.99	0.450	<0.400	32.6	<0.400	0.640	0.500	<0.400	<0.500	<0.400	199
	3/4/2024	7.74	<0.400	0.780	193	0.480	<0.500	1.34**	<0.400	<0.500	0.630**	197
	3/4/2024 DUP	7.63	<0.400	0.770	183	0.470	<0.500	0.450**	<0.400	<0.500	0.440**	205
	6/10/2024	3.74	<0.400	<0.400	1.95	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	53.4
	6/10/2024 DUP	3.82	<0.400	<0.400	2.06	<0.400	<0.500	0.450	<0.400	<0.500	<0.400	54.5
MGMS3-3(60)	9/11/2023	0.400	<0.400	<0.400	17.0	<0.400	<0.500	2.35	<0.400	<0.500	2.12	<0.200
	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.830	<0.400	<0.500	<0.400	0.200
	3/4/2024	<0.400	<0.400	<0.400	6.63	<0.400	<0.500	1.96	<0.400	<0.500	1.57	<0.200
	6/10/2024	<0.400	<0.400	<0.400	2.68	<0.400	<0.500	1.43	<0.400	<0.500	0.780	0.350
MGMS3-2(101)	12/6/2022	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.52	<0.400	<0.500	0.460	<0.400
	6/15/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.18	<0.400	<0.500	<0.400	<0.400
	12/13/2023	<0.400	<0.400	<0.400	1.72	<0.400	<0.500	3.28	<0.400	<0.500	1.90	<0.200
	6/10/2024	<0.400	<0.400	<0.400	0.400	<0.400	<0.500	1.47	<0.400	<0.500	0.790	<0.200
MGMS3-1(132)	12/6/2022	<0.400	<0.400	<0.400	1.71	<0.400	<0.500	3.29	<0.400	<0.500	1.85	<0.400
	6/15/2023	<0.400	<0.400	<0.400	1.46	<0.400	<0.500	2.83	<0.400	<0.500	1.74	<0.400
	12/13/2023	0.480	<0.400	<0.400	5.04	<0.400	<0.500	8.17	<0.400	<0.500	5.20	0.240
	6/10/2024	<0.400	<0.400	<0.400	2.40	<0.400	<0.500	3.35	<0.400	<0.500	2.69	<0.200
EX*	9/12/2023	<8.00	<8.00	<8.00	562	<8.00	<10.0	2290	<8.00	<10.0	198	6.80
	12/14/2023	<8.00	<8.00	<8.00	83.6	<8.00	<10.0	2450	10.2	<10.0	148	<4.00
	3/6/2024	<8.00	<8.00	<8.00	436	<8.00	<10.0	2060	8.60	<10.0	214	5.40
	6/13/2024	<4.00	<4.00	<4.00	141	<4.00	<5.00	1850	<4.00	<5.00	113	2.20

Table 3

Groundwater Analytical Results: 2024

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
		Concentrations in µg/L (ppb)										
MP-1	9/13/2023	<0.800	<0.800	<0.800	**13.4**	<0.800	<1.00	**277**	<0.800	<1.00	**31.9**	<0.800
	12/15/2023	<0.800	<0.800	<0.800	**6.76**	<0.800	<1.00	**189**	<0.800	<1.00	**29.6**	<0.400
	3/7/2024	<1.00	<1.00	<1.00	**9.85**	<1.00	<1.25	**224**	<1.00	<1.25	**35.0**	<0.500
	6/13/2024	<1.00	<1.00	<1.00	**10.0**	<1.00	<1.25	**159**	<1.00	<1.25	**35.6**	<0.500
NKW-1	12/12/2023	<0.400	<0.400	<0.400	**3.50**	<0.400	<0.500	**33.8**	<0.400	<0.500	**11.4**	<0.200
	3/5/2024	**16.4**	<4.00	<4.00	**166**	<4.00	<5.00	**250**	<4.00	<5.00	**74.8**	**10.4**
	6/11/2024	**3.05**	<0.400	**0.640**	**47.2**	<0.400	<0.500	**84.3**	<0.400	<0.500	**27.0**	**0.290**
NKW-2	12/12/2023	**3.72**	<0.400	**2.53**	**147**	**1.03**	<0.500	**109**	**1.40**	<0.500	**110**	**0.220**
	3/5/2024	**89.9**	<4.00	**33.5**	**4010**	**41.8**	<5.00	**38.3**	<4.00	<5.00	**80.9**	**12.1**
	6/11/2024	**66.0**	<20.0	**29.5**	**2140**	**27.0**	<25.0	**55.0**	<20.0	<25.0	**107**	<10.0
KMW-4	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	**16.9**	<0.400	<0.500	**11.7**	<0.200
	6/10/2024	**0.940**	<0.400	**0.600**	**3.12**	<0.400	<0.500	**27.4**	**1.28**	<0.500	**84.7**	<0.200
KMW-5	12/13/2023	**0.430**	<0.400	<0.400	**3.16**	<0.400	<0.500	**0.580**	<0.400	<0.500	**2.08**	**3.05**
	6/10/2024	**0.410**	<0.400	<0.400	**4.81**	<0.400	<0.500	<0.400	<0.400	<0.500	**0.400**	**2.29**
KMW-6	12/13/2023	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200

Notes:

1. µg/L (ppb) = Micrograms per liter (parts per billion).
2. **Bold** values represent detected concentration of listed analyte.
3. < = Not detected at or above the specified laboratory method reporting limit (MRL).
4. Halogenated volatile organic compounds (HVOCs) analysis by U.S. Environmental Protection Agency (EPA) Method 8260B.
5. *This well was decommissioned during the third quarter 2019 and a replacement well was installed adjacent (offset 3 - 4 ft) in April 2021. Historically the well has been referred to as EX or EX-1.
6. **These relative percent difference for these field duplicate samples are outside of the +/- 30% limits.
7. 'Q' qualifiers indicate that spike recovery and/or RPD for this analyte is outside acceptance limits.

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
EX	2/6/2007	**26.7**	**108**	**0.49**
	3/23/2009	**14**	**43**	**0.54**
	3/16/2010	**3.4**	**89**	**0.71**
	6/7/2011	--	**150**	<0.10
	12/9/2011	--	<0.50	<0.10
	3/21/2018	**302**	**1.22**	**0.47**
	6/28/2018	**119**	<0.10	<0.050
	9/24/2018	**132**	**0.461**	<0.250
	12/4/2018	**117**	**24.1**	<0.250
	6/17/2021	**32.7**	**140**	0.59
	9/16/2021	**81.4**	**70.8**	<0.250
	12/10/2021	**29.6**	**85.6 H-01**	<0.250 H-01
	3/8/2022	**28.9**	**100**	<0.250
	06/16/2022	**93.6**	**87.6**	<0.250
	9/14/2022	**35.4**	**40**	<0.250
	12/8/2022	**77.1**	**77.6**	<0.250
	3/15/2023	**46.9**	**48.8**	<0.250
	6/14/2023	**49.2**	**134**	<0.250
	9/12/2023	**29.4**	**48.0**	<0.250
	12/14/2023	**24.5**	**169**	<0.250
	3/6/2024	**29.6**	**37.9**	<0.250
	6/13/2024	**28.4**	**42.0**	<0.250
MW-1	11/9/2017	**3.96**	**46.4**	<1.0
	3/20/2018	**6.20**	**1.84**	<0.10
	7/1/2018	**1.47**	<0.10	<0.10
	9/25/2018	**5.79**	<0.250	<0.250
	12/4/2018	**3.38**	**79.4**	<0.250
	3/21/2019	**22.0**	**2.8**	<0.250
	6/5/2019	**176**	**32.8**	**0.802**
	9/27/2019	**56.9**	**44.0**	<0.250
	12/4/2019	**112**	**134**	<0.250
	3/10/2020	**14.4**	**0.393**	<0.250
	6/17/2020	**38**	**7.45**	<0.250
	10/7/2020	**401**	**96.9**	<0.250
	12/8/2020	**417**	**71.9**	<0.250
	3/4/2021	**461**	**15.9**	<0.250
	6/16/2021	**323**	**62.6**	<0.250
	9/16/2021	**196**	**21.3**	**4.49**
	12/9/2021	**518**	**366**	**96.6**
	3/8/2022	**616**	**239**	**40.8**
	06/15/2022	**73.7**	**0.810**	<0.250
	9/15/2022	**363**	**94.5**	**2.6**
	12/6/2022	**574**	**242**	**11.2**
	3/17/2023	**154**	**35.0**	**0.619 H-01**
	6/14/2023	**216**	**35.8**	<0.250
	9/12/2023	**144**	**103**	<0.250
	12/13/2023	**80.1**	**122**	<0.250
	3/7/2024	**84.9**	**23.7**	<0.250
	6/13/2024	**60.1**	**105**	<0.250
MW-2	11/6/2017	**6.34**	**0.26**	<0.10
	7/2/2018	**9.85**	<0.10	<0.10
	3/21/2019	**11.0**	<0.250	<0.250
	6/5/2019	**9.86**	<0.250	<0.250
	9/27/2019	**9.82**	<0.250	<0.250
	12/4/2019	**9.72**	<0.250	<0.250
	3/12/2020	**9.04**	<0.250	<0.250
	6/17/2020	**10.9**	<0.250	<0.250
	10/8/2020	**9.48**	<0.250	<0.250
	12/9/2020	**9.78**	<0.250	<0.250
	3/4/2021	**8.75**	<0.250	<0.250
	6/16/2021	**9.31**	<0.250	<0.250
	9/16/2021	**9.62**	<0.250	<0.250
	12/9/2021	**17.2**	<0.250	<0.250
	3/8/2022	**9.08**	<0.250	<0.250
	06/16/2022	**12.6**	<0.250	<0.250
	9/15/2022	**12.80**	<0.250	<0.250
	12/8/2022	**9.21**	<0.250	<0.250
	3/16/2023	**9.65**	<0.250	<0.250
	6/13/2023	**14.1**	<0.250	<0.250
	9/13/2023	**7.48**	<0.250	<0.250
	12/13/2023	**8.97**	<0.250	<0.250
	3/7/2024	**9.12**	<0.250	<0.250
	6/14/2024	**9.80**	<0.250	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-3	11/8/2017	**1.68**	**2.7**	<1.0
	3/20/2018	<0.40	**19.7**	<0.10
	7/2/2018	**0.569**	**15.4**	**1.49**
	9/26/2018	**1.56**	**5.64**	<0.250
	12/7/2018	**1.18**	**10.2**	<0.250
	3/20/2019	<0.0200	**17.1**	<0.250
	6/7/2019	<0.0200	**15.1**	<0.250
	9/27/2019	**2.04**	**3.90**	<0.250
	12/4/2019	**0.212**	**11.5**	<0.250
	3/10/2020	**0.021**	**14.7**	<0.250
	6/17/2020	<0.0200	**7.92**	<0.250
	10/7/2020	**0.998**	**5.57**	<0.250
	12/8/2020	<0.0200	**9.16**	<0.250
	3/4/2021	**0.042**	**15.1**	<0.250
	6/16/2021	**0.023**	**9.06**	<0.250
	9/14/2021	**0.821**	**4.39**	<0.250
	12/9/2021	<0.0200	**8.23**	<0.250
	3/9/2022	<0.0200	**4.78**	<0.250
	06/16/2022	**0.123**	**0.437**	<0.250
	9/15/2022	**0.071**	**2.68**	<0.250
	12/6/2022	<0.0200	**5.57**	<0.250
	3/16/2023	<0.0200	<0.250	<0.250
	6/13/2023	**0.0300**	**3.74**	<0.250
	9/13/2023	**0.754**	**0.890**	<0.250
	12/13/2023	<0.0200	**5.48**	<0.250
	3/7/2024	<0.0200	**4.88**	<0.250
	6/12/2024	<0.0200	**3.90**	<0.250
MW-5	11/7/2017	**2.86**	<0.10	<0.10
	3/21/2018	<0.05	**2.63**	<0.10
	6/29/2018	**0.819**	<0.10	<0.10
	9/27/2018	**9.55**	<0.250	<0.250
	12/7/2018	**1.22**	<0.250	<0.250
	3/26/2019	**2.40**	**0.866**	<0.250
	6/7/2019	**2.94**	<0.250	<0.250
	12/4/2019	**0.570**	<0.250	<0.250
	3/12/2020	**0.114**	<0.250	<0.250
	6/18/2020	**0.114**	<0.250	<0.250
	10/6/2020	**9.20**	<0.250	<0.250
	12/10/2020	**0.294**	<0.250	<0.250
	3/3/2021	**0.543**	**4.64**	<0.250
	6/16/2021	**1.39**	<0.250	<0.250
	9/15/2021	**9.86**	<0.250	<0.250
	12/9/2021	**0.722**	<0.250	<0.250
	3/9/2022	**1.12**	<0.250	<0.250
	06/16/2022	**3.86**	<0.250	<0.250
	9/14/2022	**8.92**	<0.250	<0.250
	12/8/2022	**2.41**	<0.250	<0.250
	3/15/2023	**1.52**	<0.250	<0.250
	6/15/2023	**1.33**	<0.250	<0.250
	9/12/2023	**8.68**	<0.250	<0.250
	12/15/2023	**0.385**	<0.250	<0.250
	3/7/2024	**0.176**	<0.250	<0.250
	6/11/2024	**0.660**	<0.250	<0.250
MW-6	11/7/2017	**0.608**	**0.35**	<0.10
	7/1/2018	**4.17**	<0.10	<0.10
	9/25/2018	**4.30**	<0.250	<0.250
	3/20/2019	**5.17**	**0.738**	<0.250
	6/5/2019	**0.964**	**0.883**	<0.250
	9/27/2019	**6.36**	<0.250	<0.250
	12/4/2019	**2.18**	<0.250	<0.250
	3/12/2020	**9.42**	<0.250	<0.250
	6/17/2020	**1.87**	<0.250	<0.250
	10/8/2020	**3.14**	<0.250	<0.250
	12/9/2020	**2.67**	**0.315**	<0.250
	3/4/2021	**4.56**	<0.250	<0.250
	6/16/2021	**3.05**	<0.250	<0.250
	9/15/2021	<0.0200	<0.250	<0.250
	12/9/2021	**0.583**	**1.12**	<0.250
	3/8/2022	**1.77**	<0.250	<0.250
	6/14/2022	**0.893**	<0.250	<0.250
	9/15/2022	**11.0**	<0.250	<0.250
	12/6/2022	**0.725**	<0.250	<0.250
	3/14/2023	**2.18**	<0.250 H-01	<0.250 H-01
	6/14/2023	**13.7**	<0.250	<0.250
	9/13/2023	**2.74**	<0.250	<0.250
	12/13/2023	**0.532**	**1.09**	<0.250
	3/6/2024	**5.54**	<0.250	<0.250
	6/12/2024	**2.08**	<0.250	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-7	2/6/2007	**3.00**	**60.7**	< 0.100
	6/10/2008	**4.89**	**67.5**	**0.1**
	3/23/2009	**11**	**56**	<0.10
	3/16/2010	**2.40**	**99**	<0.50
	6/7/2011	--	**140**	<0.10
	12/9/2011	--	<0.50	<0.10
	11/7/2017	**9.09**	<0.10	<0.10
	3/21/2018	**13.4**	<0.10	<0.10
	3/21/2018 DUP	**16.9**	<0.10	<0.10
	6/29/2018	**7.9**	**10.8**	0.10
	9/27/2018	**16.7**	<0.250	<0.250
	12/7/2018	**22.4**	**13.3**	<0.250
	12/7/2018 DUP	**22.1**	**13.5**	<0.250
	3/20/2019	**34.5**	**13.1**	<0.250
	3/20/2019 DUP	**33.7**	**13.4**	<0.250
	6/5/2019	**16.6**	**30.4**	<0.250
	6/5/2019 DUP	**17.0**	**30.3**	<0.250
	9/26/2019	**19.8**	**11.5**	<0.250
	9/26/2019 DUP	**20.3**	**11.5**	<0.250
	12/3/2019	**33.1**	**47.4**	<0.250
	12/3/19 DUP	**34.9**	**49.7**	<0.250
	3/11/2020	**6.89**	**18.7**	<0.250
	3/11/2020 DUP	**6.89**	**18.7**	<0.250
	6/18/2020	**5.21**	**27.6**	<0.250
	6/18/2020 DUP	**6.33**	**27.6**	<0.250
	10/8/2020	**14.5**	**1.92**	<0.250
	10/8/2020 DUP	**14.3**	**1.83**	<0.250
	12/9/2020	**34.5**	**88.6**	<0.250
	12/9/2020 DUP	**33.3**	**88.9**	<0.250
	3/3/2021	**5.94**	**10.6**	<0.250
	3/3/2021 DUP	**5.97**	**10.7**	<0.250
	6/16/2021	**16.1**	**94.9**	<0.250
	6/16/2021 DUP	**16.7**	**79.1**	<0.250
	9/14/2021	**11.6**	**14.4**	<0.250
	9/14/2021 DUP	**11.5**	**13.7**	<0.250
	12/8/2021	**34.3**	**130**	<0.200
	12/8/2021 DUP	**37.2**	**137**	<0.250
	3/9/2022	**10.9**	**39.6**	<0.250
	3/9/2022 DUP	**11.0**	**39.7**	<0.250
	6/14/2022	**0.0230**	**9.04**	<0.250
	6/14/2022 DUP	**0.0320**	**8.72**	<0.250
	9/15/2022	**9.02**	**5.77**	<0.250
	9/15/2022 DUP	**6.45**	**5.88**	<0.250
	12/7/2022	**16.7**	**66.5**	<0.250
	12/7/2022 DUP	**17.3**	**56.6**	<0.250
	3/14/2023	**11.8 D**	**16.1 H-01, D**	<0.250 H-01
	3/14/2023 DUP	**7.52 D**	**10.3 H-01, D**	<0.250 H-01
	6/15/2023	**0.780**	**9.39**	<0.250
	6/15/23 DUP	**0.784**	**9.42**	<0.250
	9/12/2023	**8.38**	**29.7**	<0.250
	9/12/2023 DUP	**8.34**	**29.5**	<0.250
	12/14/2023	**22.0**	**125**	<0.250
	12/14/2023 DUP	**22.0**	**128**	<0.250
	3/7/2024	**8.13**	**24.4**	<0.250
	3/7/24 DUP	**7.61**	**21.4**	<0.250
	6/11/2024	**25.0**	**167**	<0.250
	6/11/2024 DUP	**23.5**	**156**	<0.250
MW-8	6/10/2008	<0.0500	**167**	<0.1
	11/6/2017	<0.050	**207**	<0.10
	3/19/2018	<0.40	**284**	<0.10
	6/29/2018	<0.050	**333**	<0.10
	9/25/2018	<0.0200	**235**	<0.250
	12/7/2018	**0.0230**	**260**	<0.250
	3/22/2019	**0.0350**	**544**	<0.250
	6/3/2019	<0.0200	**176**	<0.250
	12/3/2019	<0.0200	**276 E**	<0.250
	3/11/2020	**0.7320**	**311**	<1.25
	6/17/2020	<0.0200	**108 H-01**	<0.250
	10/6/2020	<0.0200	**248 H-01**	<0.250
	12/10/2020	<0.0200	**276**	<0.250
	3/3/2021	<0.0200	**317**	<0.250
	6/16/2021	<0.0200	**206**	<1.25 R-04
	9/15/2021	<0.0200	**248**	<0.250
	12/13/2021	<0.0200	**273**	<0.250 R-04
	3/8/2022	<0.0200	**212**	<0.250
	06/15/2022	<0.0200	**41**	<0.250
	9/14/2022	<0.0200	**204**	<0.250
	12/7/2022	<0.0200	**201**	<0.250
	3/15/2023	<0.0200	**220**	<0.250
	6/13/2023	<0.0200	**210**	<0.250
	9/12/2023	<0.0200	**207**	<0.250
	12/12/2023	<0.0200	**146**	<0.250
	3/6/2024	<0.0200	**246**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-9	6/11/2024	<0.0200	**65.9**	<0.250
	9/21/2010	**1.4**	**89**	<0.10
	11/9/2017	**17.4**	**559**	<0.10
	3/21/2018	<0.050	**230**	<0.10
	6/29/2018	**14.2**	**382**	**0.61**
	9/27/2018	**17.0**	**468**	<0.250
	12/7/2018	**5.60**	**311**	<0.250
	3/20/2019	**0.198**	**173**	<0.250
	6/7/2019	**0.022**	**125**	<0.250
	9/26/2019	**0.680**	**138**	<0.250
	12/3/2019	**0.618**	**101**	<0.250
	3/11/2020	**0.085**	**264**	<0.250
	6/18/2020	<0.0200	**128**	<0.250
	10/8/2020	**5.76**	**172**	<0.250
	12/9/2020	**11.1**	**302**	<0.250
	3/3/2021	<0.0200	**298**	<0.250
	6/15/2021	**0.026**	**156**	<1.25 R-04
	9/14/2021	**0.891**	**117**	<0.250
	12/9/2021	**0.063**	**113 H-01**	<0.250 H-01
	3/8/2022	**0.146**	**132**	<0.250
	6/14/2022	**13.2**	**35.2**	<0.250
	9/15/2022	<0.0200	**156**	<0.250
	12/7/2022	**6.54**	**227**	<0.250
	3/17/2023	**14.5**	**329 H-01**	<0.250
	6/15/2023	**2.07**	**93.6**	<0.250
	9/12/2023	**3.41**	**170**	<0.250
	12/14/2023	<0.0200	**67.9**	<0.250
	3/7/2024	<0.0200	**89.7**	<0.250
	6/11/2024	<0.0200	**79.4**	<0.250
MW-10	11/6/2017	**35.6**	**333**	**0.270**
	6/29/2018	**29.0**	**486**	<0.10
	9/25/2018	**37.2**	**413**	<0.250
	9/25/2018 DUP	**38.0**	**412**	<0.250
	3/21/2019	**45.0**	**412**	<0.250
	6/6/2019	**36.5**	**363**	**0.463 R-04**
	9/25/2019	**37.3**	**429**	<0.5
	12/4/2019	**36.6**	**460**	<0.250
	3/11/2020	**18.2**	**491**	<1.25
	6/17/2020	**13.2**	**489 H-01**	<0.250 H-01
	10/8/2020	**34.8**	**541**	<0.250
	12/9/2020	**37.7**	**515**	<0.250
	3/4/2021	**14.1**	**420**	<0.250
	6/15/2021	**17.0**	**430**	<1.25 R-04
	9/15/2021	**31.7**	**395**	**0.447**
	12/9/2021	**35.7**	**363**	<1.25 R-04
	3/9/2022	**7.91**	**384**	<1.25 R-04
	06/15/2022	**5.58**	**222**	<0.250
	9/14/2022	**15.9**	**408**	<0.250
	12/8/2022	**31.6**	**424**	<0.250
	3/15/2023	**18.2**	**415**	<0.250
	6/14/2023	**2.66**	**327**	<0.250
	9/12/2023	**18.2**	**403**	<0.250
	12/14/2023	**15.4**	**342**	<0.250
	3/5/2024	**3.94**	**294**	<0.250
	6/11/2024	**5.03**	**321**	<0.250
MW-12	10/19/2010	--	**59**	--
	6/7/2011	--	**1.1**	<0.10
	12/7/2011	--	**67**	<0.10
	9/22/2015	**110**	**47**	--
	11/9/2017	**55.4**	**0.57**	<0.25
	3/20/2018	**39.4**	<0.10	<0.10
	3/20/2018 DUP	**39.9**	<0.10	<0.10
	7/1/2018	**33.0**	<0.10	<0.10
	9/25/2018	**126**	<0.250	<0.250
	9/25/2018 DUP	**129**	<0.250	<0.250
	12/4/2018	**37.2**	**82.2**	**0.487**
	12/4/2018 DUP	**37.1**	**80.0**	**0.526**
	3/20/2019	**53.2**	<0.250	<0.250
	3/20/2019 DUP	**48.2**	<0.250	<0.250
	6/5/2019	**19.8**	**2.34**	<0.250
	6/5/2019 DUP	**22.4**	**2.32**	<0.250
	9/26/2019	**107**	**0.371**	<0.250
	9/26/2019 DUP	**122**	**0.383**	<0.250
	12/4/2019	**22.8**	**36.4**	<0.250
	12/4/2019 DUP	**20.2**	**35.6**	<0.250
	3/11/2020	**26.6**	**12.0**	<0.250
	3/11/2020 DUP	**25.6**	**11.9**	<0.250
	6/18/2020	**12.2**	**1.66**	<0.250
	6/18/2020 DUP	**12.3**	**1.61**	<0.250
	10/7/2020	**125**	<0.250	<0.250
	10/7/2020 DUP	**122**	<0.250	<0.250
	12/8/2020	**12.8**	**49.1**	**0.364**

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-12 continued	12/8/2020 DUP	**13.0**	**49.9**	**0.380**
	3/5/2021	**27.6**	**0.861**	<0.250
	3/5/2021 DUP	**28.2**	**0.920**	<0.250
	6/16/2021	**35.6**	**71.8**	**3.52**
	6/16/2021 DUP	**30.8**	**70.3**	**3.41**
	9/14/2021	**138**	**0.835**	<0.250
	9/14/2021 DUP	**145**	**1.14**	<0.250
	12/9/2021	**4.51**	**14.3**	<0.250
	12/9/2021 DUP	**4.32**	**14.2**	<0.250
	3/8/2022	**27.2**	**72.1**	<0.250
	3/8/2022 DUP	**26.0**	**74 H-01**	<0.250
	6/14/2022	**2.29**	**2.20**	<0.250
	6/14/2022 DUP	**2.31**	**2.19**	<0.250
	9/14/2022	**175**	<0.250	<0.250
	9/14/2022 DUP	**218**	<0.250	<0.250
	12/8/2022	**32.7**	**162**	<0.250
	12/8/2022 DUP	**32.0**	**165**	<0.250
	3/16/2023	**139**	<0.250	<0.250
	3/16/2023 DUP	**151**	<0.250	<0.250
	6/14/2023	**98.2**	<0.250	<0.250
	6/14/23 DUP	**96.6**	<0.250	<0.250
	9/13/2023	**147**	<0.250	<0.250
	9/13/2023 DUP	**147**	<0.250	<0.250
	12/13/2023	**2.61**	**8.34**	<0.250
	12/13/2023 DUP	**2.80**	**8.49**	<0.250
	3/5/2024	**123**	<0.250	<0.250
	3/5/2024 DUP	**128**	<0.250	<0.250 Q-42
	6/13/2024	**90.0**	**11.1 H-01**	<0.250 H-01
	6/13/2024 DUP	**87.9**	**11.6 H-01**	<0.250
MW-13	9/22/2015	**48**	**135**	**–**
	11/7/2017	**35.0**	**0.52**	<0.10
	3/20/2018	**191**	<0.10	<0.10
	7/1/2018	**23.5**	<0.10	<0.10
	9/25/2018	**37.7**	<0.250	<0.250
	12/5/2018	**49.8**	<0.250	<0.250
	3/19/2019	**110**	<0.250	<0.250
	6/6/2019	**78.5**	<0.250	<0.250
	9/26/2019	**76.2**	<0.250	<0.250
	12/3/2019	**63.2**	<0.250	<0.250
	3/10/2020	**52.0**	<0.250	<0.250
	6/18/2020	**18.1**	<0.250	<0.250
	10/7/2020	**56.6**	<0.250	<0.250
	12/8/2020	**39.8**	<0.250	<0.250
	3/4/2021	**32.1**	<0.250	<0.250
	6/15/2021	**21.2**	**11.0**	<0.250
	9/14/2021	**50.4**	<0.250	<0.250
	12/9/2021	**12.5**	**9.11**	<0.250
	3/9/2022	**6.51**	**42.3**	<0.250
	6/14/2022	**1.97**	**5.25**	<0.250
	9/15/2022	**48.9**	<0.250	<0.250
	12/6/2022	**7.89**	**65.8**	<0.250
	3/16/2023	**32.1**	<0.250 H-01	<0.250 H-01
	6/14/2023	**19.4**	<0.250	<0.250
	9/13/2023	**40.8**	<0.250	<0.250
	12/13/2023	**0.562**	**52.7**	<0.250
	3/6/2024	**50.4**	<0.250	<0.250
	6/13/2024	**10.4**	**27.3**	**0.777**
MW-14	11/8/2017	**34.7**	**50.3**	<1.0
	3/20/2018	**50.7**	**17.1**	<0.10
	6/28/2018	**31.6**	**104**	<2.5
	9/26/2018	**41.0**	**150**	<0.250
	12/5/2018	**53.7**	**75.5**	<0.250
	3/19/2019	**190**	**51.3**	<0.250
	6/6/2019	**33.9**	**28.6**	**0.958**
	9/25/2019	**29.6**	**145**	<0.250
	12/4/2019	**245**	**85.5**	<0.250
	3/11/2020	**32.0**	**137**	<0.250
	6/17/2020	**23.9**	**118 H-01**	<0.250
	10/8/2020	**32.5**	**305**	<0.250
	12/9/2020	**21.3**	**200**	<0.250
	3/4/2021	**15.9**	**258**	<0.250
	6/15/2021	**6.79**	**158**	<1.25 R-04
	9/14/2021	**17.6**	**364**	**0.00**
	12/9/2021	**17.6**	**155**	<0.250
	3/8/2022	**5.20**	**254 H-01**	<0.250
	06/16/2022	**0.372**	**174**	<0.250
	9/13/2022	**10.1**	**345**	<0.250
	12/7/2022	**6.66**	**168**	<0.250
	3/15/2023	**8.69**	**299**	<0.250
	6/13/2023	**0.699**	**181**	<0.250
	9/12/2023	**9.46**	**326**	<0.250
	12/14/2023	**2.28**	**125**	<0.250
	3/5/2024	**4.85**	**226**	<0.250
	6/12/2024	**1.55**	**66.9**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-15	11/6/2017	<0.050	**9.78**	<0.10
	7/2/2018	<0.050	**6.06**	<0.10
	6/6/2019	<0.0200	**2.42**	<0.250
	6/18/2020	<0.0200	**1.34**	<0.250
	12/10/2020	<0.0200	**5.85**	<0.250
	6/17/2021	<0.0200	**5.38**	<0.250
	12/10/2021	<0.0200	**4.61 H-01**	<0.250 H-01
	06/15/2022	<0.0200	**0.634**	<0.250
	12/5/2022	<0.0200	**8.58**	<0.250
	6/15/2023	<0.0200	**5.13**	<0.250
	12/14/2023	<0.0200	**5.86**	<0.250
	6/11/2024	<0.0200	**5.49**	<0.250
MW-16	11/6/2017	<0.050	**9.95**	<0.10
	3/19/2018	<0.40	**15.7**	<0.10
	7/2/2018	<0.050	**19.4**	<0.10
	9/25/2018	<0.0200	**6.10**	<0.250
	12/6/2018	<0.0200	**10.2**	<0.250
	3/22/2019	**5.31**	**7.90**	<0.250
	6/4/2019	<0.0200	**8.58**	<0.250
	9/25/2019	<0.0200	**7.15**	<0.250
	12/3/2019	<0.0200	**7.93**	<0.250
	3/11/2020	**0.465**	**10.5**	<0.250
	6/18/2020	<0.0200	**2.44**	<0.250
	10/7/2020	<0.0200	**7.10**	<0.250
	12/9/2020	<0.0200	**9.58**	<0.250
	3/3/2021	<0.0200	**7.09**	<0.250
	6/16/2021	**0.022**	**8.66**	<0.250
	9/15/2021	<0.0200	**5.99**	<0.250
	12/7/2021	<0.0200	**13.0**	<0.250
	3/9/2022	<0.0200	**17.0**	<0.250
	06/16/2022	<0.0200	**5.80**	<0.250
	9/14/2022	<0.0200	**5.28**	<0.250
	12/7/2022	<0.0200	**11.5**	<0.250
	3/15/2023	<0.0200	**25.8**	<0.250
	6/15/2023	<0.0200	**17.7**	<0.250
	9/13/2023	<0.0200	**8.16**	<0.250
	12/14/2023	<0.0200	**25.0**	<0.250
	3/11/2024	<0.0200	**21.0 Q-42**	<0.250 Q-42
	6/11/2024	<0.0200	**24.6**	<0.250
MW-17	11/8/2017	**0.634**	**43.4**	<1.0
	6/28/2018	<0.050	**7.84**	<0.10
	9/26/2018	**2.13**	**0.760**	<0.250
	3/19/2019	**5.77**	**25.3**	<0.250
	6/6/2019	**0.119**	**24.7**	<0.250
	9/26/2019	**2.12**	**1.10**	<0.250
	12/3/2019	**0.353**	**15.9**	<0.250
	3/10/2020	**1.21**	**11.5**	<0.250
	6/17/2020	<0.0200	**10.6 H-01**	<0.250
	10/7/2020	**3.44**	**0.636**	<0.250
	12/8/2020	**0.481**	**24.3**	<0.250
	3/3/2021	**1.00**	**2.95**	<0.250
	6/15/2021	**0.146**	**28.1**	<0.250
	9/14/2021	**6.55**	<0.250	<0.250
	12/8/2021	**2.42**	**9.18**	<0.250
	3/8/2022	**0.0890**	**27.7**	<0.250
	06/16/2022	<0.0200	**0.763**	<0.250
	9/13/2022	**5.84**	<0.250	<0.250
	12/7/2022	**3.39**	**34.1**	<0.250
	3/15/2023	**4.92**	<0.250	<0.250
	6/13/2023	**0.0290**	**0.337**	<0.250
	9/13/2023	**8.24**	<0.250	<0.250
	12/14/2023	<0.0200	**19.7**	<0.250
	3/5/2024	**0.723**	**14.8**	<0.250
	6/12/2024	**0.103**	**13.4**	<0.250
MW-18i	6/10/2008	<0.0500	**0.35**	<0.1
	11/7/2017	<0.050	**1.07**	<0.10
	3/21/2018	<0.050	**0.75**	<0.10
	7/2/2018	<0.050	**1.13**	<0.10
	9/27/2018	<0.0200	**1.00**	<0.250
	12/6/2018	<0.0200	**0.715**	<0.250
	3/21/2019	<0.0200	**0.509**	<0.250
	6/3/2019	<0.0200	**0.755**	<0.250
	9/25/2019	<0.0200	**0.831**	<0.250
	12/3/2019	<0.0200	**0.846**	<0.250
	3/11/2020	<0.0200	**0.445**	<0.250
	6/17/2020	<0.0200	**0.420**	<0.250
	10/7/2020	<0.0200	**0.415**	<0.250
	12/9/2020	<0.0200	**0.618**	<0.250
	3/3/2021	<0.0200	**0.528**	<0.250
	6/17/2021	<0.0200	**0.467**	<0.250
	9/15/2021	<0.0200	**0.422**	<0.250
	12/9/2021	<0.0200	**0.475**	<0.250
	3/9/2022	<0.0200	**0.415**	<0.250
	06/16/2022	<0.0200	**0.372**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-18i continued	9/15/2022	<0.0200	**0.561**	<0.250
	12/7/2022	<0.0200	**0.542**	<0.250
	3/17/2023	<0.0200	<0.250	<0.250
	6/15/2023	<0.0200	**0.765**	<0.250
	9/13/2023	<0.0200	**0.777**	<0.250
	12/14/2023	<0.0200	**0.793**	<0.250
	3/7/2024	<0.0200	**0.822**	<0.250
	6/12/2024	<0.0200	**1.38**	<0.250
MW-19	10/19/2010	--	**19**	--
	9/22/2015	**46**	**135**	--
	11/9/2017	**80**	**41**	<1.0
	3/21/2018	**150**	**47.8**	<0.10
	3/21/2018 DUP	**152**	**46.5**	<0.10
	6/28/2018	**194**	<0.10	<0.10
	9/25/2018	**122**	**120**	<0.250
	9/25/2018 DUP	**125**	**121**	<0.250
	12/5/2018	**188**	**118**	<0.250
	12/5/2018 DUP	**188**	**119**	<0.250
	3/20/2019	**242**	**195**	<0.250
	3/20/2019 DUP	**192**	**191**	<0.250
	6/7/2019	**145**	**34.8**	**1.06**
	9/26/2019	**113**	**232**	<0.250
	9/26/2019 DUP	**119**	**233**	<0.250
	12/3/2019	**131**	**129**	<0.250
	12/3/2019 DUP	**125**	**136**	<0.250
	3/11/2020	**109**	**213**	<1.25
	3/11/2020 DUP	**107**	**205**	<1.25
	6/18/2020	**88.0**	**30.8**	<0.250
	6/18/2020 DUP	**90.4**	**27.2**	<0.250
	10/7/2020	**187**	**224**	<0.250
	10/7/2020 DUP	**155**	**228**	<0.250
	12/8/2020	**180**	**147**	<0.250
	12/8/2020 DUP	**176**	**157**	<0.250
	3/3/2021	**156**	**137**	<0.250
	3/3/2021 DUP	**166**	**160**	<0.250
	6/16/2021	**115 D**	**152**	<1.25 R-04
	6/16/2021 DUP	**23.4 D**	**146**	<1.25 R-04
	9/15/2021	**111**	**150**	<0.250
	9/15/2021 DUP	**100**	**177**	<0250
	12/8/2021	**104**	**89.5**	<0.250
	12/8/2021 DUP	**79.4**	**69.8**	<0.250
	3/9/2022	**103**	**108**	<1.25 R-04
	3/9/2022 DUP	**105**	**102**	<0.250
	6/14/2022	**1.31**	**103**	<0.250
	6/14/2022 DUP	**1.10**	**104**	<0.250
	9/15/2022	**69.80**	**92.5**	<0.250
	9/15/2022 DUP	**75.4**	**102**	<0.250
	12/6/2022	**141**	**82.0**	<0.250
	12/6/2022 DUP	**142**	**76.7**	<0.250
	3/14/2023	**112**	**205 H-01**	<0.250 H-01
	3/14/2023 DUP	**123**	**211 H-01**	<0.250 H-01
	6/14/2023	**76.3**	**131**	<0.250
	6/14/23 DUP	**72.1**	**130**	<0.250
	9/14/2023	**64.0**	**118**	<0.250
	9/14/2023 DUP	**62.4**	**120**	<0.250
	12/15/2023	**137**	**34.1**	<0.250
	12/15/2023 DUP	**141**	**37.6**	<0.250
	3/6/2024	**127**	**63.7**	<0.250
	3/6/24 DUP	**121**	**66.7**	<0.250
	6/12/2024	**108**	**77.8**	<0.250
	6/12/2024 DUP	**108**	**85.5**	<0.250
MW-19i	11/8/2017	**0.236**	<0.10	<0.10
	3/20/2018	<0.40	<0.10	<0.10
	7/2/2018	**0.158**	<0.10	<0.10
	9/27/2018	**0.213**	<0.250	<0.250
	12/6/2018	**0.240**	<0.250	<0.250
	3/25/2019	**0.212**	<0.250	<0.250
	6/3/2019	**0.178**	<0.250	<0.250
	12/4/2019	**0.169**	<0.250	<0.250
	3/12/2020	<0.0200	<0.250	<0.250
	6/18/2020	**0.191**	<0.250	<0.250
	10/7/2020	**0.178**	<0.250	<0.250
	12/10/2020	**0.226**	<0.250	<0.250
	3/3/2021	**0.198**	<0.250	<0.250
	6/17/2021	**0.187**	<0.250	<0.250
	9/15/2021	**0.271**	<0.250	<0.250
	12/7/2021	**0.031**	**0.798**	<0.250
	3/9/2022	**0.220**	<0.250	<0.250
	06/16/2022	**0.264**	<0.250	<0.250
	9/14/2022	**0.358**	<0.250	<0.250
	12/7/2022	**0.246**	<0.250	<0.250
	3/14/2023	**0.342**	<0.250 H-01	<0.250 H-01

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-19i continued	6/14/2023	**0.223**	<0.250	<0.250
	9/12/2023	**0.302**	<0.250	<0.250
	12/14/2023	**0.273**	<0.250	<0.250
	3/7/2024	**0.268**	<0.250	<0.250
	6/12/2024	**0.237**	<0.250	<0.250
MW-20i	11/7/2017	**0.125**	**0.28**	<0.10
	3/21/2018	**1.01**	**1.06**	<0.10
	7/2/2018	**0.115**	**0.37**	<0.10
	9/25/2018	**0.244**	**1.11**	<0.250
	12/6/2018	<0.0200	<0.250	<0.250
	3/22/2019	**0.027**	**0.261**	<0.250
	6/3/2019	**0.353**	**1.77**	<0.250
	9/25/2019	<0.0200	**0.617**	<0.250
	12/3/2019	**0.030**	**1.84**	<0.250
	3/11/2020	<0.0200	**0.332**	<0.250
	6/17/2020	<0.0200	**0.585**	<0.250
	10/7/2020	<0.0200	**0.360**	<0.250
	12/9/2020	**0.176**	**0.643**	<0.250
	3/2/2021	<0.0200	**0.330**	<0.250
	6/17/2021	<0.0200	<0.250	<0.250
	9/15/2021	**0.028**	**0.367**	<0.250
	12/9/2021	<0.200	**0.260**	<0.250
	3/9/2022	<0.0200	**0.314**	<0.250
	06/15/2022	<0.0200	**0.258**	<0.250
	9/14/2022	<0.0200	**0.253**	<0.250
	12/7/2022	<0.0200	<0.250	<0.250
	3/15/2023	<0.0200	<0.250	<0.250
	6/15/2023	<0.0200	**0.326**	<0.250
	9/13/2023	<0.0200	**0.344**	<0.250
	12/14/2023	<0.0200	**0.502**	<0.250
	3/7/2024	<0.0200	**0.265**	<0.250
	6/12/2024	<0.0200	**0.279**	<0.250
MW-21i-40	6/10/2008	**0.0594**	<0.100	<0.100
	11/8/2017	<0.050	**1.90**	<1.0
	3/22/2018	**0.071**	**1.70**	<0.10
	6/29/2018	<0.050	**5.12**	<1.0
	9/27/2018	<0.0200	**3.61**	<0.250
	12/6/2018	<0.0200	**3.16**	<0.250
	3/21/2019	**0.0360**	**3.41**	<0.250
	6/3/2019	<0.0200	**1.49**	<0.250
	9/25/2019	<0.0200	**3.49**	<0.250
	12/3/2019	<0.0200	**4.61**	<0.250
	3/11/2020	<0.0200	**2.90**	<0.250
	6/17/2020	<0.0200	**2.11**	<0.250
	10/7/2020	<0.0200	**5.67**	<0.250
	12/9/2020	<0.0200	**6.15**	<0.250
	3/2/2021	**0.117**	**3.70**	<0.250
	6/16/2021	**0.0620**	**5.77**	<0.250
	9/15/2021	<0.0200	**5.55**	<0.250
	12/7/2021	<0.0200	**4.64**	<0.250
	3/8/2022	<0.0200	**5.20**	<0.250
	06/16/2022	<0.0200	**3.40**	<0.250
	9/14/2022	**0.027**	**4.87**	<0.250
	12/7/2022	<0.0200	**3.76**	<0.250
	3/15/2023	<0.0200	**4.76**	<0.250
	6/14/2023	<0.0200	**4.55**	<0.250
	9/13/2023	<0.0200	**4.45**	<0.250
	12/14/2023	<0.0200	**3.83**	<0.250
	3/7/2024	<0.0200	**2.29**	<0.250
	6/13/2024	<0.0200	**2.12**	<0.250
MW-21i-105	6/10/2008	**0.0645**	<0.100	<0.100
	11/8/2017	<0.050	**1.6**	<1.0
	3/22/2018	**13.0**	**15.8**	**0.10**
	6/29/2018	**12.3**	**13.1**	<0.10
	9/26/2018	**0.409**	**0.759**	<0.250
	12/6/2018	**3.05**	**5.29**	<0.250
	3/21/2019	**49.6**	**0.755**	<0.250
	6/6/2019	**45.7**	**7.57**	**1.25**
	9/25/2019	**28.3**	**4.46**	**1.81**
	12/4/2019	**42.5**	**4.15**	**2.11**
	3/12/2020	**32.6**	**3.54**	**4.79**
	6/18/2020	**44.6**	**4.18**	**12.1**
	10/8/2020	**45.6**	**5.85**	**10.6**
	12/9/2020	**34.4**	**8.54**	**5.76**
	3/4/2021	**2.30**	**7.39**	**2.47**
	6/15/2021	**17.6**	**11.0**	**2.99**
	9/15/2021	**7.29**	**1.15**	<0.250
	12/8/2021	**2.34**	**9.42**	<0.250
	3/9/2022	<0.0200	**3.13**	<0.250
	06/15/2022	**3.02**	**0.868**	<0.250
	9/15/2022	**1.67**	**1.87**	<0.250
	12/6/2022	**1.44**	**0.840**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-21i-105 continued	3/14/2023	**0.101**	**2.61 H-01**	<0.250 H-01
	6/13/2023	**2.21**	**1.34**	<0.250
	9/12/2023	**1.38**	**0.815**	<0.250
	12/14/2023	**1.81**	**0.847**	<0.250
	3/5/2024	**1.68**	**1.02**	<0.250
	6/13/2024	**1.32**	**0.970**	<0.250
MW-22i	11/7/2017	**0.354**	<1.0	<1.0
	3/22/2018	**1.25**	**0.63**	<0.10
	6/29/2018	**0.469**	<1.0	<1.0
	9/26/2018	**0.369**	<0.250	<0.250
	12/5/2018	**0.378**	<0.250	<0.250
	3/21/2019	**0.448**	<0.250	<0.250
	6/6/2019	**0.329**	<0.250	<0.250
	9/25/2019	**0.339**	<0.250	<0.250
	12/4/2019	**0.395**	<0.250	<0.250
	3/12/2020	**0.111**	<0.250	<0.250
	6/18/2020	**0.331**	<0.250	<0.250
	10/8/2020	**0.325**	<0.250	<0.250
	12/9/2020	**0.339**	<0.250	<0.250
	3/4/2021	**0.206**	<0.250	<0.250
	6/15/2021	**0.328**	<0.250	<0.250
	9/15/2021	**0.390**	<0.250	<0.250
	12/8/2021	**0.339**	<0.250	<0.250
	3/9/2022	**0.342**	<0.250	<0.250
	06/15/2022	**0.119**	<0.250	<0.250
	9/14/2022	**0.119**	**0.342**	<0.250
	12/8/2022	**0.374**	<0.250	<0.250
	3/16/2023	**0.358**	<0.250	<0.250
	6/13/2023	**0.269**	**1.09**	<0.250
	9/12/2023	**0.324**	<0.250	<0.250
	12/14/2023	**0.409**	<0.250	<0.250
	3/5/2024	**0.361**	<0.250	<0.250
	6/14/2024	**0.411**	<0.250	<0.250
MW-23i	6/10/2008	<0.0500	**0.440**	<0.100
	11/8/2017	<0.0500	**0.78**	<0.100
	3/21/2018	<0.0500	**0.72**	<0.100
	6/28/2018	<0.0500	**0.53**	<0.100
	9/27/2018	<0.0200	**1.04**	<0.250
	12/6/2018	<0.0200	**0.520**	<0.250
	3/22/2019	<0.0200	**0.592**	<0.250
	6/3/2019	<0.0200	**0.604**	<0.250
	12/4/2019	<0.0200	**0.534**	<0.250
	3/12/2020	<0.0200	**0.639**	<0.250
	6/17/2020	<0.0200	**0.372**	<0.250
	10/7/2020	<0.0200	**0.796**	<0.250
	12/9/2020	<0.0200	**0.667**	<0.250
	3/2/2021	<0.0200	**0.616**	<0.250
	6/17/2021	**0.0410**	**0.650**	<0.250
	9/15/2021	<0.0200	**1.07**	<0.250
	12/9/2021	<0.0200	**0.406 H-01**	<0.250 H-01
	3/9/2022	<0.0200	**0.680**	<0.250
	06/15/2022	<0.0200	**0.310**	<0.250
	9/14/2022	<0.0200	**1.08**	<0.250
	12/7/2022	<0.0200	**0.990**	<0.250
	3/14/2023	<0.0300 R-01	**1.69 H-01**	<0.250 H-01
	6/14/2023	<0.0200	**1.35**	<0.250
	9/13/2023	<0.0200	**1.88**	<0.250
	12/14/2023	<0.0200	**0.716**	<0.250
	3/7/2027	<0.0200	**1.83**	<0.250
	6/13/2024	<0.0200	**1.77**	<0.250
MW-24i	6/7/2011	--	**0.50**	<0.10
	12/7/2011	--	**1.60**	<0.10
	11/9/2017	<0.050	**3.09**	<0.10
	3/21/2018	**0.687**	**7.36**	<0.10
	6/28/2018	<0.050	**2.37**	<0.050
	9/27/2018	<0.0200	**7.56**	<0.250
	12/4/2018	**0.067**	**2.97**	<0.250
	3/25/2019	**0.020**	**4.07**	<0.250
	6/7/2019	<0.0200	**2.19**	<0.250
	9/27/2019	**0.116**	<0.250	<0.250
	12/3/2019	<0.0200	**2.86**	<0.250
	3/12/2020	<0.0200	**4.87**	<0.250
	6/18/2020	<0.0200	**2.70**	<0.250
	10/9/2020	<0.0200	**1.70**	<0.250
	12/10/2020	<0.0200	**9.40**	<0.250
	3/3/2021	<0.0200	**1.30**	<0.250
	6/17/2021	**0.026**	**5.43**	<0.250
	9/14/2021	<0.0200	**10.2**	<0.250
	12/7/2021	<0.0200	**0.784**	<0.250
	3/8/2022	<0.0200	**3.45**	<0.250
	06/15/2022	<0.0200	**0.431**	<0.250
	9/14/2022	**0.577**	<0.250	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-24i continued	12/8/2022	<0.0200	**8.62**	<0.250
	3/15/2023	<0.0200	**6.22**	<0.250
	6/13/2023	<0.0200	**4.01**	<0.250
	9/13/2023	<0.0200	**9.17**	<0.250
	12/11/2023	<0.0200	**0.826**	<0.250
	3/7/2024	<0.0200	**7.12**	<0.0250
	6/13/2024	<0.0200	**8.40**	<0.250
MW-24d	11/6/2017	**0.153**	<0.10	<0.10
	3/20/2018	<0.40	<0.10	<0.10
	6/27/2018	**0.160**	<0.10	<0.050
	9/28/2018	**0.145**	<0.250	<0.250
	12/10/2018	**0.993**	<0.250	<0.250
	3/25/2019	**0.147**	<0.250	<0.250
	6/4/2019	**0.131**	<0.250	<0.250
	9/27/2019	**0.050**	**3.76**	<0.250
	12/3/2019	**0.142**	<0.250	<0.250
	3/12/2020	**0.130**	<0.250	<0.250
	6/18/2020	**0.211**	<0.250	<0.250
	10/9/2020	**0.140**	<0.250	<0.250
	3/3/2021	**0.163**	<0.250	<0.250
	9/14/2021	**0.110**	<0.250	<0.250
	12/7/2021	**0.121**	<0.250	<0.250
	3/8/2022	**0.124**	<0.250	<0.250
	06/15/2022	**0.115**	<0.250	<0.250
	9/15/2022	**0.140**	<0.250	<0.250
	12/6/2022	**0.341**	<0.250	<0.250
	3/16/2023	**0.123**	<0.250	<0.250
	6/14/2023	<0.0200	**1.26**	<0.250
	9/14/2023	**0.102**	<0.250	<0.250
	12/15/2023	**0.106**	<0.250	<0.250
	3/7/2024	**0.0990**	<0.250	<0.250
	6/12/2024	**0.0970**	<0.250	<0.250
MW-25i	11/8/2017	**0.138**	**0.53**	<0.25
	3/21/2018	<0.050	**0.40**	<0.10
	6/29/2018	<0.050	**0.27**	<0.10
	9/27/2018	<0.0200	**0.775**	<0.250
	12/6/2018	<0.0200	**0.541**	<0.250
	3/22/2019	**0.0250**	**0.0389**	<0.250
	6/3/2019	<0.0200	**0.383**	<0.250
	9/25/2019	<0.0200	**0.710**	<0.250
	12/3/2019	<0.0200	**0.405**	<0.250
	3/12/2020	<0.0200	**0.453**	<0.250
	6/18/2020	<0.0200	**0.357**	<0.250
	10/7/2020	<0.0200	**0.644**	<0.250
	12/9/2020	<0.0200	**0.485**	<0.250
MW-25i continued	3/2/2021	<0.0200	**0.797**	<0.250
	6/17/2021	<0.0200	**0.675**	<0.250
	9/15/2021	<0.0200	**1.09**	<0.250
	12/8/2021	<0.0200	**0.426**	<0.250
	3/8/2022	<0.0200	**0.628**	<0.250
	06/16/2022	<0.0200	<0.250	<0.250
	9/14/2022	<0.0200	**0.782**	<0.250
	12/8/2022	<0.0200	**0.903**	<0.250
	3/15/2023	<0.0200	**1.09**	<0.250
	6/14/2023	<0.0200	**1.59**	<0.250
	9/14/2023	<0.0200	**1.03**	<0.250
	12/14/2023	<0.0200 B-02	**0.965**	<0.250
	3/6/2024	**0.0340**	**1.92**	<0.250
	6/12/2024	<0.0200	**1.71**	<0.250
MW-26	11/8/2017	**34.1**	**101**	<2.5
	3/20/2018	**30.0**	**271**	<0.25
	6/29/2018	**22.4**	**213**	<0.10
	9/24/2018	**30.2**	**212**	<0.250
	12/5/2018	**35.3**	**152**	<0.250
	3/22/2019	**60.6**	**544**	<0.250
	6/3/2019	**41.3**	**476**	<0.250
	9/26/2019	**32.4**	**383**	<0.500
	12/3/2019	**24.7**	**279**	<0.250
	3/11/2020	**48.9**	**628**	<1.25
	6/17/2020	**42.9**	**573 H-01**	<0.250 H-01
	10/7/2020	**30.1**	**358**	<0.250
	12/9/2020	**41.1**	**484**	<0.250
	3/4/2021	**55.2**	**457**	<0.250
	6/17/2021	**55.3**	**583 H-01**	<0.250
	9/15/2021	**81.0**	**376**	<0.250
	12/7/2021	**91.6**	**479**	<0.250
	12/7/2021 DUP	**86.6**	**465**	<0.250
	3/8/2022	**49.1**	**348**	<0.250
	06/15/2022	**109**	**380**	<0.250
	9/14/2022	**80.8**	**321**	<0.250
	12/8/2022	**118**	**349**	<0.250
	3/15/2023	**112**	**406**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MW-26 continued	6/14/2023	**66.8**	**306**	<0.250
	9/14/2023	**124**	**418**	<0.250
	12/15/2023	**72.7**	**316**	<0.250
	3/6/2024	**89.2**	**384**	<0.250
	6/14/2024	**96.5**	**381**	<0.250
MW-32s	11/10/2017	**0.235**	**0.58**	<0.10
	3/22/2018	<0.050	**0.16**	<0.10
	10/1/2018	<0.0200	<0.250	<0.250
	12/10/2018	**0.069**	**1.81**	<0.250
	3/25/2019	<0.0200	<0.250	<0.250
	9/26/2019	**0.0630**	<0.250	<0.25
	3/13/2020	<0.0200	<0.250	<0.250
	10/9/2020	<0.0200	<0.250	<0.250
	3/2/2021	<0.0200	<0.250	<0.250
	9/16/2021	<0.0200	<0.250	<0.250
	3/9/2022	<0.0200	<0.250	<0.250
	9/15/2022	<0.0200	<0.250	<0.250
	3/17/2023	<0.0200	<0.250	<0.250
	9/13/2023	<0.0200	<0.250	<0.250
	3/6/2024	<0.0200	<0.250	<0.250
EW-1	11/9/2017	<0.050	**0.50**	<0.10
	7/1/2018	<0.050	**2.91**	<0.10
	9/27/2018	<0.0200	**0.686**	<0.250
	3/25/2019	<0.0200	**3.69**	<0.250
	6/4/2019	<0.0200	**3.42**	<0.250
	12/4/2019	<0.0200	**0.708**	<0.250
	3/11/2020	<0.0200	**2.56**	<0.250
	6/17/2020	<0.0200	**4.24**	<0.250
	10/7/2020	<0.0200	**1.46**	<0.250
	12/9/2020	**0.177**	**2.32**	<0.250
	3/2/2021	<0.0200	**25.3**	<0.250
	6/16/2021	<0.0200	**28.4**	<0.250
	9/16/2021	<0.0200	**2.48**	<0.250
	12/7/2021	**0.0210**	**3.62**	<0.250
	3/8/2022	<0.0200	**1.22**	<0.250
	06/16/2022	<0.0200	<0.250	<0.250
	9/15/2022	<0.0200	**3.23**	<0.250
	12/8/2022	<0.0200	**1.24**	<0.250
	3/14/2023	<0.0200	**3.46 H-01**	<0.250 H-01
	6/14/2023	<0.0200	**4.09**	<0.250
	9/12/2023	<0.0200	**3.09**	<0.250
	12/14/2023	<0.0200	**5.05**	<0.250
	3/6/2024	<0.0200	**3.82**	<0.250
	6/12/2024	<0.0200	**3.54**	<0.250
S-1	11/8/2017	**7.13**	**4.14**	<0.10
	3/20/2018	**35.5**	**11.4**	**0.24**
	6/28/2018	<1.3	**3.02**	<0.10
	9/26/2018	**0.259**	**3.03**	<0.250
	12/5/2018	<0.0200	**2.16**	<0.250
	3/19/2019	**0.846**	**3.35**	<0.250
	6/5/2019	**0.141**	**1.95**	<0.250
	9/25/2019	<0.0200	**3.72**	<0.250
	12/4/2019	<0.0200	**2.04**	<0.250
	3/10/2020	<0.0200	**1.08**	<0.250
	6/17/2020	<0.0200	**1.13**	<0.250
	10/7/2020	<0.0200	**1.86**	<0.250
	12/8/2020	**0.0210**	**1.40**	<0.250
	3/3/2021	<0.0200	**1.39**	<0.250
	6/15/2021	<0.0200	**1.54**	<0.250
	9/14/2021	<0.0200	**1.18**	<0.250
	12/8/2021	**0.0440**	**0.762**	<0.250
	3/28/2022	<0.0200	**1.94**	<0.250
	6/15/2022	<0.0200	**0.331**	<0.250
	9/13/2022	<0.0200	**2.51**	<0.250
	12/7/2022	<0.0200	**2.00**	<0.250
	3/16/2023	<0.0200	**2.26**	<0.250
	6/14/2023	<0.0200	**0.705**	<0.250
	9/14/2023	<0.0200	**4.25**	<0.250
	12/13/2023	<0.0200	**1.00**	<0.250
	3/6/2024	<0.0200	**1.74**	<0.250
	6/12/2024	<0.0200	**2.72**	<0.250
S-2	11/8/2017	**5.64**	**1.05**	<0.10
	3/20/2018	**6.1**	**1.25**	<0.10
	6/28/2018	**8.05**	**3.28**	**0.054**
	9/26/2018	**7.55**	**5.93**	<0.250
	12/5/2018	**7.76**	<0.250	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
S-2 continued	3/19/2019	**25.6**	**3.23**	**0.259**
	6/5/2019	**6.06**	<0.250	<0.250
	9/25/2019	**0.691**	**1.77**	<0.250
	12/4/2019	**6.83**	**0.408**	<0.250
	3/10/2020	**6.96**	**0.906**	<0.250
	6/17/2020	**6.34**	<0.250	<0.250
	10/7/2020	**5.97**	**5.45**	<0.250
	12/8/2020	**6.85**	<0.250	<0.250
	3/3/2021	**5.61**	<0.250	<0.250
	6/15/2021	**5.56**	<0.250	<0.250
	9/14/2021	**7.03**	**4.60**	<0.250
	12/8/2021	**4.98**	<0.250	<0.250
	3/28/2022	**4.82**	<0.250	<0.250
	6/15/2022	**4.75**	<0.250	<0.250
	9/13/2022	**5.12**	**6.67**	<0.250
	12/7/2022	**4.53**	<0.250	<0.250
	3/14/2023	**3.95**	<0.250 H-01	<0.250 H-01
	6/14/2023	**5.57**	<0.250	<0.250
	9/14/2023	**4.22**	**0.253**	<0.250
	12/13/2023	**3.76**	<0.250	<0.250
	3/6/2024	**3.91**	**0.793**	<0.250
	6/12/2024	**3.72**	<0.250	<0.250
MGMS1-3(43)	10/19/2010	--	**390**	--
	11/7/2017	**217**	**120**	<1.0
	3/22/2018	**214**	<0.10	<0.10
	7/1/2018	**198**	<0.10	<0.10
	9/28/2018	**240**	**75.8**	<0.250
	12/4/2018	**246**	**30.6**	<0.250
	3/26/2019	**238**	**13.5**	<0.250
	6/7/2019	**209**	<0.25	<0.250
	9/27/2019	**233**	**84.1**	<0.250
	12/4/2019	**216**	**45.3**	<0.250
	3/11/2020	**199**	**12.3**	<0.250
	6/16/2020	**157**	<0.250	<0.250
	10/6/2020	**214**	**40.7**	<0.250
	12/10/2020	**190**	**10.8**	<0.250
	3/4/2021	**233**	**0.731**	<0.250
	6/16/2021	**188**	**0.398**	<0.250
	9/14/2021	**219**	**21.1**	<0.250
	12/7/2021	**175**	<0.250	<0.250
	3/10/2022	**271**	**1.27**	<0.250
	06/15/2022	**180**	<0.250	<0.250
	9/12/2022	**209**	**32.5**	<0.250
	12/8/2022	**236**	**10.2**	<0.250
	3/16/2023	**199**	**25.2**	<0.250 H-01
	6/13/2023	**197**	**1.58 M-02**	<0.250
	9/12/2023	**174**	**57.7**	<0.250
	12/11/2023	**278**	**2.11**	<0.250
	3/6/2024	**202**	**10.4 M-02**	<0.250
	6/12/2024	**198**	**2.64**	<0.250
MGMS1-2(60)	11/7/2017	<0.050	**1.91**	<0.10
	3/22/2018	**0.054**	**3.18**	<0.10
	7/1/2018	<0.050	**1.83**	<0.10
	10/1/2018	<0.0200	**3.65**	<0.250
	12/4/2018	**0.104**	**0.697**	<0.250
	3/26/2019	<0.0200	**1.39**	<0.250
	6/7/2019	<0.0200	**1.08**	<0.250
	9/27/2019	<0.0200	**2.58**	<0.250
	12/4/2019	<0.0200	**0.732**	<0.250
	3/12/2020	<0.0200	**3.25**	<0.250
	6/16/2020	<0.0200	**0.375**	<0.250
	10/6/2020	<0.0200	**2.49 M-02**	<0.250
	12/10/2020	<0.0200	**1.46**	<0.250
	3/4/2021	<0.0200	**2.18**	<0.250
	6/16/2021	<0.0200	**0.908**	<0.250
	9/14/2021	**4.75**	**2.12**	<0.250
	12/7/2021	<0.0200	**0.638**	<0.250
	3/10/2022	<0.0200	**1.70**	<0.250
	06/15/2022	<0.0200	**0.257**	<0.250
	9/12/2022	**0.022**	**4.00**	<0.250
	12/8/2022	**1.95**	**2.60**	<0.250
	3/16/2023	**1.87**	**4.31**	<0.250
	6/14/2023	**0.123**	**2.59**	<0.250
	9/12/2023	**2.06**	**2.33**	<0.250
	12/11/2023	**0.0570**	**0.879**	<0.250
	3/6/2024	**1.10**	**4.78**	<0.250
	6/12/2024	**0.139**	**2.23**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MGMS1-1(110)	11/7/2017	**0.822**	**0.73**	<0.10
	7/1/2018	**0.134**	**0.11**	<0.10
	10/1/2018	**0.595**	**0.898**	<0.250
	6/7/2019	**0.179**	**0.533**	<0.250
	12/4/2019	**0.225**	**0.587**	<0.250
	6/16/2020	**0.211**	**0.856**	<0.250
	12/8/2020	**0.237**	<0.250	<0.250
	6/16/2021	**0.130**	**0.552**	<0.250
	12/7/2021	**0.0910**	**0.623**	<0.250
	6/15/2022	**0.034**	**0.444**	<0.250
	12/8/2022	**0.0710**	**0.280**	<0.250
	6/15/2023	**0.0370**	<0.250	<0.250
	12/11/2023	<0.0200	<0.250	<0.250
	6/12/2024	<0.0200	<0.250	<0.250
MGMS2-4(40)	9/21/2010	**130**	**560**	<0.10
	6/7/2011	--	**200**	<0.10
	12/7/2011	--	**8.0**	<0.10
	11/9/2017	**87.1**	<0.10	<0.10
	3/22/2018	**84.2**	<0.10	<0.10
	7/1/2018	**83.6**	**0.76**	<0.10
	9/28/2018	**85.2**	**9.38**	<0.250
	12/10/2018	**80.7**	<0.250	<0.250
	3/25/2019	**85.2**	<0.250	<0.250
	6/4/2019	**78.7**	<0.250	<0.250
	9/27/2019	**78.9**	**1.34**	<0.250
	12/4/2019	**76.1**	<0.250	<0.250
	3/12/2020	**74.9**	<0.250	<0.250
	6/16/2020	**75.8**	**6.57**	**0.414**
	10/6/2020	**80.8**	**6.08**	**0.253**
	12/8/2020	**68.6**	**28.5**	**0.385**
	3/4/2021	**115**	**3.23**	<0.250
	6/17/2021	**60.9**	<0.250	<0.250
	9/16/2021	**78.6**	**39.9**	<0.250
	12/7/2021	**52.8**	**44.9**	<0.250
MGMS2-4(40) continued	3/10/2022	**66.3**	**34.4**	<0.250
	6/14/2022	**46.5**	**64.2**	<0.250
	9/12/2022	**73.1**	**21.6**	<0.250
	12/6/2022	**29.8**	**38.9**	<0.250
	3/16/2023	**57.3**	**44.8**	<0.250
	6/13/2023	**64.6**	**20.4**	<0.250
	9/11/2023	**47.4**	**2.22**	<0.250
	12/12/2023	**109**	**77.3**	<0.250
	3/4/2024	**62.0**	**117**	<0.250
	6/10/2024	**65.5**	**120**	<0.250
MGMS2-3(60)	11/9/2017	**1.03**	**0.12**	<0.10
	3/22/2018	**0.153**	**0.68**	<0.10
	7/1/2018	<0.050	**0.77**	<0.10
	12/10/2018	**1.39**	<0.250	<0.250
	3/25/2019	**0.407**	<0.250	<0.250
	6/4/2019	<0.0200	**0.852**	<0.250
	9/27/2019	**0.719**	<0.250	<0.250
	12/4/2019	**1.15**	<0.250	<0.250
	3/12/2020	**0.0280**	**0.678**	<0.250
	6/16/2020	**0.0200**	**0.519**	<0.250
	10/6/2020	**0.306**	<0.250	<0.250
	12/8/2020	**0.136**	**0.558**	<0.250
	3/4/2021	<0.0200	**0.606**	<0.250
	6/17/2021	<0.0200	**0.59**	<0.250
	9/16/2021	**0.082**	**0.45**	<0.250
	12/7/2021	**0.996**	<0.250	<0.250
	3/10/2022	<0.0200	**0.613**	<0.250
	6/14/2022	<0.0200	**0.486**	<0.250
	9/12/2022	**0.025**	**0.470**	<0.250
	12/6/2022	<0.0200	**0.594**	<0.250
	3/16/2023	<0.0200	**1.21**	<0.250
	6/13/2023	<0.0200	**0.999**	<0.250
	9/11/2023	<0.0200	**1.45**	<0.250
	12/12/2023	**0.239**	**0.373**	<0.250
	3/4/2024	<0.200	**1.41**	<0.250
	6/10/2024	<0.0200	**0.886**	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MGMS2-2(110)	11/9/2017	<0.050	**0.37**	<0.10
	7/1/2018	**0.050**	**0.28**	<0.10
	9/28/2018	<0.0200	**0.412**	<0.250
	6/4/2019	<0.0200	**0.402**	<0.250
	12/4/2019	<0.0200	**0.400**	<0.250
	6/16/2020	<0.0200	**0.317**	<0.250
	12/8/2020	**0.0230**	**0.333**	<0.250
	6/17/2021	<0.0200	**0.282**	<0.250
	12/7/2021	<0.0200	**0.376**	<0.250
	6/14/2022	<0.0200	**0.335**	<0.250
	12/6/2022	<0.0200	<0.250	<0.250
	6/13/2023	<0.0200	**0.268**	<0.250
	12/12/2023	<0.0200	**0.870**	<0.250
	6/10/2024	<0.0200	**1.38**	<0.250
MGMS2-1(132)	11/9/2017	<0.050	<0.10	<0.10
	7/1/2018	<0.050	<0.10	<0.10
	9/28/2018	**0.0500**	<0.250	<0.250
	6/4/2019	<0.0200	<0.250	<0.250
	12/4/2019	<0.0200	<0.250	<0.250
	6/16/2020	<0.0200	<0.250	<0.250
	12/8/2020	**0.0230**	<0.250	<0.250
	6/17/2021	<0.0200	<0.250	<0.250
	12/7/2021	<0.0200	<0.250	<0.250
	6/14/2022	<0.0200	<0.250	<0.250
	12/6/2022	<0.0200	**0.432**	<0.250
	6/13/2023	**0.0240**	<0.250	<0.250
	12/12/2023	<0.0200	<0.250	<0.250
	6/11/2024	<0.0200	<0.250	<0.250
MGMS3-4(40)	9/22/2015	**1.1**	**<.10**	--
	11/10/2017	**1.71**	<0.10	<0.10
	3/22/2018	**1.55**	<0.10	<0.10
	7/1/2018	**0.971**	<0.10	<0.10
	9/28/2018	**1.71**	<0.250	<0.250
	9/28/2018 DUP	**1.68**	<0.250	<0.250
	12/10/2018	**1.04**	<0.250	<0.250
	3/26/2019	**2.67**	<0.250	<0.250
	6/3/2019	**1.31**	<0.250	<0.250
	6/3/2019 DUP	**1.32**	<0.250	<0.250
	6/3/2019 DUP	**1.32**	<0.250	<0.250
	9/27/2019	**1.14**	<0.250	<0.250
	9/27/2019 DUP	**1.26**	<0.250	<0.250
	12/4/2019	**0.906**	<0.250	<0.250
	12/4/2019 DUP	**0.918**	<0.250	<0.250
	3/12/2020	**2.09**	<0.250	<0.250
	6/16/2020	**0.784**	<0.250	<0.250
	6/16/2020 DUP	**0.789**	<0.250	<0.250
	10/6/2020	**1.68**	<0.250	<0.250
	10/6/2020 DUP	**1.64**	<0.250	<0.250
	12/10/2020	**1.73**	<0.250	<0.250
	12/10/2020 DUP	**1.76**	<0.250	<0.250
	3/4/2021	**2.35**	<0.250	<0.250
	3/4/2021 DUP	**2.30**	<0.250	<0.250
	6/16/2021	**2.33**	<0.250	<0.250
	6/16/2021 DUP	**2.35**	<0.250	<0.250
	9/16/2021	**1.24**	<0.250	<0.250
	9/16/2021 DUP	**1.24**	<0.250	<0.250
	12/10/2021	**1.30**	<0.250 H-01	<0.250 H-01
	12/10/2021 DUP	**1.31**	<0.250 H-01	<0.250 H-01
	3/10/2022	**2.72**	<0.250	<0.250
	3/10/2022 DUP	**2.79**	<0.250	<0.250
	6/14/2022	**2.25**	<0.250	<0.250
	6/14/2022 DUP	**2.21**	<0.250	<0.250
	9/14/2022	**3.45**	<0.250	<0.250
	9/14/2022 DUP	**3.47**	<0.250	<0.250
	12/6/2022	**2.42**	<0.250	<0.250
	12/6/2022 DUP	**2.44**	<0.250	<0.250
	3/16/2023	**4.30**	<0.250	<0.250
	3/16/2023 DUP	**4.28**	<0.250	<0.250
	6/15/2023	**2.94**	<0.250	<0.250
	6/15/23 DUP	**2.95**	<0.250	<0.250
	9/11/2023	**1.75**	<0.250	<0.250
	9/11/2023 DUP	**1.72**	<0.250	<0.250
	12/13/2023	**2.14**	<0.250	<0.250
	12/13/2023 DUP	**2.19**	<0.250	<0.250
	3/4/2024	**3.77**	<0.250	<0.250
	3/4/2024 DUP	**3.69**	<0.250	<0.250
	6/10/2024	**3.41**	<0.250	<0.250
	6/10/2024 DUP	**3.43**	<0.250	<0.250

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MGMS3-3(60)	11/10/2017	<0.050	<0.10	<0.10
	3/22/2018	**0.272**	**0.39**	<0.10
	7/1/2018	**0.100**	**0.29**	<0.10
	9/28/2018	<0.0200	**0.393**	<0.250
	12/10/2018	<0.0200	<0.250	<0.250
	3/26/2019	<0.0200	**0.495**	<0.250
	6/3/2019	<0.0200	**0.371**	<0.250
	9/27/2019	<0.0200	<0.250	<0.250
	12/4/2019	<0.0200	**0.364**	<0.250
	3/12/2020	<0.0200	**0.257**	<0.250
	6/16/2020	<0.0200	**0.262**	<0.250
	10/6/2020	<0.0200	**0.296**	<0.250
	12/10/2020	<0.0200	**0.310**	<0.250
	3/4/2021	<0.0200	**0.376**	<0.250
	6/16/2021	<0.0200	**0.318**	<0.250
	9/16/2021	**0.0970**	**0.298**	<0.250
	12/10/2021	<0.0200	**0.307 H-01**	<0.250 H-01
	3/10/2022	<0.0200	**0.358**	<0.250
	6/14/2022	<0.0200	<0.250	<0.250
	9/14/2022	<0.0200	**0.488**	<0.250
	12/6/2022	<0.0200	**0.429**	<0.250
	3/16/2023	<0.0200	**1.00**	<0.250
	6/15/2023	<0.0200	**0.653**	<0.250
	9/11/2023	<0.0200	**1.03**	<0.250
	12/13/2023	<0.0200	**0.410**	<0.250
	3/4/2024	<0.0200	**0.930**	<0.250
	6/10/2024	<0.0200	**0.529**	<0.250
MGMS3-2(101)	11/10/2017	<0.050	**0.48**	<0.10
	7/1/2018	<0.050	**0.43**	<0.10
	9/28/2018	<0.0200	**0.506**	<0.250
	6/3/2019	<0.0200	**0.467**	<0.250
	12/4/2019	<0.0200	**0.451**	<0.250
	6/16/2020	<0.0200	**0.370**	<0.250
	12/10/2020	<0.0200	**0.389**	<0.250
	6/16/2021	<0.0200	**0.352**	<0.250
	12/10/2021	**0.0620**	**0.357 H-01**	<0.250 H-01
	6/14/2022	<0.0200	**0.457**	<0.250
	12/6/2022	<0.0200	**0.371**	<0.250
	6/15/2023	<0.0200	**0.406**	<0.250
	12/13/2023	<0.0200	**0.489**	<0.250
	6/10/2024	<0.0200	**0.685**	<0.250
MGMS3-1(132)	11/10/2017	<0.050	**0.52**	<0.10
	7/1/2018	<0.050	**0.46**	<0.10
	9/28/2018	<0.0200	**0.468**	<0.250
	6/5/2019	<0.0200	**0.560**	<0.250
	12/4/2019	<0.0200	**0.629**	<0.250
	6/16/2020	<0.0200	**0.591**	<0.250
	12/10/2020	<0.0200	**0.412**	<0.250
	12/10/2021	**0.0240**	**0.607 H-01**	<0.250 H-01
	6/14/2022	<0.0200	**0.848**	<0.250
	12/6/2022	<0.0200	**0.368**	<0.250
	6/15/2023	<0.0200	**0.628**	<0.250
	12/13/2023	<0.0200	**0.802**	<0.250
	6/10/2024	<0.0200	**0.588**	<0.250
MP-1	2/6/2007	**42.4**	**247**	**0.18**
	3/23/2009	**35**	**210**	**1.2**
	3/16/2010	**37**	**990**	**0.76**
	6/7/2011	--	**160**	<0.10
	12/9/2011	--	**120**	**0.91**
	11/9/2017	**12.2**	**23.0**	<0.50
	3/21/2018	**7.13**	**37.8**	<0.10
	6/28/2018	**8.71**	**38.2**	<0.10
	9/26/2018	**10.9**	**113**	<0.250
	12/4/2018	**6.01**	**80.8**	<0.250
	3/20/2019	**7.05**	**77.6**	<0.250
	6/7/2019	**8.24**	**61.6**	**0.366**
	9/26/2019	**2.15**	**97.7**	**0.384**
	12/3/2019	**2.39**	**118**	<0.250
	3/11/2020	**8.82**	**110**	<0.250
	6/17/2020	**5.81**	**161 H-01**	<0.250
	10/8/2020	**5.22**	**115**	<0.250
	12/9/2020	**1.95**	**106**	<0.250
	3/3/2021	**6.68**	**140**	<0.250
	6/16/2021	**2.71**	**70.1**	**0.690**
	9/16/2021	**8.12**	**56.8**	<0.250
	12/8/2021	**0.735**	**53.9**	**0.434**

Table 4

Groundwater Analytical Results—Ammonia, Nitrate, and Nitrite

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Ammonia (as Nitrogen)	Nitrate-Nitrogen	Nitrite-Nitrogen
		Concentrations in mg/L (ppm)		
MP-1 continued	3/9/2022	**2.58**	**43.9**	<0.250
	6/14/2022	**3.71**	**90.2**	**0.323**
	9/14/2022	**6.50**	**83.3**	<0.250
	12/7/2022	**1.47**	**76.7**	**0.345**
	3/17/2023	**2.25**	**30.6**	<0.250
	6/15/2023	**4.60**	**90.7 H-01**	<0.250
	9/13/2023	**4.86**	**56.6**	<0.250
	12/15/2023	**0.336**	**43.1**	<0.250
	3/7/2024	**3.63**	**30.5**	<0.250
	6/13/2024	**0.225**	**11.9**	<0.250
MP-3	6/28/2018	**18.8**	**138**	**0.42**
NKW-1	12/12/2023	<0.0200	**6.32**	<0.250
	3/5/2024	**16.7**	**13.7**	<0.250
	6/11/2024	**4.60**	**24.6**	<0.250
NKW-2	12/12/2023	**2.61**	**33.9**	<0.250
	3/5/2024	**19.6**	**19.9**	<0.250
	6/11/2024	**19.9**	**47.2**	<.250
KMW-4	12/13/2023	**0.140**	**6.79**	<0.250
	6/10/2024	<0.0200	**31.5**	<0.250
KMW-5	12/13/2023	<0.0200	<0.250	<0.250
	6/10/2024	**1.19**	<0.250	<0.250
KMW-6	12/13/2023	<0.0200	**0.605**	<0.250
	6/11/2024	<0.0200	**1.62**	<0.250

Notes:

1. mg/L (ppm) = Milligrams per liter (parts per million).
2. **Bold** value represents detected concentration of listed analyte.
3. -- = Not sampled or not analyzed.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. Ammonia as nitrogen by Method 350.1.
6. Nitrate as nitrogen and nitrite as nitrogen by Method 300.0.
7. E = Estimated value.
8. H-01 = This sample was analyzed outside the recommended holding time.
9. M-02 = Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
10. R-01/R-04 = Reporting levels elevated due to preparation and/or analytical dilution necessary for analysis.
11. D = Relative percent difference (RPD) between sample and duplicate is outside of the acceptable range of +/- 30%.
13. 'Q' qualifiers indicate that spike recovery and/or RPD for this analyte is outside acceptance limits.

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloro ethane	1,2-Dichloro ethane	1,1-Dichloro ethene	cis-1,2-Dichloro ethene	trans-1,2-Dichloro ethene	Tetrachloro ethene	1,1,1-Trichloro ethane	Trichloro ethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MW-7	2/6/2007	<100	<100	<100	<100	<100	**31,500**	<100	**352**	<100	N/A	<1.0	1.20	245.7
	12/16/2008	<50	<50	<50	**130**	<50	**15,000**	<50	**450**	<50	N/A	**2.4**	0.72	-103.2
	3/23/2009	<15.0	<0.50	<15.0	**420**	<15.0	**3,300**	<15.0	**270**	<15.0	N/A	**6.7**	0.69	-614.5
	6/18/2009	**3.7**	<3.0	<3.0	**520**	<3.0	**890**	**5.2**	**350**	<3.0	N/A	N/A	6.97	-16.4
	9/18/2009	**9.8**	<3.0	**5.5**	**930**	<3.0	**2,600**	**10**	**250**	<3.0	<1.0	**4.1**	0.59	121.7
	12/18/2009	**6.7**	<5.0	<5.0	**330**	<5.0	**1,600**	**6.7**	**160**	<5.0	<1.0	**2.5**	1.23	162.1
	3/16/2010	<2.0	<2.0	<2.0	**180**	<2.0	**550**	**2.0**	**56**	<2.0	<1.0	**2.6**	1.37	147.7
	6/17/2010	<1.5	<1.5	<1.5	**360**	<1.5	**200**	**2.7**	**72**	<1.5	<1.0	**2.8**	1.86	240.0
	9/23/2010	**3.3**	<3.0	<3.0	**690**	<3.0	**750**	**3.5**	**110**	**4.8**	<1.0	**8.2**	0.64	-483.4
	12/10/2010	**1.8**	<0.90	<0.90	**94**	<0.90	**220**	**1.6**	**36**	**1.7**	**1.19**	**0.84**	6.29	111.6
	3/11/2011	**6.6**	<0.90	**1.6**	**150**	**0.91**	**420**	**5.1**	**82**	**9.3**	**7.76**	**1.10**	6.65	132.3
	6/7/2011	**4.8**	<2.5	**3.4**	**1,400**	**3.3**	**430**	**4.0**	**110**	**7.9**	<1.0	**4.7**	0.45	108.6
	9/19/2011	<5.0	<5.0	<5.0	**1,300**	<5.0	**410**	<5.0	**84**	**78**	N/A	**3,400**	4.53	695.8
	12/9/2011	**8.0**	<5.0	**6.9**	**3,400**	**6.8**	**200**	<5.0	**32**	**110**	**38.7**	**1,600**	1.19	-117.5
	3/12/2012	**9.2**	<5.0	<5.0	**1,600**	<5.0	**41**	<5.0	**8.6**	**600**	**71**	**1,000**	2.97	96.8
	06/22/2012	**9.0**	<2.0	<2.0	**500**	<2.0	**25**	<2.0	**5.2**	**290**	**130**	**790**	6.28	-137.9
	9/14/2012	**3.8**	<0.50	**0.54**	**180**	**0.70**	**28**	<0.50	**5.2**	**80**	**47**	**790**	2.29	93.3
	12/14/2012	**1.9**	<0.50	<0.50	**130**	<0.50	**11**	<0.50	**6.8**	**18**	**19.5**	**550**	0.34	24.1
	3/15/2013	**0.69**	<0.50	<0.50	**110**	<0.50	**1.6**	<0.50	**0.78**	**11**	**13.3**	**250**	1.02	53.3
	6/14/2013	**0.51**	<0.50	<0.50	**58**	<0.50	**1.6**	<0.50	<0.50	**16**	**5.86**	**220**	0.29	47.9
	9/20/2013	**1.5**	<0.50	<0.50	**56**	<0.50	<0.50	<0.50	<0.50	**10**	**18.6**	**270**	0.45	-189.3
	12/16/2013	**2.9**	<0.50	<0.50	**6.9**	<0.50	**0.51**	<0.50	<0.50	**9.1**	**5.0**	**250**	0.44	-66.1
	3/24/2014	**1.6**	<0.50	<0.50	**13**	<0.50	**9.8**	<0.50	**2.6**	**7.6**	**220**	**77**	0.43	76.9
	6/25/2014	**0.19**	<0.50	<0.50	**0.62**	<0.50	<0.50	<0.50	<0.50	**1.4**	**21.9**	**120**	0.6	-90.5
	9/30/2014	**2.7**	<0.50	<0.50	**4.5**	<0.50	<0.50	<0.50	<0.50	**9.8**	<1.0	**160**	1.93	-112.0
	12/15/2014	**4.5**	<0.50	<0.50	**16**	<0.50	**0.61**	<0.50	**1.5**	**21**	<1.0	**28.5**	1.61	-34.0
	3/20/2015	**1.0**	<0.50	<0.50	**8.4**	<0.50	<0.50	<0.50	**1.1**	**1.0**	<6.2	**23.5**	1.19	-76.8
	6/17/2015	**2.6**	<0.50	<0.50	**12**	<0.50	**1.2**	<0.50	**1.0**	**12.6**	<10.0	**46**	0.81	-4.9
	9/23/2015	**1.8**	<0.50	<0.50	**12.7**	<0.50	**4.5**	<0.50	**4.2**	**4.8**	<10.0	**40.6**	0.87	-30.5
	12/8/2015	<0.50	<0.50	<0.50	**4.1**	<0.50	**0.94**	<0.50	**1.7**	**1.9**	<10.0	**9.8**	1.98	84.1
	6/17/2016	**0.60**	<0.50	<0.50	**10.9**	<0.50	**0.69**	<0.50	**2.1**	**5.4**	<10.0	**18.9**	1.67	-120.1
	9/29/2016	**1.1**	<0.50	<0.50	**10.9**	<0.50	<0.50	<0.50	**6.0**	**5.5**	N/A	N/A	0.96	164.1
	12/14/2016	<0.50	<0.50	<0.50	**9.4**	<0.50	**0.78**	<0.50	<0.50	**1.0**	N/A	N/A	1.13	5.6
	3/28/2017	<0.50	<0.50	<0.50	<0.50	<0.50	**1.2**	<0.50	**0.73**	<0.50	N/A	N/A	0.89	-25.4
	6/14/2017	<0.50	<1.0	<0.50	**2.5**	<0.50	<0.50	<0.50	**0.55**	**2.5**	<10.0	**9.1**	1.08	-60.5
	9/27/2017	<0.50	<1.0	<0.50	**1.7**	<0.50	**2.6**	<0.50	**1.60**	**1.7**	<10.0	**7.8**	1.75	110.2
	3/21/2018	**0.495 J**	<0.500	<0.500	**17.6**	<0.500	**0.228 J**	<0.500	**2.86**	**4.93**	<13.0	**9.96**	6.03	10.5
	6/29/2018	**0.461 J**	<0.500	<0.500	**5.50**	<0.500	**9.89**	<0.500	**3.53**	**1.47**	<10.0	**5.0**	0.56	187.5
	9/27/2018	**1.23**	<0.400	<0.400	**8.48**	<0.400	**6.50**	<0.400	**10.8**	**2.08**	N/A	N/A	1.21	-9.0
	12/7/2018	**3.97**	<0.400	**0.472**	**17.7**	<0.400	**30.4**	<0.400	**18.1**	**1.62**	N/A	N/A	1.89	18.5
	3/20/2019	**1.87**	<0.400	<0.400	**22.2**	<0.400	**22.8**	<0.400	**10.8**	**0.605**	<1.0	**9.07**	3.20	93.4
	6/5/2019	**2.91**	<0.400	**0.559**	**20.2**	<0.400	**28.4**	<0.400	**12.7**	**1.15**	<1.0	**4.77**	6.02	92.2
	9/26/2019	**2.98**	<0.400	**0.672**	**21.0**	<0.400	**41.7**	<0.400	**17.9**	**0.420**	N/A	N/A	0.67	182.9
	12/3/2019	**4.61**	<0.400	**0.839**	**29.7**	<0.400	**66.1**	<0.400	**31.8**	<0.400	<1.0	**7.51**	6.61	194.0
	3/11/2020	**0.936**	<0.400	<0.400	**26.5**	<0.400	**47.4**	<0.400	**14.3**	**0.476**	<1.0	**5.98**	3.39	109.1
	6/18/2020	**0.850**	<0.400	<0.400	**11.1**	<0.400	**43.0**	<0.400	**10.1**	<0.400	<1.0	**5.10**	1.03	230.9
	10/8/2020	**1.97**	<0.400	**0.481**	**23.6**	<0.400	**50.2**	<0.400	**19.7**	<0.400	<1.0	**15.4**	1.65	18.5
	12/9/2020	**7.05**	<0.400	**1.41**	**56.3**	**0.552**	**108**	<0.400	**45.4**	<0.400	<1.0	**8.45**	2.50	139.5
	3/3/2021	<0.400	<0.400	**1.28**	**20.0**	<0.400	**56.4**	<0.400	**22.4**	<0.400	<1.0	**4.53**	2.79	103.9
	6/16/2021	**0.927**	<0.400	**4.30**	**35.5**	<0.400	**78.0**	<0.400	**39.6**	**0.450**	<1.0	**8.63**	2.55	195.0
	9/14/2021	**2.11**	<0.400	**0.457**	**25.8**	<0.400	**47.6**	<0.400	**20.6**	<0.400	<1.0	**19.40**	2.37	19.2
	12/8/2021	**4.67**	<0.400	**0.870**	**39.1**	<0.400	**118**	**0.593**	**51.2**	**0.537**	<1.0	**9.16**	0.35	159.5
	3/9/2022	**3.24**	<0.400	**0.950**	**37.2**	**0.530**	**78.8**	<0.400	**38.2**	**1.20**	<1.0	**4.43**	0.19	177.1
	6/14/2022	<0.400	<0.400	<0.400	**3.76**	<0.400	**85.6**	**0.790**	**27.2**	<0.400	<1.0	<1.00	5.32	166.3
	9/15/2022	**1.26**	<0.400	<0.400	**31.3**	<0.400	**30.9**	<0.500	**13.0**	**0.660**	<1.0	**14.8**	0.46	144.2
	12/7/2022	**4.22**	<0.400	**0.930**	**41.1**	**0.440**	**118.0**	**0.570**	**46.3**	**0.560**	<1.0	**7.62**	2.14	72.8
	3/14/2023	**1.97**	<0.400	**0.460**	**22.6**	<0.400	**67.0**	<0.400	**27.8**	**0.820**	<1.0	**8.66**	0.96	-290.9
	6/15/2023	<0.400	<0.400	<0.400	**3.34**	<0.400	**19.0**	<0.400	**5.79**	<0.400	<1.0	**2.71**	0.31	-537.2
	9/12/2023	**2.30**	<0.400	**0.620**	**26.8**	<0.400	**65.5**	<0.400	**30.5**	**0.250**	<1.0	**5.89**	0.18	137.5
	12/14/2023	**5.53**	<0.400	**1.01**	**44.9**	**0.790**	**123**	**1.00**	**52.0**	**0.690**	<1.0	**3.80**	0.35	129.1
	3/7/2024	**1.69**	<0.400	**0.540**	**20.8**	<0.400	**70.0**	<0.400	**36.3**	**0.280**	<1.0	**5.70**	0.32	50.1
	6/11/2024	**6.74**	<0.400	**1.63**	**58.7**	**0.720**	**152**	**1.50**	**87.9**	**0.660**	<1.0	**4.70**	1.26	9.0
MP-1	2/6/2007	**18.4**	<5.0	<5.0	**347**	**8.5**	**1,610**	**11.2**	**421**	**23.6**	N/A	<1.00	0.39	208.9
	12/16/2008	**<5.0**	<5.0	<5.0	**70**	<5.0	**1,600**	**10**	**230**	<5.0	N/A	**1.80**	1.37	-78.5
	3/23/2009	**6.0**	<4.0	<4.0	**89**	<4.0	**1,200**	**10**	**180**	<4.0	N/A	**2.0**	1.05	127.3
	6/18/2009	**4.3**	<4.0	<4.0	**43**	<4.0	**1,500**	**12**	**180**	<4.0	N/A	N/A	3.65	-43.7
	9/18/2009	**14**	<4.0	<0.40	**240**	**8.9**	**1,100**	**8.2**	**310**	**7.3**	<1.0	**1.50**	0.48	99.7
	12/18/2009	<4.0	<4.0	<4.0	**58**	<4.0	**1,000**	**7.1**	**180**	<4.0	<1.0	**1.60**	0.78	155.3
	3/16/2010	**22**	<3.0	**4.7**	**410**	**13**	**1,500**	**8.6**	**400**	**10**	**2.47**	**2.4**	0.89	83.2
	6/17/2010	**3.2**	<3.0	<3.0	**120**	<3.0	**800**	**5.4**	**140**	<3.0	<1.0	**2.4**	3.22	228.3
	9/23/2010	<3.0	<3.0	<3.0	**41**	<3.0	**730**	**4.0**	**120**	<3.0	<1.0	**2.0**	0.53	-464.0
	12/10/2010	<3.0	<3.0	<3.0	**27**	<3.0	**1,000**	**4.5**	**150**	<3.0	<1.0	**1.0**	0.52	-4.6
	3/14/2011	**7.1**	<3.0	<3.0	**150**	<3.0	**1,200**	**6.4**	**180**	**5.9**	<0.0010	**0.96**	1.35	159.6
	6/7/2011	**4.9**	<2.5	<2.5	**75**	<2.5	**640**	**3.3**	**130**	<2.5	<1.0	**1.6**	0.52	48.9
	9/19/2011	**2.4**	<1.5	<1.5	**4.1**	<1.5	**30**	**1.9**	**72**	**1.6**	N/A	**3.7**	0.69	913.5
	12/9/2011	**2.6**	<2.5	<2.5	**49**	**3.1**	**640**	**3.1**	**120**	<2.5	**3.28**	**8.3**	0.83	-51.7
	3/9/2012	**9.4**	<1.5	**2.8**	**440**	**6.3**	**490**	**3.5**	**140**	**21**	**15.9**	**16**	0.23	77.7
	6/22/2012	**5.6**	<2.5	**2.8**	**530**	**2.9**	**690**	**12**	**120**	**48**	**66.6**	**26**	0.83	-51.7
	9/14/2012	**4.0**	<1.5	<1.5	**170**	**2.2**	**340**	**2.0**	**83**	**4.5**	**16**	**23**	0.43	98.2
	12/14/2012	**2.0**	<0.90	<0.90	**170**	**1.7**	**230**	**1.0**	**48**	**1.8**	**21.1**	**18**	0.28	-15.2
	3/15/2013	**5.1**	<0.90	**0.94**	**140**	**2.5**	**230**	**1.0**	**69**	**1.8**	**5.86**	**35**	0.44	60.4
	6/14/2013	**4.5**	<0.90	**1.4**	**190**	**1.6**	**330**	**1.4**	**70**	**1.8**	**2.96**	**28**	0.34	187.2
	9/20/2013	**2.9**	<0.90	<0.90	**77**	**1.5**	**260**	**0.95**	**66**	<0.90	**3.17**	**35**	0.44	1.2
	12/16/2013	**1.7**	<0.90	**1.1**	**67**	**0.92**	**290**	**1.2**	**70**	<0.90	<1.0	**26**	1.10	10.3
	3/24/2014	**2.2**	<1.5	<1.5	**240**	<1.5	**360**	**1.8**	**54**	<1.5	**33**	**38**	0.69	-18.7
	6/23/2014	**4.9**	<1.5	**2.3**	**290**	**1.7**	**1,200**	**9.5**	**130**	**5.0**	**19.6**	**34**	3.00	-14.0
	9/30/2014	**2.8**	<2.0	<2.0	**110**	<2.0	**360**	<2.0	**63**	**16**	<1.0	**29**	4.09	42.3
	12/15/2014	**1.7**	<1.5	<1.5	**58**	<1.5	**320**	<1.5	**59**	<1.5	<1.0	**2.4**	0.88	-28.6
	3/20/2015	**3.6**	<1.0	**1.5**	**190**	**1.5**	**570**	**1.0**	**96**	**25**	<6.2	**7.8**	1.04	29.8
	6/18/2015	**2.9**	<0.84	**1.5**	**91**	**0.87**	**376**	<0.84	**80.8**	<0.84	<10.0	**6.0**	1.75	-148.5
	9/22/2015	**1.8**	<1.2	**1.4**	**38.3**	<1.2	**343**	<1.2	**68.3**	<1.2	<1.0	**2.2**	1.66	105.5
	12/8/2015	**1.8**	<1.2	**1.5**	**50.9**	<1.2	**308**	<1.2	**62.6**	<1.2	<1.0	**9.9**	1.20	82.8
	3/8/2016	**7.5**	<0.84	**2.1**	**148**	**1.2**	**433**	<0.84	**100**	<0.84	<1.0	**5.1**	1.13	29.5
	6/17/2016	**5.0**	<0.50	**1.5**	**125**	**0.97**	**206**	<0.50	**67.3**	<0.50	<10.0	<1.0	3.71	-8.6
	9/28/2016	**1.3**	<0.50	**3.1**	**40.5**	<0.50	**99.4**	<0.50	**35.5**	**3.3**	<10.0	**2620**	1.32	135.2
	12/13/2016	**0.64**	<0.50	**0.92**	**209**	**0.55**	**2.9**	<0.50	**1.0**	**4.3**	<10.0	**130**	3.57	12.1
	3/30/2017	**7.5**	<0.50	<0.50	**177**	**6.0**	<0.50	<0.50	**0.79**	**186**	**328**	**137**	0.79	-137.7
	6/14/2017	**2.3**	<1.0	<0.50	**143**	**1.9**	**16.2**	<0.50	**8.5**	**29.4**	**83.2**	**38.9**	0.87	-53.2
	9/26/2017	**4.5**	<1.0	**3.4**	**83.0**	**0.83**	**307**	<0.50	**65.9**	**2.3**	<10.0	**4.3**	0.93	80.5
	11/9/2017	**3.3**	<0.50	**4.3**	**105**	**0.91**	**198**	<0.50	**74.0**	**2.6**	<10.0	**3.7**	0.66	-104.8

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MP-1 continued	3/21/2018	**3.17**	<0.500	**4.04**	**151**	**1.02**	**245**	<0.500	**64.5**	**1.63**	<13.0	**8.3**	0.36	175.8
	6/28/2018	**10.2**	<0.500	**9.34**	**353**	**1.74**	**747**	**0.555**	**140**	**5.26**	<10.0	**8.2**	0.45	159.1
	9/26/2018	<8.00	<8.00	<8.00	**60.2**	<8.00	**322**	<8.00	**57**	<8.00	<1.0	**3.12**	0.99	126.4
	12/4/2018	<0.400	**2.79**	**6.59**	**130**	**0.836**	**355**	<0.400	**76.7**	**1.24**	<1.0	**6.09**	2.28	-22.7
	3/20/2019	**1.43**	<0.400	**3.08**	**69.0**	<0.400	**146**	<0.400	**36.6**	**1.55**	<1.0	**3.34**	5.86	72.6
	6/7/2019	<8.00	<8.00	<8.00	**205**	<8.00	**769**	<8.00	**111**	<8.00	<1.0	**8.2**	0.73	29.2
	9/29/2019	**1.36**	<0.800	**1.14**	**37.1**	<0.800	**176**	<0.800	**26.8**	<0.800	<1.0	**1.94**	0.70	-16.2
	12/3/2019	**1.57**	<0.800	**1.80**	**40.6**	<0.800	**306**	<0.800	**57.8**	<0.800	<1.0	**2.27**	5.01	181.8
	3/11/2020	**3.94**	<0.800	**5.63**	**177**	**1.14**	**1,370**	**1.77**	**190**	<0.800	<1.0	**2.28**	0.94	99.5
	6/17/2020	<4.00	<4.00	<4.00	**72.0**	<4.00	**427**	<4.00	**61.2**	<4.00	<1.0	**5.91**	0.96	237.3
	10/8/2020	<2.00	<2.00	<2.00	**36.7**	<2.00	**510**	<2.00	**52.3**	<2.00	<1.0	**1.74**	1.80	1.6
	12/9/2020	**1.15**	<0.800	<0.800	**29.5**	<0.800	**362**	<0.800	**41.3**	<0.800	<1.0	**1.76**	1.50	-30.7
	3/3/2021	**2.34**	<2.00	<2.00	**70.1**	<2.00	**831**	<2.00	**100**	<2.00	<1.0	**1.83**	6.85	19.3
	6/16/2021	<4.00	<4.00	<4.00	**70.7**	<4.00	**309**	<4.00	**52.0**	<4.00	<1.0	**2.81**	1.88	266.0
	9/15/2021	**1.67**	<0.800	**1.27**	**38.1**	<0.800	**392**	<0.800	**63.8**	<0.800	<1.0	**1.51**	1.30	-56.5
	12/8/2021	<2.00	<2.00	<2.00	**9.16**	<2.00	**152**	<2.00	**29.2**	<2.00	N/A	<1.00	2.44	100.7
	3/9/2022	<2.00	<2.00	<2.00	**33.4**	<2.00	**322**	<2.00	**59.0**	<2.00	<1.0	**1.10**	2.17	162.3
	6/14/2022	<2.00	<2.00	<2.00	**40.0**	<2.00	**417**	<2.00	**41.9**	<2.00	<1.0	**2.83**	0.32	202.6
	9/14/2022	<2.00	<2.00	<2.00	**24.6**	<2.00	**470**	<2.00	**39.4**	<2.00	<1.0	<1.00	0.26	-18.0
	12/7/2022	<2.00	<2.00	<2.00	**27.6**	<2.00	**436**	<2.00	**56.8**	<2.00	<1.0	**1.27**	1.22	140.9
	3/17/2023	<2.00	<2.00	<2.00	**11.1**	<2.00	**199**	<2.00	**26.1**	<2.00	<1.0	**1.01**	0.59	-230.2
	6/15/2023	**3.30**	<2.00	<2.00	**65.9**	<2.00	**1,000**	**2.85**	**85.0**	<2.00	<1.0	**1.55**	0.67	-495.2
	9/13/2023	<0.800	<0.800	<0.800	**13.4**	<0.800	**277**	<0.800	**31.9**	<0.800	<1.0	<1.00	0.34	81.5
	12/15/2023	<0.800	<0.800	<0.800	**6.76**	<0.800	**189**	<0.800	**29.6**	<0.400	<1.0	**0.60**	0.59	108.0
	3/7/2024	<1.00	<1.00	<1.00	**9.85**	<1.00	**224**	<1.00	**81.0**	<0.500	<1.0	**0.80**	0.17	20.7
	6/13/2024	<1.00	<1.00	<1.00	**10.0**	<1.00	**159**	<1.00	**35.6**	<0.500	<1.0	**0.80**	1.15	119.5
EX	2/6/2007	<10.0	<10.0	<10.0	**68.2**	<10.0	**2,810**	**40**	**564**	<10.0	N/A	**1.45**	0.24	164.8
	12/16/2008	**54**	<15.0	<15.0	**490**	<15.0	**4,500**	**71**	**830**	<15.0	N/A	**3.30**	0.74	-174.5
	3/23/2009	<5.0	<5.0	<5.0	**50**	<5.0	**1,400**	**43**	**420**	<5.0	N/A	**3.0**	0.47	68.8
	6/18/2009	<0.50	<0.50	<0.50	**4.2**	<0.50	**24**	**1.1**	**11**	<0.50	N/A	N/A	0.37	-9.3
	9/18/2009	**4.1**	<0.50	**3.3**	**120**	**0.76**	**2,100**	**38**	**380**	**1.1**	<1.0	**4.9**	0.60	109.0
	12/18/2009	<2.5	<2.5	<2.5	**5.6**	<2.5	**700**	**3.7**	**56**	<2.5	**55.6**	**1.8**	2.13	170.1
	3/16/2010	<0.50	<0.50	<0.50	**20**	<0.50	**150**	**3.2**	**33**	<0.50	<0.50	**2.4**	0.88	102.6
	6/17/2010	**0.97**	<0.50	<0.50	**92**	<0.50	**150**	**2.3**	**39**	**2.2**	<1.0	**3.3**	0.84	239.5
	9/23/2010	**1.5**	<0.50	**1.6**	**90**	**0.53**	**2,400**	**20**	**220**	**1.8**	<1.0	**3.6**	0.93	-521.6
	12/21/2010	**0.83**	<0.50	**0.59**	**30**	<0.50	**900**	**6.7**	**99**	**0.71**	<1.0	<0.50	0.91	131.7
	3/31/2011	**8.2**	<4.0	**8.1**	**240**	<4.0	**6,800**	**110**	**910**	**5.1**	**1.91**	**1.9**	--	--
	6/7/2011	<4.0	<4.0	<4.0	**140**	<4.0	**1,400**	**15**	**170**	<4.0	<1.0	**3.5**	0.70	115.2
	9/19/2011	**7.9**	<5.0	**11**	**290**	<5.0	**4,100**	**73**	**460**	**14**	N/A	**560**	0.63	907.9
	12/9/2011	**16**	<5.0	**19**	**12,000**	**9.3**	<50	**17**	<50	**140**	**11.4**	**320**	1.23	-68.3
	3/9/2012	**5.0**	<4.0	<4.0	**1,400**	**8.6**	**33**	<4.0	**10**	**290**	**24.2**	**89**	0.14	-33.6
	6/22/2012	**3.4**	<0.50	**0.68**	**170**	**1.3**	**3.0**	**0.59**	**1.1**	**120**	**150**	**110**	1.23	-68.3
	9/14/2012	**1.5**	<1.5	<1.5	**320**	<1.5	**3.0**	<1.5	<1.5	**42**	**47.2**	**77**	0.15	-29.5
	12/14/2012	<0.50	<0.50	<0.50	**26**	<0.50	**0.87**	<0.50	<0.50	**12**	**5.92**	**59**	0.25	3.3
	3/15/2013	<0.50	<0.50	<0.50	<0.50	<0.50	**1.2**	<0.50	<0.50	**4.4**	<1.0	**64**	0.37	67.0
	6/14/2013	<0.50	<0.50	<0.50	**1.6**	<0.50	**0.79**	<0.50	<0.50	<0.50	<1.0	**12**	0.54	158.8
	9/20/2013	**1.9**	<0.50	**0.54**	**71**	**0.68**	**4.1**	<0.50	**2.6**	**30**	**35.4**	**42**	0.43	-175.4
	12/16/2013	**3.8**	<0.50	<0.50	**34**	<0.50	**2.0**	<0.50	**1.4**	**28**	**45.3**	**46**	1.66	11.9
	3/24/2014	**0.80**	<0.50	<0.50	**30**	<0.50	**20**	<0.50	**7.5**	**11**	**91.1**	**35**	0.51	158.7
	6/23/2014	**2.9**	<0.50	**1.1**	**160**	**0.97**	**29**	<0.50	**15**	**38**	**81.5**	**34**	0.41	-50
	9/30/2014	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/15/2014	<0.50	<0.50	<0.50	**10**	<0.50	**22**	<0.50	**2.7**	<0.50	<1.0	**158**	2.41	-52.2
	3/19/2015	**3.5**	<0.50	**2.1**	**690**	**1.9**	**170**	**2.5**	**56**	**2.8**	<6.2	<5.0	1.05	18.2
	6/18/2015	**2.6**	<0.50	**2.6**	**420**	**1.6**	**186**	**0.88**	**42**	**3.2**	<10.0	**7.5**	2.29	-35.2
	9/22/2015	**2.9**	<0.50	**3.7**	**543**	**2.6**	**302**	**0.65**	**61.9**	**24.4**	<1.0	**22.6**	0.90	23.7
	12/8/2015	<0.50	<0.50	<0.50	**427**	<0.50	**94.4**	<0.50	**21.3**	**2.1**	<1.0	**7.5**	--	--
	3/8/2016	**4.0**	<1.2	**2.9**	**1,160**	**3.6**	**274**	**5.0**	**71.1**	**13.3**	<1.0	**22**	0.36	113.3
	6/17/2016	<5.0	<5.0	<5.0	**1,040**	<5.0	**592**	<5.0	**90.8**	<5.0	<10.0	**1.2**	2.72	4.8
	9/28/2016	**4.6**	<1.7	**3.5**	**2,230**	**3.8**	**39.4**	**2.5**	**549**	**128**	N/A	N/A	1.61	138.1
	12/12/2016	<0.50	<0.50	<0.50	**8.1**	<0.50	**4.3**	<0.50	**0.96**	**51.9**	N/A	N/A	2.00	-24
	3/28/2017	<0.50	<0.50	<0.50	**5.2**	<0.50	**6.1**	<0.50	**1.9**	<0.50	**23.5**	**347**	1.50	89.9
	6/14/2017	**10.7**	<1.0	<0.50	**11.7**	**0.56**	**9.5**	<0.50	**3.0**	**1.3**	**11.2**	**14.0**	3.48	-12.4
	9/26/2017	**8.8**	<1.0	<0.50	**6.9**	<0.50	**0.82**	<0.50	**0.63**	**10.1**	**17.5**	**25.5**	1.18	-140.5
	3/21/2018	**1.34**	<0.500	<0.500	**22.6**	<0.500	**1.48**	<0.500	**2.72**	**10.8**	**28.3**	**15.4**	0.19	74.4
	6/28/2018	**4.55**	<0.500	**1.11**	**722**	**8.72**	**1.91**	<0.500	**0.758**	**424**	**99.2**	**43.6**	0.39	-62.6
	9/24/2018	**1.42**	<0.400	<0.400	**3.38**	**0.751**	**3.07**	<0.400	**2.42**	**7.56**	**2.9**	**13.2**	1.55	150.7
	12/4/2018	**0.876**	<0.400	<0.400	**8.18**	<0.400	**6.35**	<0.400	**3.60**	**1.88**	<1.0	**11.0**	5.80	-10.0
	6/17/2021	**3.90**	<0.400	**4.55**	**415**	**2.33**	**4,570**	**12.4**	**322**	**22.2**	<1.0	**5.32**	3.02	67.5
	9/16/2021	**11.30**	<0.400	**7.65**	**739**	**6.50**	**2,940**	**7.80**	**380**	**20.6**	<1.0	**6.01**	3.25	186.4
	12/10/2021	**3.09**	<0.400	**3.73**	**198**	**1.55**	**4,900**	**10.6**	**268**	**6.76**	<1.0	**4.57**	0.58	241.4
	3/8/2022	**3.27**	<0.400	**4.40**	**224**	**1.74**	**6,930**	**19.8**	**321**	**9.00**	<1.0	**2.95**	2.07	170.0
	6/16/2022	**22.7**	<2.00	**7.80**	**412**	**8.50**	**1,590**	<2.00	**344**	**7.30**	<1.0	**3.52**	7.41	137.9
	9/14/2022	<20.0	<20.0	<20.0	**466**	<20.0	**2,340**	<20.0	**224**	**24.5**	<1.0	**4.29**	1.16	180.9
	12/8/2022	<20.0	<20.0	<20.0	**608**	<20.0	**4,040**	<20.0	**334**	<20.0	<1.0	**3.41**	2.50	-0.6
	3/15/2023	<20.0	<20.0	<20.0	**677**	<20.0	**2,860**	<20.0	**276**	<20.0	<1.0	**4.46**	2.39	-48.0
	6/14/2023	<20.0	<20.0	<20.0	**944**	<20.0	**3,120**	<20.0	**402**	<20.0	<1.0	**3.99**	0.32	144.0
	9/12/2023	<8.00	<8.00	<8.00	**562**	<8.00	**2,290**	<8.00	**198**	**6.80**	<1.0	**3.80**	1.48	114.6
	12/14/2023	<8.00	<8.00	<8.00	**83.6**	<8.00	**2450**	**10.2**	**148**	<4.00	<1.0	**1.20**	0.19	22.2
	3/6/2024	<8.00	<8.00	<8.00	**436**	<8.00	**2,060**	**8.60**	**214**	**5.40**	<1.0	**6.10**	0.42	158.5
	6/13/2024	<4.00	<4.00	<4.00	**141**	<4.00	**1850**	<4.00	**113**	**2.20**	<1.0	**2.00**	0.14	224.0
MW-12	6/7/2011	**1.8**	<0.50	<0.50	**59**	**1.0**	**53**	**0.70**	**25**	<0.50	<1.0	**0.94**	3.16	110.4
	9/19/2011	**240**	**2.5**	**45**	**4,700**	**55**	**860**	**65**	**690**	**63**	N/A	**8.3**	0.84	906.3
	12/7/2011	**130**	**1.3**	**28**	**2,900**	**33**	**520**	**34**	**380**	**40**	**6.15**	**59**	1.00	109.0
	3/12/2012	**210**	<15.0	**44**	**3,800**	**45**	**770**	**48**	**540**	**46**	<1.0	**65**	1	45.3
	6/22/2012	**100**	<5.0	**16**	**1,700**	**39**	**270**	**13**	**200**	**22**	<1.0	**56**	0.66	117.1
	9/14/2012	**270**	<15.0	**58**	**5,400**	**73**	**1,100**	**76**	**730**	**84**	<1.0	**100**	0.43	140.7
	12/13/2012	**1.0**	<0.50	<0.50	**62**	**0.97**	**38**	**0.53**	**23**	<0.50	<1.0	**4.9**	1.07	128.6
	3/15/2013	**200**	**1.8**	**40**	**4,300**	**56**	**760**	**53**	**540**	**54**	<1.0	**95**	0.62	117.3
	6/13/2013	**240**	<15.0	**39**	**4,800**	**53**	**610**	**46**	**500**	**59**	<1.0	**62**	0.39	205.2
	9/20/2013	**170**	**1.6**	**37**	**3,400**	**49**	**510**	**37**	**400**	**50**	<1.0	**110**	0.59	-10.7
	12/16/2014	**36**	<2.5	**7.6**	**800**	**10**	**150**	**5.8**	**110**	**9.8**	<1.0	**23**	1.22	40.4
	3/24/2014	**110**	**0.77**	**18**	**1,900**	**25**	**180**	**8.6**	**170**	**47**	<1.0	**41**	1.94	29.1
	6/24/2014	**14**	<1.5	**1.9**	**310**	**2.3**	**42**	**1.6**	**34**	<1.5	<1.0	**13**	3.68	1.5
	9/30/2014	**190**	<15.0	**39**	**3,500**	**45**	**680**	**36**	**480**	**42**	<1.0	**93**	6.09	47.1
	12/11/2014	**0.73**	<0.50	<0.50	**34**	**0.64**	**25**	<0.50	**15**	<0.50	<1.0	**1.9**	0.65	-110.0
	3/20/2015	**102**	<5.0	**25**	**2,110**	**29**	**580**	**18**	**340**	**37**	<6.2	**4**	0.89	75.7
	6/19/2015	**151**	<10.0	**28.2**	**2,570**	**25**	**514**	**23.6**	**356**	**31.1**	<10.0	**4.8**	0.71	10.2
	9/22/2015	**120**	<8.3	**16.9**	**2,250**	**23.4**	**343**	**15.7**	**239**	**22.5**	<1.0	**4.4**	1.06	65.3
	12/8/2015	**0.84**	<0.50	<0.50	**40.1**	**0.72**	**44.9**	**0.52**	**22**	<0.50	<10.0	**16.5**	0.99	28.1

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MW-12 continued	3/8/2016	**79.9**	<3.6	**15.4**	**1,380**	**16.2**	**325**	**7.7**	**209**	**21.3**	<10.0	**5.5**	0.71	62.2
	6/16/2016	**174**	<8.4	**29.9**	**3,310**	**31.6**	**314**	**12.8**	**288**	**52.3**	<10.0	**3.7**	2.68	59.7
	9/27/2016	**44**	<10.0	**11.5**	**867**	**11.4**	**387**	**3.9**	**163**	**14.8**	<10.0	**5,240**	0.98	252.5
	12/14/2016	**16.5**	<10.0	**4.7**	**744**	**2.3**	**62.3**	<10.0	**42.2**	**20.5**	<10.0	**1,930**	0.46	-91.3
	3/30/2017	**11.4**	<2.5	**3.8**	**1,120**	**6.1**	**55.9**	<2.5	**29.6**	**28.3**	**75.2**	**490**	2.92	-17.9
	6/12/2017	**14.0**	<3.1	**4.7**	**893 J**	**7.6**	**42.4**	<3.1	**18.1**	**48.4**	**120**	**530**	0.91	-34.2
	9/28/2017	**19.5**	<1.7	<1.7	**457**	**5.4**	<1.7	<1.7	<1.7	**47.7**	**16.0**	**243**	1.19	-87.4
	11/9/2017	**4.5**	<0.50	<0.50	**22.2**	**1.6**	<0.50	<0.50	<0.50	**49.1**	<10.0	**326 J**	1.61	-119.0
	3/20/2018	**0.522**	<0.500	<0.500	**5.64**	**1.33**	<0.500	<0.500	**0.271 J**	**2.77**	<13.0	**89.1**	8.95	-136.3
	7/1/2018	**0.913**	<0.500	<0.500	**4.02**	**1.57**	**0.304 J**	<0.500	**0.996**	**1.45**	<10.0	**66.0**	1.77	114.3
	9/25/2018	**0.730**	<0.400	<0.400	**1.46**	**0.520**	<0.400	<0.400	<0.400	**1.23**	<1.0	**79.5**	1.27	-174.0
	12/4/2018	**0.470**	<0.400	<0.400	**4.30**	**0.415**	**1.29**	<0.400	**1.29**	**1.69**	<1.0	**36.4**	5.51	-30.5
	3/20/2019	**0.655**	<0.400	<0.400	**6.70**	**0.675**	**2.11**	<0.400	**1.33**	**1.64**	<1.0	**34.4**	2.34	-38.6
	6/5/2019	**0.719**	<0.400	<0.400	**9.36**	**0.756**	**3.64**	<0.400	**3.45**	**2.74**	<1.0	**16.6**	1.72	69.9
	9/26/2019	**6.26**	<0.400	<0.400	**5.31**	**0.565**	<0.400	<0.400	**0.459**	**6.82**	**1.1**	**46.1**	0.29	-227.1
	12/5/2019	<0.400	<0.400	<0.400	**2.61**	<0.400	**2.37**	<0.400	**1.41**	**0.413**	<1.0	**23.8**	9.18	185.3
	3/11/2020	**0.806**	<0.400	<0.400	**8.47**	**0.561**	**7.01**	<0.400	**4.25**	**0.423**	<1.0	**12.0**	5.10	91.3
	6/18/2020	**1.30**	<0.400	<0.400	**14.1**	<0.400	**2.59**	<0.400	**2.68**	**1.04**	<1.0	**10.5**	0.90	173.1
	10/7/2020	**37.8**	<0.400	<0.400	**81.7**	**0.632**	<0.400	<0.400	**0.750**	**196**	**56**	**39.5**	2.49	-156.9
	12/8/2020	**1.55**	<0.400	<0.400	**9.92**	<0.400	**13.5**	<0.400	**6.47**	**7.36**	**3.6**	**4.60**	2.34	120.9
	3/5/2021	<0.400	<0.400	**1.55**	**8.6**	<0.400	**6.73**	<0.400	**4.92**	**0.436**	<1.0	**8.33**	0.68	-4.2
	6/16/2021	<0.400	<0.400	**6.90**	**34.0**	**0.426**	**8.85**	<0.400	**9.62**	**35.7**	**14.0**	**10.7**	2.90	273.2
	9/14/2021	**37.40**	<0.400	<0.400	**59.0**	**0.572**	**4.29**	<0.400	**5.59**	**308**	**18.0**	**49.2**	3.69	-1.1
	12/9/2021	**0.680**	<0.400	<0.400	**7.49**	<0.400	**12.3**	<0.400	**6.68**	**2.10**	N/A	**4.23**	0.26	133
	3/8/2022	**13.4**	<0.400	<0.400	**18.6**	<0.400	**8.43**	<0.400	**9.36**	**168**	**58.0**	**4.22**	0.32	133.6
	6/14/2022	<0.400	<0.400	<0.400	**2.48**	<0.400	**10.6**	<0.400	**5.38**	**0.490**	<1.0	**1.46**	7.42	69.5
	9/14/2022	**79.600**	<0.400	**10.2**	**2470**	**2.58**	**0.850**	<0.400	**11.6**	**2000**	**92.0**	**29.1**	0.46	186.5
	12/8/2022	**8.60**	<0.400	**0.730**	**165**	**0.53**	**7.29**	<0.400	**5.11**	**124**	**10**	**4.11**	1.35	182.9
	3/16/2023	**88.3**	<0.400	**2.23**	**576**	**1.55**	**2.51**	<0.400	**4.11**	**1300**	**69**	**22.9**	0.18	-358.3
	6/14/2023	**109**	<4.00	<4.00	**208**	<10.0	**4.80**	<4.00	<4.00	**1710**	**200**	**10.7**	0.61	-513.9
	9/13/2023	**105**	<4.00	**10.4**	**1310**	<4.00	<6.00	<4.00	**8.00**	**1690**	**67**	**31.1**	0.06	-133.8
	12/13/2023	<0.400	<0.400	<0.400	**4.14**	<0.400	**6.94**	<0.400	**3.36**	**1.80**	<1.0	**1.60**	0.48	101.8
	3/5/2024	**96.0**	<4.00	<4.00	**79.5**	<4.00	<4.00	<4.00	<4.00	**1330**	**120**	**11.9**	0.19	-19.5
	6/13/2024	**29.9**	<4.00	**0.440**	**32.8**	<0.400	**3.88**	<0.400	**3.90**	**22.8**	**2.3**	**9.70**	0.30	130.1
MW-24i	6/7/2011	<0.50	<0.50	<0.50	**2.0**	<0.50	**6.6**	<0.50	**1.4**	<0.50	<1.0	**1.2**	6.40	59.0
	9/16/2011	**13**	<0.50	**2.5**	**270**	**1.7**	**27**	**5.6**	**24**	**19**	N/A	**7.0**	0.61	646.9
	12/7/2011	**5.0**	<0.50	**0.84**	**100**	<0.50	**19**	**2.9**	**14**	**7.5**	**2.29**	**290**	3.50	-147.5
	3/12/2012	**5.9**	<0.50	<0.50	**79**	<0.50	**30**	**2.3**	**11**	**4.5**	**2.03**	**33**	2.11	-1.2
	6/22/2012	**1.8**	<0.50	<0.50	**14**	<0.50	**0.85**	<0.50	<0.50	**2.6**	**1.52**	**44**	3.50	-147.5
	9/14/2012	**4.4**	<0.50	**0.87**	**58**	<0.50	**31**	**0.79**	**20**	<0.50	<1.0	**15**	0.40	-54.0
	12/14/2012	<0.50	<0.50	<0.50	**51**	<0.50	**2.1**	<0.50	**0.65**	<0.50	<1.0	**16**	2.11	6.3
	3/15/2013	**2.8**	<0.50	<0.50	**48**	<0.50	**23**	**0.57**	**15**	<0.50	<1.0	**9.5**	0.79	13.1
	6/14/2013	**2.7**	<0.50	<0.50	**28**	<0.50	**6.2**	<0.50	**3.6**	<0.80	<1.0	**11**	0.39	130.2
	9/20/2013	**1.0**	<0.50	<0.50	**15**	<0.50	**15**	<0.50	**5.9**	<0.80	<1.0	**11**	1.92	-31.2
	12/16/2013	**1.3**	<0.50	<0.50	**8.4**	<0.50	**6.7**	<0.50	**3.4**	<0.50	<1.0	**7.9**	3.08	16.9
	3/24/2014	**1.3**	<0.50	<0.50	**16**	<0.50	**10**	<0.50	**5.5**	<0.80	<1.0	**9.4**	3.16	-55.4
	6/23/2014	**1.2**	<0.50	<0.50	**13**	<0.50	**1.3**	<0.50	**5.2**	**2.1**	**29.1**	**8.4**	4.70	-49.7
	9/30/2014	**1.8**	<0.50	<0.50	**21**	<0.50	**20**	<0.50	**10**	<0.50	<1.0	**12.0**	2.01	129.7
	12/15/2014	**0.60**	<0.50	<0.50	**12**	<0.50	**2.4**	<0.50	**1.1**	<0.50	<1.0	<1.0	6.27	-13.9
	3/20/2015	**0.58**	<0.50	<0.50	**5.9**	<0.50	**6.1**	<0.50	**3.1**	<0.50	<6.2	<1.0	10.28	38.6
	6/18/2015	<0.50	<0.50	<0.50	**3.4**	<0.50	<0.50	<0.50	<0.50	<0.50	<10.0	**1.6**	1.08	-158.7
	9/22/2015	**1.9**	<0.50	<0.50	**4.7**	<0.50	**2.2**	<0.50	**0.8**	<0.50	<1.0	**2.3**	1.85	99.4
	12/8/2015	**0.74**	<0.50	<0.50	**18**	<0.50	**189**	<0.50	**36.4**	<0.50	<1.0	**3.5**	1.36	99.2
	3/8/2016	<0.50	<0.50	<0.50	**3.5**	<0.50	**4.1**	<0.50	**1.6**	<0.50	<10.0	**1.0**	1.75	47.8
	6/17/2016	0.99	<0.50	<0.50	**7.8**	<0.50	**11.5**	<0.50	**6.3**	<0.50	<10.0	<1.0	3.12	14.0
	9/28/2016	**0.53**	<0.50	<0.50	**5.4**	<0.50	**5.8**	<0.50	**3.1**	<0.50	<10.0	**5.3**	2.58	123.9
	12/12/2016	<0.50	<0.50	<0.50	<0.50	<0.50	**1.1**	<0.50	<0.50	<0.50	<10.0	**1.5**	5.64	2.6
	3/30/2017	<0.50	<0.50	<0.50	**0.70**	<0.50	**1.0**	<0.50	<0.50	<0.50	<10.0	**3.4**	5.24	14.3
	6/15/2017	<0.50	<1.0	<0.50	**3.2**	<0.50	**6.6**	<0.50	**2.8**	<0.50	<10.0	**1.2**	3.72	-13.4
	9/26/2017	**2.1**	<1.0	<0.50	**24.5**	<0.50	**30.1**	<0.50	**16.6**	<0.50	<10.0	**1.2**	1.21	-10.7
	11/9/2017	**1.1**	<0.50	<0.50	**9.6**	<0.50	**12.7**	<0.50	**5.9**	<0.50	<10.0	**1.3**	3.11	-100.1
	3/21/2018	**1.42**	<0.500	<0.500	**13.5**	<0.500	**19.1**	<0.500	**10.2**	<0.500	<13.0	**0.734 B J**	0.95	129.6
	6/28/2018	**1.44**	<0.500	<0.500	**13.6**	**1.09**	**10.3**	<0.500	**5.93**	<0.500	<10.0	<1.0	2.69	129.9
	9/27/2018	**2.18**	<0.400	<0.400	**25.0**	<0.400	**24.8**	<0.400	**14.3**	<0.400	N/A	N/A	1.67	106.3
	12/4/2018	**0.800**	<0.400	<0.400	**5.13**	<0.400	**10.2**	<0.400	**3.76**	<0.400	N/A	N/A	5.24	-6.9
	3/25/2019	**0.888**	<0.400	<0.400	**8.46**	<0.400	**11.7**	<0.400	**5.91**	<0.400	<1.0	<1.00	4.52	18.1
	6/7/2019	**0.601**	<0.400	<0.400	**4.99**	<0.400	**7.39**	<0.400	**3.55**	<0.400	<1.0	<1.00	4.39	5.8
	9/27/2019	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	**1.6**	<1.00	5.30	-252.2
	12/3/2019	**0.775**	<0.400	<0.400	**3.82**	<0.400	**8.78**	<0.400	**3.72**	<0.400	<1.0	<1.00	3.09	1.3
	3/12/2020	**1.30**	<0.400	<0.400	**15.4**	<0.400	**17.0**	<0.400	**8.42**	<0.400	<1.0	<1.00	7.57	66.9
	6/18/2020	**0.610**	<0.400	<0.400	**2.91**	<0.400	**6.24**	<0.400	**2.84**	<0.400	<1.0	<1.00	7.63	-43.8
	10/9/2020	<0.400	<0.400	<0.400	**1.08**	<0.400	**1.35**	<0.400	<0.400	<0.400	<1.0	**1.09**	3.60	-63.2
	12/10/2020	**1.73**	<0.400	<0.400	**20.0**	<0.400	**29.7**	<0.400	**13.0**	<0.400	N/A	N/A	9.37	77.2
	3/3/2021	<0.400	<0.400	<0.400	**0.505**	<0.400	**0.955**	<0.400	<0.400	<0.400	<1.0	<1.00	6.41	22.2
	6/17/2021	<0.400	<0.400	**0.989**	**9.31**	<0.400	**15.7**	<0.400	**8.00**	<0.400	<1.0	<1.50	2.99	132.0
	9/14/2021	<0.400	<0.400	<0.400	**27.5**	<0.400	**36.7**	<0.400	**17.20**	<0.400	N/A	<1.00	0.17	94.0
	12/7/2021	<0.400	<0.400	<0.400	**0.540**	<0.400	**2.22**	<0.400	**0.629**	<0.400	<1.0	<1.00	5.32	38.7
	3/8/2022	**0.900**	<0.400	<0.400	**7.93**	<0.400	**13.2**	<0.400	**6.19**	<0.400	<1.0	<1.00	5.54	57.9
	6/15/2022	<0.400	<0.400	<0.400	**0.430**	<0.400	**0.710**	<0.400	<0.400	<0.400	<1.0	<1.00	8.95	47.7
	9/14/2022	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<1.0	<1.00	0.56	66.6
	12/8/2022	1.07	<0.400	<0.400	**15.500**	<0.400	**38.6**	<0.400	**9.46**	<0.400	<1.0	<1.00	1.85	4.8
	3/15/2023	**1.04**	<0.400	<0.400	**15.9**	<0.400	**16.1**	<0.400	**7.95**	<0.400	<1.0	<1.00	0.00	222.0
	6/13/2023	**0.850**	<0.400	<0.400	**14.3**	<0.400	**9.97**	<0.400	**5.21**	<0.400	<1.0	<1.00	2.91	169.1
	9/13/2023	**0.990**	<0.400	<0.400	**23.0**	<0.400	**17.8**	<0.400	**9.01**	<0.200	<1.0	<1.00	0.61	129.8
	12/11/2023	<0.400	<0.400	<0.400	**1.11**	<0.400	**2.09**	<0.400	**0.680**	<0.200	<1.0	**0.41 J**	7.20	39.4
	3/7/2024	**1.59**	<0.400	<0.400	**16.3**	<0.400	<0.500	<0.400	**9.70**	<0.200	<1.0	**0.17**	0.56	127.0
	6/13/2024	**1.09**	<0.400	<0.400	**17.5**	<0.400	**16.7**	<0.400	**8.68**	<0.200	<1.0	**0.42 J**	0.48	238.0
MGMS2-4(40)	6/7/2011	**65**	<15.0	**30**	**1,600**	**17**	**4,400**	**57**	**1,400**	**48**	<1.0	**2.2**	0.86	49.5
	9/12/2011	**44**	<15.0	**28**	**7,400**	**20**	**790**	**48**	**380**	**58**	N/A	**110**	2.63	338.9
	12/7/2011	**35**	<15.0	<15.0	**5,300**	<15.0	**61**	<15.0	**39**	**460**	**14.5**	**300**	6.28	-137.9
	3/8/2012	**38**	<2.0	**2.3**	**470**	**2.8**	**9.9**	**5.2**	**5.4**	**260**	**368**	**290**	1.22	-73.6
	6/19/2012	**53**	<0.50	<0.50	**20**	**1.3**	**7.2**	<0.50	**2.5**	**63**	**566**	**500**	6.28	-137.9
	9/12/2012	**39**	<1.5	**2.8**	**310**	**3.2**	**89**	**5.0**	**80**	**440**	**264**	**140**	1.16	-40.1
	12/11/2012	**4.8**	<0.50	<0.50	**33**	**1.3**	**10**	<0.50	**3.4**	**4.0**	**110**	**280**	0.55	-82.3
	3/15/2013	**28**	<0.50	**1.9**	**300**	**2.0**	**5.6**	**2.5**	**2.2**	**270**	**121**	**81**	0.33	-24.3
	6/11/2013	**8.3**	<0.50	<0.50	**7.9**	<0.50	**0.94**	<0.50	<0.50	**4.8**	**55.6**	**110**	0.42	-116.7
	9/17/2013	**28**	<0.50	**4.8**	**290**	**1.4**	**16**	**1.6**	**17**	**330**	**143**	**98**	0.27	-209.9
	12/16/2013	**9.7**	<0.50	<0.50	**8.4**	<0.50	**2.4**	<0.50	**1.4**	**3.4**	**33.3**	**110**	1.19	-41.9
	3/24/2014	**45**	<0.50	**2.9**	**84**	<0.50	**2.6**	<0.50	**1.8**	**270**	**930**	**120**	1.06	-126.1
	6/26/2014	**31**	<0.50	**10**	**88**	**0.84**	**21**	<0.50	**22**	**90**	**207**	**120**	2.22	-23.7

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MGMS2-4(40) continued	9/23/2014	30	<0.50	30	590	2.4	170	3.2	110	800	12.1	94	1.31	-119.0
	12/12/2014	35	<0.50	<0.50	10	<0.50	3.4	<0.50	2.3	18	34	7.9	1.41	-162.1
	3/20/2015	4.3	<0.50	3.9	47	<0.50	31	<0.50	22	17	8.1	8	20.02	-83.7
	6/19/2015	13.8	<0.50	1.3	53.8	<0.50	18.4	<0.50	12.8	48.3	33.7	11	13.5	-117.5
	9/25/2015	12.3	<0.50	4.2	105	0.61	67.4	0.92	45.9	57.8	<10.0	10.9	9.67	-145.1
	12/8/2015	13.5	<0.50	<0.50	7.2	<0.50	4.0	<0.50	2.8	3.3	22.8	7.9	6.14	-96.9
	3/8/2016	20.6	<0.50	1.6	36.0	<0.50	6.5	<0.50	6.2	36	63.7	7.4	5.52	-161.7
	6/17/2016	24.9	<0.50	26.4	744	2.8	223	3.1	146	227	31	3.8	1.60	-72.2
	9/29/2016	12.1	<0.50	<0.50	115	<0.50	33.3	<0.50	24.8	142	N/A	N/A	5.16	194.5
	12/16/2016	10.3	<0.50	<0.50	5.2	<0.50	2.6	<0.50	1.9	2.0	N/A	N/A	0.80	-28.1
	3/31/2017	57.6	<0.50	14.3	236	0.60	4.3	<0.50	14.4	235	N/A	N/A	0.68	-92.2
	6/15/2017	38.6	<0.50	3.5	46.2	<0.50	5.1	<0.50	4.9	98.9	128	7.0	1.29	-109.6
	9/29/2017	21.7	<1.0	6.8	195	0.74	41.5	0.67	31.3	428	47.4	6.4	1.03	-43.7
	11/9/2017	21.3	<0.50	0.86	61.6	0.52	13.2	<0.50	9.2	170	95.7	6.2	1.24	-113.3
	3/22/2018	25.9	<0.500	4.22	109	0.571	46.0	0.259 J	27.3	122	32.7	9.58	6.89	-112.9
	7/1/2018	12.7	<0.500	5.93	151	0.971	62.1	1.04	48.9	38.2	<10.0	5.2	3.15	-50.8
	9/28/2018	8.74	<0.800	1.44	140	<0.800	66.9	<0.800	43.3	106	3.6	5.91	1.50	97.3
	12/10/2018	20.9	<0.400	0.563	24.9	<0.400	18.7	<0.400	12.0	123	78	5.08	2.05	-111.4
	3/25/2019	26.6	<0.400	2.58	136	0.752	62.0	<0.400	35.9	155	26	4.61	0.97	151.7
	6/4/2019	28.2	<0.400	0.960	37.8	<0.400	14.6	<0.400	10.4	145	19	4.83	0.64	104.5
	9/27/2019	11.2	<0.400	0.729	73.8	<0.400	17.0	<0.400	13.1	101	1.4	4.76	7.37	-133.9
	12/4/2019	20.6	<0.400	0.778	40.5	<0.400	32.3	<0.400	17.9	65.4	4.2	5.01	4.39	-82.2
	3/12/2020	24.1	<0.400	2.73	105	0.641	86.3	0.453	43.3	134	2.1	5.13	8.14	-78.9
	6/16/2020	27.3	<0.400	1.25	85.0	<0.400	14.8	<0.400	9.09	138	6.1	4.13	0.93	177.2
	10/6/2020	19.1	<0.400	2.45	98.4	0.635	101	<0.400	56.2	148	3.8	5.15	1.17	28.8
	12/8/2020	17.8	<0.800	1.85	82.6	<0.800	41.0	<0.800	19.4	80.2	2.0	5.37	1.07	-19.5
	3/4/2021	3.83	<0.400	25.1	159	1.12	115	<0.400	59.9	72.5	<1.0	5.17	1.97	-19.5
	6/17/2021	3.25	<0.400	20.7	181	0.975	68.8	<0.400	35.6	66.3	<1.0	4.93	2.75	82.2
	9/16/2021	9.92	<4.00	1.40	98.7	0.734	42.2	<4.00	28.3	34.2	<1.0	4.82	4.14	18.9
	12/7/2021	22.7	<0.400	6.97	178	1.50	190	0.812	106	0.989	<1.0	5.84	0.59	60.5
	3/10/2022	21.8	<4.00	8.70	260	<4.00	155	<4.00	92.9	<4.00	<1.0	4.85	0.83	205.2
	6/14/2022	35.2	<2.00	7.20	209	<2.00	138	4.75	69.3	<2.00	<1.0	6.19	1.48	222.1
	9/12/2022	16.2	<0.400	9.45	330	2.55	271	0.960	142	1.41	<1.0	4.19	0.20	-15.4
	12/6/2022	19.6	<0.400	9.63	297	2.58	245	1.55	153	0.400	<1.0	4.20	0.61	44.5
	3/16/2023	17.7	<4.00	10.00	311	<4.00	299	<4.00	169	<4.00	<1.0	4.63	0.00	182
	6/13/2023	19.1	<0.800	8.50	352	2.64	173	1.02	121	<0.800	<1.0	4.14	0.13	213.2
	9/11/2023	16.6	<0.400	10.8	338	2.92	162	0.570	101	1.11	<1.0	3.99 Q	0.22	9.4
	12/12/2023	27.6	<0.400	12.7	396	3.29	408	4.16	204	0.780	<1.0	3.40	0.23	55.7
	3/4/2024	22.5	<0.800	12.5	331	3.60	405	2.60	294	0.680	<1.0	3.50	0.22	40.0
	6/10/2024	25.8	<2.00	13.0	403	3.55	315	3.10	232	<1.00	<1.0	3.30	2.78	-16.1
MW-13	9/28/2016	<2.5	<2.5	<2.5	148	<2.5	5,090	<2.5	951	<2.5	<10.0	33,600	2.71	158.7
	12/16/2016	<5.0	<5.0	<5.0	509	<5.0	1,020	<5.0	394	<5.0	<10.0	2,220	0.66	-111.4
	3/30/2017	<5.0	<5.0	<5.0	101	<5.0	176	<5.0	57.6	<5.0	<10.0	341	4.36	-61.8
	6/15/2017	<1.0	<1.0	1.2	272	1.6	97.7	<1.0	56.3	4.1	N/A	N/A	1.41	-105.7
	9/27/2017	<1.0	<1.0	5.0	3220	7.3	3.3	<1.0	1.3	25.0	<10.0	55.8	2.16	-103.9
	11/7/2017	<4.2	<4.2	<4.2	1,360	5.4	<4.2	<4.2	<4.2	25.0	11.6	85.5	2.19	-89.2
	3/20/2018	0.879	<0.500	2.55	1,730	5.20	0.396 J	<0.500	2.19	211	191	73.7	5.79	-114.8
	7/1/2018	18.3	0.148 J	5.98	1680	26.9	<0.500	<0.500	0.781	2030	500	52.9	1.13	-31.0
	9/25/2018	1.91	<0.400	<0.400	9.78	1.26	0.410	<0.400	0.800	113	61	20.8	1.22	-146.8
	12/5/2018	<0.400	<0.400	<0.400	6.17	0.682	0.567	<0.400	0.413	55.2	7.1	51.7	7.71	-130.6
	3/19/2019	<0.400	<0.400	<0.400	2.69	<0.400	<0.400	<0.400	0.433	2.02	<1.0	48.5	2.58	-79.2
	6/6/2019	<0.400	<0.400	<0.400	4.62	<0.400	<0.400	<0.400	0.673	2.89	<1.0	21.2	0.02	48.4
	9/26/2019	1.07	<0.400	<0.400	1.94	0.439	<0.400	<0.400	<0.400	2.01	<1.0	34.3	0.50	-261.4
	12/3/2019	1.50	<0.400	<0.400	1.06	0.488	<0.400	<0.400	<0.400	1.42	<1.0	29.1	2.41	-149.4
	3/10/2020	9.19	<0.400	1.97	72.5	2.04	<0.400	<0.400	7.59	134	18.0	20.1	5.76	-122.2
	6/18/2020	0.610	<0.400	<0.400	1.15	<0.400	<0.400	<0.400	1.12	5.28	<1.0	21.9	0.90	182.1
	10/7/2020	18.1	<0.400	<0.400	3.47	0.920	0.470	<0.400	0.87	98.8	120	9.99	0.26	-126.4
	12/8/2020	2.67	<0.400	<0.400	0.606	<0.400	<0.400	<0.400	<0.400	2.30	<1.0	23.2	2.11	-100.5
	3/4/2021	<0.400	<0.400	11.9	3.48	0.494	<0.400	<0.400	0.996	27.4	16.0	12.9	3.06	-120.8
	6/15/2021	<0.400	<0.400	1.12	13.4	0.673	1.01	<0.400	2.56	12.9	1.00	20.9	4.20	10.0
	9/14/2021	<4.00	<4.00	34.3	90.7	<4.00	<4.00	<4.00	<4.00	635	240	8.44	1.68	-84.1
	12/9/2021	0.684	<0.400	<0.400	10.4	<0.400	4.97	<0.400	3.28	6.13	5.50	44.2	0.74	37.5
	3/9/2022	2.00	<0.400	0.650	13.2	0.500	1.07	<0.400	3.37	26.3	16.0	4.38	0.37	157.1
	6/14/2022	<0.400	<0.400	<0.400	1.36	<0.400	1.81	<0.400	0.720	0.4	<1.0	3.24	2.35	162.8
	9/15/2022	29.8	<0.400	15.2	224	4.86	4.10	<0.400	15.7	764	76.0	7.32	0.35	-101.3
	12/6/2022	2.940	<0.400	<0.400	5.37	<0.400	3.40	<0.400	4.53	14.1	17 Q	<1.00	1.45	136.8
	3/16/2023	22.3 Q-42	<0.400	8.08 Q-42	145	2.90	0.680	<0.400	1.19	268	54	4.95	0.29	-359.3
	6/14/2023	26.1	<2.00	20.3	313	6.50	49.4	<2.00	117	426	60	4.29	0.45	-507.7
	9/13/2023	30.4	<2.00	16.0	204	5.05	103	<2.00	85.2	788	150	6.73	0.01	-127.5
	12/13/2023	0.440	<0.400	<0.400	1.57	<0.400	22.3	0.450	15.4	0.650	<1.0	2.00	0.19	190.1
	3/6/2024	37.6	<2.00	48.9	1400	17.3	955	<2.00	986	432	11.0	3.00	0.23	32.6
	6/13/2024	<4.00	<4.00	<4.00	147	<4.00	212	<4.00	89.4	35.9	8.2	2.10	0.18	143.8
MW-14	9/27/2016	7.2	<0.50	2.1	61.8	0.94	100	1.7	218	<0.50	<10.0	8.8	8.1	221.2
	12/13/2016	<0.50	<0.50	<0.50	1.3	<0.50	0.56	<0.50	0.97	<0.50	<10.0	5.1	3.1	55.0
	3/27/2017	<0.50	<0.50	0.57	69.2	<0.50	14.7	<0.50	33.4	0.62	<10.0	5.1	3.1	55.0
	6/13/2017	10	<1.0	5.3	432	2.7	58.3	2.1	204	2.5	N/A	N/A	0.94	61.3
	9/26/2017	6.2	<0.84	2.6	279	2.8	62.4	1.1	265	<0.84	<10.0	3.8	1.89	80.6
	11/8/2017	4.5	<0.84	2.1	306	2.2	39.3	<0.84	160	0.91	<10.0	8.5	1.85	106.9
	3/20/2018	5.42	<0.500	3.64	500	2.56	36.0	0.579	150	1.35	<13.0	8.76	0.58	21.7
	6/28/2018	10.5	<0.500	2.54	255	2.52	34.9	1.57	247	0.687	<10.0	6.6	6.59	203.6
	9/26/2018	12.1	<4.00	4.40	361	4.50	84.3	<4.00	484	<4.00	<1.0	4.56	1.55	100.1
	12/5/2018	5.43	<4.00	<4.00	333	<4.00	83.4	<4.00	260	<4.00	<1.0	13.4	4.40	55.3
	3/19/2019	5.4	<2.00	<2.00	223	2.06	31.4	<2.00	178	<2.00	<1.0	4.89	8.17	88.6
	6/6/2019	1.74	<0.400	1.09	151	0.937	19.1	<0.400	76.4	<0.400	<1.0	6.64	2.96	80.3
	9/25/2019	12.5	<0.400	4.58	264	3.60	91.8	1.47	327	0.482	<1.0	5.06	0.77	67.5
	12/4/2019	7.81	<0.400	3.17	242	2.88	107	0.704	351	<0.400	<1.0	50.0	4.41	110.9
	3/11/2020	6.80	<2.00	2.72	186	2.45	85.9	<2.00	294	<2.00	NA	N/A	3.30	108.2
	6/17/2020	3.50	<2.00	<2.00	82.6	<2.00	62.6	<2.00	197	<2.00	<1.0	4.22	1.16	205.3
	10/8/2020	14.6	<2.00	4.79	207	<2.00	124	<2.00	680	<2.00	<1.0	2.79	0.82	18.1
	12/9/2020	7.77	<2.00	3.04	180	2.52	109	<2.00	339	<2.00	<1.0	3.05	1.05	94.4
	3/4/2021	3.76	<0.400	9.39	161	2.51	128	1.24	410	<0.400	<1.0	2.16	8.52	84.7
	6/15/2021	0.485	<0.400	0.87	23.8	<0.400	28.3	<0.400	80.6	<0.400	<1.0	2.44	7.35	-23.0
	9/14/2021	11.1	<0.400	4.52	159	3.21	156	1.43	531	<0.530	<1.0	2.48	2.56	-8.4
	12/9/2021	0.522	<0.400	0.465	21.6	<0.400	34.9	<0.400	72.8	<0.400	<1.0	3.09	0.29	132.7
	3/8/2022	2.37	<0.400	1.16	39.3	0.670	54.3	0.540	194	<0.400	<1.0	1.30	0.71	78.8
	6/16/2022	0.740	<0.400	<0.400	7.36	<0.400	16.2	<0.400	41.7	<0.400	<1.0	1.04	1.54	65.1
	9/13/2022	6.76	<0.400	2.48	115.0	2.10	109	0.800	321	<0.400	<1.0	2.01	0.59	48.6
	12/7/2022	1.10	<0.400	0.74	27.9	0.67	59.6	<0.400	108	<0.400	<1.0	2.69	2.00	119.8
	3/15/2023	3.15	<0.400	1.57	58.8	1.59	146	0.740	223	<0.400	<1.0	1.43	0.23	-371.9
	6/13/2023	1.76	<0.400	0.860	27.5	0.760	48.5	<0.400	158	<0.400	<1.0	1.68	0.34	-514.4
	9/12/2023	5.85	<2.00	5.15	82.7	2.45	119	<2.00	324	<1.00	<1.0	1.71	0.26	162.4

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MW-14 Continued	12/14/2023	<0.400	<0.400	0.400	6.75	<0.400	26.6	<0.400	48.6	<.200	<1.0	–	1.12	135.3
	3/5/2024	4.30	<2.00	2.05	42.0	<2.00	90.7	<2.00	262	<1.00	<1.0	1.30	0.22	44.7
	6/12/2024	0.410	<0.400	<0.400	5.75	<0.400	20.6	<0.400	39.8	<0.200	<1.0	1.00	0.69	182.3
MW-19	9/26/2016	10.4	<5.0	11.0	235	<5.0	1,520	14.5	592	10.1	<10.0	1.9	3.27	174.4
	12/12/2016	78.7	<5.0	14.2	1,030	11.6	1,730	15.5	975	31.9	<10.0	8.1	9.22	175.2
	3/28/2017	214	<5.0	26.7	1,990	21.5	755	19.9	896	63.2	<10.0	4.8	2.5	35.8
	6/14/2017	41.8	<2.5	15.8	486	6.2	566	8.2	506	17.2	N/A	N/A	1.54	-22.7
	9/26/2017	11.1	<2.5	28.9	1,160	5.4	3,710	40.4	1,480	111	44.3	8.1	1.92	185.2
	11/9/2017	104	0.75 J	24.9	1,660	24.0	1,530	20.2	1,020	115	11.8	6.9	2.26	-75.2
	3/21/2018	59.0	0.225 J	31.4	2,430	11.2	1,250	17.0	1,340	413	32.3	29.9	1.43	135.6
	6/28/2018	81.6	<0.500	36.3	4190	18.4	177	11.7	191	799	271	58.2	2.18	-30.8
	9/25/2018	<0.400	<0.400	<0.400	1,960	<0.400	3,830	<0.400	2,270	116	9.8	16.8	1.30	57.4
	12/5/2018	91.8	0.453	39.3	1,750	18.4	3,090	21.8	1,490	79.0	2.1	10.5	5.11	-29.9
	3/20/2019	49.7	<8.00	39.5	1,910	13.9	2,970	23.7	2,090	75.8	2.1	19.1	4.26	108.6
	6/7/2019	108	<10.0	52.6	1,910	20.4	894	<10.0	793	80.8	2.9	9.34	0.72	61
	9/26/2019	41.9	<4.00	40.2	1,160	12.1	4,340	30.6	1,620	39.1	3.1	5.38	1.73	-172.4
	12/3/2019	57.4	<20.0	28.6	1,250	<20.0	1,670	<20.0	1,200	25.6	<1.0	6.88	6.52	205.1
	3/11/2020	35.4	<10.0	60.4	1,450	14.8	4,730	29.1	2,010	154	7.5	13.6	3.01	87.0
	6/18/2020	32.5	<20.0	27.5	956	5.60	1,080	9.40	697	96.3	5.0	40.1	3.12	162.1
	10/7/2020	46.9	<20.0	58.8	1,510	<20.0	8,110	39.0	2,920	53.8	<1.0	19.7	1.1	-83.5
	12/8/2020	70.8	<40.0	<40.0	1,330	<40.0	3,880	<40.0	1,210	117	<1.0	17.3	2.36	106.3
	3/3/2021	51.0	<0.4	41.4	1,120	11.4	4,470	27.8	1,880	53.6	<1.0	5.84	6.47	24.6
	6/16/2021	28.2	<10	58	1,260	15.1	4,770	22.5	1,190	80.8	1.3	7.63	2.95	391.7
	9/15/2021	19.6	<10.0	53.6	922	<10.0	6,790	60.8	2,540	45.1	1.4	4.94	1.49	32.9
	12/8/2021	226	<40.0	86.0	3,690	<40.0	9,310	55.3	3,420	117	<1.0	5.48	0.33	155.3
	3/9/2022	71.0	<20.00	31.0	1,240	<20.0	3,500	20.5	942	33.0	<1.0	4.33	0.31	210.9
	6/14/2022	0.940	<0.400	<0.400	14.6	<0.400	46.2	<0.400	16.5	0.950	<1.0	2.20	4.56	195.4
	9/15/2022	16.8	<0.400	44.8	1050	5.79	6,010	48.2	1,100	196	1.30	5.18	0.41	226.4
	12/6/2022	69.0	<20.0	36.5	1,130	<20.0	4,340	25.0	1,390	36.5	<1.0	5.40	1.62	60.2
	3/14/2023	20.5	<2.00	36.2	767	12.6	5,260	32.2	1,840	45.8	<1.0	5.63	0.22	-332.1
	6/14/2023	30.0	<8.00	22.8	813	11.0	2,290	12.4	1,060	25.8	<1.0	3.85	0.34	-549.9
	9/14/2023	<20.0	<20.0	27.0	387	<20.0	6120	33.5	1130	23.0	<1.0	3.18	0.07	110.5
	12/15/2023	158	<20.0	28.0	1500	<20.0	1830	<20.0	856	58.0	1.3	3.90	0.19	93.5
	3/6/2024	54.0	<20.0	26.6	1010	15.4	2,420	14.2	1,270	87.8	<1.0	4.00	0.27	25.7
	6/12/2024	66.3	<4.00	19.9	1150	10.9	2600	12.6	894	39.8	<1.0	4.40	3.62	114.8
MW-26	9/26/2016	3.9	<0.50	1.1	61.1	1.6	160	2.4	288	<0.50	N/A	N/A	1.64	236.7
	12/13/2016	8.9	<0.50	2.4	85.9	2.0	167	3.3	410	<0.50	<10.0	2.4	0.88	102.4
	3/29/2017	<0.50	<0.50	<0.50	170	<0.50	214	<0.50	452	<0.50	<10.0	1.3	1.34	165.2
	6/13/2017	6.7	<1.0	1.9	113	2.0	160	2.1	311 E, J	0.65	NA	N/A	3.80	74.6
	9/26/2017	5.1	<1.0	1.0	192	2.1	68.4	0.83	192	0.98	<10.0	7.1	5.56	77.3
	11/8/2017	4.8	<0.50	1.5	204	2.3	88.1	1.0	170	1.8	<10.0	5.9	1.75	99.8
	3/20/2018	4.85	<0.500	1.35	157	1.85	108	1.20	190	1.75	<13.0	5.84	7.28	156.4
	6/29/2018	5.05	<0.500	1.46	114	1.88	138	1.94	221	1.02	<10.0	3.9	0.88	224.6
	9/24/2018	4.24	<0.400	1.24	141	2.14	117	1.19	233	1.18	<1.0	5.13	4.17	152.8
	12/5/2018	3.02	<0.400	1.09	147	1.89	139	0.846	210	0.85	<1.0	<1.00	4.16	36.5
	3/22/2019	7.74	<0.800	2.18	142	3.18	139	2.09	383	<0.800	<1.0	3.48	1.12	100.2
	6/3/2019	5.75	<2.00	<2.00	92.2	2.35	148	2.10	336	<2.00	<1.0	2.76	5.68	69.1
	9/26/2019	5.14	<2.00	<2.00	104	2.6	133	<2.00	272	<2.00	<1.0	4.38	0.40	-6.1
	12/3/2019	2.63	<2.00	<2.00	95	<2.00	137	<2.00	216	<2.00	<1.0	5.56	3.12	49.2
	3/11/2020	3.65	<2.00	<2.00	59.7	<2.00	79.1	<2.00	205	<2.00	<1.0	3.72	10.81	72.3
	6/17/2020	5.16	<0.800	1.38	64.2	1.90	143	2.20	299	<0.800	N/A	N/A	2.19	-17.1
	10/7/2020	2.64	<2.00	<2.00	62.8	<2.00	118	<2.00	208	<2.00	<1.0	4.06	9.73	109.3
	12/9/2020	3.34	<2.00	<2.00	64.3	<2.00	147	<2.00	218	<2.00	<1.0	4.04	3.99	119.1
	3/4/2021	1.89	<0.4	5.92	89.4	2.39	151	2.04	320	<0.4	<1.0	2.87	1.97	141.5
	6/17/2021	1.43	<1.0	4.35	72.3	1.92	132	2.06	366	<1.0	<1.0	3.42	6.13	226.5
	9/15/2021	3.33	<2.00	<2.00	71.7	<2.00	162	<2.00	257	<2.00	<1.0	4.28	0.33	225
	12/7/2021	2.74	<2.00	<2.00	43.5	<2.00	205	<2.00	255	<2.00	<1.0	2.63	0.76	219.2
	3/8/2022	2.56	<0.400	0.930	44.1	1.18	184	1.81	247	<0.400	<1.0	2.23	1.12	170.9
	6/15/2022	4.30	<2.00	<2.00	63.8	<2.00	283	2.40	362	<2.00	<1.0	1.23	3.13	143.6
	9/14/2022	2.40	<2.00	<2.00	31.9	<2.00	87.9	<2.00	151	<2.00	<1.0	1.63	7.53	265.3
	12/8/2022	1.86	<0.800	<0.800	28.1	<0.800	129	0.98	156	<0.800	<1.0	2.00	2.19	193.2
	3/15/2023	2.70	<2.00	<2.00	35.9	<2.00	161	<2.00	203	<2.00	<1.0	2.21	0.32	-347.1
	6/14/2023	3.50	<2.00	<2.00	43.7	<2.00	141	<2.00	219	3.05	<1.0	1.82	0.36	-509.8
	9/14/2023	3.25	<2.00	<2.00	44.3	<2.00	121	<2.00	208	<1.00	<1.0	2.05	0.34	151.5
	12/15/2023	3.20	<0.800	0.880	48.7	1.10 Q	211	1.48	253	<0.400	<1.0	2.00	0.28	126.5
	3/6/2024	2.60	<1.00	<1.00	31.0	<1.00	133	1.38	<1.25	<0.500	<1.0	1.60	1.01	52.7
	6/14/2024	2.38	<1.00	<1.00	37.4	1.32	160	1.40	204	<0.500	<1.0	1.90	0.37	152.7
MGMS1-3(43)	9/26/2016	81.9	<8.3	13.5	1,980	24.2	230	<8.3	366	52	<10.0	9.0	5.09	184.2
	12/16/2016	92.6	<8.4	9.5	1,810	20.1	64.1	<8.4	171	239	<10.0	6.2	6.06	-17.5
	3/31/2017	90.8	<8.4	12.5	1,430	15.2	45.8	<8.4	119	348	14.8	7.0	3.02	-40.7
	6/12/2017	173	<8.3	16.7	2,620	18.7	24.4	<8.3	116	681	N/A	N/A	1.17	-109.8
	9/29/2017	60.1	<2.5	6.9	901	12.9	70.7	<2.5	126	117	<10.0	6.1	8.73	90.7
	11/7/2017	153	<2.5	13.7	2,350 J	26.6	108	<2.5	211	181	<10.0	5.6	2.04	74.5
	3/22/2018	192	<0.500	18.0	2,450	34.9	80.1	0.780	278	236	<13.0	13.8	10.71	-11.7
	7/1/2018	116	<0.500	13.8	1,880	32.8	107	0.588	246	118	<10.0	7.5	3.48	-1.6
	9/28/2018	141	<8.00	27.8	3,150	47.4	252	<8.00	528	134	<1.0	5.52	1.98	97.4
	12/4/2018	148	<0.400	22.5	2,750	48.1	146	1.08	388	129	<1.0	6.06	8.31	-2.0
	3/26/2019	160	<8.00	22.3	3,210	42.2	145	<8.00	372	105	<1.0	5.58	0.96	-10.1
	6/7/2019	169	<8.00	26.5	3,090	40.8	115	<8.00	315	145	<1.0	6.73	1.24	-12.5
	9/27/2019	156	<8.00	30.5	3,240	53.9	212	<8.00	434	113	<1.0	6.32	0.42	-295.7
	12/4/2019	124	<8.00	17.5	2,860	40.9	162	<8.00	398	11.8	<1.0	5.60	6.76	-32.5
	3/11/2020	157	<10.0	29.7	3,230	60.4	228	<10.0	495	157	1.4	4.82	8.24	-40.1
	6/16/2020	114	<10.0	21.8	2,520	31.5	116	<10.0	264	152	3.4	6.56	1.3	166.4
	10/6/2020	124	<10.0	26.0	2,980	45.5	219	<10.0	507	48.2	<1.0	5.30	1.07	127.5
	12/10/2020	131	<20.0	<20.0	2,620	34.3	151	<20.0	294	40.6	<1.0	5.51	1.26	95.2
	3/4/2021	29.0	<4	128	2,840	38.5	135	<4	388	161	<1.0	5.64	1.46	-22.8
	6/16/2021	20.8	<10	103	2,690	34.9	90.5	<10	297	153	1.6	6.53	0.58	-71.8
	9/14/2021	152	<10.0	31.2	3,550	49.6	170	<10.0	464	61.6	<1.0	5.05	0.42	113
	12/7/2021	87.6	<10.0	17.2	2,280	61.2	139	<10.0	338	177	2.9	6.57	0.3	124
	3/10/2022	114	<4.00	23.5	2,250	28.7	53.6	<4.00	209	322	7.2	6.10	0.49	224.3
	6/15/2022	74.5	<20.0	<20.0	1250	<20.0	43.5	<20.0	140	572	49	7.53	1.09	74.8
	9/12/2022	124	<4.00	27.9	2,960	55.2	193	<4.00	471	176	<1.0	4.64	0.22	7.3
	12/8/2022	104	<10.0	25	2630	39.8	175	<10.0	385	41.2	<1.0	5.24	0.22	-33.5
	3/16/2023	113	<4.00	22.6	2,920	45.9	161	<4.00	428	42.6	<1.0	4.84	0.78	167
	6/13/2023	104	<8.00	21.0	2,520	35.6	133	<8.00	370	141	<1.0	5.18	0.31	78.6
	9/12/2023	91.2	<8.00	22.4	2,350	46.6	126	<8.00	339	39.4	<1.0	4.48	0.32	84.7
	12/11/2023	113	<8.00	23.2	2630	42.8	160	<8.00	390	145 Q	1.2	5.30	0.31	54.9
	3/6/2024	119	<8.00	23.8	3,090	44.6	170	<8.00	446	78.8	<1.0	4.20	0.43	213.0
	6/12/2024	103	<4.00	18.5	2150	40.7	98.3	<4.00	306	36.6	<1.0	4.60	0.14	219.8

Table 5

Interim Action—Groundwater Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Well Number	Sample Date	Volatile Organic Compounds										Attenuation Chemistry	Field Parameters	
		1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Ethene	Total Organic Carbon	Dissolved Oxygen	Oxidation Reduction Potential
		Concentrations in µg/L										(mg/L)	(mg/L)	(mV)
MGMS3-4(40)	9/26/2016	**4.5**	<0.50	**0.60**	**226**	**2.0**	**1.7**	<0.50	**1.4**	**52.1**	<10.0	**36.2**	2.7	165.3
	12/16/2016	**1.0**	<0.50	<0.50	**1.3**	**0.97**	**0.63**	<0.50	<0.50	**0.88**	**55.2**	**86.9**	5.95	-9.20
	3/28/2017	**22.5**	**0.68**	**3.3**	**1,050**	**6.0**	**1.4**	<0.50	**0.60**	**323**	**68.1**	**5.0**	1.57	-125.8
	6/12/2017	**3.3**	<0.50	<0.50	**1.7**	<0.50	**0.97**	<0.50	<0.50	<0.50	N/A	N/A	5.22	-94.1
	9/26/2017	**1.1**	<1.0	<0.50	**0.69**	<0.50	**0.79**	<0.50	<0.50	<0.50	**22.8**	**3.8**	10.02	-82.8
	11/10/2017	**4.3**	<0.50	<0.50	**8.0**	<0.50	**0.85**	<0.50	<0.50	**15.8**	**54.8**	**6.5**	0.93	-111.6
	3/22/2018	**8.57**	<0.500	<0.500	**9.81**	**0.179 J**	**1.45**	<0.500	**0.528**	**39.8**	**242**	**8.74**	6.95	-130.8
	7/1/2018	**1.39**	<0.500	<0.500	**7.58**	<0.500	**0.498 J**	<0.500	**0.169 J**	**8.98**	**27.4**	**4.6**	3.18	-28.6
	9/28/2018	**9.08**	<0.400	**0.560**	**143**	<0.400	**0.970**	<0.400	<0.400	**129**	**33**	**4.38**	6.62	-61.7
	12/10/2018	**1.54**	<0.400	<0.400	**1.77**	<0.400	**0.603**	<0.400	<0.400	**5.44**	**4.9**	**3.42**	1.05	-122.9
	3/26/2019	**8.36**	<0.400	**0.709**	**117**	<0.400	**0.680**	<0.400	<0.400	**151**	**38**	**4.00**	0.74	92.6
	6/3/2019	**7.22**	<0.400	**0.440**	**74.7**	<0.400	**0.530**	<0.400	<0.400	**157**	**45**	**3.66**	0.89	-24.3
	9/27/2019	**5.09**	<0.400	**0.413**	**80.5**	<0.400	**0.578**	<0.400	<0.400	**106**	**8.4**	**2.86**	0.35	-182.8
	12/4/2019	**1.67**	<0.400	<0.400	**2.66**	<0.400	**1.35**	<0.400	<0.400	**5.79**	<1.0	**2.69**	2.92	-91.1
	3/12/2020	**12.8**	<0.400	**2.43**	**418**	**0.638**	**0.529**	<0.400	**0.439**	**330**	**40**	**4.00**	3.98	-136.4
	6/16/2020	**3.71**	<0.400	<0.400	**138**	<0.400	**0.660**	<0.400	<0.400	**134**	**12.0**	**3.08**	0.48	186.5
	10/6/2020	**4.38**	<0.400	<0.400	**67.2**	<0.400	**0.850**	<0.400	<0.400	**84.0**	**4.1**	**3.15**	0.56	-84.6
	12/10/2020	<8.00	<8.00	<8.00	**125**	<8.00	<8.00	<8.00	<8.00	**155**	**16**	**3.49**	0.70	-93.0
	3/4/2021	<0.400	<0.400	**6.69**	**111**	<0.400	**0.698**	<0.400	<0.400	**137**	**13**	**3.35**	2.96	-137.2
	6/16/2021	<0.400	<0.400	**4.74**	**16.3**	<0.400	**0.486**	<0.400	<0.400	**109**	**6.2**	**2.87**	0.74	-152.3
	9/16/2021	**2.86**	<0.400	<0.400	**9.61**	<4.00	**0.547**	<0.400	<0.400	**30.7**	**1.2**	**2.69**	2.01	31.7
	12/10/2021	**2.32**	<0.400	<0.400	**6.02**	<0.400	**0.509**	<0.400	<0.400	**25.7**	<1.0	**2.54**	0.37	-80.3
	3/10/2022	**5.70**	<0.400	<0.400	**102**	<0.400	**0.510**	<0.400	<0.400	**122**	**5.8**	**2.86**	0.66	131.8
	6/14/2022	**12.8**	<0.400	**1.85**	**280**	**0.610**	**0.570**	<0.400	**2.15**	**292**	**28**	**3.80**	0.87	-2.0
	9/14/2022	**7.85**	<2.00	<2.00	**344**	<2.0	<2.00	<2.00	<2.00	**171**	**4.2**	**3.02**	3.40	-65.7
	12/6/2022	**3.61**	<0.400	<0.400	**8.19**	<0.400	**0.540**	<0.400	<0.400	**58.5**	**2.8 Q**	–	1.55	-130.1
	3/16/2023	**10.2**	<4.00	<4.00	**394**	<4.00	<4.00	<4.00	<4.00	**298**	**5.7**	**3.92**	0.89	-124.0
	6/15/2023	**7.81**	<4.00	<4.00	**56.9**	<4.00	<4.00	<4.00	<4.00	**92**	**6.2**	**3.37**	0.07	-132.4
	9/11/2023	**3.95**	<0.400	<0.400	**32.3**	<0.400	**0.420**	<0.400	<0.400	**67.4**	**1.6**	**2.32 Q**	0.27	-127.3
	12/13/2023	**7.99**	**0.450**	<0.400	**32.6**	<0.400	**0.500**	<0.400	<0.400	**199**	**17**	**2.00**	0.23	-89.5
	3/4/2024	**7.74**	<0.400	**0.780**	**193**	**0.480**	**1.34**	<0.400	**0.630**	**197**	**4.90**	**2.80**	0.26	-61.4
	6/10/2024	**3.74**	<0.400	<0.400	**1.95**	<0.400	<0.400	<0.400	<0.400	**53.4**	**2.7**	**2.10**	2.3	-87.4

Notes:

1. µg/L (ppb) = Micrograms per liter (parts per billion)
2. mg/L = milligrams per liter
3. mV = millivolts
4. N/A = Not analyzed
5. -- = Not sampled
6. B = The analyte was found in the associated method blank.
7. J = Value is estimated
8. Ethene is analyzed by EPA Method RSK-175M. All other HVOCs were analyzed by EPA Method 8260.
9. **Bold** value represents detected concentration of listed analyte.
10. < = Not detected at or above the specified laboratory method reporting limit (MRL).
11. E = Analyte concentration exceeded the calibration range. Reported result is estimated.
12. Main sample values are shown. Main and duplicate sample values are shown on Table 3.
13. Q = Analyte exhibited high recovery in the LCS. Results may contain a high bias.

12.'Q' qualifiers indicate that spike recovery and/or RPD for this analyte is outside acceptance limits.

Table 6

North SVE System—Operation Monitoring

NuStar Vancouver Facility

Vancouver, Washington

Date	Branch 4		Branch 5		Post Blower		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	0.0	-13.0	0.0	-12.0	7.2	0.1	--
11/2/2011	--*	-25.0	6.7	-25.0	--	--	--
11/17/2011	0.8	-16.0	6.9	-16.0	7.0	0.1	PID complications; Routinely reported error code. Potential moisture issues.
12/5/2011	--	--	--	--	--	--	System off on arrival and would not restart. Contractor identified electrical issues.
12/14/2011	--	--	--	--	--	--	System not operating, pending blower replacement. Blower reinstalled January 10, 2012.
1/23/2012	--	-15.0	6.5	-15.0	3.9	0.1	Water in sample port of Branch 4, could not get PID reading.
2/17/2012	0.1	-11.0	0.9	-11.0	2.9	1.0	--
3/22/2012	6.8	-12.0	5.4	-12.0	1.3	0.05	--
4/26/2012	1.3	-4.2	6.4	-4.0	1.0	0.05	--
5/23/2012	0.1	-3.4	3.2	-3.4	0.4	--	--
6/20/2012	0.0	-2.8	0.0	-2.7	0.1	0.2	--
7/24/2012	3.2	-3.2	9.2	-3.2	0.2	0.4	Used Rental PID.
8/22/2012	0.4	-2.4	1.0	-2.4	0.0	0.2	--
9/25/2012	0.1	-1.7	0.5	-1.7	0.0	0.2	Used ACA PID #3.
10/29/2012	--	--	--	--	--	--	System not operating.
11/26/2012	8.4	-4.0	9.2	-4.0	3.0	0.05	Used ACA PID #3.
12/21/2012	0.1	-0.63	0.0	-0.62	0.0	0.1	Used ACA PID #3.
1/24/2013	10.4	-0.45	0.0	-0.15	0.5	0.1	Used ACA PID #3.
2/28/2013	37.1	-0.22	2.1	-0.15	1.3	0.1	Used ACA PID #3.
3/25/2013	--	--	--	--	--	--	System not operating.
4/29/2013	--	--	--	--	--	--	System not operating.
5/24/2013	0.4	-23.0	0.1	-23.0	7.9	0.1	Used APEX PID #3.
6/25/2013	--	-20.0	--	-20.0	--	0.1	--
7/25/2013	6.6	-20.0	13.3	-20.0	6.1	0.1	Used APEX PID #3.
8/27/2013	1.9	-18.0	16.9	-18.0	6.8	0.1	Used APEX PID #3.
9/30/2013	0.0	-20.0	0.0	-20.0	2.1	0.1	Used APEX PID #3.
10/24/2013	1.3	-20.0	1.2	-20.0	2.3	0.1	Used APEX PID #3.
11/25/2013	0.3	-23.0	0.2	-23.0	1.1	0.1	Used APEX PID #3.
12/27/2013	1.0	-21.0	0.6	-21.0	2.6	0.1	Used APEX PID #1
1/29/2014	0.2	-20.0	0.1	-20.0	0.0	3.0	--
2/24/2014	2.4	-20.0	2.6	-20.0	2.6	9.0	Used APEX PID #3.
3/31/2014	0.3	-20.0	1.0	-20.0	0.2	1.0	Used APEX PID #4
4/29/2014	2.0	-20.0	1.4	-20.0	0.0	2.0	--
5/27/2014	2.0	-20.0	1.3	-20.0	0.9	2.0	--
7/3/2014	0.5	-20.0	0.3	-18.0	0.4	4.0	--
7/28/2014	4.0	-20.0	2.6	-19.0	0.1	3.0	Used APEX PID #3.
8/25/2014	--	-20.0	--	-19.0	3.7	3.5	Used APEX PID #3.
9/30/2014	2.1	-17.0	0.6	-17.0	1.7	--	--
10/27/2014	0.4	-26.0	1.4	-26.0	2.3	2.0	Used APEX PID #3.
11/25/2014	0.3	-21.0	1.5	-20.0	0.5	--	Used APEX PID #3.
12/29/2014	20.2	-25.0	32.1	-25.0	--	2.0	Used APEX PID #3.
1/26/2015	2.0	-25.0	3.2	-25.0	0.7	3.0	Used APEX PID #3. Knockout drum emptied.
2/26/2015	0.0	-22.0	0.0	-25.0	0.0	0.1	--
3/30/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	Used APEX PID #3.
4/24/2015	0.0	-23.0	0.2	-27.0	0.0	0.4	--
5/28/2015	5.5	-26.0	4.8	-26.0	5.5	0.05	--
7/29/2015	7.5	-17.0	0.3	-17.0	0.5	0.10	Used APEX PID #3.
8/31/2015	0.0	-11.0	0.0	-10.0	0.9	0.05	Used APEX PID #3.
9/28/2015	0.6	-12.0	2.4	-12.0	1.8	0.00	Used APEX PID #3.
10/29/2015	0.5	-12.0	0.3	-13.0	2.9	1.00	Used APEX PID #3.
11/30/2015	0.0	-13.0	0.2	-13.0	0.0	2.00	Used APEX PID #3.
12/28/2015	0.0	-17.0	9.0	-18.0	0.0	0.10	Used APEX PID #3.
2/1/2016	30.4	-28.0	0.0	-25.0	2.6	3.00	Used APEX PID #3.
2/29/2016	0.0	-13.0	0.0.	-13.0	0.0	0.10	Used APEX PID #3.
3/29/2016	0.0	-12.0	0.0	-12.0	0.0	0.20	Used APEX PID #3.
4/27/2016	0.2	-11.0	0.0	-5.0	0.0	1.00	Used APEX PID #3. North SVE system turned off.
5/25/2016	--	--	--	--	--	--	North SVE system intentionally turned off for approx . 60 days to evaluate system efficiency.
6/28/2016	20.4	-23.0	14.3	-23.0	0.9	0.10	Used APEX PID #3.
7/26/2016	0.0	-20.0	0.4	-20.0	0.6	1.20	Used APEX PID #3.
9/29/2016	1.0	-16.0	0.0	-15.0	0.0	0.10	Used APEX PID #3.
10/25/2016	0.4	-14.0	0.0	-14.0	0.0	0.10	Used APEX PID #3.
11/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.
12/28/2016	0.0	-12.0	0.0	-12.0	0.0	0.10	Used APEX PID #3.
1/30/2017	0.0	-5.0	0.0	-5.0	0.0	0.10	Used APEX PID #3.
2/28/2017	12.5	-15.0	8.7	-14.0	1.0	0.10	--
3/28/2017	0.0	-20.0	0.0	-20.0	0.1	0.00	Used Mini Rae 3000.
4/24/2017	0.8	-20.0	0.0	-20.0	2.0	0.10	Used APEX PID #3.

Notes:

1. PID = photionization detector
2. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
3. Pressure readings in inches of water, measured with magnehelic gauge.
4. -- = Not available; branch not in use or no measurement collected during the site visit.
5. * = During the 11/2/2011 monitoring event, PID malfunctioned while monitoring Branch 4. Instrument readings would not stabilize.

Table 7

North SVE System—Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Sampling Location	Sample ID	Date	1,1,1-Trichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	Trichloro-ethene	Vinyl Chloride
			Concentrations in µg/m^3								
System Effluent	North_EFF-20111012	10/12/2011	**69**	<16	**160**	<16	<14	**9,500**	**16**	**700**	<10
System Effluent	Post Blower_North_012312	1/23/2012	<170	<120	<120	<120	<110	**16,000**	<120	**530**	<79
System Effluent	North_Effluent_0121712	2/17/2012	<140	<100	<100	<100	<91	**11,000**	<99	**300**	<67
System Effluent	North Effluent-032212	3/22/2012	<28	<54	<27	<27	<23	**6,600**	<25	**140**	<8.6
System Effluent	North_Effluent_062012	6/20/2012	<1.6	<3.2	<1.6	<1.6	**5.3**	**250**	<1.5	**15**	<0.51
System Effluent	North_Effluent_082212	8/22/2012	<1.6	<3.2	<1.6	<1.6	<1.4	**140**	<1.5	**11**	<0.51
System Effluent	North_Effluent_112612	11/26/2012	**39**	<14	**52**	<7.1	<6.2	**22,000**	<6.8	**510**	<4.6
System Effluent	North_Effluent_122112	12/21/2012	<31	<59	<30	<30	<26	**3,500**	<28	**61**	<19
System Effluent	North_Effluent_022813	2/28/2013	<36	<70	<35	<35	<31	**4,400**	<33	**160**	<22
System Effluent	SVE North	5/24/2013	<240	<170	**280**	<170	<380	**23,000**	<160	**1,100**	<110
System Effluent	SVE North	6/25/2013	**76**	<51	**88**	<51	<110	**13,000**	<49	**730**	<33
System Effluent	SVE North	8/27/2013	<150	<110	<110	<110	<230	**17,000**	<100	**800**	<69
System Effluent	SVE North Effluent	10/24/2013	<82	<60	<60	<60	<130	**10,000**	<57	**570**	<39
System Effluent	SVE North Effluent	12/27/2013	<44	<32	<32	<32	<69	**7,000**	<30	**470**	<20
System Effluent	SVE North Effluent	1/29/2014	<10	<40	**22**	<40	<87	**1,300**	<38	**110**	<26
System Effluent	SVE_North_Post Carbon	2/24/2014	**55**	<83	**68**	<41	<36	**8,700**	<39	**760**	<27
System Effluent	SVE North Post Carbon	3/5/2014	**25**	<39	**29**	<20	<17	**4,600**	<19	**300**	<13
System Effluent	VCP_North_Effluent	3/31/2014	**19**	<13	**18**	<13	<28	**3,500**	<12	**200**	<8.2
System Effluent	North_SVE_Effluent_042914	4/29/2014	**22**	<15	**17**	<15	<33	**3,500**	<14	**220**	<9.8
System Effluent	North_SVE_Effluent_052714	5/27/2014	<31	<23	<23	<23	<50	**4,100**	<22	**280**	<15
System Effluent	North_VCP_Effluent	7/3/2014	<23	<17	**20**	<17	<37	**4,500**	<16	**290**	<11
System Effluent	SVE North	7/28/2014	<120	<88	**<88**	<88	<190	**7,200**	<84	**460**	<22
System Effluent	North SVE	9/30/2014	<48	<35	**48**	<35	<76	**7,300**	<33	**480**	<22
System Effluent	SVE North Effluent	10/27/2014	<110	<80	<80	<80	<180	**15,000**	<76	**410**	<52
System Effluent	SVE North 11.25.14	11/25/2014	<39	<28	<28	<28	<62	**7,100**	<27	**390**	<18
System Effluent	SVENorth122914	12/29/2014	<140	<99	<99	<99	<220	**15,000**	<94	**290**	<64
System Effluent	SVE North	1/26/2015	**16**	<31	<16	<16	<14	**1,500**	<15	**130**	<10
System Effluent	SVE North	2/26/2015	<1.6	<3.2	<1.6	<1.6	<1.5	**32**	<1.5	<2.1	<1.0
System Effluent	SVE North	3/30/2015	**15**	<9.6	**9.5**	<4.8	<4.2	**1,700**	<4.6	**130**	<3.1
System Effluent	SVE N	4/24/2015	<8.5	<16	<8.2	<8.2	<7.2	**550**	<7.8	**50**	<5.3
System Effluent	SVE North	5/14/2015	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	<1.5	<2.1	<1.0
System Effluent	SVE North	5/28/2015	<3.8	<7.3	<3.6	<3.6	<3.2	**360**	**3.6**	**8.0**	<2.4
System Effluent	SVE North	7/29/2015	**19**	<33	**21**	<16	<14	**2,000**	<16	**210**	<11
System Effluent	SVE North	8/31/2015	**65**	<65	**62**	<33	<28	**7,100**	<31	**600**	<21
System Effluent	SVE North	9/28/2015	**21**	<22	<11	<11	<9.7	**1,400**	<11	**190**	<7.1
System Effluent	SVE North	10/29/2015	<56	<110	**59**	<55	<48	**6,300**	<52	**550**	<35
System Effluent	SVE_North_Effluent_113015	11/30/2015	<54	<140	<72	<72	<72	**2,300**	<72	**86**	<72
System Effluent	SVE_North_Effluent_122815	12/28/2015	<32	<62	<31	<31	<27	**5,600**	<30	**110**	<20
System Effluent	North_Effluent_020116	2/1/2016	<53	<100	<51	<51	<45	**11,000**	<48	**150**	<33
System Effluent	SVE_North_Effluent_022916	2/29/2016	**30**	<33	**29**	<16	<14	**7,800**	<16	**160**	<11
System Effluent	SVE_North_Effluent_032916	3/29/2016	**19**	<14	<7.2	<7.2	<6.3	**920**	<6.9	**19**	<4.7
System Effluent	North_Effluent	4/27/2016	<15	<29	<14	<14	<13	**1,500**	<14	**75**	<9.2
System Effluent	North_Effluent_62816	6/28/2016	<11	<22	<11	<13	<9.6	**1,800**	<10	**83**	<7.1
System Effluent	SVE-North-Effluent 72616	7/26/2016	<1.6	<3.2	<1.6	<1.6	<1.4	**84**	**2.0**	**6**	<1.0
System Effluent	SVE-North-Effluent 83016	8/30/2016	<0.30	<0.80	<0.40	<0.40	<0.40	**54**	<0.40	**2**	<0.40
System Effluent	SVE_North_Effluent_092916	9/29/2016	<1.6	<3.2	<1.6	<1.6	<1.4	**15**	<1.5	<2.1	<1.0
System Effluent	SVE_North_Effluent_102516	10/25/2016	<1.6	<3.2	<1.6	<1.6	<1.4	**7.9**	**3.0**	<2.1	<1.0
System Effluent	SVE_North_Effluent_112816	11/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	**2.8**	**3.9**	<2.1	<1.0
System Effluent	SVE_North_Effluent_122816	12/28/2016	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	**1.7**	<2.1	<1.0
System Effluent	SVE_North_Effluent_013017	1/30/2017	<1.6	<3.2	<1.6	<1.6	<1.4	<2.7	**4.6**	<2.1	<1.0
System Effluent	SVE_North_Effluent_022817	2/28/2017	<1.6	<3.2	<1.6	<1.6	<1.4	**5.9**	<1.5	<2.1	<1.0
System Effluent	SVE_North_Effluent_032817	3/28/2017	<1.6	<3.2	<1.6	<1.6	<1.4	**3.2**	**2.9**	<2.1	<1.0
System Effluent	SVE_North_Effluent	4/24/2017	<1.6	<3.2	<1.6	<1.6	<1.4	**3.9**	**3.7**	<2.1	<1.0

Notes:

1. µg/m^3 = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. **Bold** value represents detected concentration of listed analyte.
5. < = Not detected at or above the specified laboratory method reporting limit (MRL).

Table 8

South SVE System–Operation Monitoring

NuStar Vancouver Facility

Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
10/12/2011	--	-14.0	17.1	24.0	0	12.0	0.2	4.0	--
10/18/2011	--	-14.0	15.5	--	15.5	14.0	0.5	3.0	Pre-carbon, post blower tap is now covered by noise suppression panels.
11/2/2011	--	-15.0	18.2	26.0	0.0	26.0	2.0	7.0	--
11/17/2011	--	-18.0	8.9	27.0	--*	15.0	--*	6.8	--
12/5/2011	8.3	-18.0	10.7	39.0	0.0	19.0	2.2	6.1	System switch off upon arrival. System restarted. Monitoring event conducted approximately 3 hours after restart.
12/14/2011	11.8	-19.0	21.0	28.0	0.0	18.0	0.7	6.2	--
1/9/2012	7.3	-17.0	8.3	29.0	0.0	18.0	0.0	6.2	--
1/23/2012	7.0	-17.0	8.9	29.0	0.0	17.0	0.0	6.9	--
2/17/2012	6.0	-18.0	11.2	29.0	0.0	18.0	0.0	6.0	--
3/22/2012	13.3	-16.0	10.7	27.0	0.0	15.0	0.0	6.5	--
4/26/2012	10.3	-17.0	11.6	27.0	0.0	16.0	0.0	6.4	--
5/23/2012	10.4	-20.0	10.6	31.0	0.0	19.0	0.0	6.6	--
6/20/2012	7.3	-21.0	7.5	33.0	0.5	20.0	0.0	6.3	--
7/24/2012	19.8	-20.0	41.5	32.0	226.3	20.0	98.8	6.2	Used rental PID.
8/22/2012	8.0	-48.0	10.1	29.0	5.5	18.0	1.1	4.6	--
9/25/2012	10.0	-46.0	13.7	29.0	9.5	15.0	12.8	4.3	Used ACA PID #3.
10/29/2012	8.4	-34.0	18.6	47.0	0.3	28.0	12.9	4.3	Used ACA PID #3; Carbon change-out on 10/29/2012
11/26/2012	13.7	<-100	1.6	18.0	0.1	6.6	3.1	0.66	Used ACA PID #3.
12/21/2012	0.5	-107	0.5	17.0	0.0	6.1	0.0	0.49	Used ACA PID #3.
1/24/2013	5.1	-105	0.5	10.0	0.0	6.5	0.0	0.61	Used ACA PID #3.
2/28/2013	2.8	-105	0.1	18.0	0.0	7.0	0.0	0.60	Used ACA PID #3.
3/25/2013	8.4	-102	0.9	16.0	0.1	7.0	0.0	0.58	Used Apex PID #3
4/29/2013	0.2	-98	0.4	15.0	0.0	6.3	0.1	0.49	Used Apex PID #3
5/24/2013	41.0	-18	49.7	47.0	0.2	26	0.7	5.0	Used Apex PID #3
6/25/2013	--	-15	--	51.0	--	31	--	5.1	--
7/25/2013	12.3	-16	13.9	50.0	0.7	32	0.5	6.0	Used Apex PID #3
8/27/2013	13.2	-16	12.1	52.0	3.8	31	1.2	5.2	Used Apex PID #3
9/30/2013	5.2	-15	15.4	45.0	27.4	30	0.4	5.2	Used Apex PID #3
10/24/2013	3.1	-14	13.2	50.0	6.8	32	1.5	5.2	Used Apex PID #3
11/25/2013	1.4	-19	19.3	51.0	12.4	35	2.8	5.3	Used Apex PID #3
12/27/2013	0.3	-19	7.7	55.0	3.1	32	0.0	5.4	Used Apex PID #1
1/29/2014	2.4	-19	6.7	50.0	5.7	30	0.2	10.0	--
2/24/2014	7.7	-19	19.7	50.0	2.4	30	1.4	10.0	Used Apex PID #3
3/31/2014	2.6	-15	4.6	46.0	5.4	30	0.0	8.0	Used APEX PID #4
4/29/2014	2.0	-14	3.4	48.8	9.7	30	0.0	8.0	--
5/27/2014	3.5	-14	5.0	49.0	10.2	28	0.1	7.0	--
7/3/2014	1.6	-18	2.4	50.0	1.4	30	0.1	10.0	--
7/28/2014	8.5	-19	9.0	50.0	11.0	30	8.7	8.0	Used Apex PID #3
8/25/2014	4.6	-17	7.5	49.0	15.8	26	11.0	7.0	Used Apex PID #3
9/30/2014	0.5	-14	5.2	40.0	4.0	28	2.7	5.0	--
10/27/2014	--	--	--	--	--	--	--	--	System off upon arrival. Unable to turn back on.
11/3/2014	5.0	-20	23.0	50.0	13.1	20	14.6	8.0	Used Apex PID #3
11/25/2014	--	--	--	--	--	--	--	--	System off for drum replacement.
12/29/2014	--	--	--	--	--	--	--	--	System off.
1/26/2015	27.1	-25	34.6	20.0	1.0	17	0.0	10.0	Used Apex PID #3
2/26/2015	0.8	-20	12.9	30.0	0.2	19	0.1	8.0	--
3/30/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	Used Apex PID #3
4/24/2015	0.4	-20	14.2	29.0	0.1	20	0.1	8.0	
5/28/2015	1.0	-20	57.5	28.0	63.6	17	33.0	7.0	--
7/29/2015	0.0	-16	14.1	25.0	9.6	14	1.2	5.0	Used Apex PID #3
8/31/2015	0.0	-20	1.2	26.0	6.9	14	1.8	6.0	Used Apex PID #3
9/28/2015	3.0	-20	7.4	26.0	3.8	16	1.1	6.0	Used Apex PID #3
10/29/2015	9.0	-22	11.2	27.0	7.6	16	0.2	8.0	Used Apex PID #3
11/30/2015	--	-18	7.0	30.0	33.6	18	0.4	6.0	Used Apex PID #3
12/28/2015	--	-18	12.5	29.0	1.3	18	0.4	8.0	Used Apex PID #3
2/1/2016	0.1	-24	0.3	19.0	9.2	16	0.0	7.0	Used Apex PID #3
2/29/2016	0.2	-18	25.2	30.0	8.5	17	2.3	6.0	Used Apex PID #3
3/29/2016	0.0	-19	54.0	28.0	13.2	16	3.4	7.0	Used Apex PID #3
4/27/2016	5.0	-28	32.0	50.0	21.3	0.2	22.3	1.0	Used Apex PID #3
5/25/2016	0.2	-100	0.3	3.0	23.2	2	9.7	0.6	Used Apex PID #3
6/28/2016	--	--	--	--	--	--	--	--	System shut down
7/26/2016	8.1	-20	30.4	30.0	26.2	20	18.1	10.0	Used Apex PID #3
9/29/2016	26.3	-18	27.4	28.0	36.7	16	35.7	6.0	Used Apex PID #3
10/25/2016	0.8	-18	13.3	30.0	58.0	18	7.7	8.0	Used Apex PID #3
11/28/2016	0.0	-22	70.1	30.0	78.0	18	54.2	8.0	Used Apex PID #3
12/28/2016	0.0	-100	0.0	2.0	0.4	1.0	1.0	1.0	Bleeder valve appears damaged. No sample collected. Turned system off prior to departure.
1/30/2017	0.0	-22	52.3	33.0	0.0	20.0	0.0	10.0	Used Apex PID #3
2/28/2017	--	--	--	--	--	--	--	--	No sample collected.
3/28/2017	--	--	--	--	--	--	--	--	System not working properly. Knock out drum valve was pulled down and sucking in ambient air. No sample collected.
4/24/2017	--	--	--	--	--	--	--	--	Could not get valve to operate properly. System pulling in ambient air.
7/31/2017	0.0	-18	31.8	31.0	31.2	18.0	27.2	8.0	Used Apex PID #3
8/28/2017	0.0	-18	75.0	32.0	60.0	18.0	50.1	9.0	
9/25/2017	39.2	-18	32.7	30.0	19.7	18.0	20.6	7.5	Used Apex PID #3
10/26/2017	2.8	-22	27.7	30.0	19.0	18.0	17.4	7.0	Used Apex PID #3
11/29/2017	5.2	-20	68.0	30.0	54.0	18.0	56.0	7.0	
12/21/2017	0.3	-20	12.4	30.0	6.7	18.0	5.6	8.0	Pre-Carbon was not sampled due to sampling canister malfunction.
1/22/2018	0.0	-20	13.6	30.0	10.2	18.0	7.2	7.0	Used Apex PID #3
2/28/2018	--	-20	--	30.0	--	18.0	--	7.0	PID was not within calibration and readings were not recorded.
3/29/2018	--	-20	19.0	31.0	28.0	19.0	19.0	8.0	Used Apex PID #3
4/24/2018	2.2	-20	26.8	31.0	29.2	19.0	18.8	8.0	Used Apex PID #3
5/16/2018	13.8	-20	26.6	30.0	40.2	18.0	26.8	8.0	
7/23/2018	30.0	-18	34.5	29.0	37.5	17.0	37.3	7.0	
11/7/2018	3.0	-18	22.9	30.0	20.7	17.0	19.3	6.0	
1/4/2019	0.5	-24	27.3	28.0	23.4	16.0	22.4	6.0	Used Cascadia PID
3/8/2019	0.7	-24	19.2	28.0	12.1	16.0	12.4	6.0	Used Cascadia PID
5/7/2019	4.0	-20	33.0	29.0	25.4	17.0	25.8	7.0	Used Cascadia PID
7/8/2019	0.6	-21	33.6	29.0	26.1	17.0	27.1	7.0	Used Cascadia PID
9/9/2019	1.0	-21	29.7	29.0	27.1	17.0	22.8	6.0	Used Cascadia PID
11/4/2019	0.9	-21	31.6	29.0	18.1	12.0	16.2	6.0	Used Cascadia PID

Table 8

South SVE System–Operation Monitoring

NuStar Vancouver Facility

Vancouver, Washington

Date	Pre-Blower		Post Blower (Pre-Carbon)		Post Carbon 1		Post Carbon 2		Notes
	PID	Pressure	PID	Pressure	PID	Pressure	PID	Pressure	
1/10/2020	0.1	-21	6.3	29.0	4.2	16.0	3.5	6.0	Used Cascadia PID
12/14/2020	0.6	-18	52.9	30.0	25.2	17.0	21.9	6.0	Used Cascadia PID
2/23/2021	0.1	-21	13.1	30.0	16.8	17.0	7.2	6.0	Used Cascadia PID
4/9/2021	0.0	-17	303.4	30.0	281.1	18.0	278.6	7.0	Used FEI miniRAE 30.00 PID
6/18/2021	0.2	-16	26.7	30.0	32.4	18.0	25.3	7.0	Used Cascadia PID
8/25/2021	0.0	-17	29.1	30.0	33.6	18.0	35.5	7.0	Used GeoEngineers PID
11/19/2021	0.0	-19	36.9	28.0	25.1	11.0	24.5	6.0	Used GeoEngineers PID
12/8/2021	0.0	-19	29.5	28.0	10.9	16.0	11.8	7.0	Used Cascadia PID. System was off on arrival. System ran for 15 minutes before readings were taken.
1/25/2022	0.0	-19	19.5	28.5	11.6	16.5	11.1	6.5	Used GeoEngineers PID
3/10/2022	0.0	-21	13.5	29.0	9.0	12.0	8.5	6.0	Used GeoEngineers PID
5/10/2022	0.0	-18	15.0	29.5	10.0	12.5	9.3	7.0	Used GeoEngineers PID
7/12/2022	0.0	-16	20.7	29.0	16.3	16.5	14.9	7.0	Used GeoEngineers PID
9/12/2022	0.0	-17	22.8	29.0	23.1	17.0	17.5	7.0	Used GeoEngineers PID
11/14/2022	0.0	-19	15.9	29.0	14.2	17.0	12.1	6.5	Used GeoEngineers PID
1/16/2023	0.0	-21	12.3	28.5	9.3	16.0	7.2	6.5	Used GeoEngineers PID
3/13/2023	0.0	-21	10.0	28.0	7.8	16.0	5.9	6.0	Used GeoEngineers PID
5/9/2023	0.0	-21	11.1	28.5	12.0	16.0	7.1	6.5	Used GeoEngineers PID
7/11/2023	0.0	-19	32.6	26.5	14.0	14.5	6.4	7.0	Used GeoEngineers PID
9/11/2023	0.0	-16	20.5	29.5	24.2	17.5	15.0	7.0	Used GeoEngineers PID
11/10/2023	0.0	-18	11.7	29.0	12.2	17.0	9.6	8.0	Used GeoEngineers PID

Notes:

1. PID = photoionization detector
2. PID readings in parts per million (ppm), calibrated to 100 ppm isobutylene.
3. Pressure readings in inches of water, measured with magnehelic gauge.
4. -- = Not available or not applicable.
5. Note Cascadia and GeoEngineers PID are the same equipment.

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m³										
Pre Carbon	INF 1006	10/6/2011	<330	<320	**470**	<320	<280	**40,000**	<300	**520**	**5,100**	<210	<350
Post Carbon	EFF 1006	10/6/2011	<16	<16	**390**	<16	<14	<27	<15	**140**	**50**	<10	<17
Pre Carbon	Post Blower 110211	11/2/2011	<290	<280	**430**	<280	<250	**26,000**	<270	<390	**2,100**	<180	<310
Pre Carbon	SOUTHSVE_PRECARBON_121411	12/14/2011	<580	<570	**620**	<570	<500	**54,000**	<540	<780	**2,800**	<360	<620
Post Carbon	SOUTHSVE_POSTCARBON_121411	12/14/2011	<16	**35**	**23**	<16	**17**	**1,600**	<15	**78**	**1,300**	**12**	<17
Post Carbon	POST CARBON_SOUTH_012312	1/23/2012	<16	<16	<16	<16	<14	<27	<15	<22	<21	<10	<17
Pre Carbon	South_PreCarbon_021712	2/17/2012	<300	<300	**460**	<300	<260	**28,000**	<280	<410	**1,200**	<190	<330
Post Carbon	South_PostCarbon_021712	2/17/2102	<16	<16	<16	<16	<14	<27	<15	<22	<21	<17	<10
Pre Carbon	South Influent - 032212	3/22/2012	<190	<190	**310**	<95	<84	**30,000**	<91	**99**	**960**	<31	<100
Post Carbon	South Effluent - 032212	3/22/2012	<1.2	<3.2	<1.6	<1.6	**4**	<2.7	<1.5	<1.6	<2.1	**6.4**	<3.5
Pre Carbon	South_SVE_PRECARBON	4/26/2012	<210	<560	<280	<280	<240	**32,000 S**	<270	<290	**640 S**	<90	<610
Post Carbon	South-SVE_POSTCARBON	4/26/2012	<1.2	<3.2	<1.6	<1.6	**4**	<2.7	<1.5	<1.6	<2.1	**2.4**	<3.5
Pre Carbon	SOUTH_SVE_PRECARBON	5/23/2012	<100	<260	**200**	<130	<120	**19,000**	<130	<140	**780**	<43	<290
Post Carbon	South_SVE_PRECARBON	5/23/2012	<1.2	<3.2	<1.6	<1.6	**3**	<2.7	<1.5	<1.6	<2.1	**3.7**	<3.5
Pre Carbon	South_PreCarbon_062012	6/20/2012	<240	<630	**360**	<320	<280	**35,000**	<300	<330	**1,400**	<100	<1040
Post Carbon	South_PostCarbon_062012	6/20/2012	<0.30	<0.80	<0.40	<0.40	**1.0**	<0.40	<0.40	<0.30	<0.40	**1.2**	<1.2
Pre Carbon	South_PreCarbon_072412	7/24/2012	<150	<390	**240**	<200	<170	**33,000**	<190	<200	**1,100**	<63	<640
Post Carbon	South_PostCarbon_072412	7/24/2012	<1.2	**11**	<1.6	<1.6	**3.0**	<2.7	**2.2**	<1.6	<2.1	**3.9**	<5.2
Pre Carbon	South_PreCarbon_082212	8/22/2012	<250	<660	**760**	<330	<290	**47,000**	<310	<340	**2,000**	<110	**1,080**
Post Carbon	South_PostCarbon_082212	8/22/2012	<21	<55	<27	<27	<24	<47	<26	<28	<37	<8.8	<90
Pre Carbon	South_PreCarbon_092512	9/25/2012	<270	<700	**500**	<400	<310	**50,000**	<330	<360	**1,900**	<230	<770
Post Carbon	South_PostCarbon_092512	9/25/2012	**13**	**18**	**1,200**	**11**	**5.7**	<2.7	<1.5	<1.6	<2.1	**6.2**	<3.5
Pre Carbon	South_PreCarbon_102912	10/29/2012	<320	<850	**440**	<480	<370	**60,000**	<400	<440	**2,200**	<270	<930
Post Carbon	South_PostCarbon_102912	10/29/2012	<5.3	<14	<7	<7	<7	<7	<7	<7	<7	<7	<14
Pre Carbon	South_PreCarbon_112612	11/26/2012	<95	<250	<120	<120	<110	**10,000**	<120	<130	**530**	<80	<410
Post Carbon	South_PostCarbon_112612	11/26/2012	<2.7	<7.2	<3.6	<3.6	<3.6	<3.6	<3.6	<2.7	<3.6	<3.6	<10.8
Pre Carbon	South_PreCarbon_122112	12/21/2012	<71	<190	**110**	<93	<82	**14,000**	<89	<96	**600**	<60	<300
Post Carbon	South_PostCarbon_122112	12/21/2012	<1.2	<3.2	<1.6	<1.6	**1.6**	<2.7	<1.5	<1.6	<2.1	**3.0**	<5.2
Pre Carbon	South_PreCarbon_012413	1/24/2013	<9.2	<24	**14**	<12	<11	**1,700**	<11	<12	**100**	<7.8	<39
Post Carbon	South_PostCarbon_012413	1/24/2013	<1.2	<3.2	<1.6	<1.6	**3.3**	<2.7	<1.5	<1.6	<2.1	**3.7**	<5.2
Pre Carbon	South_PreCarbon_022813	2/28/2013	<5.9	<15	**8.5**	<7.7	<6.7	**940**	<7.3	<7.9	**84**	<5.0	<25.4
Post Carbon	South_PostCarbon_022813	2/28/2013	<1.2	<3.2	<1.6	<1.6	**8.1**	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2
Pre Carbon	South_PreCarbon_032513	3/25/2013	<29	<75	<38	<38	<33	**3,700**	<36	<39	**160**	<24	<123
Post Carbon	South_PostCarbon_032513	3/25/2013	<1.2	<3.2	<1.6	<1.6	**2.0**	<2.7	<1.5	<1.6	<2.1	**2.0**	<5.2
Pre Carbon	SVE South Pre Carbon	4/29/2013	<6.3	<16	**10**	<8.2	<7.2	**950**	<7.8	<8.4	**48**	<5.3	<26.9
Post Carbon	SVE South Post Carbon	4/29/2013	<0.30	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.30	<0.40	**0.93**	<1.2

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m³										
Pre Carbon	SVE South Pre Carbon	5/24/2013	<1,100	<1,100	**2,400**	<1,100	<2,400	**240,000**	<1,100	<1,500	**8,400**	<720	<4,300
Post Carbon	SVE South Post Carbon	5/24/2013	<0.81	<0.79	<0.79	<0.79	<1.7	<1.4	<0.75	<1.1	<1.1	<0.51	<3.1
Pre Carbon	SVE South Pre Carbon	6/25/2013	<150	<150	**630**	<150	<330	**39,000**	<140	<210	**1,800**	<97	<570
Post Carbon	SVE South Post Carbon	6/25/2013	<0.81	**8.1**	**3.8**	<0.79	**5.6**	<1.4	<0.75	<1.1	<1.1	**3.1**	<3.1
Pre Carbon	SVE South Pre Carbon	7/25/2013	<120	<120	**380**	<120	<260	**22,000**	<110	<160	**1,200**	<77	<460
Post Carbon	SVE South Post Carbon	7/25/2013	<0.81	**17**	**65**	**2.1**	**3.4**	<1.4	**1.2**	<1.1	<1.1	**2.6**	**1.4**
Pre Carbon	SVE South Pre Carbon	8/27/2013	<150	<150	**520**	<150	<330	**28,000**	<140	<210	**1,500**	<97	<580
Post Carbon	SVE South Post Carbon	8/27/2013	**3.3**	**13**	**270**	**7.0**	**4.7**	<2.7	<1.5	<2.2	<2.1	**3.7**	<6.0
Pre Carbon	SVE South Precarbon	9/30/2013	<110	<110	**450**	<110	<240	**26,000**	<110	<150	**1,400**	<72	<420
Pre Carbon	SVE South Pre Carbon	10/24/2013	<140	<140	**430**	<140	<310	**27,000**	<130	<190	**1,100**	<90	<530
Post Carbon	SVE South Post Carbon	10/24/2013	**3.8**	**4.9**	**390**	**3.3**	<5.2	**4.3**	<2.3	**5.4**	<3.2	**2.6**	<5.1
Pre Carbon	SVE South Pre Carbon	11/25/2013	<100	<98	**250**	<98	<220	**21,000**	<93	<140	**840**	<63	<380
Post Carbon	SVE South Post Carbon	11/25/2013	<2.8	**4.1**	**250**	<2.8	**7.3**	<4.8	<2.6	**17**	**56**	<1.8	<10.6
Pre Carbon	SVE South Pre Carbon	12/27/2013	<110	<110	**270**	<110	<240	**20,000**	<100	<150	**900**	<70	<420
Post Carbon	SVE South Post Carbon	12/27/2013	**2.5**	**4.5**	**220**	**2.4**	**3.8**	**3.5**	<1.1	**6.8**	**62**	<0.77	<4.6
Pre Carbon	SVE South Pre-Carbon	1/29/2014	<80	<79	**260**	<79	<170	**20,000**	<75	<110	**800**	<51	<306
Post Carbon	SVE South Post-Carbon	1/29/2014	**4.5**	**7.2**	**330**	**4.8**	<8.7	**7.9**	<3.8	**13**	**98**	**3.1**	<15.3
Pre Carbon	SVE_South_Pre_Carbon	2/24/2014	<190	<490	**430**	<240	**240.0**	**34,000**	**600**	<250	**1,500**	<160	<800
Post Carbon	SVE_South_Effluent	2/24/2014	<1.2	<3.2	**41**	<1.6	<1.4	<2.7	<1.5	<1.6	<2.1	<1.0	<5.2
Pre Carbon	SVE South Pre Carbon	3/5/2014	<110	<280	**270**	<140	<120	**16,000**	**660**	<140	**660**	<90	**1,090**
Post Carbon	SVE South Effluent	3/5/2014	**3.7**	<8.3	**310**	**4.2**	**4.4**	<7.1	<4.0	<4.3	**21**	<2.7	<13.7
Pre Carbon	VCP_South_Post_Blower	3/31/2014	<83	<82	**260**	<82	<180	**20,000**	<78	<110	**630**	<53	<309
Post Carbon	VCP_South_Effluent	3/31/2014	**3.3**	**4.9**	**290**	**4.2**	<4.3	<3.4	<1.9	**3.3**	**21**	**1.4**	<7.6
Pre Carbon	South_SVE_Postblower_042914	4/29/2014	<47	<46	**180**	<46	<100	**13,000**	<44	<63	**550**	<30	<180
Post Carbon	South_SVE_Effluent_042914	4/29/2014	**5.1**	**5.0**	**540**	<4.8	<11	<8.2	<4.6	<6.6	**37**	<3.1	<18.3
Pre Carbon	South_SVE_Postblower_052714	5/27/2014	<57	<55	**160**	<55	<120	**12,000**	<53	<76	**490**	<36	<201
Post Carbon	South_SVE_PostCarbon_052714	5/27/2014	**5.0**	<4.8	**530**	<4.8	<11	<8.2	<4.6	**14**	**8.1**	<3.1	<18.3
Pre Carbon	South_VCP_Post Blower	7/3/2014	<18	<18	**56**	<18	<45	**2,800**	<18	<18	**150**	<18	<63
Post Carbon	South_VCP_Post Carbon	7/3/2014	<16	<16	**760**	<16	<35	**55**	<15	**430**	**3,200**	<10	<60
Pre Carbon	SVE Pre Carbon	7/28/2014	<69	<67	**200**	<67	<150	**15,000**	<64	<93	**750**	<43	<254
Post Carbon	SVE Post Carbon	7/28/2014	<68	<67	**270**	<67	<150	**13,000**	<63	**530**	**12,000**	<43	<253
Pre Carbon	South SVE Pre Carbon	8/25/2014	<140	<130	**340**	<130	<290	**20,000**	<130	<180	**1,100**	<86	<520
Post Carbon	South SVE Post Carbon	8/25/2014	<140	<130	**270**	<130	<290	**9,600**	<130	<180	**2,700**	<86	<520
Pre Carbon	South SVE_Pre Carbon	9/30/2014	<110	<110	**250**	<110	<230	**17,000**	<100	<150	**930**	<69	<410
Post Carbon	South SVE_Post Carbon	9/30/2014	<130	<120	**280**	<120	<270	**23,000**	<120	<170	**620**	<80	<480
Pre Carbon	SVE South Post Blower	11/3/2014	<130	<130	**320**	<130	<280	**24,000**	<120	<170	**1,100**	<81	<490
Post Carbon	SVE South Post Carbon	11/3/2014	<81	<81	**130**	<81	<180	**12,000**	<77	<110	**290**	<52	<309

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m³										
Pre Carbon	SVE South Pre Carbon	1/26/2015	<190	<500	**420**	<250	<220	**21,000**	**240**	<260	**860**	<160	<820
Post Carbon	SVE South Post Carbon	1/26/2015	<78	<200	<100	<100	<90	<170	**190**	<110	<140	<66	<330
Pre Carbon	SVE South Pre Carbon	2/26/2015	<150	<390	**260**	<200	<170	**18,000**	**280**	<200	**660**	<130	<650
Post Carbon	SVE South Post Carbon	2/26/2015	<1.2	<3.2	<1.6	<1.6	**3.2**	<2.7	<1.5	<1.6	<2.1	**2.5**	<5.2
Pre Carbon	SVE South Pre Carbon	3/30/2015	<61	<160	**200**	<79	**160**	**17,000**	**180**	<82	**570**	<51	<257
Post Carbon	SVE South Post Carbon	3/30/2015	<1.2	<3.2	<1.6	<1.6	**2.8**	<2.7	**2.7**	<1.6	**51**	**2.5**	<5.2
Pre Carbon	SVE S Pre Carbon	4/24/2015	<37	<97	**170**	<49	<43	**5,400**	<46	<50	**410**	<31	<163
Post Carbon	SVE S Post Carbon	4/24/2015	<6.2	<16	<8.1	<8.1	<7.1	**660**	<7.7	<8.3	**19**	<5.2	**18**
Pre Carbon	SVE South Pre Carbon	5/28/2015	<60	<160	**140**	<79	**92**	**8,000**	**240**	<81	**460**	<51	<256
Post Carbon	SVE South Post Carbon	5/28/2015	<4.9	<13	<6.3	<6.3	<5.6	**650**	<6.0	<6.5	**16**	<4.1	**22.1**
Pre Carbon	SVE South Pre Carbon	7/29/2015	<65	<170	**190**	<85	<75	**12,000**	<81	<88	**790**	<55	<183
Post Carbon	SVE South Post Carbon	7/29/2015	**10**	<27	**960**	**16**	<12	**440**	<13	<14	<18	<8.7	<45
Pre Carbon	SVE South Pre Carbon	8/31/2015	<64	<170	**160**	<83	<73	**12,000**	<79	<86	**780**	<54	<171
Post Carbon	SVE South Post Carbon	8/31/2015	<21	<55	**530**	<27	<24	**3,400**	<26	<28	**94**	<18	<90
Pre Carbon	SVE South Pre Carbon	9/28/2015	<83	<220	**170**	<110	<94	**9,900**	<100	<110	**660**	<70	<360
Post Carbon	SVE South Post Carbon	9/28/2015	**3.4**	<6.0	**340**	**3.6**	<2.6	**300**	<2.8	**39**	**59**	<1.9	<9.8
Pre Carbon	SVE South Pre Carbon	10/29/2015	<130	<350	**230**	<170	<150	**18,000**	<170	<180	**790**	<110	<570
Post Carbon	SVE South Post Carbon	10/29/2015	**4.2**	**5.2**	**340**	**4.5**	**2.6**	**26**	<1.5	**67**	**310**	**1.7**	<5.2
Pre Carbon	SVE_South_Precarbon_113015	11/30/2015	<29	<77	**54**	<38	<38	**3,000**	<38	<29	**300**	<38	<77
Post Carbon	SVE_South_Postcarbon_113015	11/30/2015	<0.80	<0.80	**27**	**0.60**	<0.40	<0.40	<0.40	**6**	**11**	<0.40	<0.80
Pre Carbon	SVE_SOUTH_PRE CARBON_12/28/15	12/28/2015	<120	<320	**180**	<160	<140	**35,000**	<150	<170	**1,200**	<100	<530
Post Carbon	SVE_SOUTH_POST CARBON_12/28/15	12/28/2015	<1.2	<3.2	**28**	<1.6	<1.4	<2.7	**1.5**	**2**	**6.5**	<1.0	<4.2
Pre Carbon	SVE_SOUTH_PRE CARBON	2/1/2016	<8.6	<22	**20**	<11	<9.8	**2,900**	<11	**14**	**120**	<7.2	<37
Post Carbon	SVE_SOUTH_POST CARBON	2/1/2016	**2.2**	<3.2	**160**	**2.90**	<1.4	<2.7	<1.5	**92**	**260**	<1.0	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON	3/29/2016	<230	<610	**710**	<300	<270	**71,000**	<290	**520**	**2,800**	<200	<670
Post Carbon	SVE_SOUTH_POST CARBON	3/29/2016	<69	<180	**490**	<23	<79	**9,300**	<86	**1500**	**9,300**	<58	<200
Pre Carbon	SVE_SOUTH_PRE CARBON	4/27/2016	<6.4	<17	**12**	<8.4	<7.4	**910**	<8.0	<8.7	**23**	<5.4	<18
Post Carbon	SVE_SOUTH_POST CARBON	4/27/2016	<63	<160	**180**	<82	<72	**11,000**	<78	**110**	**2,200**	<53	<180
Pre Carbon	SVE_SOUTH_PRE CARBON	5/25/2016	<1.2	<3.2	**4**	<1.6	<1.4	**550**	**2.9**	**3**	**22**	<1.0	**3.9**
Post Carbon	SVE_SOUTH_POST CARBON	5/25/2016	<16	<41	**2300**	**30.00**	<18	**14,000**	<19	**130**	**3,300**	<13	<45
Pre Carbon	SVE_SOUTH_PRE CARBON	7/26/2016	<98	<260	**340**	<130	<110	**18,000**	<120	<130	**970**	<83	<420
Post Carbon	SVE_SOUTH_POST CARBON	7/26/2016	<78	<200	**760**	<120	<89	**15,000**	<97	**220**	**1,400**	<66	<330
Pre Carbon	SVE_SOUTH_PRE CARBON	8/30/2016	<86	<230	**340**	<110	<99	**28,000**	<110	<120	**1,400**	<73	<370
Post Carbon	SVE_SOUTH_POST CARBON	8/30/2016	<81	<210	**370**	<110	<93	**19,000**	<100	**210**	**910**	<68	<350
Pre Carbon	SVE_SOUTH_PRE CARBON	9/29/2016	<73	<190	**340**	<95	<83	**25,000**	<90	**110**	**1,300**	<61	<310
Post Carbon	SVE_SOUTH_POST CARBON	9/29/2016	<46	<120	**410**	<60	<53	**14,000**	<57	**140**	**1,900**	<39	<196

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m³										
Pre Carbon	SVE-SOUTH_PRE CARBON_102516	10/25/2016	<150	<390	**380**	<190	<170	**32,000**	<180	<200	**1,500**	<120	<630
Post Carbon	SVE-SOUTH_POST CARBON_102516	10/25/2016	<100	<260	**530**	<130	<120	**19,000**	<130	**180**	**2,700**	<85	<430
Pre Carbon	SVE_SOUTH_PRE CARBON_112816	11/28/2016	<260	<670	**420**	<340	<290	**52,000**	<320	<350	**2,100**	<220	<1110
Post Carbon	SVE_SOUTH_POST CARBON_112816	11/28/2016	<79	<210	<100	<100	<90	**18,000**	<98	**360**	**3,200**	<66	<340
Pre Carbon	SVE_SOUTH_PRE CARBON_013017	1/30/2017	<260	<690	**660**	<340	<300	**61,000**	<330	**400**	**2,400**	<220	<1130
Post Carbon	SVE_SOUTH_POST CARBON_013017	1/30/2017	<1.2	<3.2	<1.6	<1.6	<1.4	**24**	**1.8**	<1.6	<2.1	<1.0	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_073117	7/31/2017	<100	<260	**400**	<130	<110	**17,000**	**340**	<130	**1,000**	<84	<430
Post Carbon	SVE_SOUTH_POST CARBON_073117	7/31/2017	<1.2	<3.2	<1.6	<1.6	**2.4**	**6.5**	**8.2**	<1.6	**3.9**	**2.4**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_082817	8/28/2017	<60	<160	**320**	<79	<69	**32,000**	<75	**90**	**1,100**	<51	<256
Post Carbon	SVE_SOUTH_POST CARBON_082817	8/28/2017	<1.2	**5.8**	**2**	<1.6	**2.4**	**160**	**2.3**	<1.6	**3.9**	**2.2**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_092517	9/25/2017	<21	<55	**200**	<27	<24	**23,000**	<26	**45**	**460**	<18	<90
Post Carbon	SVE_SOUTH_POST CARBON_092517	9/25/2017	<1.2	**8.0**	**16**	<1.6	**5.3**	**6.8**	<1.5	<1.6	<2.1	**2.2**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_102617	10/26/2017	<40	<100	**230**	<52	<45	**13,000**	<49	**64**	**700**	<33	<167
Post Carbon	SVE_SOUTH_POST CARBON_102617	10/26/2017	**2.0**	**15**	**98**	**2.1**	**1.6**	**9.7**	<1.5	**3.9**	<2.1	**1.5**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_112917	11/29/2017	<140	<370	**280**	<180	<160	**22,000**	<170	<190	**820**	<120	<600
Post Carbon	SVE_SOUTH_POST CARBON_112917	11/29/2017	**3.8**	**8.5**	**220**	**4.0**	<2.0	<4.0	<2.2	**12**	<3.2	**2.5**	<5.7
Pre Carbon	SVE_SOUTH_PRE CARBON_122117	12/21/2017	--	--	--	--	--	--	--	--	--	--	--
Post Carbon	SVE_SOUTH_POST CARBON_122117	12/21/2017	**4.6**	**4.9**	**300**	**5.2**	**1.7**	<2.7	<1.5	**20**	**7.2**	**1.8**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_012218	1/22/2018	<110	<290	**150**	<150	<130	**13,000**	<140	<150	**390**	<95	<480
Post Carbon	SVE_SOUTH_POST CARBON_012218	1/22/2018	**4.3**	<6.5	**380**	<3.2	<2.8	**8.1**	<3.1	**11**	**16**	**2.1**	<10.6
Pre Carbon	SVE_SOUTH_PRE CARBON_022818	2/28/2018	<19	<49	**200**	<25	<22	**13,000**	<23	**52**	**440**	<16	<81
Post Carbon	SVE_SOUTH_POST CARBON_022818	2/28/2018	**2.8**	<3.2	**300**	**4.0**	<1.4	<2.7	<1.5	**14**	**51**	**5.1**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_032918	3/29/2018	<23	<60	**180**	<30	<26	**13,000**	<28	**46**	**470**	<19	<98
Post Carbon	SVE_SOUTH_POST CARBON_032918	3/29/2018	**4.2**	**5.2**	**500**	**7.4**	**1.5**	**7.8**	<1.5	**15**	**110**	**1.7**	<5.2
Pre Carbon	SVE_SOUTH_PRE CARBON_042418	4/24/2018	<69	<180	**140**	<90	<79	**12,000**	<86	<58	**350**	<58	<299
Post Carbon	SVE_SOUTH_POST CARBON_042418	4/24/2018	**3.4**	**4.2**	**470**	**7.6**	**1.5**	**6.6**	**3.1**	**8.4**	**76**	**1.4**	**17.9**
Pre Carbon	SVE_SOUTH_PRE CARBON_051618	5/16/2018	<50	<130	**160**	<65	<57	**7,800**	<62	<68	**370**	<42	<212
Post Carbon	SVE_SOUTH_POST CARBON_051618	5/16/2018	<4.7	<12	**480**	**6.6**	<0.97	<1.3	<0.75	**7.1**	**33**	<4	<19.7
Pre Carbon	SVE_South_72318-Pre Carbon	7/23/2018	<63	<170	**170**	<83	<73	**18,000**	<79	<85	**770**	<53	<271
Post Carbon	SVE_South_Post Carbon-72318	7/23/2018	<25	<65	**230**	<33	<29	**8,300**	<31	**520**	**6,400**	<21	<108
Pre Carbon	SVE_South_PreCarbon_110718	11/7/2018	<64	<170	**310**	<84	<74	**31,000**	<80	**91**	**1,300**	<54	<180
Post Carbon	SVE_South_PostCarbon_110718	11/7/2018	<1.2	<3.2	<1.6	<1.6	<1.4	**15**	<1.5	<1.6	<2.1	**1.6**	<3.5
Pre Carbon	SVE_South_PreCarbon_010419	1/4/2019	<64	<160	**280**	<82	<71	**32,000**	<77	**84**	**920**	<53	<180
Post Carbon	SVE_South_PostCarbon_010419	1/4/2019	<1.2	<3.2	<1.6	<1.6	**2.1**	<2.7	**2.3**	<1.6	<2.1	**1.5**	**7.3**
Pre Carbon	SVE_South_PreCarbon_030819	3/8/2019	<69	<180	**180**	<90	<79	**21,000**	<86	<93	**570**	<58	<200
Post Carbon	SVE_South_PostCarbon_030819	3/8/2019	<1.2	<3.2	<1.6	<1.6	**1.8**	**5.5**	<1.5	<1.6	<2.1	**1.3**	<3.5

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m³										
Pre Carbon	SVE_South_PreCarbon_050719	5/7/2019	<69	<180	**140**	<90	<79	**17,000**	<85	<93	**450**	<58	<200
Post Carbon	SVE_South_PostCarbon_050719	5/7/2019	<1.2	<3.2	**9.9**	<1.6	<1.4	**1,300**	**13**	**3.0**	**31**	<1.0	**11.7**
Pre Carbon	SVE_South_PreCarbon_070819	7/8/2019	<64	<170	**100**	<83	<73	**16,000**	<79	<86	**530**	<54	<180
Post Carbon	SVE_South_PostCarbon_070819	7/8/2019	<1.2	**6.3**	<1.6	<1.6	**1.6**	**7.9**	<1.5	<1.6	<2.1	<1.0	**1.7**
Pre Carbon	SVE_South_PreCarbon_090919	9/9/2019	<28	<74	**120**	<37	<32	**15,000**	<35	**48**	**590**	<24	<81
Post Carbon	SVE_South_PostCarbon_090919	9/9/2019	**2.8**	**3.6**	**160**	**9.1**	<1.4	<2.7	<1.5	<1.6	<2.1	<1.0	<3.5
Pre Carbon	SVE_South_PreCarbon_110419	11/4/2019	<33	<87	**300**	<43	<38	**38,000**	<41	**87**	**990**	<28	<95
Post Carbon	SVE_South_PostCarbon_110419	11/4/2019	**2.2**	<5.2	**160**	**5.6**	<2.3	<4.4	<2.5	<2.7	<3.5	**3.2**	<5.7
Pre Carbon	SVE-South-PreCarbon-011020	1/10/2020	<12	<31	**110**	<16	<14	**9,200**	<15	**33**	**420**	<10	<17
Post Carbon	SVE-South-PostCarbon-011020	1/10/2020	<1.7	<4.5	**130**	<2.3	<2.0	<3.9	<2.2	**5.1**	<3.1	<1.5	<5.0
Pre Carbon	SVE_South_PreCarbon_121420	12/14/2020	<62	<160	**400**	<82	**160**	**32,000**	**130**	**100**	**1,300**	<53	<180
Post Carbon	SVE_South_PostCarbon_121420	12/14/2020	**2.3**	<5.4	**180**	<2.7	<2.4	<4.6	<2.6	**8.9**	<3.6	<1.7	<5.9
Pre Carbon	SVE_South_PreCarbon_022321	2/23/2021	<35	<91	**120**	<46	<500	**18,000**	<43	<47	**390**	<29	<100
Post Carbon	SVE_South_PostCarbon_022321	2/23/2021	**2.4**	**6.0**	**150**	**3.5**	<27	<4.2	<2.3	**7.0**	**36**	<1.6	<5.4
Pre Carbon	SVE_South_PreCarbon_040921	4/9/2021	<13	<34	**150**	<17	<190	**14,000**	<16	**32**	**450**	<11	<38
Post Carbon	SVE_South_PostCarbon_040921	4/9/2021	**5.0**	<4.2	**390**	**9.7**	<23	<3.6	<2.0	**7.1**	**41**	<1.3	<4.6
Pre Carbon	SVE_South_PreCarbon_061721	6/17/2021	<11	<29	**94**	<15	<160	**11,000**	<14	**31**	**380**	<9.4	<32
Post Carbon	SVE_South_PostCarbon_061721	6/17/2021	<7.8	<20	**400**	<10	<110	**340**	<9.7	**940**	**4,800**	<6.6	<22
Pre Carbon	SVE_South_PreCarbon_082521	8/25/2021	<17	<46	**86**	<23	<250	**12,000**	<22	**33**	**500**	<15	<50
Post Carbon	SVE_South_PostCarbon_082521	8/25/2021	<12	<32	**44**	<16	<170	**10,000**	**42**	<16	**180**	<10	<35
Pre Carbon	SVE_South_PreCarbon_111921	11/19/2021	<22	<58	**160**	<29	<320	**17,000**	<27	**52**	**620**	<19	<63
Post Carbon	SVE_South_PostCarbon_120821*	12/8/2021*	<1.6	<4.3	<2.2	<2.2	<24	<3.7	<2.0	<2.2	<2.9	<1.4	<4.7
Pre Carbon	SVE_South_PreCarbon_012522	1/25/2022	<22	<59	**100**	<29	<320	**16,000**	<28	**30 J**	**410**	<19	<64
Post Carbon	SVE_South_PostCarbon_012522	1/25/2022	<1.7	<4.5	<2.2	<2.2	<25	<3.8	<2.1	<2.3	<3.0	<1.4	<4.9
Pre Carbon	SVE_South_PreCarbon_031022	3/10/2022	<13	<34	**68**	<17	<190	**11,000**	<16	**25**	**320**	<11	<38
Post Carbon	SVE_South_PostCarbon_031022	3/10/2022	<1.6	<4.3	<2.1	<2.1	<23	<3.7	<2.0	<2.2	<2.9	<1.4	<4.7
Pre Carbon	SVE_South_PreCarbon_051022	5/10/2022	<16	<42	**78**	<21	<230	**12,000**	<20	**23**	**310**	<14	<46
Post Carbon	SVE_South_PostCarbon_051022	5/10/2022	<4.4	<4.3	<2.2	<2.5	<24	<3.7	<2.1	<2.2	<2.9	<1.4	<4.8
Pre Carbon	SVE_South_PreCarbon_071222	7/12/2022	<64	<24	**61**	<32	<350	**12,000**	<30	<33	**290**	<21	<70
Post Carbon	SVE_South_PostCarbon_071222	7/12/2022	<1.8	<4.6	<2.3	<2.3	<25	<3.9	<2.2	<2.4	<3.1	<1.5	<5.0

Table 9

South SVE System–Analytical Results

NuStar Vancouver Facility

Vancouver, Washington

Sampling Location	Sample ID	Date	1,1-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Methylene Chloride	Tetrachloro-ethene	Toluene	1,1,1-Trichloro-ethane	Trichloro-ethene	Vinyl chloride	Total Xylenes
			Concentrations in µg/m^3										
Pre Carbon	PreCarbon_SVE_South_09122022	9/12/2022	<16	<41	**64**	<20	<220	**11,000**	<19	**31**	**440**	<13	<45
Post Carbon	PostCarbon_SVE_South_09122022	9/12/2022	**4.1**	<3.6	**220**	12.0	<20	<3.1	<1.7	<1.9	<2.4	<1.2	<4.0
Pre Carbon	PreCarbon_S_SVE_11142022	11/14/2022	<16	<42	**18**	<21	<230	**1,800**	<20	**5.3**	**76**	<14	<46
Post Carbon	PostCarbon_S_SVE_11142022	11/14/2022	<1.7	<4.4	**31**	<2.2	<24	<3.8	<2.1	1.3	<3.0	<1.4	<4.8
Pre Carbon	PreCarbon_SVE_South_011623	1/16/2023	<14	<37	**71**	<19	<200	**10,000**	<44	**22**	**310**	<12	<41
Post Carbon	PostCarbon_SVE_South_011623	1/16/2023	<1.6	<4.3	**69**	<2.1	<23	<3.6	<5.0	**6.2**	**24**	<1.4	<4.6
Pre Carbon	PreCarbon_South_SVE_03132023	3/13/2023	<14	<13	**65**	<13	<120	**7,300**	<25	**19**	**290**	<8.6	<29
Post Carbon	PostCarbon_South_SVE_03132023	3/13/2023	<2.7	<2.6	**63**	<2.6	<23	**5.4**	<5.0	**5.8**	**36**	<1.7	<2.9
Pre Carbon	PreCarbon_South_SVE_05092023	5/9/2023	<23	<22	**50**	<22	<200	**10,000**	<42	<31	**220**	<14	<49
Post Carbon	PostCarbon_South_SVE_05092023	5/9/2023	<2.6	<2.5	**96**	3.2	<22	<4.3	<4.8	<3.5	**14**	<1.6	<5.5
Pre Carbon	SVE_South_PreCarbon_071123	7/11/2023	<31	<30	**170**	<30	<110	**51,000**	<29	**90**	**830**	<20	<33
Post Carbon	SVE_South_PostCarbon_071123	7/11/2023	**3.0**	**2.6**	**180**	**5.4**	<21	<4.0	<4.5	<3.2	**8.4**	<1.5	<2.6
Pre Carbon	20230911_South_SVE_PreCarbon	9/11/2023	<25	<24	**75**	<24	<210	**12,000**	<46	<33	**440**	<16	<26
Post Carbon	20230911_South_SVE_PostCarbon	9/11/2023	**3.9**	**3.4**	**350**	**7.0**	<23	<4.5	<5.0	**13**	**37**	<1.7	<2.9
Pre Carbon	20231110_S_SVE_PreCarbon	11/20/2023	<23	<23	**62**	<22	<200	**13,000**	<43	**31 J**	**440**	<14	<25
Post Carbon	20231110_S_SVE_PostCarbon	11/10/2023	<3.7	<3.6	**90**	<3.6	<31	**2,000**	<6.8	**260**	**1100**	<2.3	<3.9

Notes:

1. µg/m^3 = Micrograms per cubic meter.
2. Samples analyzed by Modified EPA Method TO-15.
3. Only analytes detected in at least one sample are presented in this table.
4. S = Surrogate recoveries were above acceptable recovery limits. Results may be biased high.
5. **Bold** values represents detected concentration of listed analyte.
6. -- = Not sampled.
7. * = Due to a faulty sample container, the Post Carbon sample was not able to be collected on the same date as the Pre Carbon sample.

Table 10

North SVE System—HVOC Mass Removal

NuStar Vancouver Facility

Vancouver, Washington

Sample Date	Post-Blower Pressure (in water)	Air Flow Rate [(1)] (cfm)	Total HVOCs (mg/m^3)	HVOC Removal (lb/day)
10/12/2011	0.1	250	10.5	0.2
1/23/2012	0.1	361	16.5	0.5
2/17/2012	0.05	215	11.3	0.2
3/22/2012	--	210	6.7	0.1
6/20/2012	0.2	217.8	0.3	0.005
8/22/2012	0.2	216	0.2	0.003
11/26/2012	0.05	215	22.6	0.436
12/21/2012	0.1	215	3.6	0.069
2/28/2013	0.1	215	4.6	0.088
5/24/2013	0.1	215	24.4	0.471
6/25/2013	0.1	215	13.8	0.267
8/27/2013	0.1	215	17.8	0.344
10/24/2013	0.1	215	10.6	0.204
12/27/2013	0.1	215	7.5	0.144
1/29/2014	3.0	215	1.4	0.028
2/24/2014	9.0	215	9.5	0.184
3/31/2014	1.0	215	3.7	0.072
4/29/2014	2.0	215	3.7	0.072
5/27/2014	2.0	215	4.4	0.085
7/3/2014	4.0	215	4.8	0.093
7/28/2014	3.0	215	7.7	0.148
9/30/2014	--	215	7.8	0.151
10/27/2014	2.0	215	15.4	0.298
11/25/2014	--	215	7.5	0.145
12/29/2014	2.0	215	15.3	0.296
1/26/2015	3.0	215	1.6	0.032
2/26/2015	0.1	215	0.0	0.001
3/30/2015	0.4	215	1.8	0.036
4/24/2015	0.4	215	0.6	0.012
5/14/2015	--	215	0.0	0.000
5/28/2015	0.05	215	0.4	0.007
7/29/2015	0.10	215	2.2	0.043
8/31/2015	0.05	215	7.8	0.150
9/28/2015	0.00	215	1.6	0.031
10/29/2015	1.00	215	6.9	0.134
11/30/2015	2.00	215	2.4	0.046
12/28/2015	0.10	215	5.7	0.110
2/1/2016	3.00	215	11.2	0.215
2/29/2016	0.10	215	8.0	0.154
3/29/2016	0.20	215	0.9	0.018
4/27/2016	1.00	215	1.6	0.030
5/25/2016	--*	--*	--*	--*
6/28/2016	0.10	215	1.8830	0.036
7/26/2016	1.20	215	0.0916	0.00177
9/29/2016	0.10	215	0.0150	0.00029
10/25/2016	0.10	215	0.0109	0.000211
11/28/2016	0.10	215	0.0067	0.000129
12/28/2016	0.10	215	0.0017	0.0000329
1/30/2017	0.10	215	0.0046	0.0000889
2/28/2017	0.10	215	0.0059	0.000114
3/28/2017	0.10	215	0.0061	0.000118
4/24/2017	0.10	215	0.0076	0.000147

Table 10

North SVE System—HVOC Mass Removal

NuStar Vancouver Facility

Vancouver, Washington

Date	Activity	HVOC Removal Rate (lb/day)	Days of Operation	Approximate HVOCs Removed (lbs)	Approximate Cumulative HVOCs Removed (lbs)
10/10/2011	Startup	--	--	--	--
10/12/2011	Sample	0.2	37	9	9
1/23/2012	Sample	0.5	31	17	26
2/17/2012	Sample	0.2	25	6	32
3/22/2012	Sample	0.1	34	5	37
6/20/2012	Sample	0.005	90	1	38
8/22/2012	Sample	0.003	63	1	39
11/26/2012	Sample	0.436	66	29	68
12/21/2012	Sample	0.069	25	2	70
2/28/2013	Sample	0.088	69	7	77
5/24/2013	Sample	0.471	--	--	77
6/25/2013	Sample	0.267	32	9	86
8/27/2013	Sample	0.344	63	22	108
10/24/2013	Sample	0.204	58	12	120
12/27/2013	Sample	0.144	64	10	130
1/29/2014	Sample	0.028	33	1	131
2/24/2014	Sample	0.184	--	--	131
3/31/2014	Sample	0.072	35	3	134
4/29/2014	Sample	0.072	29	3	137
5/27/2014	Sample	0.085	28	3	140
7/3/2014	Sample	0.093	37	4	144
7/28/2014	Sample	0.148	25	4	148
9/30/2014	Sample	0.151	64	10	158
10/27/2014	Sample	0.298	27	9	167
11/25/2014	Sample	0.145	29	5	172
12/29/2014	Sample	0.296	34	11	183
1/26/2015	Sample	0.032	28	1	184
2/26/2015	Sample	0.001	31	1	185
3/30/2015	Sample	0.036	32	2	187
4/24/2015	Sample	0.012	25	1	188
5/14/2015	Sample	0.000	20	0	188
5/28/2015	Sample	0.007	14	1	189
6/30/2015	Estimate	0.007	33	1	190
6/30/2015	Estimate	0.000	0	0	190
7/29/2015	Sample	0.043	29	2	192
8/31/2015	Sample	0.150	33	5	197
9/28/2015	Sample	0.031	28	1	198
10/29/2015	Sample	0.134	31	5	203
11/30/2015	Sample	0.046	32	2	205
12/28/2015	Sample	0.110	28	4	209
2/1/2016	Sample	0.215	35	8	217
2/29/2016	Sample	0.154	28	5	222
3/29/2016	Sample	0.018	29	1	223
4/27/2016	Sample	0.030	29	1	224
5/25/2016	Sample	--*	28	--*	221
6/28/2016	Sample	0.0364	34	2	223
7/26/2016	Sample	0.00177	28	1	224
9/29/2016	Sample	0.00029	65	1	225
10/25/2016	Sample	0.000211	26	1	226
11/28/2016	Sample	0.000129	34	1	227
12/28/2016	Sample	0.0000329	30	1	228
1/30/2017	Sample	0.0000889	33	1	229
2/28/2017	Sample	0.000114	29	1	230
3/28/2017	Sample	0.000118	28	1	231
4/24/2017	Sample	0.000147	27	1	232

Notes:

1. Air flow rate read from system gauge.
2. cfm = cubic feet per minute
3. mg/m^3 = milligrams per cubic meter
4. lb/day = pounds per day
5. HVOCs = halogenated volatile organic compounds
6. lbs = pounds
7. * = Not measured/sampled; system intentionally shut down to evaluate system efficiency.
8. -- = Not measured/sampled.

Table 11

South SVE System—HVOC Mass Removal

NuStar Vancouver Facility
Vancouver, Washington

Sample Date	Activity	Post-Blower Pressure (in water)	Air Flow Rate [(1)] (cfm)	Total HVOCs (mg/m3)	HVOC Removal (lb/day)	Days of Operation	Approximate HVOCs Removed (lbs)	Approximate Cumulative HVOCs Removed (lbs)
10/6/2011	Startup	33.0	590	46	2.4	0.5	2	2
11/2/2011	Sample	27.0	590	29	1.5	27	41	43
12/14/2011	Sample	27.0	590	57	3.0	42	96	139
2/17/2012	Sample	29.0	--[6]	30	1.6	65	151	290
3/22/2012	Sample	27.0	658	31	1.9	34	59	349
4/26/2012	Sample	27.0	--	0	0.0	35	33	382
5/23/2012	Sample	31.0	--	20	1.2	29	18	400
6/20/2012	Sample	33.0	--	37	2.2	28	47	447
7/24/2012	Sample	32.0	--	34	2.0	34	72	519
8/22/2012	Sample	29.0	--	51	3.0	29	74	593
9/25/2012	Sample	29.0	--	52	3.1	34	104	697
10/29/2012	Sample	47.0	--	63	3.7	34	116	813
11/26/2012	Sample	18.0	--	11	0.6	28	61	874
12/21/2012	Sample	17.0	--	15	0.9	25	19	893
1/24/2013	Sample	10.0	--	2	0.1	34	17	910
2/28/2013	Sample	18.0	--	1	0.1	35	3	913
3/25/2013	Sample	16.0	--	4	0.2	25	4	917
4/29/2013	Sample	15.0	--	1	0.1	35	6	923
5/24/2013	Sample	47.0	--	251	14.8	--	--	996
6/25/2013	Sample	51.0	--	41	2.5	32	277	1,273
7/25/2013	Sample	50.0	--	24	1.4	30	58	1,331
8/27/2013	Sample	52.0	--	30	1.8	33	53	1,384
9/30/2013	Sample	45.0	--	28	1.6	34	59	1,443
10/24/2013	Sample	50.0	--	29	1.7	24	41	1,484
11/25/2013	Sample	51.0	--	22	1.3	32	48	1,532
12/27/2013	Sample	55.0	--	21	1.3	32	41	1,573
1/29/2014	Sample	50.0	--	21	1.2	33	41	1,614
2/24/2014	Sample	50.0	--	37	2.2	--	--	1,614
3/31/2014	Sample	46.0	--	21	1.2	35	60	1,674
4/29/2014	Sample	48.8	--	14	0.8	29	30	1,704
5/27/2014	Sample	49.0	--	13	0.7	28	22	1,726
7/3/2014	Sample	50.0	--	3	0.2	37	18	1,744
7/28/2014	Sample	50.0	--	16	0.9	25	15	1,759
8/25/2014	Sample	49.0	--	21	1.2	28	31	1,790
9/30/2014	Sample	40.0	--	18	1.1	36	42	1,832
11/3/2014	Sample	50.0	--	25	1.5	30	39	1,871
12/31/2014	Estimated	--	--	--	--	22	33	1,904
1/26/2015	Sample	20.0	--	23	1.3	26	37	1,941
2/26/2015	Sample	30.0	--	19	1.1	31	39	1,980
3/30/2015	Sample	29.0	--	18	1.1	32	36	2,016
4/24/2015	Sample	29.0	--	6	0.4	25	18	2,034
5/28/2015	Sample	28.0	--	9	0.5	34	15	2,049
7/29/2015	Sample	25.0	--	13	0.8	62	41	2,090
8/31/2015	Sample	26.0	--	13	0.8	33	26	2,116
9/28/2015	Sample	26.0	--	11	0.6	28	20	2,136
10/29/2015	Sample	27.0	--	19	1.1	31	28	2,164
11/30/2015	Sample	30.0	--	3	0.2	32	22	2,186
12/28/2015	Sample	29.0	--	36	2.2	28	33	2,219
2/1/2016	Sample	19.0	--	3	0.2	35	41	2,260
2/29/2016	Sample	30.0	--	3	0.2	28	6	2,266
3/29/2016	Sample	28.0	--	75	4.4	29	67	2,333
4/27/2016	Sample	5.0	--	1	0.1	29	66	2,399
5/25/2016	Sample	3.0	--	1	0.03	28	2	2,401
6/28/2016	Sample	-- *	-- *	-- *	-- *	-- *	-- *	2,401
7/26/2016	Sample	30.0	--	19	1.1	62	36	2,437
9/29/2016	Sample	28.0	--	27	1.6	65	89	2,526
10/25/2016	Sample	30.0	--	34	2.0	26	47	2,573
11/28/2016	Sample	30.0	--	55	3.3	34	90	2,663
12/28/2016	No sample collected	2.0	--	--	--	--	--	2,663
1/30/2017	Sample	33.0	--	64	3.8	63	223	2,886
3/28/2017	**System Not Working Properly -- No Data or Samples**	--	--	--	--	--	--	2,886
8/28/2017	Sample	32.0	--	34	2.0	28	44	3379
9/25/2017	Sample	30.0	--	24	1.4	28	48	3,427
10/26/2017	Sample	30.0	--	14	0.8	31	35	3,462
11/29/2017	Sample	30.0	--	23	1.4	34	38	3,500
12/21/2017	Estimated (using November effluent data)	30.0	--	23	1.4	22	30	3,530
1/22/2018	Sample	30.0	--	14	0.8	32	36	3,566
2/28/2018	Sample	30.0	--	14	0.8	37	31	3,597
3/29/2018	Sample	31.0	--	14	0.8	29	24	3,621
4/24/2018	Sample	31.0	--	12	0.7	26	21	3,642
5/16/2018	Sample	30.0	--	8	0.5	22	14	3,656
7/23/2018	Sample	29.0	--	19	1.1	68	55	3,711
11/7/2018	Sample	30.0	--	33	1.9	107	164	3,875

Table 11

South SVE System—HVOC Mass Removal

NuStar Vancouver Facility
Vancouver, Washington

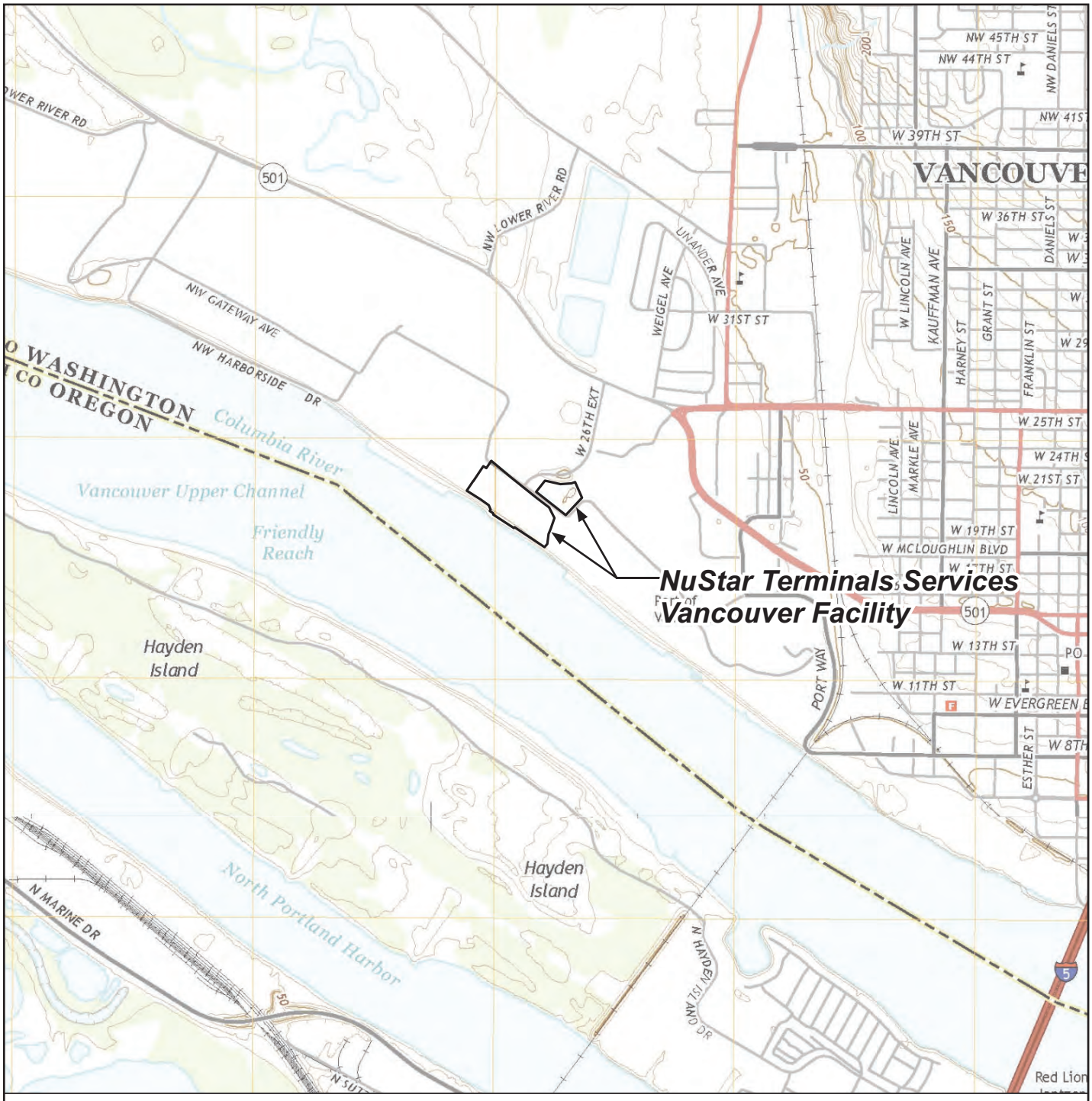
Sample Date	Activity	Post-Blower Pressure (in water)	Air Flow Rate [1] (cfm)	Total HVOCs (mg/m3)	HVOC Removal (lb/day)	Days of Operation	Approximate HVOCs Removed (lbs)	Approximate Cumulative HVOCs Removed (lbs)
1/4/2019	Sample	28.0	--	33	2.0	58	114	3,989
3/8/2019	Sample	28.0	--	22	1.3	63	103	4,092
5/7/2019	Sample	29.0	--	18	1.0	60	70	4,162
7/8/2019	Sample	29.0	--	17	1.0	62	63	4,225
9/9/2019	Sample	29.0	--	16	0.9	63	61	4,286
11/4/2019	Sample	29.0	468	39	1.7	56	73	4,359
1/10/2020	Sample	29.0	468	10	0.4	67	70	4,429
12/14/2020	Sample	30.0	--	34	1.4	6	6	4,435
2/23/2021	Sample	30.0	--	19	0.8	71	79	4,514
4/9/2021	Sample	30.0	--	15	0.6	45	32	4,546
6/17/2021	Sample	30.0	--	12	0.5	69	38	4,584
8/25/2021	Sample	30.0	--	13	0.5	69	36	4,620
11/19/2021	Sample	28.0	--	18	0.8	86	56	4,676
1/25/2022	Sample	28.5	--	17	0.7	67	49	4,725
3/10/2022	Sample	29.0	--	0	0.0	44	16	4,741
5/10/2022	Sample	29.5	--	12	0.5	61	17	4,758
7/12/2022	Sample	29.0	--	12	0.5	63	33	4,791
9/12/2022	Sample	29.0	--	12	0.5	62	32	4,823
11/14/2022	Sample	29.0	--	2	0.1	63	18	4,841
1/16/2023	Sample	28.5	--	10	0.4	63	17	4,858
3/13/2023	Sample	28.0	--	8	0.3	56	22	4,880
5/9/2023	Sample	28.5	--	10	0.4	57	22	4,926
7/11/2023	Sample	26.5	--	52	2.2	63	83	5,009
9/11/2023	Sample	29.5	--	13	0.5	62	85	5,094
11/10/2023	Sample	29.0	--	14	0.6	60	33	5,127

Notes:

1. Air flow rate read from system gauge.
2. cfm = cubic feet per minute
3. mg/m^3 = Milligrams per cubic meter
4. lb/day = pounds per day
5. lbs = pounds
6. Flow rate was not measured on dates with dashes (--). For calculations, rate is assumed to be the same as measured the date before.
7. System was down during the October 27, 2014 monitoring event and was restarted on October 29, 2014. It is assumed that the system was down for a total of four days, although the exact duration of shutdown is unknown.
8. * = system was off for part replacement.
9. -- = Not measured/sampled.
10. HVOCs = halogenated volatile organic compounds
11. **The last known time the system was operating was on the May 9, 2023 monitoring event. The system was assumed to be down between the May 9, 2023 monitoring event and the end of the semi-annual monitoring period (June 30, 2023). Therefore, the mass removed calculation may be slightly conservative.

FIGURES

GeoEngineers



Note: Base map prepared from USGS 7.5-minute quadrangles of Vancouver, WA and Portland, OR-WA, dated 2014 as provided by USGS.gov.

0 2,000 4,000

Approximate Scale in Feet



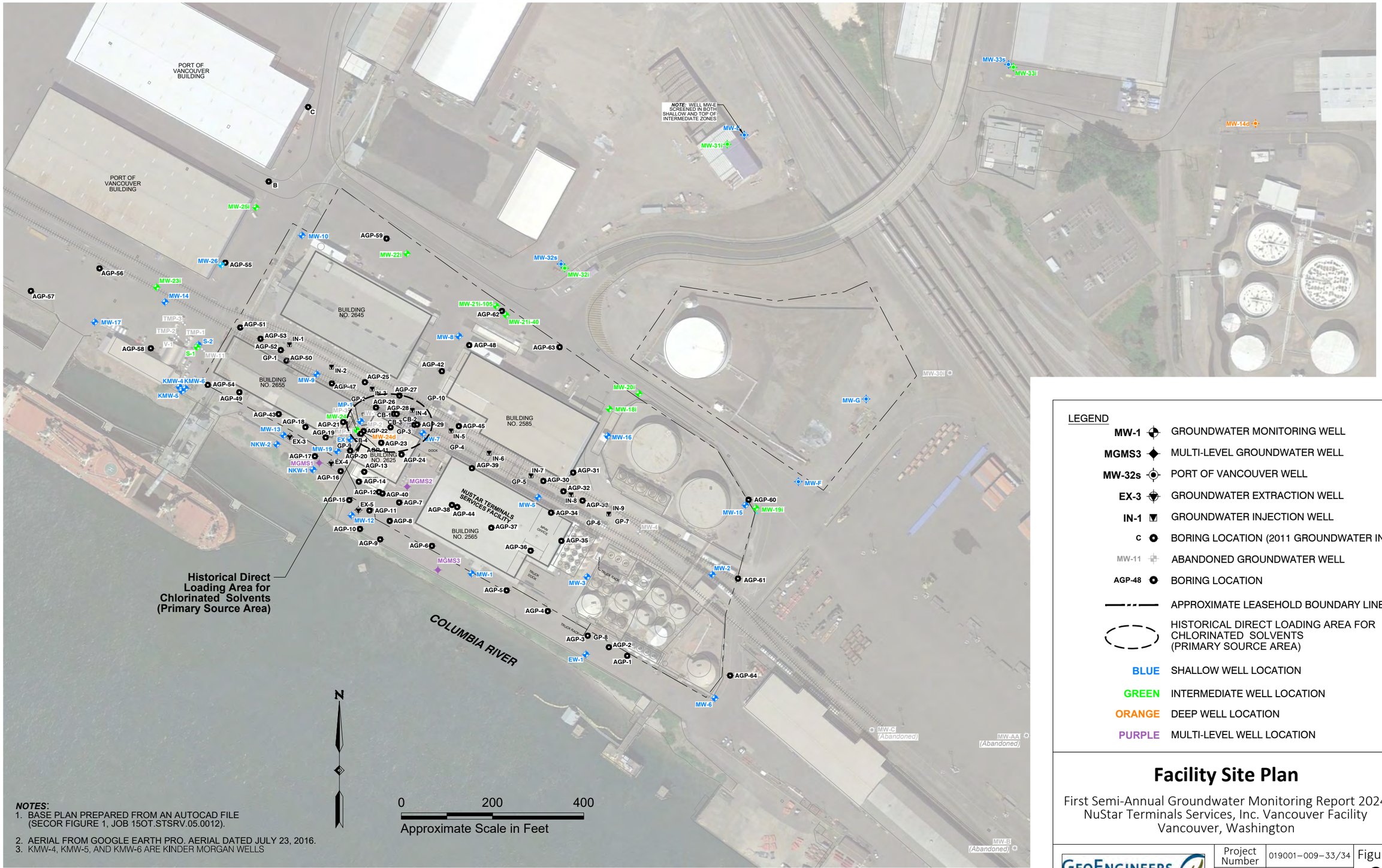
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Facility Location Map

First Semi-Annual Groundwater Monitoring Report 2024
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

GeoEngineers

Project Number	019001-009-33	Figure 1
August 2024		



LEGEND

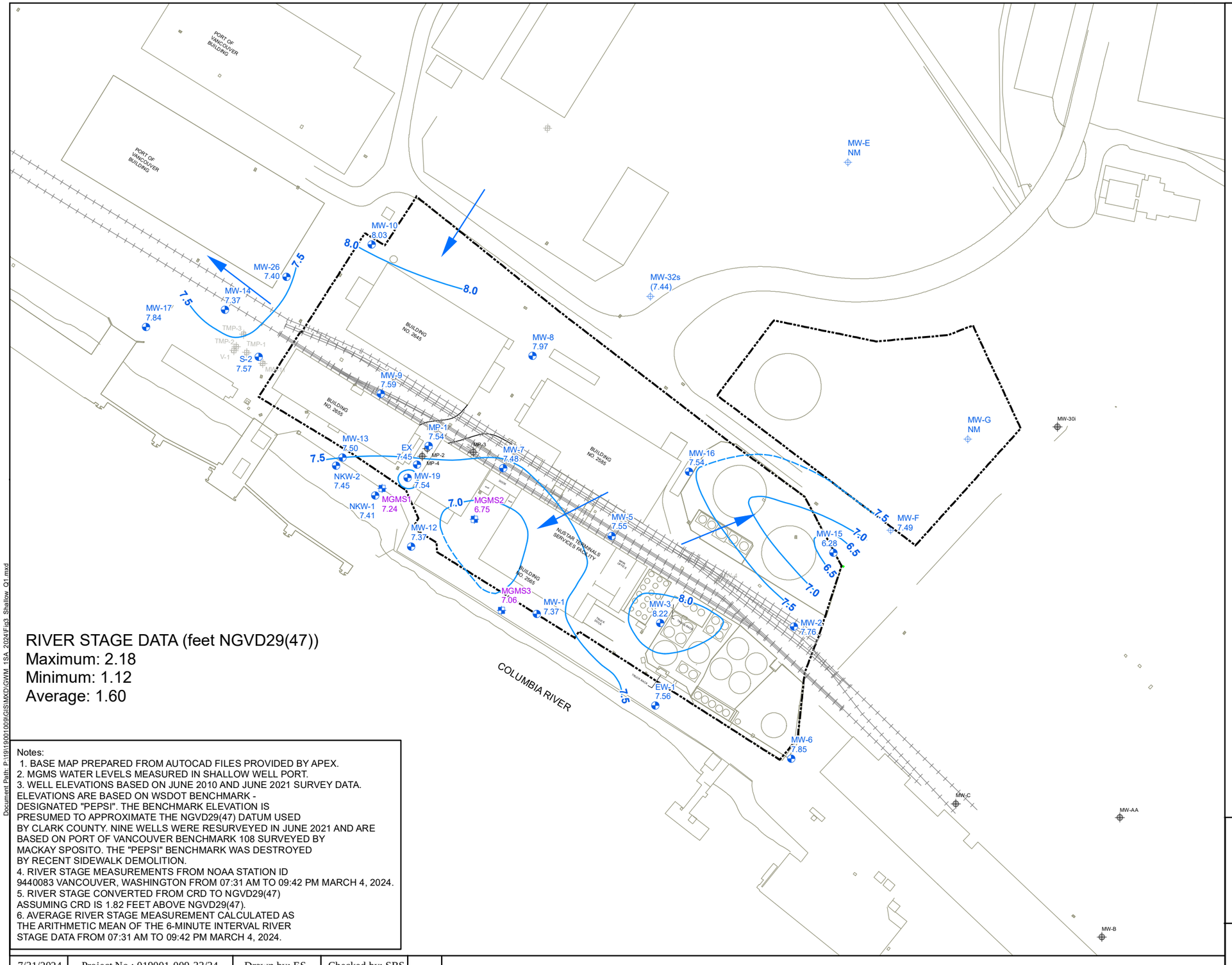
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL
MW-32s	PORT OF VANCOUVER WELL
EX-3	GROUNDWATER EXTRACTION WELL
IN-1	GROUNDWATER INJECTION WELL
C	BORING LOCATION (2011 GROUNDWATER INV.)
MW-11	ABANDONED GROUNDWATER WELL
AGP-48	BORING LOCATION
	APPROXIMATE LEASEHOLD BOUNDARY LINE
	HISTORICAL DIRECT LOADING AREA FOR CHLORINATED SOLVENTS (PRIMARY SOURCE AREA)
BLUE	SHALLOW WELL LOCATION
GREEN	INTERMEDIATE WELL LOCATION
ORANGE	DEEP WELL LOCATION
PURPLE	MULTI-LEVEL WELL LOCATION

Facility Site Plan

First Semi-Annual Groundwater Monitoring Report 2024
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

GeoEngineers

Project Number	019001-009-33/34	Figure
August 2024		2



RIVER STAGE DATA (feet NGVD29(47))
Maximum: 2.18
Minimum: 1.12
Average: 1.60

Notes:
1. BASE MAP PREPARED FROM AUTOCAD FILES PROVIDED BY APEX.
2. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
3. WELL ELEVATIONS BASED ON JUNE 2010 AND JUNE 2021 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY. NINE WELLS WERE RESURVEYED IN JUNE 2021 AND ARE BASED ON PORT OF VANCOUVER BENCHMARK 108 SURVEYED BY MACKAY SPOSITO. THE "PEPSI" BENCHMARK WAS DESTROYED BY RECENT SIDEWALK DEMOLITION.
4. RIVER STAGE MEASUREMENTS FROM NOAA STATION ID 9440083 VANCOUVER, WASHINGTON FROM 07:31 AM TO 09:42 PM MARCH 4, 2024.
5. RIVER STAGE CONVERTED FROM CRD TO NGVD29(47) ASSUMING CRD IS 1.82 FEET ABOVE NGVD29(47).
6. AVERAGE RIVER STAGE MEASUREMENT CALCULATED AS THE ARITHMETIC MEAN OF THE 6-MINUTE INTERVAL RIVER STAGE DATA FROM 07:31 AM TO 09:42 PM MARCH 4, 2024.

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Groundwater Elevation Contour (Feet)
- Approximate Property Line

8.22 - Groundwater Elevation in Feet

(7.06) Wells designated with Parentheses Were Not Used in Contouring

NM - Not Measured

NA - Water Elevation Data not Available

BLUE - Shallow Well Location

PURPLE - Multi Level Well Location

Groundwater Flow Direction

0 50 100 200 Feet

First Quarter- Shallow Groundwater (March 2024)

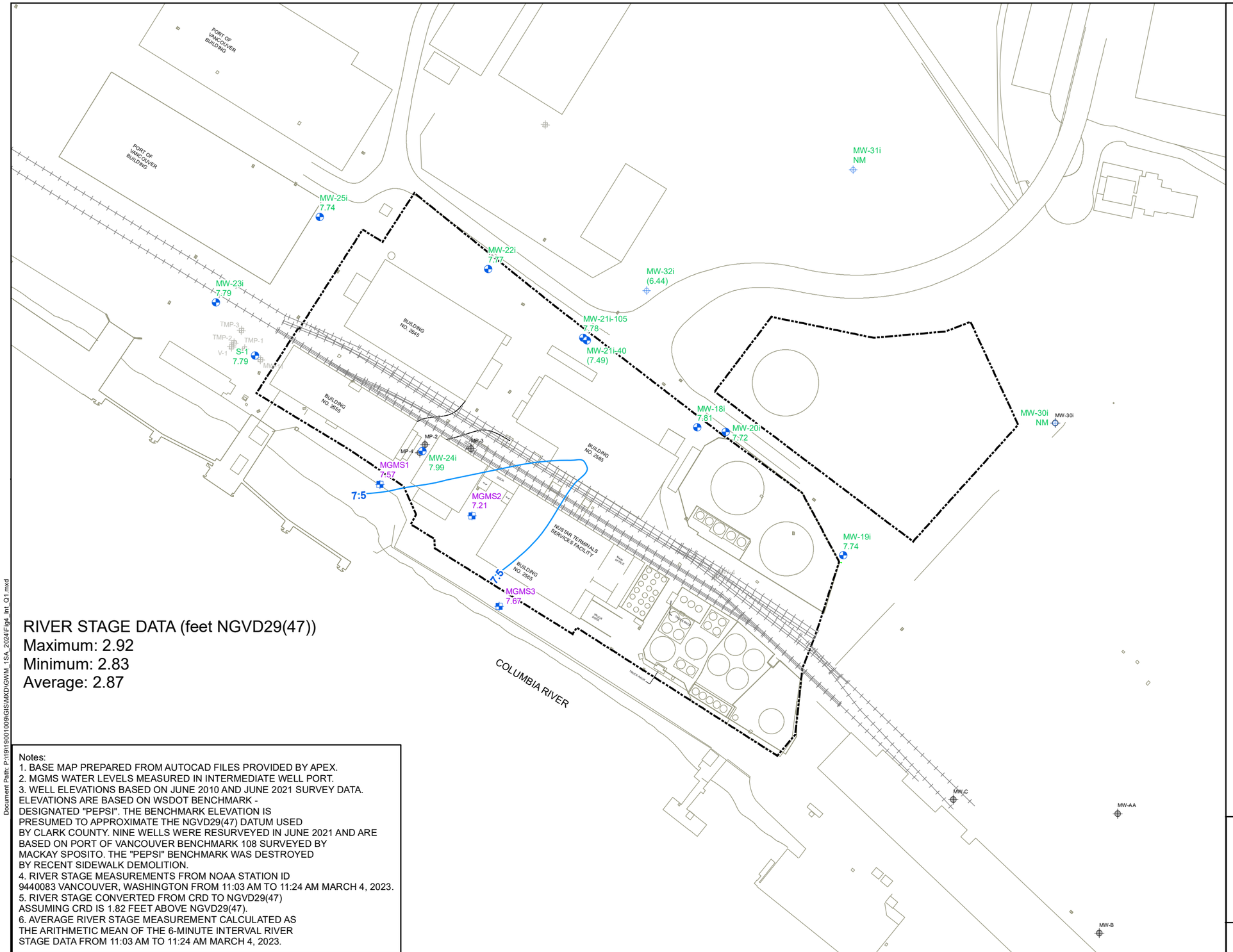
First Semi-Annual Groundwater Monitoring Report 2024
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

7/31/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

GeoEngineers

Figure 3

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RIVER STAGE DATA (feet NGVD29(47))
Maximum: 2.92
Minimum: 2.83
Average: 2.87

Notes:
1. BASE MAP PREPARED FROM AUTOCAD FILES PROVIDED BY APEX.
2. MGMS WATER LEVELS MEASURED IN INTERMEDIATE WELL PORT.
3. WELL ELEVATIONS BASED ON JUNE 2010 AND JUNE 2021 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY. NINE WELLS WERE RESURVEYED IN JUNE 2021 AND ARE BASED ON PORT OF VANCOUVER BENCHMARK 108 SURVEYED BY MACKAY SPOSITO. THE "PEPSI" BENCHMARK WAS DESTROYED BY RECENT SIDEWALK DEMOLITION.
4. RIVER STAGE MEASUREMENTS FROM NOAA STATION ID 9440083 VANCOUVER, WASHINGTON FROM 11:03 AM TO 11:24 AM MARCH 4, 2023.
5. RIVER STAGE CONVERTED FROM CRD TO NGVD29(47) ASSUMING CRD IS 1.82 FEET ABOVE NGVD29(47).
6. AVERAGE RIVER STAGE MEASUREMENT CALCULATED AS THE ARITHMETIC MEAN OF THE 6-MINUTE INTERVAL RIVER STAGE DATA FROM 11:03 AM TO 11:24 AM MARCH 4, 2023.

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Groundwater Elevation Contour (Feet)
- Approximate Property Line
- 7.99 - Groundwater Elevation in Feet

NM - Not Measured

GREEN - Intermediate Well Location

PURPLE - Multi Level Well Location

0 50 100 200 Feet

First Quarter- Intermediate (March 2024)

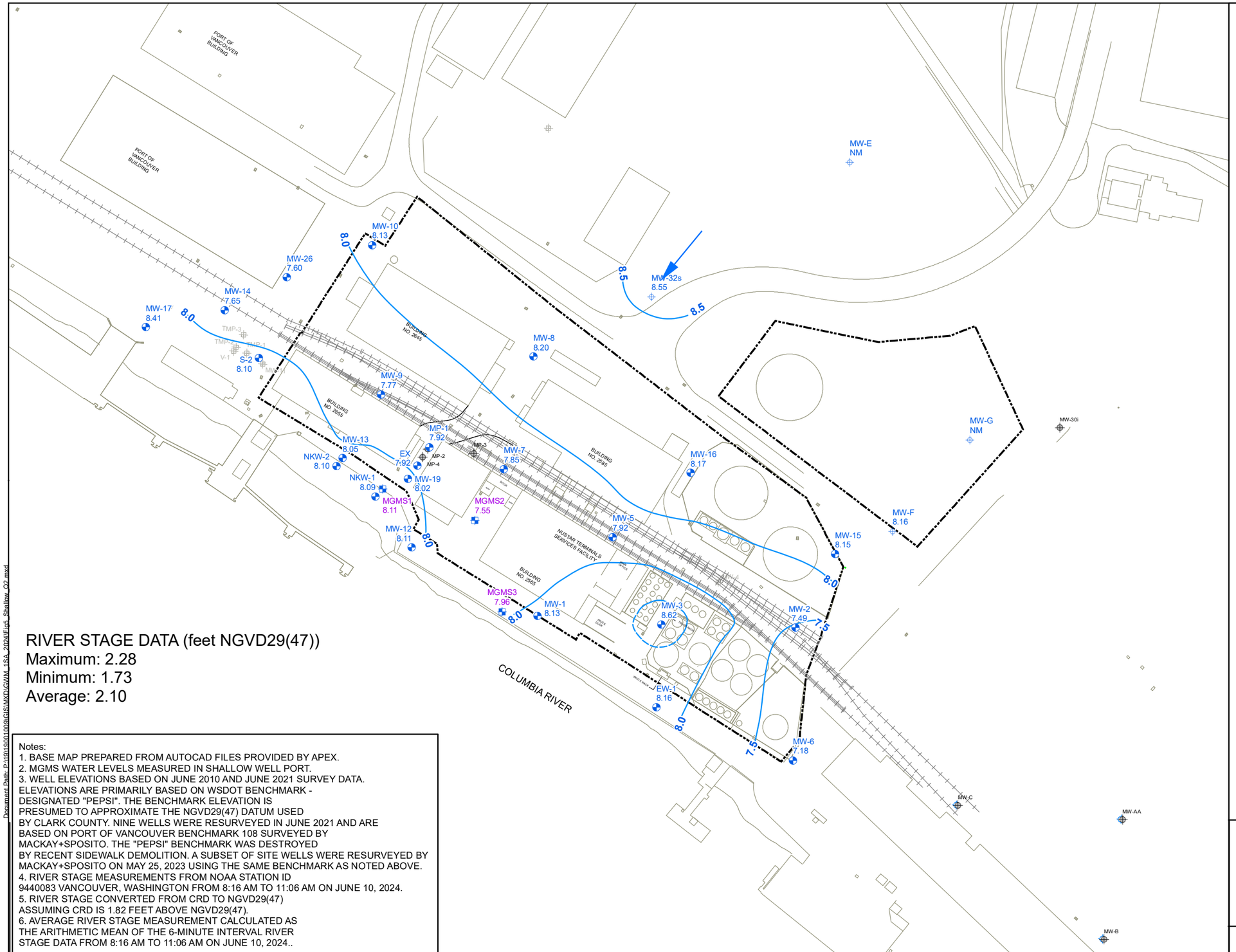
First Semi-Annual Groundwater Monitoring Report 2024
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

8/1/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

GeoEngineers

Figure 4

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RIVER STAGE DATA (feet NGVD29(47))
Maximum: 2.28
Minimum: 1.73
Average: 2.10

Notes:
1. BASE MAP PREPARED FROM AUTOCAD FILES PROVIDED BY APEX.
2. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
3. WELL ELEVATIONS BASED ON JUNE 2010 AND JUNE 2021 SURVEY DATA. ELEVATIONS ARE PRIMARILY BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY. NINE WELLS WERE RESURVEYED IN JUNE 2021 AND ARE BASED ON PORT OF VANCOUVER BENCHMARK 108 SURVEYED BY MACKAY+SPOSITO. THE "PEPSI" BENCHMARK WAS DESTROYED BY RECENT SIDEWALK DEMOLITION. A SUBSET OF SITE WELLS WERE RESURVEYED BY MACKAY+SPOSITO ON MAY 25, 2023 USING THE SAME BENCHMARK AS NOTED ABOVE.
4. RIVER STAGE MEASUREMENTS FROM NOAA STATION ID 9440083 VANCOUVER, WASHINGTON FROM 8:16 AM TO 11:06 AM ON JUNE 10, 2024.
5. RIVER STAGE CONVERTED FROM CRD TO NGVD29(47) ASSUMING CRD IS 1.82 FEET ABOVE NGVD29(47).
6. AVERAGE RIVER STAGE MEASUREMENT CALCULATED AS THE ARITHMETIC MEAN OF THE 6-MINUTE INTERVAL RIVER STAGE DATA FROM 8:16 AM TO 11:06 AM ON JUNE 10, 2024..

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Groundwater Elevation Contour (Feet)
- Approximate Property Line
- 8.20 - Groundwater Elevation in Feet

NM - Not Measured

BLUE - Shallow Well Location

PURPLE - Multi Level Well Location

Groundwater Flow Direction

0 50 100 200 Feet

Second Quarter- Shallow Groundwater (June 2024)

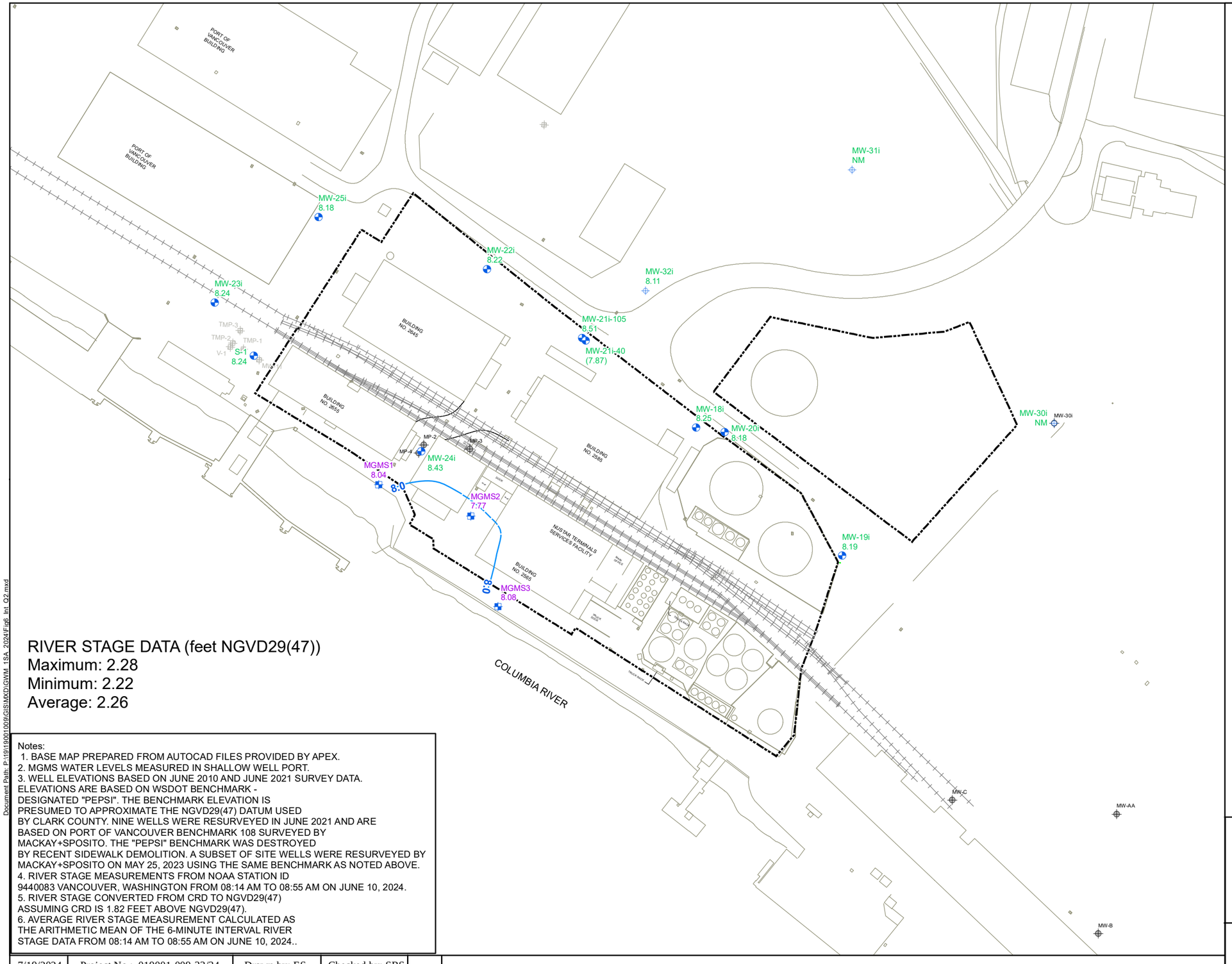
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Vancouver, Washington

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Figure 5

7/31/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

Document Path: P:\019\001\009\GIS\MXD\GWM_1SA_2024Fig5_Shallow_Q2.mxd



RIVER STAGE DATA (feet NGVD29(47))
Maximum: 2.28
Minimum: 2.22
Average: 2.26

Notes:
1. BASE MAP PREPARED FROM AUTOCAD FILES PROVIDED BY APEX.
2. MGMS WATER LEVELS MEASURED IN SHALLOW WELL PORT.
3. WELL ELEVATIONS BASED ON JUNE 2010 AND JUNE 2021 SURVEY DATA. ELEVATIONS ARE BASED ON WSDOT BENCHMARK - DESIGNATED "PEPSI". THE BENCHMARK ELEVATION IS PRESUMED TO APPROXIMATE THE NGVD29(47) DATUM USED BY CLARK COUNTY. NINE WELLS WERE RESURVEYED IN JUNE 2021 AND ARE BASED ON PORT OF VANCOUVER BENCHMARK 108 SURVEYED BY MACKAY+SPOSITO. THE "PEPSI" BENCHMARK WAS DESTROYED BY RECENT SIDEWALK DEMOLITION. A SUBSET OF SITE WELLS WERE RESURVEYED BY MACKAY+SPOSITO ON MAY 25, 2023 USING THE SAME BENCHMARK AS NOTED ABOVE.
4. RIVER STAGE MEASUREMENTS FROM NOAA STATION ID 9440083 VANCOUVER, WASHINGTON FROM 08:14 AM TO 08:55 AM ON JUNE 10, 2024.
5. RIVER STAGE CONVERTED FROM CRD TO NGVD29(47) ASSUMING CRD IS 1.82 FEET ABOVE NGVD29(47).
6. AVERAGE RIVER STAGE MEASUREMENT CALCULATED AS THE ARITHMETIC MEAN OF THE 6-MINUTE INTERVAL RIVER STAGE DATA FROM 08:14 AM TO 08:55 AM ON JUNE 10, 2024..

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Approximate Property Line
- 8.22 - Groundwater Elevation in Feet

NM - Not Measured

GREEN - Intermediate Well Location

PURPLE - Multi Level Well Location

Groundwater Flow Direction

0 50 100 200 Feet

Second Quarter- Intermediate (June 2024)

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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

7/19/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

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Figure 6

Document Path: P:\019\019001009\GIS\MXD\GWM_1SA_2024Fig6_Int_Q2.mxd

MW-25i	
PCE	0.570

MW-10	
PCE	2.06
TCE	1.82

MW-22i	
PCE	2.64
TCE	5.54
cis-1,2-DCE	15.3
1,1-DCA	0.550

MW-14	
PCE	90.7
TCE	262
cis-1,2-DCE	42.0
1,1-DCE	2.05
1,1-DCA	4.30

MW-26	
PCE	133
TCE	221
cis-1,2-DCE	31.0
1,1-DCA	2.60
1,1,1-TCA	1.38

MW-21i-105	
PCE	32.3
TCE	15.1
cis-1,2-DCE	15.9
1,1-DCE	0.530
1,1-DCA	0.800

S-1	
TCE	0.420

MW-17	
PCE	1.47
TCE	2.96
cis-1,2-DCE	6.04

MW-23i
ND[2]

MW-8	
PCE	2.42

MW-32s
ND[2]

MW-9	
PCE	39.8
TCE	11.4
1,1,1-TCA	0.570

MW-7/ MW-7 DUP		
PCE	70.0	76.8
TCE	36.3	34.5
cis-1,2-DCE	22.2	20.8
trans-1,2-DCE	0.430	<0.400
1,1-DCE	0.570	0.540
1,1-DCA	1.92	1.69
VC	0.320	0.280

MW-21i-40	
PCE	18.6
TCE	11.3
cis-1,2-DCE	26.5
1,1-DCA	1.46

S-2	
TCE	1.12
cis-1,2-DCE	39.3
trans-1,2-DCE	0.510
1,1-DCA	8.24
1,1,1-TCA	0.550
VC	0.280

MW-24i	
PCE	16.1
TCE	9.70
cis-1,2-DCE	16.3
1,1-DCA	1.59

MW-18i	
PCE	0.900
TCE	0.410

MW-20i	
PCE	1.66
TCE	1.14
cis-1,2-DCE	6.48

MW-24d
ND[2]

MW-5	
PCE	4.28
TCE	4.49
cis-1,2-DCE	19.9
1,1-DCA	0.680
VC	5.03

MW-13	
PCE	955
TCE	986
cis-1,2-DCE	1400
trans-1,2-DCE	17.3
1,1-DCE	48.9
1,1-DCA	37.6
VC	432

MW-16	
PCE	80.7
TCE	8.94
cis-1,2-DCE	25.3
1,1,1-TCA	0.540

MP-1	
PCE	224
TCE	35.0
cis-1,2-DCE	9.85

MW-19i	
cis-1,2-DCE	0.610

NKW-2	
PCE	38.3
TCE	80.9
cis-1,2-DCE	4010
trans-1,2-DCE	41.8
1,1-DCE	33.5
1,1-DCA	89.9
VC	12.1

MW-3	
PCE	160
TCE	32.9
cis-1,2-DCE	37.0
trans-1,2-DCE	1.31
1,1-DCA	0.990
1,1,1-TCA	1.78

MW-2
ND[2]

MGMS1	43	60
PCE	170	18.6
TCE	446	11.0
cis-1,2-DCE	3090	14.8
trans-1,2-DCE	44.6	<0.400
1,1-DCE	23.8	<0.400
1,1-DCA	119	1.82
VC	78.8	<0.200

MW-19/ MW-19 DUP		
PCE	2420	2760
TCE	1270	1350
cis-1,2-DCE	1010	961
trans-1,2-DCE	15.4	14.0
1,1-DCE	26.6	27.4
1,1-DCA	54.0	50.2
1,1,1-TCA	14.2	14.4
VC	87.8	89.2

MW-1	
PCE	9.22
TCE	9.90
cis-1,2-DCE	41.8
trans-1,2-DCE	0.750
1,1-DCE	0.430
1,1-DCA	3.00

EW-1	
PCE	20.3
TCE	7.43
cis-1,2-DCE	0.660
1,1,1-TCA	0.510
CF	1.05

MW-6
ND[2]

NKW-1	
PCE	250
TCE	74.8
cis-1,2-DCE	166
1,1-DCA	16.4
VC	10.4

EX	
PCE	2060
TCE	214
cis-1,2-DCE	436
1,1,1-TCA	8.60
VC	5.40

MW-12/ MW-12 DUP		
TCE	4.40	<4.00
cis-1,2-DCE	80.2	79.5
1,1-DCA	98.8	95.9
VC	1360	1330

MGMS3	40	40 DUP	60
PCE	1.34	0.450	1.96
TCE	0.630	0.440	1.57
cis-1,2-DCE	193	183	6.63
trans-1,2-DCE	0.480	0.470	<0.400
1,1-DCE	0.780	0.770	<0.400
1,1-DCA	7.74	7.63	<0.400
VC	197	205	<0.200

MGMS2	40	60
PCE	405	16.2
TCE	294	8.51
cis-1,2-DCE	331	11.3
trans-1,2-DCE	3.60	<0.400
1,1-DCE	12.5	<0.400
1,1-DCA	22.5	0.610
1,1,1-TCA	2.60	<0.400
VC	0.680	0.240

NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. ND = NOT DETECTED. WELL SAMPLED BUT NO VOC CONSTITUENTS WERE DETECTED.
3. NM = NOT MEASURED
4. HVOC = HALOGENATED VOLATILE ORGANIC COMPOUND

PORT OF VANCOUVER BUILDING
BUILDING NO. 2565
COLUMBIA R
MW-C
MW-AA
MW-B
MW-30i
MP-1
MP-2
MP-3
MP-4

WELL IDENTIFICATION
DEPTH OF PORT SAMPLED (IF NOT SPECIFIED - SINGLE PORT WELL)
CHEMICAL CONCENTRATION IN µg/L (ONLY DETECTED COMPOUNDS ARE SHOWN)
ANALYTE SAMPLED

MGMS2	40	60
PCE	405	16.2
TCE	294	8.51
cis-1,2-DCE	331	11.3
trans-1,2-DCE	3.60	<0.400
1,1-DCE	12.5	<0.400
1,1-DCA	22.5	0.61
1,1,1-TCA	2.60	<0.400
VC	0.68	0.24

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Approximate Property Line

BLUE - Shallow zone concentration data

GREEN - Intermediate zone concentration data

ORANGE - Deep zone concentration data

PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
cis-1,2-DCE	CIS-1,2-DICHLOROETHENE
trans-1,2-DCE	TRANS-1,2-DICHLOROETHENE
VC	VINYL CHLORIDE
1,1-DCE	1,1-DICHLOROETHENE
1,1-DCA	1,1-DICHLOROETHANE
CF	CHLOROFORM
1,1,1-TCA	1,1,1-TRICHLOROETHANE
CA	CHLOROETHANE

0 50 100 200 Feet

HVOC Concentrations in Groundwater (March 2024)

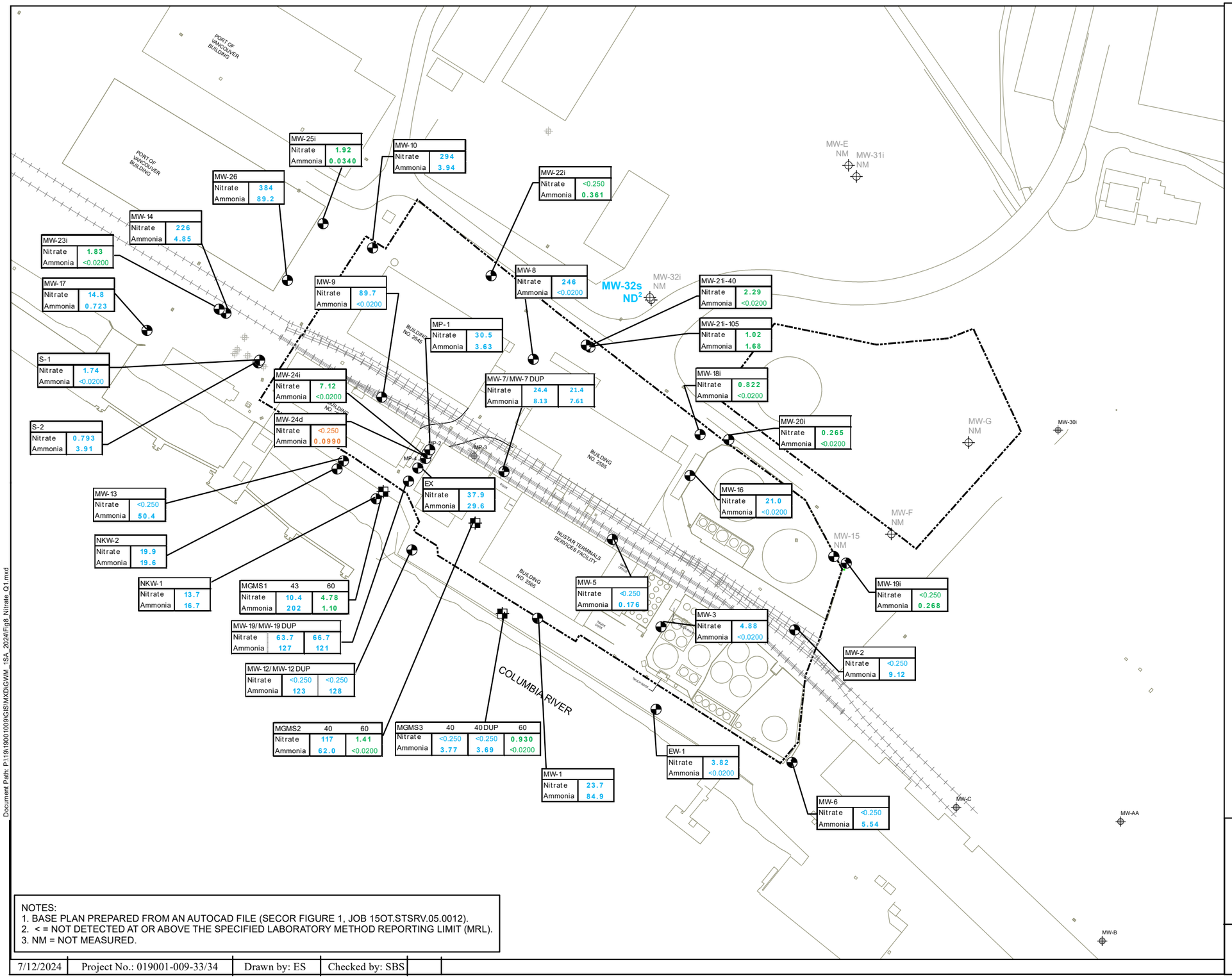
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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

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Figure 7

7/23/2024	Project No.: 019001-009-04	Drawn by: ES	Checked by: SBS	

Document Path: P:\19\1900\009\GIS\MXD\GWM_1SA_2024\Fig7_VOCs_Q1_2024.mxd



WELL IDENTIFICATION

MW-20i
Nitrate 0.265
Ammonia <0.0200

NITRATE IN mg/L (AS NITROGEN METHOD 300.0)
AMMONIA IN mg/L (AS NITROGEN METHOD 350.1)

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Approximate Property Line

BLUE - Shallow zone concentration data

GREEN - Intermediate zone concentration

ORANGE - Deep zone concentration data

0 50 100 200 Feet

NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. < = NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY METHOD REPORTING LIMIT (MRL).
3. NM = NOT MEASURED.

Nitrate and Ammonia Concentrations in Groundwater (March 2024)

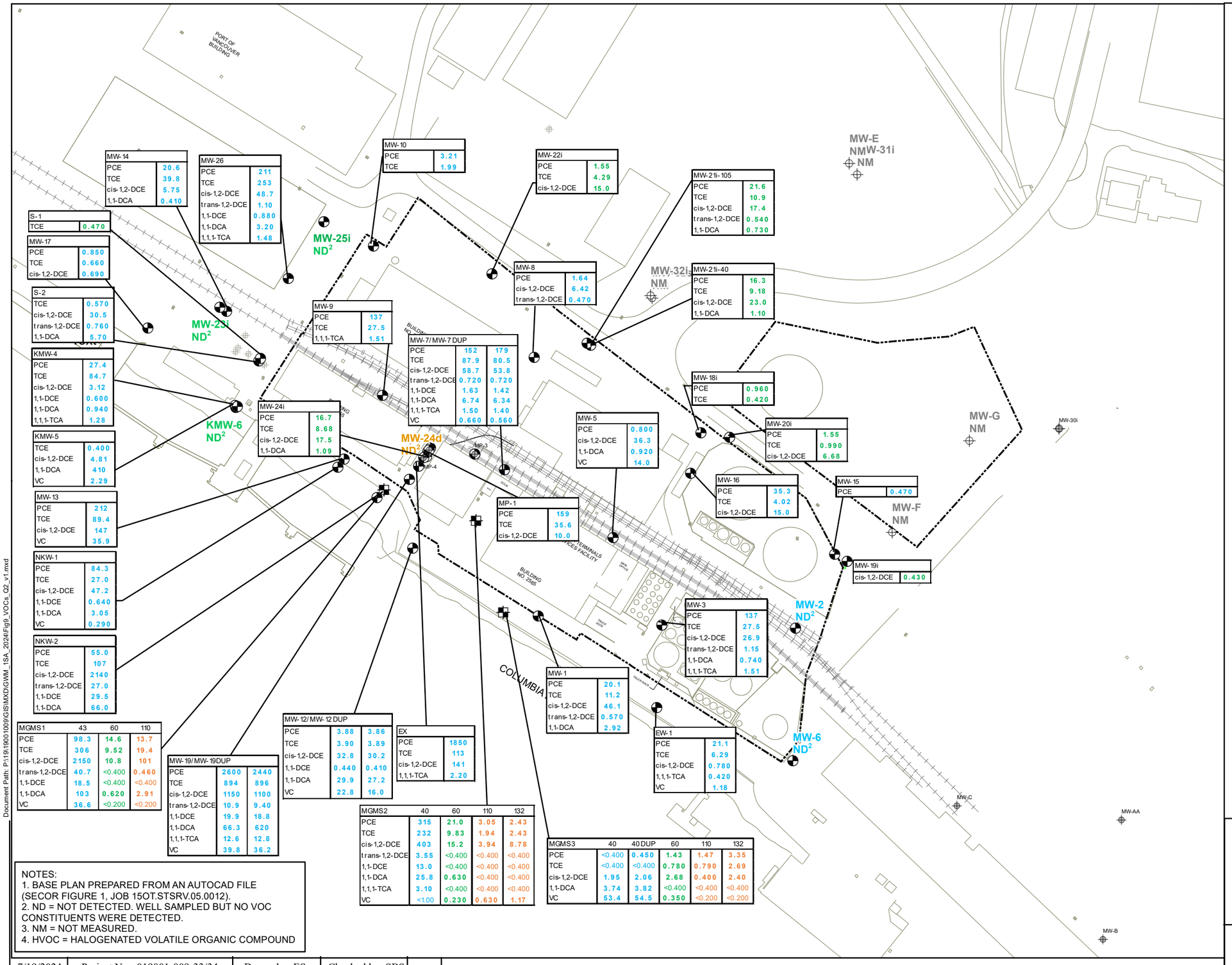
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Vancouver, Washington

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Figure 8

7/12/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS

Document Path: P:\19\19001009\GIS\MXD\GWM_ISA_2024\Fig8_Nitrate_Q1.mxd



HVOC Concentrations in Groundwater (June 2024)

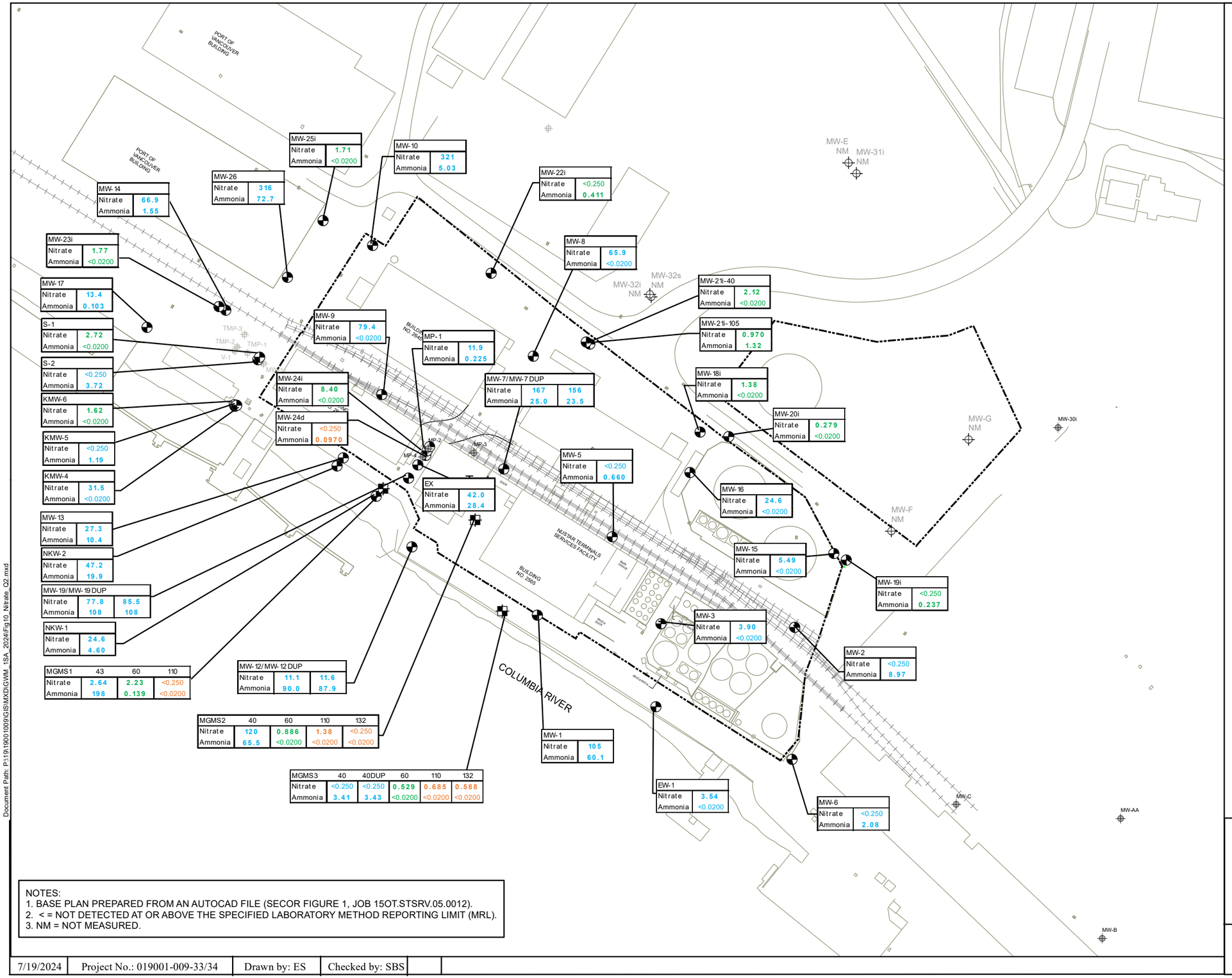
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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

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Figure 9

7/19/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

Document Path: P:\19\19001009\GIS\MXD\GWM_1SA_2024\Fig9_VOCs_Q2_v1.mxd



WELL IDENTIFICATION

MW-21i-105
Nitrate 0.970 — NITRATE IN mg/L (AS NITROGEN METHOD 300.0)
Ammonia 1.32 — AMMONIA IN mg/L (AS NITROGEN METHOD 350.1)

Legend

- Port of Vancouver Well
- Multi-Level Groundwater Well
- Monitoring Well
- Historical Groundwater Extraction Well
- Abandonded Groundwater Well
- Approximate Property Line

BLUE - Shallow zone concentration data

GREEN - Intermediate zone concentration data

ORANGE - Deep zone concentration data

NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. < = NOT DETECTED AT OR ABOVE THE SPECIFIED LABORATORY METHOD REPORTING LIMIT (MRL).
3. NM = NOT MEASURED.

Nitrate and Ammonia Concentrations in Groundwater (June 2024)

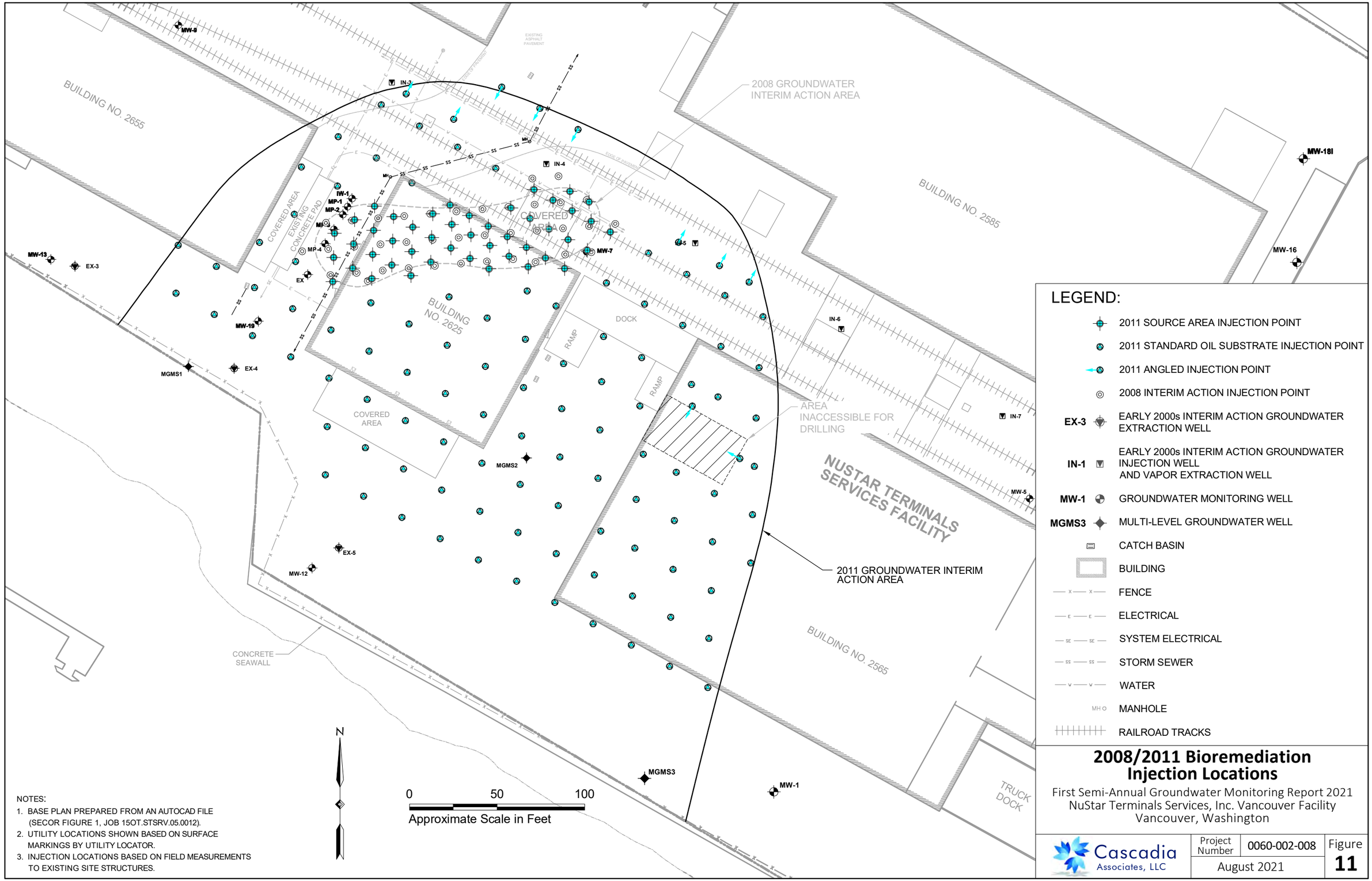
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Vancouver, Washington

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Figure 10

7/19/2024	Project No.: 019001-009-33/34	Drawn by: ES	Checked by: SBS	

Document Path: P:\19\19001009\GIS\MXD\GWM_1SA_2024\Fig10_Nitrate_Q2.mxd



NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.
3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.

LEGEND:

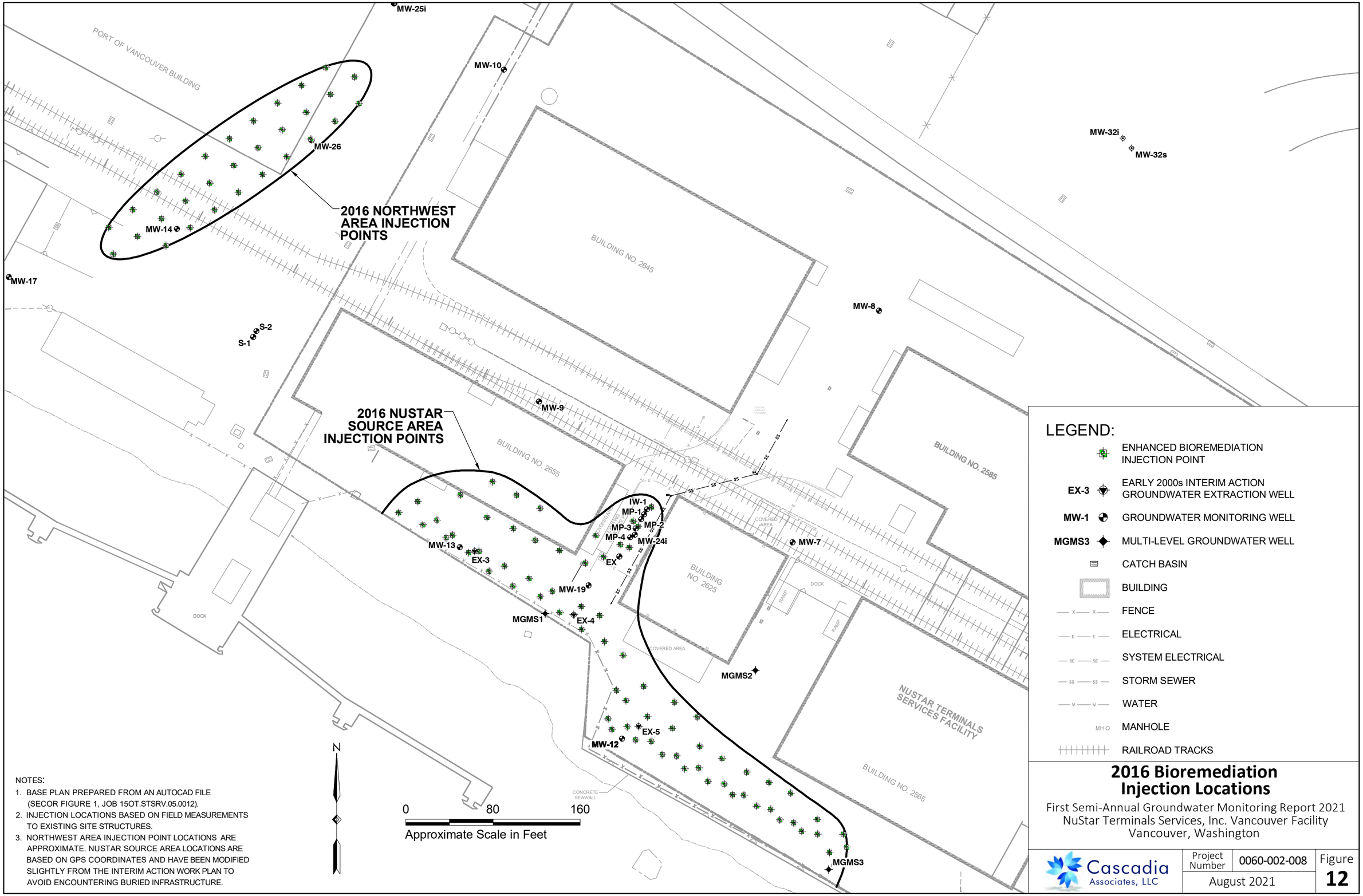
- 2011 SOURCE AREA INJECTION POINT
- 2011 STANDARD OIL SUBSTRATE INJECTION POINT
- 2011 ANGLED INJECTION POINT
- 2008 INTERIM ACTION INJECTION POINT
- **EX-3** EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- **IN-1** EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- **MW-1** GROUNDWATER MONITORING WELL
- **MGMS3** MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MANHOLE
- RAILROAD TRACKS

2008/2011 Bioremediation Injection Locations

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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

Cascadia Associates, LLC

Project Number	0060-002-008	Figure 11
August 2021		



NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.
3. NORTHWEST AREA INJECTION POINT LOCATIONS ARE APPROXIMATE. NUSTAR SOURCE AREA LOCATIONS ARE BASED ON GPS COORDINATES AND HAVE BEEN MODIFIED SLIGHTLY FROM THE INTERIM ACTION WORK PLAN TO AVOID ENCOUNTERING BURIED INFRASTRUCTURE.

LEGEND:

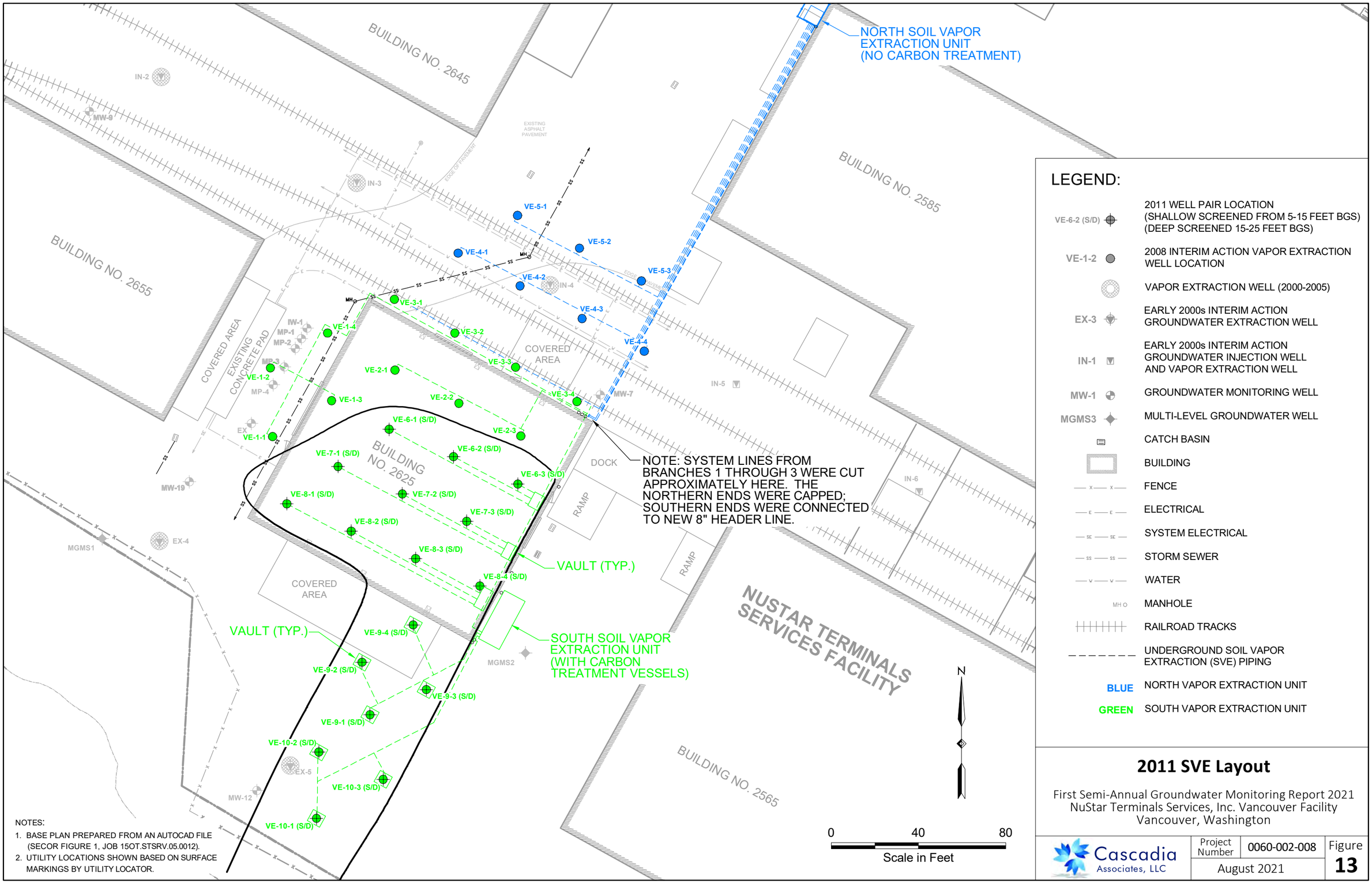
- ENHANCED BIOREMEDIATION INJECTION POINT
- EX-3 — EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- MW-1 — GROUNDWATER MONITORING WELL
- MGMS3 — MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MH — MANHOLE
- RAILROAD TRACKS

2016 Bioremediation Injection Locations

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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

Cascadia Associates, LLC

Project Number	0060-002-008	Figure
August 2021		12



NOTES:

1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 15OT.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.

LEGEND:

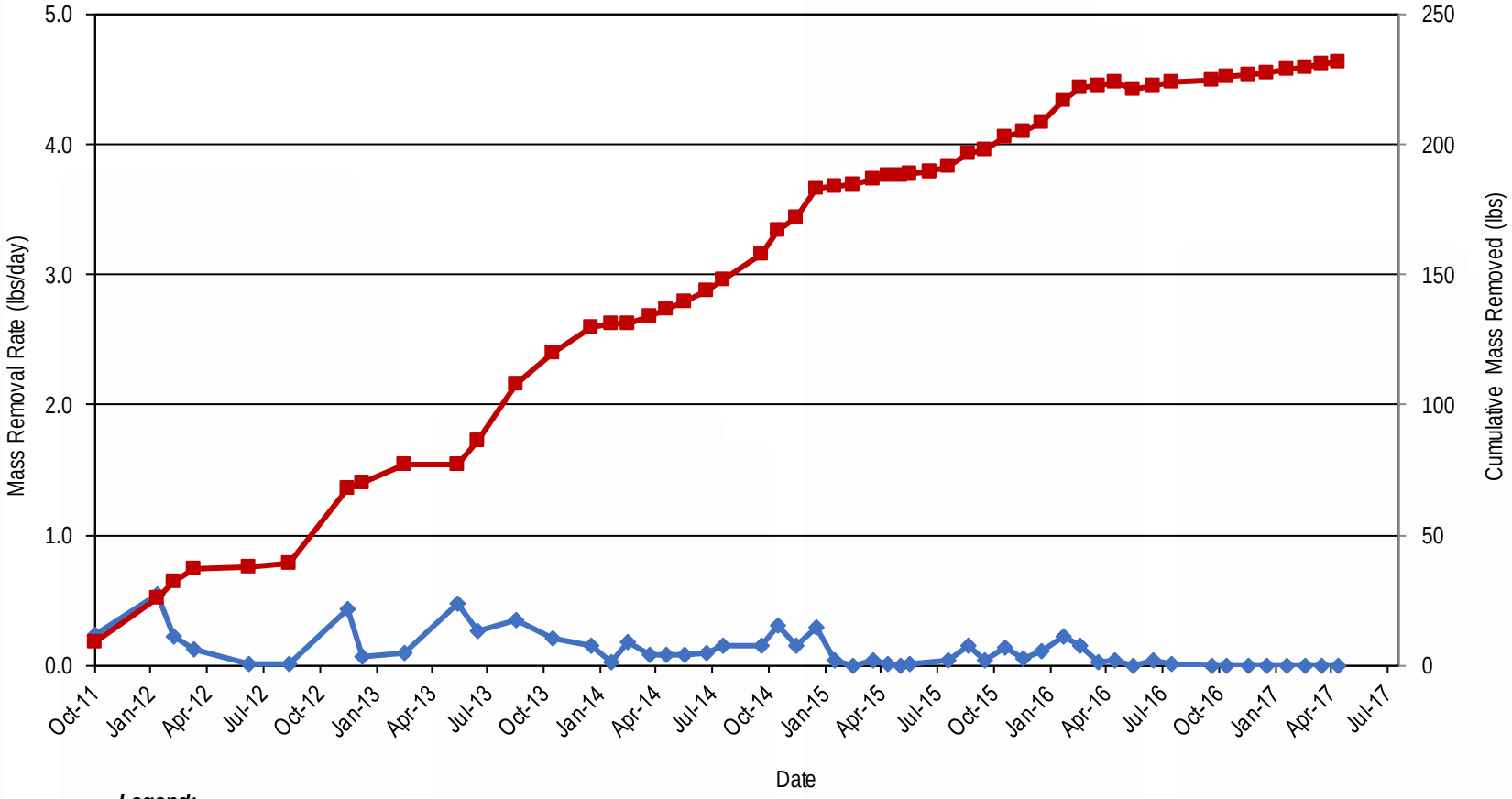
- VE-6-2 (S/D) — 2011 WELL PAIR LOCATION (SHALLOW SCREENED FROM 5-15 FEET BGS) (DEEP SCREENED 15-25 FEET BGS)
- VE-1-2 — 2008 INTERIM ACTION VAPOR EXTRACTION WELL LOCATION
- VAPOR EXTRACTION WELL (2000-2005)
- EX-3 — EARLY 2000s INTERIM ACTION GROUNDWATER EXTRACTION WELL
- IN-1 — EARLY 2000s INTERIM ACTION GROUNDWATER INJECTION WELL AND VAPOR EXTRACTION WELL
- MW-1 — GROUNDWATER MONITORING WELL
- MGMS3 — MULTI-LEVEL GROUNDWATER WELL
- CATCH BASIN
- BUILDING
- FENCE
- ELECTRICAL
- SYSTEM ELECTRICAL
- STORM SEWER
- WATER
- MH — MANHOLE
- RAILROAD TRACKS
- UNDERGROUND SOIL VAPOR EXTRACTION (SVE) PIPING
- BLUE — NORTH VAPOR EXTRACTION UNIT
- GREEN — SOUTH VAPOR EXTRACTION UNIT

2011 SVE Layout

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NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

Cascadia Associates, LLC

Project Number	0060-002-008	Figure
August 2021		13



Legend:

Halogenated Volatile Organic Compound (HVOC) Removal Rate (lbs/day)

Approximate Cumulative HVOCs Removed (lbs)

North SVE System

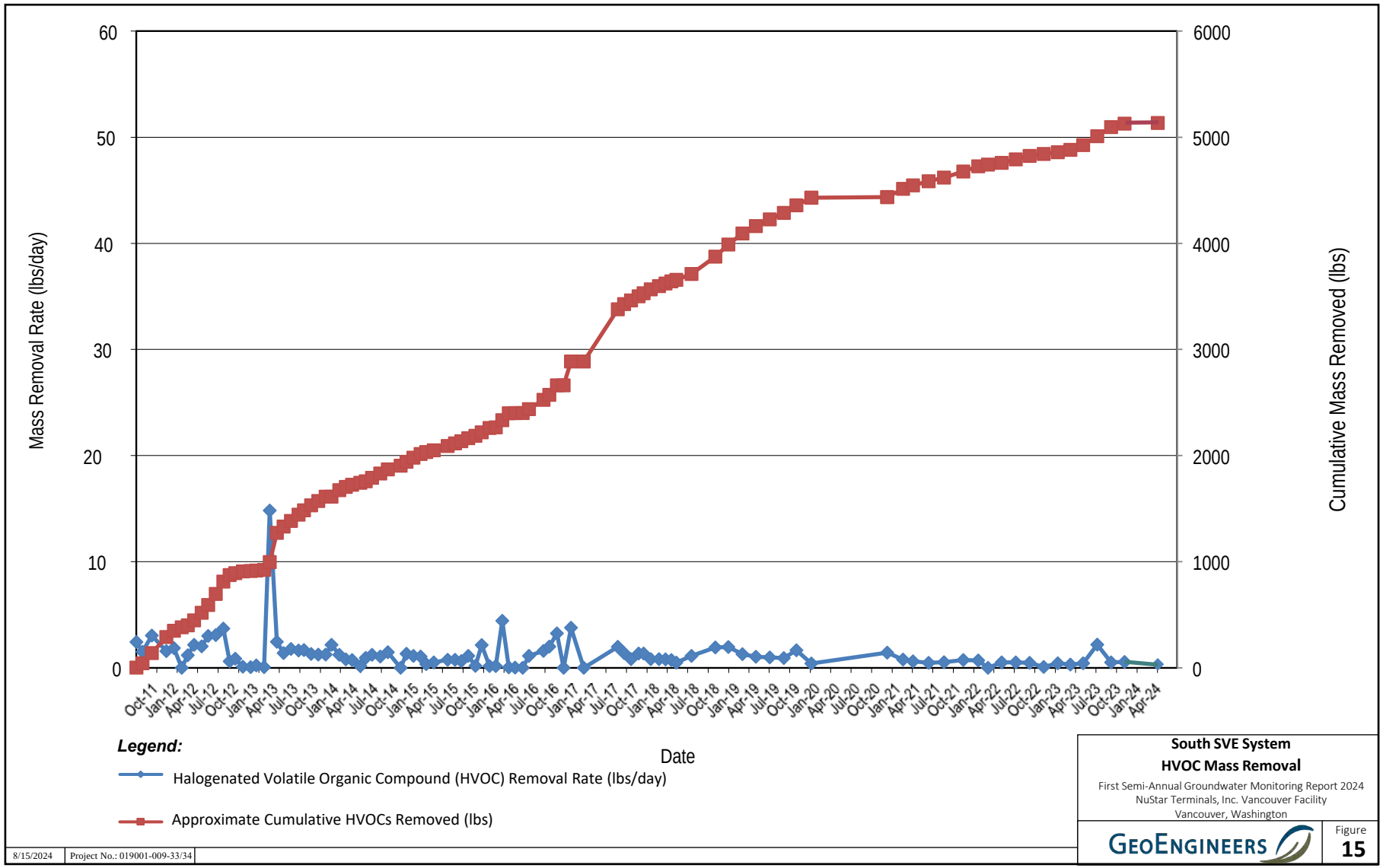
HVOC Mass Removal

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NuStar Terminals, Inc. Vancouver Facility
Vancouver, Washington

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Figure **14**

8/15/2024 | Project No.: 019001-009-33/34



South SVE System

HVOC Mass Removal

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NuStar Terminals, Inc. Vancouver Facility
Vancouver, Washington

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Figure **15**

8/15/2024 | Project No.: 019001-009-33/34

APPENDICES

GeoEngineers

APPENDIX A
Field Sampling Data Sheets

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-1	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Sunny - 43°	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount / Stick-up / Other:	Well Diameter:	2"	Depth to Free Product:	—
		Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.34	Water Column Length:	—
Well Cap Lock Present:	Yes / No	Screened Interval:	—	Purge Volume:	—
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1158	—	—	26.36	0.25	6.92	16.1	1191	0.29	36.2	clear
1201	—	—	26.38	0.25	6.98	16.2	1119	0.20	34.2	↓
1204	—	—	26.38	0.25	7.02	16.2	1072	0.16	32.7	↓
1207	—	—	26.40	0.25	7.04	16.2	1043	0.15	31.6	↓
1210	—	—	26.39	0.25	7.05	16.3	1036	0.14	31.2	↓

PURGING DATA

Sample ID:	MW-1	Sampling Flow Rate:	0.25		Analytical Laboratory:		Apex
Sample Time:	1210	Final Depth to Water:	26.35		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia / TOC	✓	✓	✓	✓	✓
1x250	—	Nitrate / Nitrite	✓	✓	✓	✓	✓
3x VOA	HCl	HVOC	✓	✓	✓	✓	✓

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-2	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Sunny - 48°	Time In/Out:	-

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	27.60	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder) / Peristaltic Pump	Tubing Material & Type:	(Skip-bond LDPE) / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1403	-	-	27.61	0.25	6.81	13.2	779	0.27	-24.4	Clear
1406	-	-	27.63	0.25	6.82	13.1	781	0.20	-30.4	↓
1409	-	-	27.62	0.25	6.81	13.1	781	0.18	-36.0	
1412	-	-	27.61	0.25	6.81	13.1	781	0.15	-39.1	

PURGING DATA

Sample ID:	MW-2	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1412	Final Depth to Water:	27.60		Did Well Dewater:		NO
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC	|	|	|	|	|
1x250	-	Nitrate/Nitrite					
3xVOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

water appeared clear in tubing, cloudy in clear bottles, gray tint

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-3	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Sunny ~40°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.56	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1109	-	-	26.55	0.30	6.78	12.3	311.5	5.10	48.1	clear
1112	-	-	26.53	0.30	6.72	12.4	305.4	5.99	46.0	↓
1115	-	-	26.53	0.30	6.71	12.7	303.6	6.19	48.2	
1118	-	-	26.51	0.30	6.70	12.9	300.5	6.56	50.4	
1121	-	-	26.52	0.30	6.70	12.9	300.0	6.65	51.7	

PURGING DATA

Sample ID:	MW-3	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1121	Final Depth to Water:	26.56		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/Tot	✓	✓	✓	✓	✓
1x250	-	Nitrate/Nitrite	✓	✓	✓	✓	✓
3x VOA	HCl	HVOC	✓	✓	✓	✓	✓

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-5	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SR
Weather:	Overcast, 35°F	Time In/Out:	0815/

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	26.48	Water Column Length:	
Well Cap Lock Present:	Yes / No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0836			26.51	0.20	6.34	12.6	340	1.68	41	Clear
0839			26.51	0.20	6.27	16.4	347	0.71	18	
0842			↓	↓	6.29	17.3	351	0.47	4	
0845					6.30	17.5	355	0.40	-1	
0848					6.30	17.7	359	0.35	-4	↓

PURGING DATA

Sample ID:	MW-5	Sampling Flow Rate:	0.20 LPM		Analytical Laboratory:	Apex
Sample Time:	0848	Final Depth to Water:	26.51		Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3 x VOA	HCl	VOCs	No			
2 x 250	H_2SO_4	$NO_3/NO_2/NH_4$	No			
1 x 250	None					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	~~MW-1~~ MW-6	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Cloudy ~ 45°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	25.23	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–
Comments:	–				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1446	–	–	25.29	0.25	6.42	13.8	433.9	0.34	-1.0	Clear
1449	–	–	25.29	0.25	6.38	13.8	421.8	0.31	-0.7	
1452	–	–	25.29	0.25	6.33	13.8	398.9	0.23	-0.9	
1455	–	–	25.29	0.25	6.33	13.8	389.8	0.20	-1.6	

PURGING DATA

Sample ID:	MW-6	Sampling Flow Rate:	0.25	Analytical Laboratory:	Apex	
Sample Time:	1455	Final Depth to Water:		Did Well Dewater:	No	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC					
1x25	–	Nitrate/Nitrite					
3xVOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-7	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Sunny - 40°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	–
	Other: Vault	Well Depth:		Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.61	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	–
Comments:	–				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0954	–	–	26.62	0.30	6.51	13.4	1064	0.52	53.5	clear
0957	–	–	26.61	0.30	6.54	13.4	946	0.40	52.8	↓
1000	–	–	26.61	0.30	6.52	13.5	938	0.36	52.2	↓
1003	–	–	26.60	0.30	6.55	13.2	785	0.33	50.9	↓
1006	–	–	26.61	0.30	6.54	13.3	739	0.31	51.1	↓
1009	–	–	26.61	0.30	6.54	13.3	728	0.32	50.1	

PURGING DATA

Sample ID:	MW-9 DUP	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1009	Final Depth to Water:	26.60		Did Well Dewater:		NO
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
4 x 250	H_2SO_4	Ammonia / TOC				DUP	
2 x 250	–	Nitrate / Nitrite				DUP	
8 x VOA	HCl	HVOC / RSK				DUP	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-8	Job Number:	19001-009-
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	JF
Weather:	Overcast ~45°F	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.93	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	—
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Pre-measured	Mid-screen	
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE	DEDICATED	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1007			25.93	0.25	6.35	16.4	1996	6.13	174.4	Clear
1010			26.08	0.30	6.49	12.2	2134	3.93	180.0	
1013			26.11	0.25	6.36	12.8	2143	3.10	187.6	
1016			26.14	0.25	6.34	13.3	2145	2.97	191.0	
1019			26.19	0.25	6.33	13.3	2146	2.93	193.7	
1022			26.20	0.25	6.32	13.4	2146	2.92	196.1	

PURGING DATA

Sample ID:	MW-8	Sampling Flow Rate:	0.25 L/min			Analytical Laboratory:	Apex
Sample Time:	1022	Final Depth to Water:				Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
(2) 250	H_2SO_4	Ammonia					
(1) 250	—	Nitrate/Nitrite					
(3) VOA	HCl	HVOCs					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-9	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Cloudy ~ 35°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.60	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0839	-	-	26.59	0.25	4.95	12.0	782	6.68	129.2	clear
0842	-	-	26.60	0.25	4.95	11.9	786	6.71	133.1	↓
0845	-	-	26.60	0.25	4.94	12.0	790	6.64	134.6	↓

PURGING DATA

Sample ID:	MW-9	Sampling Flow Rate:	0.25		Analytical Laboratory:		Apex
Sample Time:	0845	Final Depth to Water:	26.60		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia / TOC	✓	✓	✓	✓	✓
1x250	-	Nitrate / Nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-10	Job Number:	19001-009-14
Client:	NuStar	Date:	3/5/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 40°	Time In/Out:	-

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.34	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder) / Peristaltic Pump	Tubing Material & Type:	(Skip-bond LDPE) / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1046	-	-	26.78	0.30	5.55	14.1	2589	0.31	58.4	clear
1049	-	-	26.85	0.30	5.59	14.2	2584	0.27	62.5	↓
1052	-	-	26.88	0.30	5.61	14.2	2581	0.25	63.8	↓

PURGING DATA

Sample ID:	MW-10	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	1052	Final Depth to Water:				Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x 250	H_2SO_4	Ammonia / TOC	↓	↓	↓	↓	↓
1x 250	-	Nitrate, Nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-12	Job Number:	19001-009-
Client:	NuStar	Date:	
Project:	Vancouver Main 1Q24	Sampler:	
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:		Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:	24.18	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1437	<	-	24.22	0.30	6.91	14.3	2303	0.42	-6.8	Clear
1440	-	-	24.22	0.30	6.90	14.3	2291	0.22	-14.1	"
1443	-	-	24.22	0.30	6.91	14.10	2285	0.19	-19.5	"

PURGING DATA

Sample ID:	MW-12	Sampling Flow Rate:			Analytical Laboratory:	Apex
Sample Time:	1443	Final Depth to Water:			Did Well Dewater:	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
						DUP
						DUP

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-13	Job Number:	19001-009- 19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Sunny ~45°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.06	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1253	-	-	26.11	0.25	6.94	14.6	1568	0.34	39.0	clear
1256	-	-	26.19	0.25	6.93	14.7	1564	0.27	35.3	"
1259	-	-	26.21	0.25	6.92	14.7	1555	0.23	32.6	"

PURGING DATA

Sample ID:	MW-13	Sampling Flow Rate:	0.25		Analytical Laboratory:		Apex
Sample Time:	1259	Final Depth to Water:			Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC					
1x250	-	Nitrate, Nitrite					
5xVOA	HCl	HVOC, RSK					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-14	Job Number:	19001-009-
Client:	NuStar	Date:	3/5/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Cloudy - 40°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.42	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1327	-	-	26.44	0.30	6.41	14.2	2186	0.35	47.5	Clear
1330	-	-	26.44	0.30	6.41	14.2	2193	0.29	46.8	↓
1333	-	-	26.45	0.30	6.43	14.2	2194	0.22	44.7	↓

PURGING DATA

Sample ID:	MW-14	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1333	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250	H_2SO_4	Ammonia / TOC	↓	↓	↓	↓
1 x 250	-	Nitrate, nitrite				
5 x VOA	HCl	HVOC / RSK				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-16	Job Number:	19001-009-19
Client:	NuStar	Date:	3/11/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast ~ 42°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	25.42	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)			
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE / new / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1052	-	-	25.49	0.30	6.52	12.3	508	2.20	219.9	clear
1055	-	-	25.51	0.30	6.53	12.1	509	2.06	228.8	↓
1058	-	-	25.53	0.30	6.53	12.2	511	1.91	232.2	
1101	-	-	25.54	0.30	6.53	12.2	518	1.76	236.7	

PURGING DATA

Sample ID:	MW-16	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1101	Final Depth to Water:	25.45		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC	✓	✓	✓	✓	✓
1x250	-	Nitrate, Nitrite					
3xVOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-17	Job Number:	19001-009-19
Client:	NuStar	Date:	3/5/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 40°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	24.96	Water Column Length:	-
Well Cap Lock Present:	Yes / No	Screened Interval:		Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow			Pump Intake Depth:		Mid-screen			
Sampling Method:	Bladder / Peristaltic Pump			Tubing Material & Type:		Skip-bond LDPE / 1/4" LDPE		DEDICATED	
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1150	-	-	25.01	0.30	6.71	13.7	866	0.53	27.7	clear
1153	-	-	25.01	0.30	6.68	13.8	866	0.68	30.6	↓
1156	-	-	25.02	0.30	6.67	13.9	868	0.75	32.0	
1159	-	-	25.02	0.30	6.68	13.8	870	0.83	32.4	

PURGING DATA

Sample ID:	MW-17	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	1159	Final Depth to Water:				Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC					
1x250	-	Nitrate, Nitrite					
3 x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-18i	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	JR
Weather:	Sun, 40°F	Time In/Out:	1000/

WELL DATA

Monument Type:	Flush-mount/Stick-up Other:	Well Diameter:	2"	Depth to Free Product:	
		Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	27.16	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
~~1004~~				0	+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1004			27.16	0.20	7.47	11.9	189	7.06	115	clear
1007			27.16	0.20	7.20	12.8	199	5.58	119	
1010					7.13	13.0	206	5.11	121	
1013					7.10	13.4	211	4.68	122	
1016					7.09	13.4	215	4.49	123	
1019					7.08	13.3	217	4.36	123	

PURGING DATA

Sample ID:	MW-18i	Sampling Flow Rate:	0.20		Analytical Laboratory:	Apex
Sample Time:	1019	Final Depth to Water:	27.16		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x VOA	HCl	VOCs				
2x 250	H_2SO_4	NO_3/NH_4				
1x 250	None					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-19	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Pt. Sunny - 45°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	~~4~~ 2"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.31	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–
Comments:	–				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1346	–	–	26.98	0.25	7.21	15.0	2172	0.48	30.0	Clear
1349	–	–	27.04	0.25	7.21	15.0	2173	0.35	27.2	↓
1352	–	–	27.08	0.25	7.21	14.7	2176	0.27	25.7	

PURGING DATA

Sample ID:	MW-19	Sampling Flow Rate:	0.25		Analytical Laboratory:	Apex
Sample Time:	1352	Final Depth to Water:			Did Well Dewater:	NO

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4x250	H_2SO_4	Ammonia/TOC	|	|	|	DUP |
2x250	–	Nitrate/Nitrite				DUP
8xVOA	HCl	HVOC/RSK				DUP

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-19i	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SR
Weather:	Sun, 48°F	Time In/Out:	1110 /

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	27.43	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1123			27.41	0.20	7.32	13.6	260	6.50	126	Clear
1126			27.38	0.20	6.97	14.3	294	2.86	132	
1129			27.37	0.20	6.93	14.3	304	1.69	129	
1132			27.36	0.20	6.94	14.2	323	0.99	126	
1135			27.35	0.20	6.97	14.3	331	0.72	120	
1138			27.34	0.20	6.98	14.3	333	0.60	116	

PURGING DATA

Sample ID:	MW-19i	Sampling Flow Rate:	0.20		Analytical Laboratory:		Apex
Sample Time:	1138	Final Depth to Water:	27.31		Did Well Dewater:		
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3x VOA	HCl	VOCs					
2x 250	H_2SO_4	NH_4/NO3					
1x 250	None						

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-20i	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SR
Weather:	Overcast, 35°F	Time In/Out:	0915

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	26.56	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen		
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE		DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0919			26.57	0.20	7.18	8.9	276	7.10	87	Clear
0922			26.57	0.20	6.90	11.9	298	1.76	91	
0925			↓	↓	6.87	11.8	303	0.90	93	
0928					6.86	11.5	305	0.67	94	
0931					6.86	11.9	305	0.58	95	↓

PURGING DATA

Sample ID:	MW-20i	Sampling Flow Rate:	0.20 LPM			Analytical Laboratory:	Apex
Sample Time:	0931	Final Depth to Water:	26.57			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3x VOA	HCl	VOCs					
2x 250	H_2SO_4	NO3/NH4					
1x 250	None						

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-21-40	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SR
Weather:	Sunny, 45°	Time In/Out:	1200

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	27.24	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / ~~Peristaltic Pump~~	Tubing Material & Type:	~~Skip-bond LDPE~~ / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1208			27.21	0.20	7.52	15.1	271	8.96	113	Clear
1211			27.21	0.20	7.11	15.0	273	7.74	127	
1214			27.19	0.20	6.85	14.8	283	5.24	133	
1217			27.16	0.20	6.76	14.8	331	1.20	133	
1220			27.16	0.20	6.78	14.6	338	0.79	128	
1223			27.14	0.20	6.79	14.8	340	0.57	123	
1226			27.12	0.20	6.79	14.7	341	0.49	122	

PURGING DATA

Sample ID:	MW-21-40	Sampling Flow Rate:	0.20		Analytical Laboratory:	Apex
Sample Time:	1226	Final Depth to Water:	27.08		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x VOA	HCl	VOCs				
2x250	H_2SO_4	NH_4/NO_3				
1x250	None					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-21i-105	Job Number:	19001-009-19
Client:	NuStar	Date:	3/5/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 40°	Time In/Out:	

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	27.10	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:	-				
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder) / Peristaltic Pump	Tubing Material & Type:	(Skip-bond LDPE / 1/4" LDPE	DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0832	-	-	27.44	0.30	7.47	13.1	446.2	0.61	36.1	clear
0835	-	-	27.47	0.30	7.51	13.0	444.3	0.45	35.8	↓
0838	-	-	27.46	0.30	7.53	13.1	443.4	0.41	35.6	↓

PURGING DATA

Sample ID:	MW-21i-105	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	0838	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x 250	H_2SO_4	TOC / Ammonia					
1x 250	-	Nitrate, nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

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WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-22i	Job Number:	19001-009-
Client:	NuStar	Date:	3/5/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast ~40°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	27.37	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:	-				
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen		
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE	DEDICATED	

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0936	-	-	27.34	0.30	6.88	12.1	388.2	0.62	14.8	Clear
0939	-	-	27.34	0.30	6.73	12.0	450.5	0.51	5.8	
0942	-	-	27.34	0.30	6.69	11.9	464.3	0.42	2.9	↓
0945	-	-	27.35	0.30	6.68	12.0	474.0	0.37	-1.2	↓

PURGING DATA

Sample ID:	MW-22i	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	0945	Final Depth to Water:	27.35		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC	↓	↓	↓	↓	↓
1x250	-	Nitrate, nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-23i	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SR
Weather:	Sun. 50°F	Time In/Out:	1255

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.20	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:	—	Purge Volume:	—
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / ~~Peristaltic Pump~~	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1258			26.87	0.20	7.24	15.3	184	7.20	114	clear
1301			26.85	0.20	7.14	15.3	192	6.65	126	
1304			26.84	0.20	7.10	14.8	206	6.50	131	
1307			26.81	0.20	7.00	14.5	294	5.00	134	
1310			26.79	0.20	6.96	14.6	330	3.33	132	
1313			26.78	0.20	6.96	14.7	334	2.79	129	
1316			26.78	0.20	6.96	14.7	335	2.72	127	
1319			26.76	0.20	6.96	14.7	336	2.69	126	

PURGING DATA

Sample ID:	MW-23i	Sampling Flow Rate:	0.20			Analytical Laboratory:	Apex
Sample Time:	1319	Final Depth to Water:	26.65			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
3x VOA	HCl	VOCs					
2x 250	H_2SO_4	NH_4/NO3					
1x 250	None						

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-24i	Job Number:	19001-009-
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	SK
Weather:	Sun, 50°F	Time In/Out:	1400

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.50	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)			
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE	DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1403			26.47	0.20	7.32	14.1	234	6.84	126	Clear
1406			26.47	0.20	6.96	14.0	370	2.74	134	↓
1409			26.44	0.20	6.90	13.9	382	0.85	131	
1412			26.43	0.20	6.90	14.0	383	0.63	129	
1415			26.43	0.20	6.90	14.0	383	0.56	127	

PURGING DATA

Sample ID:	MW-24i	Sampling Flow Rate:	0.20		Analytical Laboratory:	Apex
Sample Time:	1415	Final Depth to Water:	~~1415~~ 26.37		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
3x VOA	HCl	VOCs				
2x VOA	HCl	RSK				
2x 250	H_2SO_4	NH_4/NO_3				
1x 500	None					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-24d	Job Number:	19001-009-19
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Sunny - 50°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.78	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow				Pump Intake Depth:		Mid-screen			
Sampling Method:	Bladder/ Peristaltic Pump				Tubing Material & Type:		Skip-bond LDPE / 1/4" LDPE		DEDICATED	
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1510	-	-	26.79	0.30	7.91	13.5	341.5	0.64	-4.8	clear
1513	-	-	26.79	0.30	7.99	13.4	342.2	0.62	-7.9	↓
1516	-	-	26.79	0.30	8.06	13.3	342.0	0.47	-15.4	↓
1519	-	-	26.78	0.30	8.09	13.3	341.9	0.40	-21.9	↓

PURGING DATA

Sample ID:	MW-24d	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1519	Final Depth to Water:	26.80		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC	✓	✓	✓	✓	✓
1x250	-	Nitrate/Nitrite					
3xVOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-25i	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Fog, ~33°	Time In/Out:	

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	27.26	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder) / Peristaltic Pump	Tubing Material & Type:	(Skip-bond LDPE) / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0811	-	-	27.20	0.30	7.36	11.0	349.6	0.80	34.9	Clear
0814	-	-	27.21	0.30	7.25	11.4	361.4	0.82	36.4	↓
0817	-	-	27.21	0.30	7.18	11.6	361.2	0.77	37.2	
0820	-	-	27.21	0.30	7.11	11.6	361.1	0.68	38.6	
0823	-	-	27.21	0.30	7.07	11.7	361.8	0.63	39.3	
0826	-	-	27.21	0.30	7.03	11.6	361.7	0.64	39.2	

PURGING DATA

Sample ID:	MW-25i	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	0826	Final Depth to Water:			Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	TOC/Ammonia	|	|	|	|	|
1x250	-	Nitrate, nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-26	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	P+Cloudy ~40°	Time In/Out:	

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.35	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder) / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1116	|	|	26.38	0.30	6.35	13.8	5290	0.45	51.2	Clear
1119	|	|	26.38	0.30	6.38	14.0	4810	0.44	48.7	↓
1122	|	|	26.39	0.30	6.33	14.1	4489	0.62	49.8	↓
1125	|	|	26.37	0.30	6.20	14.3	3691	0.72	49.7	↓
1128	|	|	26.38	0.30	6.19	14.3	3478	0.89	50.9	↓
1131	|	|	2.37	0.30	6.17	14.2	3396	1.01	52.7	↓

PURGING DATA

Sample ID:	MW-26	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	1137	Final Depth to Water:	26.35			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x 250	H_2SO_4	Ammonia / TOC	|	|	|	|	|
1x 250	-	Nitrate, Nitrite	|	|	|	|	|
5x VOA	HCl	HVOC / RSK	|	|	|	|	|

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-32S	Job Number:	19001-009-14/20
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	JP
Weather:	Fog, ~40°F	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.90	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Permanent Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0910			26.90	0.35	6.74	13.1	722	4.66	167.9	Clear
0913			27.12	0.35	6.53	13.5	806	2.07	172.5	
0916			27.21	0.35	6.52	13.9	827	1.18	173.0	
0919			27.24	0.25	6.53	13.8	825	1.02	173.2	
0922			27.29	0.25	6.54	13.7	825	0.93	173.5	

PURGING DATA

Sample ID:	MW-32S	Sampling Flow Rate:	~~0.35~~ 0.25	Analytical Laboratory:	Apex	
Sample Time:	0922	Final Depth to Water:	27.39	Did Well Dewater:	No	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) 250	H_2SO_4	Ammonia	—	—	—	—
(1) 250	—	Nitrite/Nitrate	—	—	—	—
(3) VOA	HCl	HVOCs	—	—	—	—

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MGMSI-4B	Job Number:	19001-009-19/20
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	SP
Weather:	Fog, ~40°F	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	MP	Depth to Free Product:	—
	Other: Multiport Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.41	Water Column Length:	—
Well Cap Lock Present:	(Yes) No Multi	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Permanent pump · Mid-screen
Sampling Method:	Bladder / ~~Peristaltic Pump~~	Tubing Material & Type:	Skip-bond LDPE / ~~1/4" LDPE~~ ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0757			26.41	0.35	6.87	10.9	2605	3.50	246.0	Clear
0800			26.41	0.35	7.12	11.1	2447	1.12	227.6	↓
0803			26.39	0.35	7.14	11.6	2468	0.74	221.7	↓
0806			26.39	0.35	7.14	11.5	2479	0.54	217.2	↓
0809			26.38	0.35	7.14	11.4	2496	0.43	213.0	↓

PURGING DATA

Sample ID:	MGMSI-3(43)	Sampling Flow Rate:	0.35			Analytical Laboratory:	Apex
Sample Time:	0809	Final Depth to Water:	26.39			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
(2) x 250 mL	H_2SO_4	TOC, Ammonia	—				
(1) x 250 mL	—	Nitrate, Nitrite	—				
(5) x 40mL	HCl	HLOCs, RSK	—				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS1-2(60)	Job Number:	19001-009-
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	JP
Weather:	Fog ~ 40°F	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	MP	Depth to Free Product:	—
	Other: MP	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.77	Water Column Length:	—
Well Cap Lock Present:	Yes No MP	Screened Interval:	—	Purge Volume:	—
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Permanent Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0831			26.77	0.25	7.32	11.0	325.8	2.42	~~322~~ 123.5	Clear
0834			26.75	0.25	7.23	11.6	341.2	1.82	125.7	Clear
0837			26.77	0.25	7.14	11.9	346.2	1.16	135.5	"
0840			26.77	0.25	7.11	11.9	348.4	1.01	141.3	"
0843			26.77	0.25	7.10	12.0	349.1	0.92	144.7	"

PURGING DATA

Sample ID:	MGMS1-2(60)	Sampling Flow Rate:	0.25		Analytical Laboratory:	~~Apex~~
Sample Time:		Final Depth to Water:	26.77		Did Well Dewater:	N
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(2) 250	H_2SO_4	Ammonia	—			
(1) 250	—	N. Nitrate/Nitrite	—			
(3) VOA	HCl	HVOCs	—			

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS 2-4 (40)	Job Number:	19001-009-19
Client:	NuStar	Date:	3/4/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast. 38°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-port	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.03	Water Column Length:	-
Well Cap Lock Present:	Yes No multi-port	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1225	-	-	26.03	0.25	7.01	11.9	2258	0.30	36.7	clear
1228	-	-	25.99	0.25	7.05	11.8	2270	0.24	41.0	↓
1231	-	-	25.98	0.25	7.07	11.9	2273	0.22	40.0	↓

PURGING DATA

Sample ID:	MGMS 2-4 (40)	Sampling Flow Rate:	0.25		Analytical Laboratory:		Apex
Sample Time:	1231	Final Depth to Water:	26.00		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250	H_2SO_4	TOC/ammonia	↓	↓	↓	↓	↓
1 x 250	-	nitrate, nitrite					
3 x VOA	HCl	HVOC					
2 x VOA	HCl	RSK					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS 2-3 (60)	Job Number:	19001-009-
Client:	NuStar	Date:	3/4/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 38°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-port	Depth to Free Product:	
	Other: Vault	Well Depth:	-	Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	25.29	Water Column Length:	
Well Cap Lock Present:	Yes No multi-port	Screened Interval:	-	Purge Volume:	
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / ~~Peristaltic~~ Pump	Tubing Material & Type:	Skip-bond LDPE / ~~1/4" LDPE~~ DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
	-	-			+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1255	-	-	25.31	0.25	7.60	12.4	486	0.22	15.9	clear
1258	-	-	25.31	0.25	7.28	12.5	367.2	0.21	23.2	
1301	-	-	25.32	0.25	7.19	12.4	344.8	0.21	23.2	
1304	-	-	25.31	0.25	7.13	12.3	318.3	0.20	23.0	
1307	-	-	25.32	0.25	7.14	12.4	316.1	0.20	22.9	

PURGING DATA

Sample ID:	MGMS2-3 (60)	Sampling Flow Rate:	0.25			Analytical Laboratory:	Apex
Sample Time:	1307	Final Depth to Water:	25.30			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x 250	H_2SO_4	Ammonia / ~~TPE~~					
1x 250	-	Nitrate, nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS3-4(40)	Job Number:	19001-009-
Client:	NuStar	Date:	3/4/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 40°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-port	Depth to Free Product:	-
	Other: Vault	Well Depth:		Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	24.19	Water Column Length:	-
Well Cap Lock Present:	(Yes) No multi-port	Screened Interval:		Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow				Pump Intake Depth:		Mid-screen			
Sampling Method:	Bladder / Peristaltic Pump				Tubing Material & Type:		Skip-bond LDPE / 1/4" LDPE		DEDICATED	
Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1340	-	-	24.22	0.25	6.88	11.5	478.7	0.34	-49.9	clear
1343	-	-	24.22	0.25	6.90	11.5	489.8	0.30	-57.2	↓
1346	-	-	24.21	0.25	6.94	11.6	490.8	0.26	-61.4	↓

PURGING DATA

Sample ID:	MGMS3-4(40)	Sampling Flow Rate:	0.25		Analytical Laboratory:		Apex
Sample Time:	1346	Final Depth to Water:	24.19		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
4 x 250	H_2SO_4	Ammonia / TOC	↓	↓	↓	DUP	
2 x 250	-	nitrate, nitrite				↓	
3 x 6 x VOA	HCl	HVOC					
2 x VOA	HCl	RSK					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS3-3(60)	Job Number:	19001-009-19
Client:	NuStar	Date:	3/4/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 40°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-port	Depth to Free Product:	-
	Other: vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	24.17	Water Column Length:	-
Well Cap Lock Present:	Yes No multi-port	Screened Interval:	-	Purge Volume:	-

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1420	-	-	24.21	0.25	7.26	12.4	245.1	2.07	-78.1	clear
1423	-	-	24.22	0.25	7.23	12.1	236.0	2.07	-68.4	↓
1426	-	-	24.21	0.25	7.21	12.2	236.2	2.13	-61.9	↓

PURGING DATA

Sample ID:	MGMS3-3(60)	Sampling Flow Rate:	0.25		Analytical Laboratory:	Apex
Sample Time:	1426	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2x 250	H_2SO_4	Ammonia, TOC	↓	↓	↓	↓
1x 250	-	nitrate, nitrite				
3x VOA	HCl	HVOC				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	EW-1	Job Number:	19001-009-14/20
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	JP
Weather:	Clear, ~40°	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	24.34	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Permanent Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1113			24.34	0.35	7.25	13.8	278.1	9.09	134.0	Clear
1121			24.40	0.35	6.93	14.1	263.4	7.74	164.8	↓
1124			24.40	0.40	6.90	14.2	261.6	7.69	173.3	
1127			24.42	0.40	6.86	14.2	260.9	7.67	177.5	
1130			24.43	0.40	6.85	14.1	259.6	7.64	182.1	↓

PURGING DATA

Sample ID:	EW-1	Sampling Flow Rate:	0.40			Analytical Laboratory:	Apex
Sample Time:	1130	Final Depth to Water:	24.50			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
(2) 250	H_2SO_4	Ammonia					
(1) 250	—	Nitrite/Nitrate					
(3) VOA	HCl	HVOCs					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	EX	Job Number:	19001-009-19/20
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	SB
Weather:	Overcast ~45°F	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	25.48	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.99	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:	—	Purge Volume:	—
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	~~Low-flow~~	Pump Intake Depth:	Permanent ~~Mid-screen~~
Sampling Method:	Bladder / ~~Peristaltic Pump~~	Tubing Material & Type:	~~Skip-bond LDPE~~/ 1/4" LDPE ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1039			25.99	0.35	7.65	9.5	1582	3.40	182.0	Clear
1041			↓	0.25	7.62	11.0	1716	1.12	172.8	↓
1044			↓	0.25	7.60	11.7	1648	0.68	167.0	↓
1047			↓	0.25	7.56	11.6	1553	0.55	163.6	↓
1050			26.01	0.35	7.54	11.3	1370	0.47	161.0	DO = 0.47
1053			26.02	0.25	7.52	11.5	1303	0.45	159.5	Clear
1056			↓	↓	7.52	11.6	1284	0.43	159.2	↓
1059			↓	↓	7.52	11.6	1246	0.42	158.5	↓

PURGING DATA

Sample ID:	EX	Sampling Flow Rate:	0.25			Analytical Laboratory:	Apex
Sample Time:	1059	Final Depth to Water:	26.05			Did Well Dewater:	N
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
(2) 250	H_2SO_4	Ammonia, TOC	—			—	—
(1) 250	—	Nitrate, Nitrite	—			—	—
(3) VOA	HCl	HVOCs, 1234	—			—	—

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MP-1	Job Number:	19001-009-14
Client:	NuStar	Date:	3/7/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Sunny - 47°	Time In/Out:	-

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.58	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)			
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Skip-bond LDPE / 1/4" LDPE	DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1303	-	-	26.60	0.30	7.17	14.0	499.6	0.23	23.0	clear
1306	-	-	26.61	0.30	7.21	14.0	461.2	0.19	21.2	"
1309	-	-	26.60	0.30	7.20	14.0	478.6	0.17	20.7	"

PURGING DATA

Sample ID:	MP-1	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	1309	Final Depth to Water:				Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x 250	H_2SO_4	Ammonia/TOC					
1x 250	-	Nitrate/Nitrite	"	"	"	"	"
5x VOA	HCl	HVOC/RSK					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	S-1	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast ~ 38°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.24	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	Bladder / Peristaltic Pump	Tubing Material & Type:	Silp-bond LDPE / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1016	-	-	26.22	0.30	7.14	10.0	271.4	6.44	37.6	clear
1019	-	-	26.21	0.30	7.14	10.5	228.6	6.34	38.4	
1022	-	-	26.22	0.30	7.14	10.4	224.5	6.04	38.7	
1025	-	-		0.30	7.13	10.3	219.0	5.95	39.3	

PURGING DATA

Sample ID:	S-1	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1025	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia					
1x250	-	Nitrate, nitrite					
3xVOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	S-2	Job Number:	19001-009-19
Client:	NuStar	Date:	3/6/24
Project:	Vancouver Main 1Q24	Sampler:	CW
Weather:	Overcast - 38°	Time In/Out:	

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	25.67	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Low-flow	Pump Intake Depth:	Mid-screen
Sampling Method:	(Bladder)/ Peristaltic Pump	Tubing Material & Type:	(Skip-bond LDPE) / 1/4" LDPE DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0918	-	-	26.68	0.30	6.69	12.1	1952	0.42	41.9	Clear
0921	-	-	26.76	0.30	6.73	12.5	1974	0.24	40.7	↓
0924	-	-	26.79	0.30	6.75	12.5	1963	0.17	38.9	
0927	-	-	26.84	0.30	6.76	12.6	1950	0.14	37.9	↓

PURGING DATA

Sample ID:	S-2	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:		Final Depth to Water:			Did Well Dewater:		NO
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2x250	H_2SO_4	Ammonia/TOC	↓	|	|	|	|
1x250	-	Nitrate, nitrite					
3x VOA	HCl	HVOC					

NOTES/ADDITIONAL COMMENTS

APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___ of ___

Company: GeoEngineers	Project Mgr: Stephanie Sarkozy	Project Name: Sand Mine 1 1Q24	Project #: 019001-009-34
Address: 5335 S. Kelly Ave Ste B PDX	Phone:	Email:	PO #
Sampled by: JP/CW/LT			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS.	TCLP Metals (8)	NO2/NO3	NH3	RSK-175*	TOC				Hold Sample	Frozen Archive
MGMS3-1(132)	6/10/24	1415	W	5						X										X	X							
MGMS3-2(101)	6/10/24	1341	W	5						X										X	X							
MGMS3-3(60)	6/10/24	1300	W	5						X										X	X							
MGMS3-4(40)	6/10/24	1215	W	9						X										X	X	X	X					
MGMS3-4(40)DUP	6/10/24	1215	W	6						X										X	X							
MGMS2-4(40)	6/10/24	1254	W	9						X										X	X	X	X					
MGMS2-3(60)	6/10/24	1328	W	9						X										X	X							
MGMS2-2(110)	6/10/24	1359	W	9						X										X	X							
KMW-5	6/10/24	1455	W	9						X										X	X	X	X					
KMW-4	6/10/24	1610	W	9						X										X	X	X	X					

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle) 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
+ Same list of analytes as 1Q24 event
* Ethene, ethane, methane by RSK-175

CC Ian Maguire & Jeff Pidd on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 6/10/24	Date: 6/10/24	Date:	Date:
Printed Name: Colin Watson	Printed Name: Katerina Mariposa	Printed Name:	Printed Name:
Time: 1708	Time: 1708	Time:	Time:
Company: GeoEngineers	Company: APEX	Company:	Company:

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APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___of___

Company: GeoEngineers	Project Mgr: Stephanie Salisbury	Project Name: Sunoco Van Main 2Q24	Project #: 019001-009-34
Address: 5820 S. Kelly Ave. Portland	Phone:	Email:	PO #
Sampled by: CW / JP / LT			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2 / NO_3	NH_3	RSK-175*	TOC				Hold Sample	Frozen Archive
MGMS2-1(132)	6/11/24	0820	W	9						X										X	X							
KMW-6	6/11/24	0930	W	9						X										X	X	X	X					
NKW-1	6/11/24	1040	W	9						X										X	X	X	X					
NKW-2	6/11/24	1115	W	9						X										X	X	X	X					
MW-7	6/11/24	1210	W	9						X										X	X	X	X					
MW-7 DUP	6/11/24	1210	W	9						X										X	X	X	X					
MW-9	6/11/24	1306	W	9						X										X	X							
MW-10	6/11/24	1411	W	9						X										X	X							

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle) 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
+ Same list as 1Q24 event
* Ethane, ethene, methane by RSK-175
CC Ian Maguire + Jeff Piatt on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 6/11/24	Signature: [signature] Date: 6/11/24	Signature: Date:	Signature: Date:
Printed Name: Colin Watson Time: 1700	Printed Name: Alyssa Wilbur Time: 1700	Printed Name: Time:	Printed Name: Time:
Company: GeoEngineers	Company: Apex	Company:	Company:

ALS LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___ of ___

Company: GeoEngineers	Project Mgr: S. Salisbury	Project Name: Sunoco Van Main	Project #: 019091-009-34
Address: 5820 Skelly Ave Ste 5 Pdx	Phone: -	Email: -	PO # -
Sampled by: JP/CW/CT			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO2/NO3	NH3	RSK-175 #	TOC					Hold Sample	Frozen Archive
MW-15	6/11/24	1043	W	5						X										X	X								
MW-16		0957		5						X										X	X								
MW-8		0921		5						X										X	X								
MW-5	↓	0810	↓	5						X										X	X								

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
+ Same TOC as 1424 event
* Ethane, ethene, methane by RSK-175
CC Ian Maguire & Jeff Pratt on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 6/11/24	Date: 6/11/24	Date:	Date:
Printed Name: Colin Watson	Printed Name: Alyssa Wilbur	Printed Name:	Printed Name:
Time: 1700	Time: 1700	Time:	Time:
Company: GeoEngineers	Company: ALS	Company:	Company:

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APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___ of ___

Company: GeoEngineers	Project Mgr: Stephanie Salisbury	Project Name: Sunoco Van Main 2024	Project #: 19001-009-34
Address: 5820 S Kelly Ave	Phone: –	Email: –	PO # –
Sampled by: CW			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2 / NO_3	NH_3	RSK-175 *	TOC				Hold Sample	Frozen Archive
MW-25i	6/12/24	0823	W	9						X										X	X							
MW-17	"	0929	W	9						X										X	X							
MW-14		1020	W	9						X										X	X	X	X					
S-1		1143	W	9						X										X	X							
S-2		1237	W	9						X										X	X							
MW-19		1422	W	9						X										X	X	X	X					
MW-19 DUP		1422	W	9						X										X	X							
MW-3		1515	W	9						X										X	X							
MW-6		1600	W	9						X										X	X							

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day, 2 Day, 3 Day, 5 Day, **Standard**, Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
+ HVOCs same as 1Q24 event
* Ethane, ethene, methane by RSK-175
CC Ian Maguire an Jeff Pratt on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 6/12/24	Date: 6/12/24	Date:	Date:
Printed Name: Colin Watson	Printed Name: Anissa Kepa	Printed Name:	Printed Name:
Time: 1746	Time: 1746	Time:	Time:
Company: GeoEngineers	Company: Apex Labs	Company:	Company:

Form Y-002 R-00

APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___of___

Company: GeoEngineers	Project Mgr: S Silsbury	Project Name: Sunrise Vault Main	Project #: 014001-009-34
Address: 5825 S. Kelly Ave Ste B Ptld	Phone:	Email:	PO #
Sampled by: JP/CW/ER			

Site Location: State WA, County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO3/NO2	NH3	RSK-175 *	TOC				Hold Sample	Frozen Archive
MW-24d	6/12/24	1411	W	5						X										X	X							
MW-19i		1313		5																								
MW-20i		1137		5																								
MW-18i		1052		5																								
EW-1		0956		5																								
MGMSI-1(110)		0904		5																								
MGMSI-2(60)		0834		5																								
MGMSI-1(43)	↓	0900	↓	~~5~~ 9	~~NP~~																	X	X					

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SPECIAL INSTRUCTIONS:
+ HVOCs same as 1Q24 event.
* Ethane, ethene, methane by RSK-175
6/12/24 0710
CC Ian Maguire & Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 6/12/24	Signature: [signature] Date: 6/12/24	Signature: Date:	Signature: Date:
Printed Name: Colin Watson Time: 1746	Printed Name: Anissa Kepa Time: 1746	Printed Name: Time:	Printed Name: Time:
Company: GeoEngineers Jeff Pratt	Company: Apex Labs	Company: Jeffrey Pratt	Company:

Form Y-002 R-00

APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___of___

Company: GeoEngineers	Project Mgr: Stephanie Salisbury	Project Name: Sunoco Van Main 2024	Project #: 019001-009-34
Address: 5820 S. Kelly Ave	Phone: -	Email: -	PO # -
Sampled by: CW / JP			

Site Location: State WA; County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2/NO_3	NH_3	RSK-175*	TOC				Hold Sample	Frozen Archive
MW-21i-105	6/13/24	0808	W	9						X										X	X							
MW-1		1025	W	9						X										X	X							
MP-1		1118	W	9						X										X	X	X	X					
MW-12		1218	W	9						X										X	X	X	X					
MW-12 DUP		1218	W	9						X										X	X							
MW-13		1323	W	9						X										X	X	X	X					

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day; 2 Day; 3 Day; 5 Day; **Standard**; Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
+ HVOCs same list as 1Q24 event
* Ethene, ethane, methane by RSK-175
CC Ian Maguire and Jeff Pratt on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 6/13/24	Date: 6/13/24	Date:	Date:
Printed Name: Colin Watson	Printed Name:	Printed Name:	Printed Name:
Time: 1502	Time: 1502	Time:	Time:
Company: GeoEngineers	Company: Apex	Company:	Company:

Form Y-002 R-00 -

APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # _____ COC ___of___

Company: GeoEngineers	Project Mgr: S. Salisbury	Project Name: Samoa Van Main	Project #: 019001-009-34
Address: 5335 S. Holly Ave Ste 3 Pda	Phone: —	Email: —	PO # —
Sampled by: JP/CW			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS.	TCLP	TCLP Metals (8)	NO2/NO3	NH4	RSK-175 *	TOC				Hold Sample	Frozen Archive
EX	6/13/24	1011	W	9						X										X	X	X	X						
MW-23i		0947		5						X										X	X								
MW-24i		0932		9						X										X	X	X	X						
MW-21i-40		0759		5						X										X	X								

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle) 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SPECIAL INSTRUCTIONS:
+ HVOCs same list as 1Q24 event.
* Ethene, ethane, methane by RSK-175
CC Ian Maguire and Jeff Pgh on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 6/13/24	Date: 6/13/24	Date:	Date:
Printed Name: Colin Watson	Printed Name:	Printed Name:	Printed Name:
Time: 1502	Time: 1502	Time:	Time:
Company: GeoEngineers	Company: Apex	Company:	Company:

APEX LABS

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # _____ COC 1 of 1

Company: GeoEngineers	Project Mgr: Stephanie Salisbury	Project Name: Sunoco Van Main 2024	Project #: 09001-009-34
Address: 5820 S. Kelly Ave Portland	Phone: -	Email: -	PO # -
Sampled by: CW			

Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2 / NO_3	NH_3	RSK-175 *	TOC				Hold Sample	Frozen Archive
MW-2	6/14/24	0810	W	6						X										X	X							
MW-26	↓	0936	↓							X										X	X	X	X					
MW-22i		1048								X										X	X							

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: _____

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:

+ Same HVOCs as 1Q24 event

* Ethene, Ethane, methane by RSK-175

CC Ian Maguire + Jeff Pratt on all

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature] Date: 6/14/24	Signature: [signature] Date: 6/14/24	Signature: Date:	Signature: Date:
Printed Name: Colin Watson Time: 1329	Printed Name: Alyssa Wilbur Time: 1329	Printed Name: Time:	Printed Name: Time:
Company: GeoEngineers	Company: Apex	Company:	Company:

Form Y-002 R-00

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-1	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt. Sunny 60°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	25.51	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	~~Skip-bonded LDPE~~ NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1013	-	-	25.53	0.30	5.75	16.7	1503	0.77	159.2	clear
1016	-	-	25.52	0.30	6.11	16.6	1395	0.39	155.8	↓
1019	-	-	25.53	0.30	6.17	16.6	1368	0.33	153.5	↓
1022	-	-	25.52	0.30	6.22	16.6	1348	0.29	150.8	↓
1025	-	-	25.53	0.30	6.25	16.6	1340	0.25	148.1	↓

PURGING DATA

Sample ID:	MW-1	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1025	Final Depth to Water:	25.51		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-2	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/14/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 55°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.23	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0801	-	-	26.26	0.30	6.63	~~14.0~~ 14.0	802	0.68	-122.1	clear
0804	-	-	26.27	0.30	6.61	14.0	802	0.53	-124.3	↓
0807	-	-	26.26	0.30	6.60	14.0	802	0.39	-126.1	
0810	-	-	26.26	0.30	6.59	14.0	803	0.30	-127.2	

PURGING DATA

Sample ID:	MW-2	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	0810	Final Depth to Water:	26.25	Did Well Dewater:	NO	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

Small particles observed in clear glass - Strong sewage odor & debris on pump when removed from well

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-3	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny ~75°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other: Vault	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.22	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1503	–	–	26.22	0.30	6.45	17.0	321.2	2.99	148.3	Clear
1506	–	–	26.22	0.30	6.46	16.5	318.0	4.85	162.2	
1509	–	–	26.22	0.30	6.46	16.6	302.1	5.82	173.0	
1512	–	–	26.21	0.30	6.45	16.5	298.1	6.03	177.9	
1515	–	–	26.22	0.30	6.43	16.5	294.7	6.26	184.7	

PURGING DATA

Sample ID:	MW-3	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	1515	Final Depth to Water:	26.21	Did Well Dewater:	No	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	–
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	–
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	–

NOTES/ADDITIONAL COMMENTS

Water has a slight yellow tint once observed in clear glass

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-5	Job Number:	
Client:	Simpco Van Meter	Date:	6/6/24
Project:	2024	Sampler:	SP+LT
Weather:	Clear 55°	Time In/Out:	

WELL DATA

Monument Type:	Flush mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	26.00	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gal = 3.785 liters

PURGING DATA

Purge Method:	BP	Pump Intake Depth:	MS
Sampling Method:	LF	Tubing Material & Type:	LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0801			26.00	0.25	5.98	19.8	542.8	0.60	41.7	Clear
0804			26.01	0.25	6.17	19.9	505.8	0.32	1.3	↓
0807				↓	6.19	19.8	499.1	0.41	-3.4	
0810			26.02		6.20	20.1	495.7	0.42	-7.2	

PURGING DATA

Sample ID:	MW-5	Sampling Flow Rate:	0.25		Analytical Laboratory:	Bark
Sample Time:	0810	Final Depth to Water:	26.04		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(1) 250	—	NO2/NO3	—			
(1) 250	H_2SO_4	NH3	—			
(3) VOA	HCl	HVOCs	—			

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-6	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 75°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	25.20	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1554	–	–	25.19	0.30	5.89	16.6	306.4	0.41	-76.7	clear
1557	–	–	25.20	0.30	5.89	16.3	305.7	0.45	-79.3	"
1600	–	–	25.21	0.30	5.90	16.2	304.1	0.57	-78.3	

PURGING DATA

Sample ID:	MW-6	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	~~1548~~ 1600	Final Depth to Water:	25.20		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	–	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	–	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	–	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-7	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	PC Sunny ~70°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.17	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1152	-	-	26.17	0.35	6.99	14.9	4308	2.17	28.4	clear
1155	-	-	26.18	0.35	6.98	14.9	4117	1.91	23.7	↓
1158	-	-	26.17	0.35	6.98	15.1	3117	1.56	18.4	
1201	-	-	26.19	0.35	6.98	15.1	2557	1.38	13.5	
1204	-	-	26.22	0.35	6.99	15.1	2435	1.33	12.1	
1207	-	-	26.21	0.35	6.98	15.1	2311	1.27	10.2	
1210	-	-	26.23	0.35	6.98	15.1	22	1.26	9.0	

PURGING DATA

Sample ID:	MW-7/MW-100	Sampling Flow Rate:	0.35			Analytical Laboratory:	Apex
Sample Time:	1210	Final Depth to Water:	26.20			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
4 / 2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	✓	
2 / 1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	✓	
12 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	✓	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-8	Job Number:	—
Client:	Simco Van Mar	Date:	6/4/24
Project:	2Q24	Sampler:	SP, LF
Weather:	66 Overcast, 60°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:		Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.68	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:		Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	BP	Pump Intake Depth:	MS
Sampling Method:	LF	Tubing Material & Type:	SB

NEW / (DEDICATED)

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0912			25.68	0.30	6.37	17.0	1371	1.46	137.8	Clear
0915			25.74	↓	6.35	16.0	1371	0.46	137.3	↓
0918			—		6.36	15.9	1371	0.40	136.7	
0921			25.84		6.38	15.8	1371	0.32	135.5	

PURGING DATA

Sample ID:	MW-8	Sampling Flow Rate:	0.30	Analytical Laboratory:	Anat
Sample Time:	0921	Final Depth to Water:	25.91	Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(1) 250	—	NO2/NO3				
(1) 250	H_2SO_4	NH_3				
(3) VOA	HCl	HVOCs				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-9	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt. Cloudy ~70°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	–
	Other: –	Well Depth:		Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.22	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1257	–	–	26.25	0.30	7.02	14.0	715	6.24	19.8	Clear
1300	–	–	26.27	0.30	6.99	13.8	701	6.40	36.4	↓
1303	–	–	26.28	0.30	6.99	13.8	698	6.52	39.1	
1306	–	–	26.27	0.30	6.98	13.9	695	6.49	40.2	

PURGING DATA

Sample ID:	MW-9	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1306	Final Depth to Water:	26.25		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	–	–
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	–	–
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	–	–

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-10	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt Cloudy	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	–
	Other: Vault	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.35	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1402	–	–	26.41	0.30	7.02	17.3	2666	1.55	22.0	Clear
1405	–	–	26.42	0.30	7.01	17.0	2654	0.93	16.8	↓
1408	–	–	26.49	0.30	6.99	17.2	2643	0.82	15.4	↓
1411	–	–	26.52	0.30	7.00	16.9	2632	0.73	13.1	

PURGING DATA

Sample ID:	MW-10	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	1411	Final Depth to Water:	26.40	Did Well Dewater:	No	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	–	–
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	–	–
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	–	–

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-12	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	CL
Weather:	P+ Sunny ~70°	Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	25.02	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1209	–	–	25.03	0.30	6.75	17.1	1772	1.21	144.9	clear
1212	–	–	25.04	0.30	6.75	17.0	1716	0.64	138.5	↓
1215	–	–	25.04	0.30	6.75	17.1	1703	0.49	136.0	
1218	–	–	25.04	0.30	6.75	17.1	1680	0.30	130.1	

PURGING DATA

Sample ID:	MW-12/MW-12 DUP	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1218	Final Depth to Water:	25.01		Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4 ~~3~~ x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	✓
2 ~~1~~ x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	✓
12 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	✓

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-14	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt Sunny ~65°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.26	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gal = 3.785 liters

PURGING DATA

Purge Method: Peristaltic Pump / Bladder Pump — Pump Intake Depth: Mid-screen

Sampling Method: Low-flow — Tubing Material & Type: ~~Skip-bonded LDPE~~ — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1011	-	-	26.28	0.30	6.18	16.8	924	1.42	193.1	Clear
1014	-	-	26.29	0.30	6.20	16.7	931	0.85	187.3	↓
1017	-	-	26.27	0.30	6.21	16.7	930	0.73	184.0	
1020	-	-	26.28	0.30	6.21	16.4	930	0.69	182.3	

PURGING DATA

Sample ID:	MW-14	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	1020	Final Depth to Water:	26.26	Did Well Dewater:	No	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	-	-
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	-	-
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	-	-

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-15	Job Number:	
Client:	Smoco Van Meter	Date:	6/11/24
Project:	2024	Sampler:	SP + LT
Weather:	Overcast, 60°F	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other:	Well Depth:		Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	31.02	Water Column Length:	—
Well Cap Lock Present:	Yes / No	Screened Interval:		Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	BP	Pump Intake Depth:	MS
Sampling Method:	LF	Tubing Material & Type:	SB

NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
1034					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1034				~~0~~ 0.1	6.61	19.2	627	6.17	202.8	Clear
1037				0.3	6.29	18.1	631	1.41	189.1	↓
1040				0.3	6.28	16.9	632	1.39	185.8	
1043				0.3	6.26	16.8	629	1.34	184.0	

PURGING DATA

Sample ID:	MW-15	Sampling Flow Rate:			Analytical Laboratory:	Apex
Sample Time:	1043	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 250	—	NO_2/NO_3				
1 250	H_2SO_4	NH_3				
3 VOA	HCl	HVOCs				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-16	Job Number:	—
Client:	Simco Van Mah	Date:	6/11/24
Project:	2024	Sampler:	SP + LT
Weather:	Overcast, 60°F	Time In/Out:	—

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:		Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.32	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:		Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	BP	Pump Intake Depth:	MS
Sampling Method:	LF	Tubing Material & Type:	SB

NEW (DEDICATED)

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0948			25.32	0.30	6.58	16.6	688	2.22	185.3	Clear
0951				↓	6.39	15.5	658	0.44	176.1	↓
0954					6.35	15.3	654	0.29	170.1	
0957			25.28	↓	6.34	15.2	653	0.23	165.2	

PURGING DATA

Sample ID:	MW-16	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	0957	Final Depth to Water:	25.32			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
(1) 250	—	NO_2 / NO_3					
(1) 250	H_2SO_4	NH_3					
(3) VOA	HCl	HVOCs					

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-17	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	pt. Cloudy - 60°	Time In/Out:	-

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	4"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	24.78	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / (Bladder Pump)	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	(Skip-bonded LDPE) NEW / (DEDICATED)

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0923	-	-	24.79	0.30	6.42	15.1	497.1	4.51	159.9	clear
0926	-	-	24.80	0.30	6.40	14.9	447.6	4.35	167.8	"
0929	-	-	24.80	0.30	6.34	14.8	498.1	4.25	174.1	"

PURGING DATA

Sample ID:	MW-17	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	0929	Final Depth to Water:	24.77		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	(Ammonia) / TOC	N/A	N/A	N/A		
1 x 250 mL	None	(Nitrate, Nitrite)	N/A	N/A	N/A		
6 x VOA	HCl	(HVOC) / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-18i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JP ER
Weather:	Sunny 62°	Time In/Out:	—

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2	Depth to Free Product:	—
	Other:	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.82	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / (Bladder Pump)	Pump Intake Depth:	(Mid-screen)
Sampling Method:	(Low-flow)	Tubing Material & Type:	(Skip-bonded LDPE) NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1037			25.82	0.15	6.67	18.1	194.9	6.66	218.7	clear
1040			25.82	0.25	6.97	17.4	202.2	7.12	222.8	clear
1043			25.82	0.25	6.74	15.1	254.1	2.49	221.1	clear
1046			25.82	0.25	6.79	15.0	267.4	2.16	210.0	clear
1649			25.82	0.25	6.74	15.1	275.8	1.98	200.6	clear
1052			25.82	0.25	6.81	15.2	280.2	1.80	192.8	clear

PURGING DATA

Sample ID:	MW-18i	Sampling Flow Rate:	0.25			Analytical Laboratory:	(Apex)
Sample Time:	1052	Final Depth to Water:	25.82			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
1 ~~2~~ x 250 mL	H2SO4	(Ammonia) / ~~TOC~~	N/A	N/A	N/A		
1 x 250 mL	None	(Nitrate, Nitrite)	N/A	N/A	N/A		
3 x VOA	HCl	(HVOC) / ~~RSK~~	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MW-19	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:		Time In/Out:	–

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.16	Water Column Length:	–
Well Cap Lock Present:	Yes No	Screened Interval:	–	Purge Volume:	–

Comments: –

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1358	–	–	26.18	0.30	7.01	16.4	2170	0.41	115.7	clear
1401	–	–	26.16	0.30	7.00	16.5	2158	0.44	115.2	
1404	–	–	26.16	0.30	7.00	16.4	2136	0.91	116.5	
1407	–	–	26.16	0.30	6.99	16.5	2120	1.44	117.9	
1410	–	–	26.16	0.30	6.99	16.3	2090	2.05	119.4	
1413	–	–	26.17	0.30	6.99	16.4	2080	2.76	119.5	
1416	–	–	26.18	0.30	6.99	16.3	2064	3.21	117.7	
1419	–	–	26.18	0.30	6.99	16.4	2060	3.37	116.3	
1422	–	–	26.17	0.30	6.99	16.3	2053	3.62	114.8	

PURGING DATA

Sample ID:	MW-19 / MW-19DUP	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	1422	Final Depth to Water:	26.16	Did Well Dewater:	No	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
4 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	✓
2 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	✓
12 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	✓

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-19i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JP ER
Weather:	Clear	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.20	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1255			26.20	0.45	6.73	16.7	365.3	0.85	148.7	Clear
1258			26.20	0.45	6.63	16.2	400.7	0.32	144.8	clear
1301			26.21	0.45	6.62	16.0	438.7	0.24	114.8	clear
1304			26.21	0.45	6.66	16.0	449.1	0.17	88.16	clear
1307			26.21	0.45	6.69	16.0	452.4	0.19	71.4	clear
1310			26.21	0.30	6.72	16.1	453.2	0.18	60.0	clear
1313			26.21	0.30	6.75	16.2	454.3	0.16	52.6	clear

PURGING DATA

Sample ID:	MW-19i	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1313	Final Depth to Water:	26.20		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
1 x 250 mL	H2SO4	Ammonia / ~~TOC~~	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
3 x VOA	HCl	HVOC / ~~RSK~~	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-20i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JPIER
Weather:	Clear, 65° F	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	25.28	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	.

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1128			25.28	0.25	6.70	16.3	340.0	0.80	170.7	clear
1131			25.28	0.25	6.64	16.1	341.6	0.30	155.6	clear
1134			25.28	0.25	6.66	16.2	341.3	0.26	145.0	clear
1137			25.28	0.25	6.67	16.1	341.1	0.23	139.4	clear

PURGING DATA

Sample ID:	MW-20i	Sampling Flow Rate:	0.25		Analytical Laboratory:	Apex
Sample Time:	1137	Final Depth to Water:	25.28		Did Well Dewater:	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-21-40	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	JP
Weather:	Clear, 50°F	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.92	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / ~~Bladder Pump~~	Pump Intake Depth:	~~Mid-screen~~
Sampling Method:	~~Low-flow~~ Cumulative	Tubing Material & Type:	~~Silicone~~ / Skip-bonded LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0747			25.92	0.30	5.81	15.5	404.1	2.64	217.7	Clear
0750			—	↓	6.26	15.1	364.1	0.42	143.0	↓
0753			—		6.39	14.9	364.1	0.27	102.0	
0756			25.78		6.47	14.9	366.9	0.19	174.2	
0759			↓		6.47	14.9	367.2	0.18	172.0	

PURGING DATA

Sample ID:	MW-21-40	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	0759	Final Depth to Water:			Did Well Dewater:	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 x 250 mL	H2SO4	Ammonia / ~~TOC~~	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, ~~Nitrite~~	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / ~~RSK~~	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET MW-21i-105

GEOENGINEERS

Well ID:	~~MW-25i-105~~ MW-21i-105	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt. Cloudy ~55°	Time In/Out:	–

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	–
	Other: –	Well Depth:	–	Free Product Thickness:	–
Monument Condition:	Good	Depth to Water:	26.93	Water Column Length:	–
Well Cap Lock Present:	(Yes) No	Screened Interval:	–	Purge Volume:	–
Comments:	–				
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic Pump / (Bladder Pump)	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	(Skip-bonded LDPE) NEW / (DEDICATED)

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0756	–	–	26.96	0.30	7.15	15.6	431.1	1.79	122.3	clear
0759	–	–	26.93	0.30	7.18	15.4	446.4	1.40	118.7	↓
0802	–	–	26.93	0.30	7.24	15.3	459.9	1.01	114.0	↓
0805	–	–	26.93	0.30	7.24	15.2	464.4	0.81	111.7	↓
0808	–	–	26.93	0.30	7.25	15.2	471.3	0.58	107.2	↓

PURGING DATA

MW-21i-105

Sample ID:	~~MW-25i-105~~	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex
Sample Time:	0808	Final Depth to Water:	26.93	Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	(Ammonia) / TOC	N/A	N/A	N/A		
1 x 250 mL	None	(Nitrate, Nitrite)	N/A	N/A	N/A		
6 x VOA	HCl	(HVOC) / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

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WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-22i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/14/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt-Sunny- 65°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.76	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1036	-	-	26.78	0.30	6.64	16.8	471.8	1.21	-8.4	clear
1039	-	-	26.78	0.30	6.58	16.7	504	0.82	-26.9	↓
1042	-	-	26.77	0.30	6.57	16.6	531	0.48	-45.4	
1045	-	-	26.78	0.30	6.56	16.6	542	0.42	-52.7	
1048	-	-	26.78	0.30	6.56	16.7	554	0.36	-56.3	

PURGING DATA

Sample ID:	MW-22i	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1048	Final Depth to Water:	26.76		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-23i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	SO
Weather:	Clear, 50°F	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.62	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / ~~Bladder Pump~~	Pump Intake Depth:	~~Mid-screen~~
Sampling Method:	~~Low-flow~~	Tubing Material & Type:	~~Skip-bonded~~ LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0832			26.62	0.25	6.64	15.9	349.1	5.35	158.4	Clear
0835			26.62	0.25	6.72	16.6	329.9	4.28	166.1	
0838					6.78	16.3	310.2	3.66	185.0	
0841					6.73	16.2	323.0	2.75	189.6	
0844					6.80	16.3	324.8	2.73	191.5	
0847					6.80	16.2	326.2	2.39	193.2	

PURGING DATA

Sample ID:	MW-23i	Sampling Flow Rate:	0.25	Analytical Laboratory:	Apex	
Sample Time:	0847	Final Depth to Water:	26.60	Did Well Dewater:	No	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	~~Ammonia~~ / ~~TOC~~	N/A	N/A	N/A	
1 x 250 mL	None	~~Nitrate, Nitrite~~	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / ~~RSK~~	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-24i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	SP
Weather:	Clear, 55°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.54	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / ~~Bladder Pump~~	Pump Intake Depth:	~~Mid-screen~~
Sampling Method:	~~Low-flow~~	Tubing Material & Type:	~~Silicone~~ / ~~Skip-bonded~~ LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0920			26.54	0.30	7.22	17.4	2.9	6.37	257.5	Clear
0923			—	↓	6.77	15.2	3024	4.51	268.9	↓
0926			26.52		6.66	14.2	416.8	0.59	254.0	
0929			↓		6.62	14.1	419.4	0.50	246.1	
0932			↓	↓	6.65	14.2	421.0	0.48	238.0	↓

PURGING DATA

Sample ID:	MW-24i	Sampling Flow Rate:	0.30	Analytical Laboratory:	~~Apex~~
Sample Time:	0932	Final Depth to Water:	26.51	Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

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NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-24d	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JP ER
Weather:	Clear	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other:	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.81	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1353			26.81	0.35	7.64	16.9	351.7	0.90	-1.3	clear
1356			26.81	0.35	7.81	16.1	350.5	0.53	-35.9	clear
1359			26.81	0.35	7.90	16.0	350.8	0.42	-79.0	clear
1402			26.81	0.35	7.93	15.8	351.1	0.34	-116.8	clear
1405			26.81	0.35	7.97	15.7	350.8	0.29	-131.4	clear
1408			26.81	0.30	7.97	15.4	350.9	0.23	-141.1	clear
1411			26.81	0.30	8.01	16.1	350.2	0.22	-147.1	clear

PURGING DATA

Sample ID:	MW-24d	Sampling Flow Rate:	0.35	Analytical Laboratory:		Apex
Sample Time:	1411	Final Depth to Water:	26.81	Did Well Dewater:		No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
1 x 250 mL	H2SO4	Ammonia / ~~TOC~~	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
3 x VOA	HCl	HVOC / ~~RSK~~	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-25i	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 60°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.30	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
~~0807~~			~~26.32~~	~~0.35~~						
0811	-	-	26.33	0.35	6.75	15.0	278.7	8.75	162.1	clear
0814	-	-	26.36	0.35	6.61	14.8	388.1	2.22	160.7	↓
0817	-	-	26.34	0.35	6.61	14.9	384.5	1.20	157.5	
0820	-	-	26.35	0.35	6.61	14.7	385.3	0.88	155.6	
0823	-	-	26.33	0.35	6.61	14.6	385.0	0.83	154.5	

PURGING DATA

Sample ID:	MW-25i	Sampling Flow Rate:	~~0.35~~ 0.35	Analytical Laboratory:	Apex	
Sample Time:	0823	Final Depth to Water:	26.32	Did Well Dewater:	No	
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	-
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	-
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	-

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MW-26	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/14/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 60°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: -	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	26.24	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0924	-	-	26.29	0.36	6.02	15.0	4452	0.69	143.7	clear
0927	-	-	26.27	0.30	5.93	15.1	3877	0.39	147.0	↓
0930	-	-	26.27	0.30	5.91	15.1	3591	0.33	150.9	
0933	-	-	26.26	0.30	5.92	15.1	3527	0.35	152.1	
0936	-	-	26.26	0.30	5.93	15.1	3464	0.37	152.7	

PURGING DATA

Sample ID:	MW-26	Sampling Flow Rate:	0.30			Analytical Laboratory:	Apex
Sample Time:	0936	Final Depth to Water:	26.25			Did Well Dewater:	No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS1-3(43)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JP + ER
Weather:	Cloudy, 50	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:	Multi	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.98	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	Multi	Purge Volume:	—
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE
			NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0751			25.88	0.20	6.71	15.5	2648	1.53	222.7	Clear
0754			25.88	0.20	6.77	15.4	2651	0.40	219.3	↓
0757			↓	↓	6.80	15.4	2655	0.30	216.4	
0800			↓	↓	6.82	15.3	2667	0.14	215.0	↓

PURGING DATA

Sample ID:	MGMS1-3(43)	Sampling Flow Rate:	0.20		Analytical Laboratory:	Apex
Sample Time:	0800	Final Depth to Water:	25.88		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMSI-2(60)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	JP + ER
Weather:	Cloudy, 50°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:	Multi	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.80	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	Multi	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0825			25.80	0.30	6.96	15.2	475.2	5.14	161.2	Clear
0828			25.80	0.30	6.72	14.6	252.5	3.85	155.5	Clear
0831			25.80	0.20	6.74	14.6	239.7	3.75	155.8	Clear
0834			25.80	0.20	6.72	14.6	238.0	3.71	157.2	Clear

PURGING DATA

Sample ID:	MGMSI-2(60)	Sampling Flow Rate:	0.20	Analytical Laboratory:	Apex	
Sample Time:	0834	Final Depth to Water:	25.80	Did Well Dewater:	No	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

Slight particulate observed in samples

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS1-1(110)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	4/12/24
Project:	2Q24 GWM	Sampler:	JV ER
Weather:	Cloudy 50	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:	multi	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.70	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	multi	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
~~0852~~			~~25.70~~		+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0852			25.70	0.20	6.75	15.4	227.4	0.37	170.7	Clear
0855			25.71	0.20	6.92	15.2	224.8	0.32	166.3	
0858			25.71	0.20	7.05	15.1	224.4	0.31	159.6	
0901			25.71	0.20	7.11	15.0	223.9	0.29	157.0	
0904			25.71	0.20	7.10	15.1	224.9	0.25	153.5	

PURGING DATA

Sample ID:	MGMS1-1(110)	Sampling Flow Rate:	0.20		Analytical Laboratory:	Apex
Sample Time:	0904	Final Depth to Water:	25.72		Did Well Dewater:	N

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 / 2 x 250 mL	H2SO4	Ammonia / ~~TOC~~	N/A	N/A	N/A	
1 x 250 mL	None	~~Nitrate, Nitrite~~	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / ~~RSK~~	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MBMS2-4 (40)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/10/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 75°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	Multi-pore	Depth to Free Product:	-
	Other: Vault	Well Depth:	~	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:		Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	~	Purge Volume:	-

Comments: ~

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1248				0.30	7.00	19.0	2290	3.11	-15.3	Clear
1251				0.30	7.00	19.0	2287	2.91	-16.4	
1254				0.30	7.01	19.0	2289	2.78	-16.1	

PURGING DATA

Sample ID:	MBMS2-4 (40)	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1254	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	↓
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MBMS2-3 (60)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/10/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny ~ 70°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-port	Depth to Free Product:	~
	Other: Vault	Well Depth:	~	Free Product Thickness:	~
Monument Condition:	Good	Depth to Water:	~	Water Column Length:	~
Well Cap Lock Present:	Yes No	Screened Interval:	~	Purge Volume:	~

Comments: ~

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1322	-	-	-	0.30	7.01	17.9	400.2	1.50	-19.1	clear
1325	-	-	-	0.30	7.00	17.8	383.6	1.46	-25.1	↓
1328	-	-	-	0.30	7.00	17.8	374.4	1.42	-28.3	↓

PURGING DATA

Sample ID:	MBMS2-3(60)	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	1328	Final Depth to Water:	-		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	-	
1 x 250 mL	None	~~Nitrate, Nitrite~~	N/A	N/A	N/A	-	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	-	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS2-2 (110)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/10/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 80°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	multi-pa	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	-	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1353	-	-	-	0.30	6.99	17.4	302.7	2.10	-34.6	clear
1356	-	-	-	0.30	6.99	17.4	303.2	2.10	-33.1	↓
1359	-	-	-	0.30	7.01	17.3	303.6	2.09	-32.2	

PURGING DATA

Sample ID:	MGMS2-2(110)	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1359	Final Depth to Water:	-		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	~~Nitrate, Nitrite~~	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	↓

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS2-1(132)	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	P+ Sunny ~65°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	Multi-port	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	-	Water Column Length:	-
Well Cap Lock Present:	Yes No	Screened Interval:	-	Purge Volume:	-

Comments: -

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0814	-	-	-	0.30	6.99	17.0	235.7	1.79	-39.1	Clear
0817	-	-	-	0.30	6.99	17.1	235.6	1.72	-47.4	↓
0820	-	-	-	0.30	7.00	16.9	235.1	1.73	-53.7	

PURGING DATA

Sample ID:	MGMS2-1(132)	Sampling Flow Rate:	0.30		Analytical Laboratory:		Apex
Sample Time:	0820	Final Depth to Water:	-		Did Well Dewater:		No
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS3-4(40)	Job Number:	
Client:	Seattle Iron Metals	Date:	6/6/24
Project:	2024	Sampler:	JP/LF
Weather:	Clear, 65°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	4"	Depth to Free Product:	—
	Other: Vault	Well Depth:	MGMS	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	23.83	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	PP	Pump Intake Depth:	Multi-point
Sampling Method:	LF	Tubing Material & Type:	HDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1200			23.83	0.20	6.01	18.5	581	4.7	29.3	Clear
1203			23.89	0.20	6.38	17.2	533.8	4.2	-63.0	↓
1206			—	↓	6.36	17.2	516.5	2.7	-78.8	↓
1209			—	↓	6.57	17.4	500	2.3	-84.3	↓
1212			—	↓	6.59	17.3	507.8	2.3	-85.9	↓
1215			~~+2~~ 23.94	↓	6.61	17.4	506.5	2.3	-87.4	↓

PURGING DATA

Sample ID:	MGMS3-4(40)	Sampling Flow Rate:	0.20	Analytical Laboratory:	
Sample Time:	1215	Final Depth to Water:	23.94	Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
Main Sample = 6 containers		VOAs	6	VOA, 2	250, 1 unpres 250	
DUP = 6 containers		VOAs	3	VOA, 1		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MgMS3-3C60J	Job Number:	
Client:	Seneca View Main	Date:	6/10/24
Project:	7924	Sampler:	SP/LT
Weather:	Clear, 70°	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2 MgMS	Depth to Free Product:	
	Other: Vault	Well Depth:		Free Product Thickness:	
Monument Condition:	Good	Depth to Water:	23.91	Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal): 1-inch well = 0.041 | 2-inch = 0.162 | 4-inch = 0.653 | 1 gal = 3.785 liters

PURGING DATA

Purge Method:	PP	Pump Intake Depth:	Multi-port
Sampling Method:	LT	Tubing Material & Type:	NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1251			23.91	0.25	7.01	16.6	224.4	4.06	-23.7	Clear
1254				↓	6.91	17.2	206.3	3.14	2.8	↓
1257					6.93	17.3	201.0	3.23	7.8	
1300					6.92	17.3	190	3.17	10.9	

PURGING DATA

Sample ID:	MgMS3-3C60J	Sampling Flow Rate:	0.25		Analytical Laboratory:	Apex
Sample Time:	1300	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(1) 250	—	NO_2/NO_3	—	—	—	—
(1) 250	H_2SO_4	NH_3	—	—	—	—
(3) VOA	HCl	HVOCs	—	—	—	—

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	MGM33-2(101)	Job Number:	
Client:	Simco Van Main	Date:	6/10/24
Project:	2024	Sampler:	JP + LT
Weather:	Clear 70°F	Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	MGM3	Depth to Free Product:	-
	Other: Vault	Well Depth:	24.19	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	24.19	Water Column Length:	-
Well Cap Lock Present:	(Yes) No	Screened Interval:		Purge Volume:	-

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	PP	Pump Intake Depth:	Multiport
Sampling Method:	LF	Tubing Material & Type:	LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
~~1317~~			24.19	0.20	~~8.23~~	~~20.0~~	~~1.1~~	~~8.37~~	~~62.2~~	Clear
~~1320~~				↓	~~7.44~~	~~20.4~~	~~1.1~~	~~8.34~~	~~75.2~~	↓
~~1323~~					~~7.42~~	~~20.8~~	~~1.1~~	~~8.33~~	~~83.8~~	
~~1328~~				0.20	7.08	18.4	225.4	~~15.26~~	90.5	~~00.96.5~~
1332				↓	7.21	16.0	226.9	~~1.28~~	85.8	↓
1335					7.20	16.0	226.4	1.24	74.6	
~~1340~~	1338				7.25	15.9	227.9	1.16	62.0	
1341				↓	7.36	16.0	227.0	1.27	56.4	

PURGING DATA

Sample ID:	MGM3-2(101)	Sampling Flow Rate:		Analytical Laboratory:		Apex
Sample Time:	1341	Final Depth to Water:		Did Well Dewater:		NO

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1) 250	—	NO_2/NO_3				
1) 250	H_2SO_4	NH_3				
3) VOA	HCl	HVOCs				

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MGMS3-1(132)	Job Number:	—
Client:	Seaport Van Mfg	Date:	6/10/24
Project:	2024	Sampler:	SP/LT
Weather:	Clear, 75s	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	MGMS	Depth to Free Product:	—
	Other: Van 17	Well Depth:		Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	24.48	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	PP LF	Pump Intake Depth:	Multi point
Sampling Method:		Tubing Material & Type:	LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1400			24.48	0.25	7.12	17.2	228.9	5.36	45.1	Clear
1403			24.48	0.25	7.30	16.8	224.3	5.42	45.2	↓
1406			24.48	0.25	7.58	17.0	228.5	5.54	46.0	
1409			↓	↓	7.51	16.6	227.8	3.16	50.8	
1412					7.47	16.4	228.7	3.37	54.4	
1415					7.46	16.7	228.1	3.19	61.7	↓

PURGING DATA

Sample ID:	MGMS 3-1(132)	Sampling Flow Rate:	0.25	Analytical Laboratory:	Apex
Sample Time:	1415	Final Depth to Water:	24.48	Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
(1) 250	—	NO_2/NO_3	—	—	—	—
(1) 250	H_2SO_4	NH_3	—	—	—	—
(3) VOA	HCl	HVOCs	—	—	—	—

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	EW-1	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	SP ER
Weather:	cloudy 60°	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	22	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	23.83	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—
Comments:					

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / ~~Bladder Pump~~	Pump Intake Depth:	Mid-~~screen~~
Sampling Method:	~~Low-flow~~	Tubing Material & Type:	~~Skip-bonded~~ LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0947			23.83	0.60	6.48	14.5	263.3	6.07	190.7	clear
0950			23.83	0.25	6.49	14.7	263.1	5.79	194.0	clear
0953			23.83	0.25	6.54	14.9	263.3	5.57	195.7	clear
0956			23.83	0.25	6.56	14.8	263.6	5.50	198.0	clear

PURGING DATA

Sample ID:	EW-1	Sampling Flow Rate:	0.25		Analytical Laboratory:	~~Apex~~
Sample Time:	0956	Final Depth to Water:	23.87		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
1 ~~2~~ x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
3 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	EX	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	SP
Weather:	Clear, 68°F	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.75	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / ~~Bladder Pump~~	Pump Intake Depth:	~~Mid-screen~~
Sampling Method:	Low-flow	Tubing Material & Type:	~~Skip-Bonded~~ LDPE NEW / ~~DEDICATED~~

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
0959			25.75	0.40	6.96	15.3	630	3.07	230.1	Clear
1002				0.30	7.14	14.5	785	0.91	231.3	↓
1005				↓	7.19	14.5	784	0.28	227.4	↓
1008					7.17	14.5	786	0.17	225.0	↓
1011				↓	7.18	14.5	796	0.14	224.0	↓

PURGING DATA

Sample ID:	EX	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1011	Final Depth to Water:			Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

(9)

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MP-1	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/13/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Pt. Sunny ~ 65°	Time In/Out:	—

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: —	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	26.21	Water Column Length:	—
Well Cap Lock Present:	Yes No	Screened Interval:	—	Purge Volume:	—

Comments: —

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)			
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1109	—	—	26.23	0.30	7.00	15.9	338.8	0.85	116.1	Clear
1112	—	—	26.24	0.30	6.95	15.6	333.9	0.81	116.7	↓
1115	—	—	26.23	0.30	6.92	15.4	329.4	1.05	118.2	
1118	—	—	26.24	0.30	6.89	15.5	330.7	1.15	119.5	

PURGING DATA

Sample ID:	MP-1	Sampling Flow Rate:	0.30	Analytical Laboratory:	Apex	
Sample Time:	1118	Final Depth to Water:	26.20	Did Well Dewater:	NO	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	S-1	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 70°	Time In/Out:	—

WELL DATA

Monument Type:	(Flush-mount)/Stick-up	Well Diameter:	2"	Depth to Free Product:	—
	Other: Vault	Well Depth:	—	Free Product Thickness:	—
Monument Condition:	Good	Depth to Water:	25.12	Water Column Length:	—
Well Cap Lock Present:	(Yes) No	Screened Interval:	—	Purge Volume:	—

Comments: —

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / (Bladder Pump)	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	(Skip-bonded LDPE) NEW / (DEDICATED)

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1116	—	—	25.14	0.30	6.72	18.9	320.6	8.01	176.6	clear
1119	—	—	25.15	0.30	6.69	20.3	308.3	6.98	180.5	
1122	—	—	25.14	0.30	6.68	20.9	309.3	6.71	182.8	
1125	—	—	25.14	0.30	6.68	21.5	313.8	6.01	183.2	
1128	—	—	25.13	0.30	6.68	21.9	314.4	5.15	183.4	
1131	—	—	25.14	0.30	6.68	22.1	318.2	4.94	182.8	
1134	—	—	25.12	0.30	6.68	22.3	322.8	4.42	181.8	
1137	—	—	25.13	0.30	6.67	21.9	337.3	3.65	181.5	
1140	—	—	25.12	0.30	6.65	21.5	346.6	3.38	179.9	
1143	—	—	25.14	0.30	6.65	21.6	349.9	3.21	179.1	

PURGING DATA

Sample ID:	S-1	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1143	Final Depth to Water:	25.14		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	(Ammonia) / TOC	N/A	N/A	N/A	—
1 x 250 mL	None	(Nitrate, Nitrite)	N/A	N/A	N/A	—
6 x VOA	HCl	(HVOC) / RSK	N/A	N/A	N/A	—

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	S-2	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/12/24
Project:	2Q24 GWM	Sampler:	CW
Weather:	Sunny - 70°	Time In/Out:	-

WELL DATA

Monument Type:	Flush-mount / Stick-up	Well Diameter:	2"	Depth to Free Product:	-
	Other: Vault	Well Depth:	-	Free Product Thickness:	-
Monument Condition:	Good	Depth to Water:	25.69	Water Column Length:	-
Well Cap Lock Present:	Yes / No	Screened Interval:	-	Purge Volume:	-
Comments:	-				

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE — NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
1228	-	-	25.72	0.30	6.47	22.1	1912	0.54	169.0	Slight orange
1231	-	-	25.74	0.30	6.50	21.8	1929	0.38	155.3	clear
1234	-	-	25.74	0.30	6.51	21.6	1929	0.34	151.1	↓
1237	-	-	25.73	0.30	6.52	21.5	1926	0.28	140.8	↓

PURGING DATA

Sample ID:	S-2	Sampling Flow Rate:	0.30		Analytical Laboratory:	Apex
Sample Time:	1237	Final Depth to Water:	25.71		Did Well Dewater:	No

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	-	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	-	|
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	-	|

NOTES/ADDITIONAL COMMENTS

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	NKW-1	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	CW
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:		Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
			25.74		6.82	15.19	704	1.59	144.7	clear

PURGING DATA

Sample ID:	NKW-1	Sampling Flow Rate:			Analytical Laboratory:	Apex
Sample Time:		Final Depth to Water:			Did Well Dewater:	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

Antea tubing, meter, pump

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	MKW-2	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:	2"	Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:		Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
			25.61		6.92	15.50	1217	0.78	27.9	clear

PURGING DATA

Sample ID:	MKW-2	Sampling Flow Rate:			Analytical Laboratory:		Apex
Sample Time:		Final Depth to Water:			Did Well Dewater:		
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

Antea tubing, meter, pump

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	KMW-4	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/18/24
Project:	2Q24 GWM	Sampler:	Antea / CW
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:		Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:		Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	
Comments:					
Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)					
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters	

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
			25.53		6.91	23.4	622	4.28	46.8	clear

PURGING DATA

Sample ID:	KMW-4	Sampling Flow Rate:		Analytical Laboratory:		Apex
Sample Time:		Final Depth to Water:		Did Well Dewater:		

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A	
1 x 250 mL	None	Nitrate, ~~Nitrite~~	N/A	N/A	N/A	
6 x VOA	HCl	HVOC / RSK	N/A	N/A	N/A	

NOTES/ADDITIONAL COMMENTS

Antea Group well

WELL MONITORING DATA SHEET

GeoEngineers

Well ID:	KMW-5	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/10/24
Project:	2Q24 GWM	Sampler:	Antea / CW
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:		Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:		Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)				
Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / (Bladder Pump)	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
			25.83		7.14	17.2	769	2.59	-251.1	clear

PURGING DATA

Sample ID:	KMW-5	Sampling Flow Rate:			Analytical Laboratory:	Apex
Sample Time:		Final Depth to Water:			Did Well Dewater:	

No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	(Ammonia / TOC)	N/A	N/A	N/A		
1 x 250 mL	None	(Nitrate, Nitrite)	N/A	N/A	N/A		
6 x VOA	HCl	(HVOC / RSK)	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

Antea Group well

WELL MONITORING DATA SHEET

GEOENGINEERS

Well ID:	KMW-6	Job Number:	19001-009-34
Client:	Sunoco - Vancouver Main Terminal	Date:	6/11/24
Project:	2Q24 GWM	Sampler:	Antea/CW
Weather:		Time In/Out:	

WELL DATA

Monument Type:	Flush-mount/Stick-up	Well Diameter:		Depth to Free Product:	
	Other:	Well Depth:		Free Product Thickness:	
Monument Condition:		Depth to Water:		Water Column Length:	
Well Cap Lock Present:	Yes No	Screened Interval:		Purge Volume:	

Comments:

Purge Volume = (Water Height) X (Multiplier) X (# Casing Volumes)

Water height multipliers (gal):	1-inch well = 0.041	2-inch = 0.162	4-inch = 0.653	1 gal = 3.785 liters

PURGING DATA

Purge Method:	Peristaltic Pump / Bladder Pump	Pump Intake Depth:	Mid-screen
Sampling Method:	Low-flow	Tubing Material & Type:	Skip-bonded LDPE NEW / DEDICATED

Time	Volume Purged (liters)	Cumulative Volume Purged (liters)	DTW (btc)	Purge Rate (L/min)	pH	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	Clarity/Color Other Remarks
					+/-0.1	+/-0.5 °C	+/-5%	+/-0.5 ppm	+/-20 mV	
			25.71		~~6.60~~ DUP 6.79	15.39	382	6.60	-170.9	clear

PURGING DATA

Sample ID:	KMW-6	Sampling Flow Rate:			Analytical Laboratory:		Apex
Sample Time:		Final Depth to Water:			Did Well Dewater:		
No. of Containers/Type	Preservative	Analysis/Method	Field Filtered	Filter Size	MS/MSD	Duplicate ID	
2 x 250 mL	H2SO4	Ammonia / TOC	N/A	N/A	N/A		
1 x 250 mL	None	Nitrate, Nitrite	N/A	N/A	N/A		
x VOA	HCl	HVOC / RSK	N/A	N/A	N/A		

NOTES/ADDITIONAL COMMENTS

Antea Group well

APPENDIX B
Historical Groundwater Analytical Data

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-1	11/17/1993	--	500	--	--	<250	<250	--	14,000	--	--	750	<250	--	1,400	<500
	9/1/1995	<250	<500	<250	<250	<250	<250	<250	13,000	<250	<250	620	<250	--	890	610
	9/24/1996	<5	<20	<2	<2	54	<2	8.4	11,000	83	17	2,600	68	--	1,800	420
	12/2/1996	0.8	<0.50	<0.50	<0.20	6.7	<0.50	0.3	1,500	4.4	<0.20	1,200	7.3	--	310	1.6
	11/12/1997	<125	<250	<125	<125	<125	<125	<125	11,600	<125	<125	6,330	<125	--	2,880	<250
	8/11/1999	<50	<250	<25	<250	43.1	<25	<25	8,590	86	<25	2,520	52.5	--	1,210	408
	11/16/1999	<50	<125	<25	<50	38	<25	<25	6,250	47.5	<25	2,400	28	--	829	148
	2/29/2000	<100	<500	<50	<50	<50	<50	<50	6,720	60.9	<50	1,370	<100	--	590	438
	6/27/2000	<100	<500	<50	<50	<50	<50	<50	6,480	65.1	<50	1,780	<100	--	795	284
	8/31/2000	<100	<500	<50	<50	<50	<50	<50	5,160	<50	<50	1,960	<100	--	720	<50
	11/30/2000	<20	<100	<10	<10	15	<10	<10	1,550	12.7	<10	660	<20	--	234	<10
	2/27/2001	<100	<100	<50	<50	<50	<50	<50	4,990	<50	<50	1,140	<100	--	440	190
	5/29/2001	<50	<250	<25	<25	<25	<25	<25	4,050	<25	<25	1,040	<50	--	407	91
	9/25/2001	<50	<50	<50	<50	<50	<50	<50	5,000	<50	<50	890	<50	--	440	240
	12/17/2001	<2	<10	<1	<1	<1	<1	<1	109	1.26	<1	164	<2	--	42.9	<1
	3/19/2002	<50	<25	<25	<50	35	<25	<25	4,120	35	<25	710	<25	--	349	170
	5/30/2002	<10	<5	<5	<10	10.8	<5	<5	1,140	6.6	<5	307	<5	--	101	22.3
	11/8/2002	<20	<10	<10	<20	22.8	<10	<10	1,980	20.2	<10	367	<10	--	174	14.4
	5/30/2003	<20	<10	<10	<20	21.2	<10	<10	2,180	<10	<10	1,200	14.2	--	340	22.6
	11/2/2004	<20	<10	<10	<20	22.4	<10	<10	2,130	23.6	<10	335	<10	--	169	22.8
	11/16/2004	<12	<12	<12	<12	15	<12	<12	1,300	<12	<12	310	<12	--	130	<12
	5/18/2005	<5	<2.5	<2.5	<5	12	<2.5	<2.5	773	14.1	<2.5	193	<2.5	--	87.6	3.8
	5/23/2007	<10	<10	<10	<10	15.5	<10	<10	1,110	<10	<10	58.5	<10	--	45.4	11.7
	9/11/2007	<50	<25	<25	<50	<25	<25	<25	916	<25	<25	34	<25	--	34	62.5
	12/13/2007	<10	<5	<5	<10	9.7	<5	<5	526	5	<5	81.9	<5	--	45.4	8.8
	3/5/2008	<1	<0.500	<0.500	<1	16.1	<0.500	1.66	826	9.18	2.3	49.7	0.88	<0.500	45.6	58.8
	9/19/2008	<20	<10	<10	<20	20.4	<10	<10	633	<10	<10	108	<10	<10	74.8	<10
	12/10/2008	<2.5	<2.5	<2.5	<2.5	15	<2.5	<2.5	570	6.2	<2.5	28	<2.5	<2.5	25	48
	3/27/2009	<2.5	<2.5	<2.5	<2.5	17	<0.50	<2.5	580	5.7	<2.5	39	<2.5	<2.5	42	4.4
	6/17/2009	<0.90	<0.90	<0.90	<0.90	6.3	<0.90	<0.90	310	3.6	0.99	21	<0.90	<0.90	14	9.7
	9/18/2009	<0.80	<0.80	<0.80	<0.80	19	<0.80	<0.80	590	4.2	1.9	29	<0.80		27	8.1
	12/17/2009	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	170	0.72	0.67	53	0.53	<0.50	26	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-1	3/19/2010	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	0.61	300	3.6	1.4	22	<0.50	<0.50	21	26
(continued)	6/15/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.6	<0.50	<0.50	22	<0.50	<0.50	6.6	<0.50
	9/23/2010	<0.90	<0.90	<0.90	<0.90	12	<0.90	<0.90	380	3.4	1.6	25	<0.90	<0.90	27	7.1
	12/9/2010	<1.5	<1.5	<1.5	<1.5	7.1	1.5	<1.5	250	2.2	<1.5	25	<1.5	<1.5	17	8
	3/10/2011	<1.5	<1.5	<1.5	<1.5	7.5	<1.5	<1.5	250	3	<1.5	16	<1.5	<1.5	16	18
	6/9/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	11	<0.5	<0.5	3.4	<0.5
	9/19/2011	<1.5	<1.5	<1.5	<1.5	12	<1.5	<1.5	300	3.2	<1.5	5.2	<1.5	<1.5	13	30
	12/9/2011	<1.5	<1.5	<1.5	<1.5	11	<1.5	<1.5	260	2.9	<1.5	6.2	<1.5	<1.5	8.4	40
	3/9/2012	<0.50	<0.50	<0.50	<0.50	7.8	<0.50	<0.50	200	2.4	1	3.1	<0.50	<0.50	9.5	19
	6/22/2012	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<0.5	140	1.7	0.53	17	<0.5	<0.5	13	14
	9/13/2012	<1.5	<1.5	<1.5	<1.5	10	<1.5	<1.5	260	2.4	<1.5	<1.5	<1.5	<1.5	7	25
	12/13/2012	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	47	0.64	<0.50	26	<0.50	<0.50	14	<0.50
	3/15/2013	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	140	1.6	0.8	0.83	<0.50	<0.50	6	0.98
	6/13/2013	<0.50	<0.50	<0.50	<0.50	7.2	<0.50	<0.50	130	1.9	0.63	1.1	<0.50	<0.50	2.4	28
	9/19/2013	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	180	1.6	1	3.2	<0.50	<0.50	5.6	0.92
	12/16/2013	<0.50	<0.50	<0.50	<0.50	7.8	<0.50	<0.50	110	1.8	<0.50	8.5	<0.50	<0.50	5.9	13
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.1	<0.50	<0.50	10	<0.50	<0.50	4.3	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	45	1	<0.50	<0.50	<0.50	<0.50	0.65	5.9
	9/30/2014	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	170	1.3	0.83	12	<0.50	<0.50	9.7	3.3
	12/11/2014	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	30	<0.50	<0.50	17	<0.50	<0.50	9.4	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	6.2	<0.50	<0.50	47.4	0.67	<0.50	1.1	<0.50	<0.50	1.9	<5
	6/17/2015	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	75	0.8	<0.50	4.3	<0.50	<0.50	4.6	4.9
	9/24/2015	<0.50	<0.50	<0.50	<0.50	8.4	<0.50	<0.50	39.1	0.65	<0.50	2.8	<0.50	<0.50	2.4	32.7
	12/8/2015	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	25.2	<0.50	<0.50	18	<0.50	<0.50	8.9	<0.50
	3/7/2016	<0.50	<2	<5	<0.50	4.4	<0.50	<0.50	51.9	<0.50	<0.50	18	<0.50	<0.50	10.3	0.57
	6/15/2016	<0.50	<2	<0.50	<0.50	3.7	<0.50	<0.50	13.1	<0.50	<0.50	0.67	<0.50	<0.50	1.2	5.3
	9/27/2016	<0.50	<2	<0.50	<0.50	8.6	<0.50	<0.50	25.2	<0.50	<0.50	2.3	<0.50	<0.50	3.1	23.9
	12/16/2016	<0.50	<2	<0.50	<0.50	3.4	<0.50	<0.50	22.5	<0.50	<0.50	8	<0.50	<0.50	5.8	0.86
	3/30/2017	<0.50	<2	<0.50	<0.50	<0.5	<0.5	<0.50	1.6	<0.50	<0.50	4.6	<0.50	<0.50	1.6	<0.50
	6/12/2017	<2.0	<2.0	<0.50	<0.50	2.1	<1.0	<0.50	9.9	<0.50	<0.50	4.4	<0.50	<0.50	3.1	<0.50
	9/26/2017	<2.0	<2.0	<0.50	<0.50	6.8	<1.0	<0.50	6.7	<0.50	<0.50	1.5	<0.50	<0.50	1.6	22.6
	11/9/2017	<2.0	<2.0	<0.50	<0.50	5.00	<0.50	<0.50	22.80	<0.50	<0.50	9.50	<0.50	<0.50	6.50	1.1
	3/20/2018	<0.500	<2.50	<0.500	<0.500	4.84	<0.500	<0.500	6.13	<0.500	0.322 J	2.49	<0.500	<0.500	2.06	<0.500
	7/1/2018	<0.500	<2.50	<0.500	<0.500	6.70	<0.500	0.204 J	16.1	0.303 J	0.427 J	0.530	<0.500	<0.500	1.63	10.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-1 (continued)	9/25/2018	<1.00	<5.00	<1.00	<1.00	7.33	<0.400	0.740	44.9	0.610	0.510	4.24	<0.400	<0.500	8.09	3.19
	12/4/2018	<1.00	<5.00	<1.00	<1.00	4.73	<0.400	<0.400	22.7	<0.400	<0.500	15.700	<0.400	<0.500	9.04	2.57
	3/21/2019	<1.00	<5.00	<1.00	<1.00	4.37	<0.400	0.780	28.5	0.530	<0.500	2.78	<0.400	<0.500	6.65	0.400
	6/5/2019	<1.00	<5.00	<1.00	<1.00	2.54	<0.400	<0.400	27.6	0.481	<0.500	12.9	<0.400	<0.500	8.43	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	8.66	<0.400	0.57	106	1.78	0.703	19.1	0.45	<0.500	18.4	2.97
	12/4/2019	<1.00	<5.00	<1.00	<1.00	3.22	<0.400	<0.400	26.6	0.494	<0.500	10.6	<0.400	<0.500	7.39	0.67
	3/10/2020	<1.00	<5.00	<1.00	<1.00	4.45	<0.400	<0.400	13.4	<0.400	<0.500	5.96	<0.400	<0.500	5.22	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	2.95	<0.400	0.42	23.5	0.520	<0.500	12.1	<0.400	<0.500	7.75	0.46
	10/7/2020	<1.00	<5.00	<1.00	<1.00	6.45	<0.400	<0.400	104	1.41	<0.500	26.4	<0.400	<0.500	22.2	1.80
	12/8/2020	<2.00	<5.00	<1.00	<1.00	5.47	<0.400	0.512	62.6	0.968	<0.500	19.0	<0.400	<0.500	12.3	1.42
	3/4/2021	<1.00	<5.00	<1.00	<1.00	3.38	<0.400	<0.400	37.2	0.608	<0.500	6.44	<0.400	<0.500	6.6	1.76
	6/16/2021	<1.00	<5.00	<1.00	<1.00	4.76	<0.400	0.624	75.8	0.892	<0.500	9.95	<0.400	<0.500	14.2	2.05
	9/15/2021	<1.00	<5.00	<1.00	<1.00	5.06	<0.400	0.465	69.8	0.878	<0.500	7.3	<0.400	<0.500	8.69	3.2
	12/9/2021	<1.00	<5.00	<1.00	<1.00	1.51	<0.400	<0.400	24.9	0.446	<0.500	16.8	<0.400	<0.500	6.84	1.56
	3/8/2022	<1.00	<5.00	<1.00	<1.00	1.33	<0.400	<0.400	20.9	0.420	<0.500	16.1	<0.400	<0.500	6.92	1.44
	06/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.800	<0.400	<0.500	4.93	<0.400	<0.500	1.09	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	6.41	<0.400	0.45	112	1.73	0.5	19.1	0.73	<0.500	16.6	8.68
	12/6/2022	<1.00	<5.00	<1.00	<1.00	4.37	<0.400	0.41	82.3	1.29	<0.500	30.3	0.56	<0.500	15.8	3.08
	3/17/2023	<1.00	<5.00	<1.00	<1.00	3.92	<0.400	0.51	68.7	1.07	<0.500	14.0	<0.400	<0.500	13.4	0.82
	6/14/2023	<1.00	<5.00	<1.00	<1.00	4.82	<0.400	0.54	75.9	1.23	0.530	11.2	<0.400	<0.500	13.9	2.05
	9/12/2023	<4.00	<5.00	<1.00	<1.00	5.44	<0.400	0.430	86.5	1.38	<0.500	15.3	0.450	<0.500	16.1	0.680
	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.600	<0.400	<0.400	8.89	<0.400	<0.500	19.9	<0.400	<0.500	4.28	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	3.00	<0.400	0.43	41.8	0.750	<0.500	9.22	<0.400	<0.500	9.90	<0.200
	6/13/2024	<1.00	<5.00	<1.00	<1.00	2.92	<0.400	<0.400	46.1	0.570	<0.500	20.1	<0.400	<0.500	11.2	<0.200
MW-2	11/17/1993	--	51	--	--	12	<0.50	--	10	--	--	<0.50	<0.50	--	<0.50	<0.10
	9/1/1995	<0.50	16	<0.50	<0.20	8.2	<0.50	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	--	<0.50	2.2
	9/24/1996	<0.50	19	<0.20	<0.20	9.6	0.5	<0.20	9.4	<0.20	<0.20	<0.20	<0.50	--	0.3	5.1
	12/2/1996	<0.50	8.8	<0.50	<0.20	6.9	0.6	<0.20	11	<1	<0.20	<0.50	<1	--	<0.30	7.2
	11/13/1997	<0.50	<1	<0.50	<0.50	5.32	0.571	<0.50	7.9	<0.50	<0.50	<0.50	<0.50	--	<0.50	<1
	8/11/1999	<1	18.3	<0.50	<0.50	6.38	<0.50	<0.50	20	<0.50	<0.50	<0.50	<1	--	10.4	1.64
	2/29/2000	<1	16	<0.50	<0.50	5.68	<0.50	<0.50	23.5	<0.50	<0.50	<0.50	<1	--	4.52	1.21
	6/27/2000	<1	18.3	<0.50	<0.50	5.34	<0.50	1.27	23.4	<0.50	<0.50	12.8	<1	--	16.6	<0.50
	5/30/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	5/30/2002	<1	1.68	<0.50	<1	2.65	<0.50	<0.50	0.51	<0.50	<0.50	0.61	<0.50	--	<0.50	<0.50
	11/8/2002	<1	10.4	<0.50	<1	3.13	<0.50	<0.50	1.84	<0.50	<0.50	1.05	<0.50	--	0.98	<0.50
	5/30/2003	<1	3.64	<0.50	<1	1.95	<0.50	<0.50	0.59	<0.50	<0.50	6.6	<0.50	--	1.13	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-2	9/12/2007	<1	5.9	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
(continued)	3/7/2008	<1	7.86	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.5	<0.500	<0.500	<0.500	<0.500
	9/18/2008	<1	5.93	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	3/24/2009	<0.50	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/16/2009	<0.50	5.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	0.85	<0.50
	3/19/2010	<0.50	5.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2010	<0.5	3.8	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/9/2011	<0.50	4.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/16/2011	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2012	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/13/2012	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/14/2013	<0.50	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/19/2013	<0.50	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2014	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2015	<0.50	0.96	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/29/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/25/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	7/2/2018	<0.500	3.0	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-2 (continued)	3/16/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/14/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-3	11/17/1993	--	210	--	--	27	4	--	240	--	--	190	20	--	97	130
	9/1/1995	<50	<100	<50	<50	<50	<50	<50	2,700	<50	<50	1,300	<50	--	140	730
	9/24/1996	<5	<20	7.9	<2	12	<2	<2	1,100	9.5	4	1,800	21	--	330	82
	12/2/1996	<50	<50	<50	<20	<30	<50	<20	650	<100	<20	2,100	<100	--	470	<50
	11/12/1997	<25	<50	<25	<25	<25	<25	<25	464	<25	<25	2,000	<25	--	241	<50
	8/11/1999	<20	<100	<10	<10	<10	<10	<10	500	<10	<10	1,760	25.4	--	247	<10
	11/16/1999	<20	<50	<10	<20	14	<10	<10	628	15.2	<10	700	<10	--	132	<10
	2/29/2000	<20	<100	<10	<10	<10	<10	<10	473	<10	<10	1,890	25.4	--	356	<10
	6/27/2000	<20	<100	<10	<10	<10	<10	<10	410	<10	10.2	1,460	<20	--	241	<10
	8/31/2000	<20	<100	<10	<10	52.2	<10	<10	2,580	25.5	<10	399	<20	--	100	171
	11/30/2000	<5	<25	<2.5	<2.5	13.3	<2.5	<2.5	374	3.73	<2.5	366	<5	--	80.3	3.1
	2/27/2001	<5	<25	3.64	<2.5	5.78	<2.5	<2.5	153	<2.5	2.5	358	<5	--	76.1	<2.5
	5/29/2001	<5	<25	2.8	<2.5	<2.5	<2.5	<2.5	112	<2.5	<2.5	647	5.12	--	93.3	<2.5
	9/25/2001	<1.3	3.1	2.4	<1.3	10	2	<1.3	210	3	1.7	550	7.2	--	90	4.9
	12/17/2001	<10	<50	<5	<5	<5	<5	<5	164	<5	<5	826	16.9	--	155	<5
	3/19/2002	<5	<2.5	2.75	<5	<2.5	<2.5	<2.5	138	4.1	<2.5	758	9.6	--	107	<2.5
	5/30/2002	<10	7.8	<5	<10	27.8	<5	<5	1,380	42.6	6	302	11.5	--	55.1	96.7
	8/28/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/8/2002	<5	15	<2.5	<5	29.4	3.55	<2.5	399	9.05	5.7	359	5.8	--	67.1	19.4
	1/23/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/30/2003	<5	<2.5	6.45	<5	<2.5	<2.5	<2.5	50.1	3.65	<2.5	706	4.95	--	72.6	<2.5
	11/10/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/26/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/17/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/16/2004	<10	<5	<5	<10	15	<5	<5	440	5.9	<5	270	<5	--	72	<5
	3/23/2005	<2	2.26	4.16 B	<2	8.92	<1	<1	246	8.4	2.86	329	5.04	--	71.9	3.84
	5/18/2005	<2	<1	3.86	<2	5.74	<1	<1	188	4.72	3.02	304	5.06	--	88.5	<1
	8/18/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/5/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/7/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-3 (continued)	5/23/2007	<2	<2	<2	<2	<2	<2	<2	110	6.3	<2	349	4.54	--	70.6	<2
	9/11/2007	<5	9.95	14.4	<5	43	6.1	<2.50	950	28.2	12	601	31	--	223	6.1
	12/12/2007	<10	<5	<5	<10	<5	<5	<5	95.7	<5	<5	254	<5	--	63.2	<5
	3/6/2008	<1	<0.500	2.10 J	<1	1.32	<0.500	<0.500	127	8.49	2.37	144	5.66	<0.500	94.7	<0.500
	9/19/2008	<5	3.7	2.65 J	<5	10.6	<2.50	<2.50	187	5.85	2.95	283	6.6	<2.50	75	<2.50
	12/10/2008	<0.90	1.5	1.9	<0.90	5.3	1.2	<0.90	120	4.3	1.5	200	3.8	<0.90	54	<0.90
	3/26/2009	<0.50	<0.50	1.4	<0.50	1.6	<0.50	<0.50	83	4.3	1.2	180	3.6	<0.50	46	<0.50
	6/17/2009	<0.50	<0.50	1.1	<0.50	0.89	<0.50	<0.50	76	4.7	0.71	190	3.4	<0.50	49	<0.50
	9/18/2009	<0.50	<0.50	3.3	<0.50	10	<0.50	<0.50	180	6.2	2.2	270	7.3	<0.50	62	1.2
	12/17/2009	<0.90	<0.90	0.96	<0.90	<0.90	<0.90	<0.90	50	3.2	<0.90	180	3.2	<0.90	47	<0.90
	3/19/2010	<0.90	<0.90	1 BE	<0.90	<0.90	<0.90	<0.90	77	5.4	<0.90	280	4.1	<0.90	49	<0.90
	6/16/2010	<0.50	<0.50	2.3	<0.50	1.6	0.9	<0.50	42	1.7	<0.50	180	1.9	<0.50	30	<0.50
	9/23/2010	<0.5	<0.5	2.8 BE	<0.5	0.56	<0.5	<0.5	75	4.4	0.51	220	3	<0.5	39	<0.5
	12/9/2010	<0.5	<0.5	2.7	<0.5	<0.5	<0.5	<0.5	39	3.4	<0.5	210	3	<0.5	35	<0.5
	3/10/2011	<0.50	<0.50	5.4	<0.50	<0.50	<0.50	<0.50	8.9	1.1	<0.50	110	1.6	<0.50	15	<0.50
	6/10/2011	<0.5	<0.5	1.6	<0.5	2.2	0.76	<0.5	36	1.1	0.54	99	1.6	<0.5	30	<0.5
	9/16/2011	<0.50	<0.50	2	<0.50	3	0.59	<0.50	70	1.7	0.91	130	2.4	<0.50	31	<0.50
	12/9/2011	<0.50	<0.50	2.2	<0.50	2.9	0.54	<0.50	62	1.6	0.83	190	2.6	<0.50	45	<0.50
	3/12/2012	<0.50	<0.50	2.4	<0.50	0.83	<0.50	<0.50	52	2.8	1	140	3.1	<0.50	45	<0.50
	6/21/2012	<0.5	<0.5	2.3	<0.5	0.9	<0.5	<0.5	45	2.7	0.56	170	2.7	<0.5	37	<0.5
	9/13/2012	<0.50	<0.50	1.7	<0.50	4.1	<0.50	<0.50	100	2.1	1.4	140	3.3	<0.50	45	<0.50
	12/13/2012	<0.50	<0.50	1.3	<0.50	0.78	<0.50	<0.50	27	1.6	<0.50	170	2	<0.50	36	<0.50
	3/14/2013	<0.50	<0.50	1.8	<0.50	1	<0.50	<0.50	64	2.5	1.4	160	3.2	<0.50	53	<0.50
	6/14/2013	<0.90	<0.90	1.4	<0.90	1.1	<0.90	<0.90	68	3.1	1.3	210	3.3	<0.90	48	<0.90
	9/19/2013	<0.50	<0.50	1.1	<0.50	1.1	<0.50	<0.50	99	1.5	1.4	86	1.7	<0.50	30	<0.50
	12/16/2013	<0.50	<0.50	1.4	<0.50	1.3	<0.50	<0.50	47	2.1	0.81	170	2.4	<0.50	38	<0.50
	3/21/2014	<0.50	<0.50	1.3	<0.50	0.64	<0.50	<0.50	27	1.6	<0.50	150	2	<0.50	30	<0.50
	6/24/2014	<0.50	0.86	0.86	<0.50	1.4	<0.50	<0.50	65	3.2	1.3	180	3.2	<0.50	44	<0.50
	9/30/2014	<0.50	<0.50	1	<0.50	6.7	0.7	<0.50	110	2.1	1.3	180	2.8	<0.50	47	<0.50
	12/11/2014	<0.50	<0.50	1.2	<0.50	0.8	<0.50	<0.50	28	1.7	<0.50	150	2.2	<0.50	37	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2015	<0.50	<0.50	0.86	<0.50	1.1	<0.50	<0.50	49	2	0.88	160	2.8	<0.50	44	<0.50
	12/9/2015	<0.50	<0.50	0.66	<0.50	4.9	<0.50	<0.50	72	1.8	1.1	145	1.8	<0.50	33.6	<0.50
	3/7/2016	<0.50	<2	0.76	<0.50	2.2	<0.50	<0.50	61.8	2.5	1.3	199	3.6	<0.50	45.1	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	50.2	0.82	<0.50	49.5	0.77	<0.50	17.4	<0.50
	9/30/2016	<0.50	<2	0.67	<0.50	8.2	0.73	<0.50	95.3	1.5	1.6	145	2	<0.50	40.1	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-3	12/16/2016	<0.50	<2	0.52	<0.50	1.1	<0.50	<0.50	26.8	0.9	0.57	86.2	1.2	<0.50	23.9	<0.50
(continued)	3/29/2017	<0.50	<2	<0.50	<0.50	7.1	1.3	<0.50	77.9	1.2	<0.50	67.6	0.64	<0.50	20.2	2.5
	6/14/2017	<2.0	<2.0	1.0	<0.50	2.1	<1.0	<0.50	39.0	1.5	<0.50	163	1.7	<0.50	30.4	<0.50
	9/25/2017	<2.0	<2.0	<0.50	<0.50	5.6	<1.0	<0.50	73.3	1.3	<0.50	127	1.5	<0.50	29.5	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	5.0	<0.50	<0.50	59.5	0.6	<0.50	67	0.6	<0.50	16.1	0.7
	3/20/2018	<0.500	<2.50	0.380 J	<0.500	2.0	0.144 J	<0.500	77.8	2.2	1.99	194	3.4	<0.500	48.6	<0.500
	7/2/2018	<0.500	<2.50	0.439 J	<0.500	<0.500	3.2	<0.500	64.5	1.6	1.07	180	2.6	<0.500	43.1	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	6.41	<0.400	<0.400	75.6	0.73	1.18	145	1.18	<0.500	36.3	<0.400
	12/7/2018	<2.00	<10.0	<2.00	<2.00	3.1	<0.800	<0.800	44.2	1.0	<1.00	96	1.0	<1.00	27.8	<0.800
	3/20/2019	<1.00	<5.00	<1.00	<1.00	0.930	<0.400	<0.400	37.5	1.16	1.03	112	1.55	<0.500	33.2	<0.400
	6/7/2019	<1.00	<5.00	1.02	<1.00	1.22	<0.400	<0.400	41.6	1.99	0.708	195	2.62	<0.500	39.8	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	7.00	0.47	<0.400	72.3	1.25	1.32	130	1.7	<0.500	32.9	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	1.54	<0.400	<0.400	36.5	1.07	0.634	136	1.33	<0.500	36.4	<0.400
	3/10/2020	<1.00	<5.00	<1.00	<1.00	1.77	<0.400	<0.400	48.9	1.97	1.03	192	2.74	<0.500	50.9	<0.400
	6/17/2020	<2.00	<10.0	<2.00	<2.00	<0.800	<0.400	<0.400	18.6	1.16	<1.00	115	1.38	<1.00	22.8	<0.800
	10/7/2020	<1.00	<5.00	<1.00	<1.00	5.30	<0.400	<0.400	62.9	1.02	1.10	169	1.57	<0.500	32.6	<0.400
	12/8/2020	<10.0	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	29.7	<2.00	<2.50	145	<2.00	<2.50	36.1	<2.00
	3/4/2021	<1.00	<5.00	<1.00	<1.00	1.13	<0.400	<0.400	41.8	1.65	1.06	182	2.65	<0.500	46.7	<0.400
	6/16/2021	<2.50	<12.5	<2.50	<2.50	<1.00	<1.00	<1.00	31.5	1.44	<1.25	145	1.86	<1.25	36.3	<1.00
	9/14/2021	<1.00	<5.00	<1.00	<1.00	5.07	<0.400	<0.400	63.2	1.120	1.04	117	1.60	<0.500	33.1	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	0.719	<0.400	<0.400	24.6	1.310	<0.500	183	2.50	<0.500	42.5	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	0.980	<0.400	<0.400	30.9	1.19	0.640	137	1.47	<0.500	29.3	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	1.73	<0.400	<0.400	38.4	0.500	0.600	116	1.20	<0.500	28.6	<0.400
	9/15/2022	<2.00	<10.0	<2.00	<2.00	2.72	<0.400	<0.400	41.9	<0.500	<1.00	107	1.8	<1.00	24.5	<0.500
	12/6/2022	<1.00	<5.00	<1.00	<1.00	1.13	<0.400	<0.400	31.4	1.23	<0.500	137	1.74	<0.500	29.5	<0.400
	3/16/2023	<1.00	<5.00	<1.00	<1.00	0.94	<0.400	<0.400	35.1	1.34	0.98	144	1.79	<0.500	31.7	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	0.72	<0.400	<0.400	23.7	1.19	<0.600	136	1.77	<0.500	23.9	<0.400
	9/13/2023	<2.00	<5.00	<1.00	<1.00	2.85	<0.400	<0.400	51.8	0.550	0.920	139	1.35	<0.500	29.1	<0.400
	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.480	<0.400	<0.400	12.4	0.970	<0.500	143	1.75	<0.500	26.6	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	0.99	<0.400	<0.400	37.0	1.31	1.10	160	1.78	<0.500	32.9	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	0.740	<0.400	<0.400	26.9	1.15	0.63	137	1.51	<0.500	27.5	<0.200
MW-4	11/17/1993	--	850	--	--	12	<50	--	20	--	--	40	<50	--	5.4	<10
	9/1/1995	<5	340	<5	<5	5.2	<50	<5	14	<5	<5	<50	<50	--	<50	30
	9/24/1996	<0.50	300	<0.20	<0.20	7.1	1.4	<0.20	3.2	<0.20	1	0.5	<0.50	--	0.8	4.7
	12/2/1996	<0.50	310	<0.50	0.3	3.8	1	<0.20	19	<1	0.3	<0.50	<1	--	<0.30	39
	11/13/1997	<0.50	252	<0.50	<0.50	4.22	1.23	<0.50	6.91	<0.50	0.688	<0.50	<0.50	--	<0.50	<1

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-4 (continued)	8/11/1999	<2	144	<1	<1	1.21	<1	<1	<1	<1	<1	3.6	<2	--	<1	<1
	11/16/1999	<1	26.3	<0.50	<1	2.3	<0.50	<0.50	4.18	<0.50	<0.50	1.2	<0.50	--	0.88	2.07
	2/29/2000	<2	119	<1	<1	2.84	<1	<1	4.1	<1	<1	<1	<2	--	<1	5.72
	6/28/2000	<5	59.4	<2.5	<2.5	3.89	<2.5	<2.5	2.5	<2.5	<2.5	<2.5	<5	--	<2.5	<2.5
	7/5/2000	Well Abandoned														
MW-5	11/17/1993	--	1,900	--	--	<25	<25	--	100	--	--	1,200	<25	--	52	<50
	9/1/1995	<1	<2	<1	<2	<1	<1	<1	1,300	<1	<1	60,000	<1	--	<1	<2
	9/24/1996	<5	140	<2	<2	35	<2	7.5	2,600	80	5.3	16,000	64	--	670	370
	12/2/1996	71	<50	<50	27	<30	<50	<20	5,600	<100	<20	27,000	110	--	1,700	340
	11/12/1997	<500	<1	<500	<500	<500	<500	<500	<500	<500	<500	28,000	<500	--	1,250	<1
	8/11/1999	<200	<1	<100	<100	<100	<100	<100	1,750	<100	<100	25,100	<200	--	862	238
	2/29/2000	<100	<500	<50	<50	<50	<50	<50	126	<50	<50	5,250	<100	--	135	<50
	8/31/2000	<50	<250	<25	<25	41.4	<25	<25	1,860	<25	<25	5,660	<50	--	347	280
	11/30/2000	<50	<250	<25	<25	27.3	<25	<25	3,850	26.8	<25	6,150	<50	--	511	189
	2/27/2001	<50	<250	<25	<25	<25	<25	<25	1,370	<25	<25	7,350	<50	--	445	127
	5/30/2001	<50	<250	<25	<25	<25	<25	<25	2,410	<25	<25	5,560	<50	--	439	129
	9/25/2001	<25	200	<25	<25	34	<25	<25	1,800	<25	<25	2,200	<25	--	180	180
	12/17/2001	<100	<500	<50	<50	<50	<50	<50	1,480	<50	<50	10,100	<100	--	646	<50
	3/19/2002	<50	<25	<25	<50	<25	<25	<25	360	<25	<25	4,640	<25	--	221	114
	5/29/2002	<50	46	<25	<50	<25	<25	<25	916	<25	<25	4,330	<25	--	238	39.5
	8/29/2002	<50	<25	<25	<50	<25	<25	<25	1,160	<25	<25	4,090	<25	--	288	310
	11/8/2002	<5	178	<2.5	<5	8.3	<2.5	<2.5	385	3.25	<2.5	603	<2.5	--	63.4	66
	1/23/2003	<50	<25	<25	<50	<25	<25	<25	582	<25	<25	4,090	<25	--	349	<25
	5/30/2003	<10	14.1	<5	<10	<5	<5	<5	382	<5	<5	1,450	7.9	--	140	67
	11/10/2003	<1	84.2	<1	<1	1.06	<1	<1	90.7	<1	<1	161	<1	--	30.8	9.42
	1/26/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2004	<20	<20	<20	<20	<20	<20	<20	432	<20	<20	2,440	<20	--	178	188
	8/17/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/16/2004	<50	<50	<50	<50	<50	<50	<50	6,300	<50	<50	1,800	<50	--	370	990
	3/23/2005	<20	<10	<10	<20	26.2	<10	<10	2,350	27.6	<10	511	<10	--	147	604
	5/18/2005	<5	<2.5	<2.5	<5	9.25	<2.5	6.45	817	10.2	<2.5	611	<2.5	--	156	329
	8/18/2005	<5	5.15	<2.50	<5	14.4	<2.50	<2.50	397	4.7	<2.50	169 B	<2.50	--	81.8	278
	11/15/2005	<20	<10	<10	<20	36.2	<10	<10	2,790	14	<10	408	<10	--	177	615

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-5 (continued)	2/21/2006	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	72.7	1.06	<0.500	184	0.78	--	31.5	5.05
	6/5/2006	<20	<20	<20	<20	<20	<20	<20	2,800	<20	<20	157	<20	--	75	199
	9/6/2006	<2	10.6	<1	<2	8.3	<1	<1	377	3.66	<1	104	<1	--	45	29.9
	12/6/2006	<2	<1	<1	<2	1.32	<1	1.34	113	1.28	1.52	240	1.6	--	58	43.3
	2/7/2007	<10	<5	<5	<10	<5	<5	<5	1,220	18	<5	124	<5	--	26.9	600
	5/22/2007	<5	<5	<5	<5	<5	<5	<5	634	8.45	<5	102	<5	--	40.8	59.4
	9/12/2007	<1	67.5	<0.50	<1	<0.50	<0.50	<0.50	16.2	<0.50	<0.50	0.89	<0.50	--	1.38	1.86
	12/13/2007	<1	<0.50	<0.50	<1	7.1	<0.50	4.67	2,420	9.22	1.14	180	<0.50	--	179	416
	3/7/2008	<1	<0.500	<0.500	<1	2.18	<0.500	1.33	411	3.21	<0.500	86.4	<0.500	<0.500	26.1	105
	9/18/2008	<1	101	<0.500	<1	0.79	<0.500	<0.500	11.2	<0.500	<0.500	1.14	<0.500	<0.500	1.27	1.74
	12/10/2008	<2	<2	<2	<2	3.7	<2	<2	360	2.3	<2	49	<2	<2	53	150
	3/27/2009	<0.50	4.2	<0.50	<0.50	4	<0.50	<0.50	170	1	<0.50	0.59	<0.50	<0.50	<0.50	64
	6/17/2009	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	0.6	160	2.5	<0.50	11	<0.50	<0.50	12	11
	9/18/2009	<0.50	65 BE	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	1.2
	12/17/2009	<0.50	<0.80	<0.50	<0.50	2.1	<0.50	1.4	340	2	<0.50	19	<0.50	<0.50	37	93
	3/19/2010	<0.50	1.4	<0.50	<0.50	4.4	<0.50	<0.50	72	<0.50	<0.50	24	<0.50	<0.50	14	21
	6/16/2010	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	0.83	94	0.65	0.54	4.1	<0.50	<0.50	10	23
	9/23/2010	<0.5	59	<0.5	<0.5	0.84	<0.5	<0.5	9.7	<0.5	<0.5	<0.5	<0.5	<0.5	0.97	1.3
	12/9/2010	<0.5	<0.5	<0.5	<0.5	0.84	<0.5	<0.5	140	0.73	<0.5	5.6	<0.5	<0.5	8.8	15
	3/11/2011	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	34	<0.50	<0.50	8.4	<0.50	<0.50	7.6	4.7
	6/10/2011	<0.5	<0.5	<0.5	<0.5	5	<0.5	<0.5	40	<0.5	0.63	2.2	<0.5	<0.5	3.8	26
	9/19/2011	<0.50	2.3	<0.50	<0.50	2.8	<0.50	<0.50	97	<0.50	<0.50	1.3	<0.50	<0.50	11	6.3
	12/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	47	<0.50	<0.50	2.7	<0.50	<0.50	7.7	2.8
	3/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4
	6/22/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	<0.5	<0.5	0.54	<0.5	<0.5	2.9	3
	9/14/2012	<0.50	20	<0.50	<0.50	0.75	<0.50	<0.50	26	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4
	12/13/2012	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	67	0.65	<0.50	<0.50	<0.50	<0.50	1.7	6.6
	3/15/2013	<0.50	7.4	<0.50	<0.50	1.5	<0.50	<0.50	48	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	6.6
	6/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.5	<0.50	<0.50	7.2	<0.50	<0.50	7.2	1.7
	9/19/2013	<0.50	23	<0.50	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	0.61
	12/16/2013	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	180	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	71
	3/21/2014	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	39	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	10
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<5	<0.50	<0.50	14	<0.50	<0.50	1.3	<0.50	<0.50	8	2.3
	9/30/2014	<0.50	28	<0.50	<0.50	<5	<0.50	<0.50	20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-5	12/16/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	33	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	1.9
(continued)	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26.5	<0.50	<0.50	8.4	<0.50	<0.50	5.8	5.6
	6/17/2015	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	0.63	<0.50	<0.50	0.64	<0.50
	9/24/2015	<0.50	24.6	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	199	<0.50	<0.50	29.5	<0.50	<0.50	43.2	32.3
	12/8/2015 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	175	<0.50	<0.50	27.1	<0.50	<0.50	38.5	28.4
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	9.9	<0.50	<0.50	3.1	<0.50
	6/17/2016	<0.50	7.5	<0.50	<0.50	<0.50	<0.50	<0.50	23.3	<0.50	<0.50	7.3	<0.50	<0.50	3.2	<0.50
	9/29/2016	<5	<20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	<0.50	11.5	<0.50	<0.50	2.5	1.1
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	8.4	<0.5	<0.5	6.5	<0.5	<0.5	5.8	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	4.2	<0.50	<0.50	16.3	<0.50	<0.50	6.8	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	1.60	<1.0	<0.50	15.6	<0.50	<0.50	26.7	<0.50	<0.50	15.6	0.64
	11/7/2017	<2.0	<2.0	<0.50	<0.50	0.99	<0.50	<0.50	35.6	<0.50	<0.50	3.5	<0.50	<0.50	9.7	5.30
	3/21/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	1.9	<0.500	<0.500	10.6	0.199 J	<0.500	2.4	0.260 J
	6/29/2018	<0.500	<2.50	<0.500	<0.500	0.56	<0.500	<0.500	45.5	0.174 J	<0.500	21.3	<0.500	<0.500	11.8	1.17
	9/27/2018	<1.00	26.9	<1.00	<1.00	<0.400	<0.400	<0.400	0.562	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/7/2018	<1.00	<5.00	<1.00	<1.00	1.03	<0.400	<0.400	129.0	<0.400	<0.500	4.7	<0.400	<0.500	11.7	4.80
	3/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.01	<0.400	<0.500	0.947	<0.400	<0.500	0.977	<0.400
	6/7/2019	<1.00	<5.00	<1.00	<1.00	0.404	<0.400	<0.400	11.1	<0.400	<0.500	20.4	<0.400	<0.500	8.63	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.4	<0.400	<0.400	10.7	<0.400	<0.500	0.972	<0.400	<0.500	1.35	1.10
	12/4/2019	<1.00	<5.00	<1.00	<1.00	0.817	<0.400	1.60	632	1.11	<0.500	0.925	<0.400	<0.500	9.85	10.70
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	14.3	<0.400	<0.500	18.7	<0.400	<0.500	7.11	2.58
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	10.4	<0.400	<0.500	17.3	<0.400	<0.500	18.3	0.41
	10/6/2020	<1.00	8.79	<1.00	<1.00	<0.400	<0.400	<0.400	5.74	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	1.10
	12/10/2020	<2.00	<5.00	<1.00	<1.00	0.499	<0.400	<0.400	38.4	<0.400	<0.500	<0.400	<0.400	<0.500	3.67	4.77
	3/3/2021	<1.00	6.41	<1.00	<1.00	0.664	<0.400	<0.400	10.4	<0.400	<0.500	7.5	<0.400	<0.500	5.55	20.5
	6/16/2021	<1.00	<5.00	<1.00	<1.00	6.51	<0.400	0.963	697	4.67	0.684	20.5	<0.400	<0.500	26.5	72.3
	9/15/2021	<1.00	<5.00	<1.00	<1.00	1.06	<0.400	<0.400	20.3	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	7.48
	12/9/2021	<1.00	<5.00	<1.00	<1.00	0.522	<0.400	0.53	89	0.857	<0.500	10.2	<0.400	<0.500	6.02	33.9
	3/9/2022	<1.00	<5.00	<1.00	<1.00	0.620	<0.400	<0.400	81.9	0.640	<0.500	14.4	<0.400	<0.400	7.62	8.04
	06/16/2022	<1.00	<5.00	<1.00	<1.00	0.640	<0.400	<0.400	17.0	<0.400	<0.500	0.760	<0.400	<0.500	2.00	1.93
	9/14/2022	<1.00	<5.00	<1.00	<1.00	0.430	<0.400	<0.400	2.67	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	1.83
	12/8/2022	<10.0	<50.0	<10.0	<10.0	<4.00	<4.00	<4.00	279	<4.00	<5.00	<4.00	<4.00	<5.00	<4.00	30.3

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-5 (continued)	3/15/2023	<1.00	<5.00	<1.00	<1.00	2.34	<0.400	<0.400	59.5	<0.400	<0.500	<0.400	<0.400	<0.500	<0.500	10.5
	6/15/2023	<1.00	<5.00	<1.00	<1.00	0.59	<0.400	<0.400	87.1	0.51	<0.500	<0.400	<0.400	<0.500	8.12	5.04
	9/12/2023	<4.00	23.9	<1.00	<1.00	0.470	<0.400	<0.400	2.32	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	1.35
	12/15/2023	<1.00	<5.00	<1.00	<1.00	0.920	<0.400	0.500	92.0	<0.400	<0.500	0.550	<0.400	<0.500	17.6	2.60
	3/7/2024	<1.00	<5.00	<1.00	<1.00	0.680	<0.400	<0.400	19.9	<0.400	<0.500	4.28	<0.400	<0.500	4.49	5.03
	6/11/2024	<1.00	<5.00	<1.00	<1.00	0.920	<0.400	<0.400	36.3	<0.400	<0.500	<0.400	<0.400	<0.500	0.800	140
MW-6	11/17/1993	--	<1	--	--	<0.50	<0.50	--	1.2	--	--	2.1	<0.50	--	0.54	<1
	9/1/1995	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<1
	9/24/1996	<0.50	<2	<0.20	<0.20	<0.20	<0.20	<0.20	0.3	<0.20	<0.20	<0.20	<0.50	--	<0.20	<1
	12/2/1996	<0.50	<0.50	<0.50	<0.20	<0.20	<0.50	<0.20	<0.20	<1	<0.20	<0.50	<1	--	<0.20	<0.20
	11/12/1997	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.03	<0.50	--	<0.50	<1
	8/11/1999	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	1.37	<0.50
	11/16/1999	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	2/29/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.654	<1	--	<0.50	<0.50
	6/27/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	5/29/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	1.51	<0.50	<0.50	1.31	<0.50	--	<0.50	<0.50
	8/28/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/8/2002	<1	<0.50	<0.50	<1	0.51	<0.50	<0.50	2.55	<0.50	<0.50	0.97	<0.50	--	0.55	0.52
	1/23/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/30/2003	<0.50	<0.50	<0.50	<1	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	3.73	<0.50	--	0.99	<0.50
	11/17/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	9/12/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	3/6/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.16	<0.500	<0.500	<0.500	<0.500
	9/19/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	3/24/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/15/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/5/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-6 (continued)	9/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/2/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/28/2016	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/28/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/7/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	7/1/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.549	<0.400	<0.500	<0.400	<0.400
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-7	12/2/1996	81	<50	<50	39	<30	<50	110	110	<100	<20	73,000	1,900	--	7,600	<50
	11/12/1997	<500	<1	<500	<500	<500	<500	<500	<500	<500	<500	36,400	<500	--	7,670	<1
	8/11/1999	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	49,000	1,210	--	4,650	<500
	11/16/1999	<100	<250	<50	<100	<50	<50	92	353	<50	<50	54,800	914	--	5,320	<50
	2/28/2000	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	52,400	<1	--	4,060	<500
	6/28/2000	<1	<5	<500	<500	<500	<500	<500	<500	<500	<500	54,300	<1	--	3,390	<500
	8/31/2000	<500	<2	<250	<250	<250	<250	<250	<250	<250	<250	50,900	824	--	3,960	<250
	11/30/2000	<500	<2	<250	<250	<250	<250	<250	<250	<250	<250	33,500	520	--	3,560	<250
	2/27/2001	<500	<2	<250	<250	<250	<250	<250	386	<250	<250	26,700	<500	--	3,290	<250
	5/30/2001	<200	<1,000	<100	<100	<100	<100	<100	374	<100	<100	20,400	214	--	2,820	<100
	9/25/2001	<25	<25	<25	<25	28	<25	35	350	<25	<25	19,000	260	--	2,500	<25
	12/17/2001	<100	<50	<50	<50	84.6	<50	<50	506	<50	<50	10,100	200	--	1,960	<50
	3/18/2002	<50	<25	<25	<50	<25	<25	<25	206	<25	<25	7,250	71	--	1,020	<25
	5/31/2002	<50	<25	<25	<50	<25	<25	<25	42.5	<25	<25	5,500	<25	--	311	<25
	8/29/2002	<50	<25	<25	<50	<25	<25	50.5	93	<25	<25	4,940	44.5	--	634	<25
	11/7/2002	<50	<25	<25	<50	<25	<25	<25	123	<25	<25	5,810	43	--	758	<25
	1/23/2003	<20	<10	<10	<20	<10	<10	<10	59.8	<10	<10	2,010	14	--	282	<10
	5/28/2003	<10	<5	<5	<5	6.3	<5	<5	<5	<5	<5	1,080	10.9	--	67.9	<5
	11/11/2003	<20	<20	<20	<20	40.2	<20	<20	246	<20	<20	2,460	62	--	599	<20
	1/27/2004	<20	<10	<10	<20	17	<10	<10	105	<10	<10	3,510	33	--	380	<10
	5/4/2004	<20	<20	<20	<20	<20	<20	<20	72.4	<20	<20	3,940	22	--	323	<20
	11/16/2004	<50	<50	<50	<50	<50	<50	<50	99	<50	<50	8,000	<50	--	520	<50
	3/24/2005	<50	<25	<25	<50	<25	<25	<25	98.5	<25	<25	3,930	26	--	404	<25
	5/18/2005	<10	<5	<5	<10	<5	<5	<5	72.7	<5	<5	1,310	12.4	--	180	<5
	05/18/2005 DUP	<10	<5	<5	<10	<5	<5	<5	69.4	<5	<5	1,250	12.4	--	179	<5
	8/18/2005	<20	<10	<10	<20	<10	<10	<10	54.8	<10	<10	1,800	<10	--	237	<10
	11/15/2005	<20	<10	<10	<20	15.2	<10	<10	107	<10	<10	1,960	29.6	--	333	<10
	2/21/2006	<20	<10	<10	<20	<10	<10	<10	<10	<10	<10	2,640	<10	--	139	<10
	6/5/2006	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	26,100	<200	--	568	<200
	9/6/2006	<100	<50	<50	<100	<50	<50	<50	56	<50	<50	12,800	<50	--	422	<50
	12/6/2006	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	24,600	<100	--	408	<100
	2/7/2007	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	31,500	<100	--	352	<100
	5/22/2007	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	29,100	<200	--	450	<200
	9/12/2007	<200	<100	<100	<200	<100	<100	<100	<100	<100	<100	21,300	<100	--	366	<100

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-7	12/13/2007	<500	<250	<250	<500	<250	<250	<250	345	<250	<250	18,700	<250	–	1,040	280
(continued)	03/06/2008[7.]	<1	<0.500	<0.500	<1	5.06	2.57	3.99	42.3	2.9	<0.500	26,300	38.7	<0.500	430	<0.500
	6/10/2008	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	27,000	<500	<500	575	<500
	9/18/2008	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	23,200	<500	<500	530	<500
	12/11/2008	<50	<50	<50	<50	<50	<50	<50	130	<50	<50	15,000	<50	<50	450	<50
	12/11/2008 DUP	<50	<50	<50	<50	<50	<50	<50	120	<50	<50	14,000	<50	<50	430	<50
	3/23/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	420	<0.50	<0.50	3,330	<0.50	<0.50	270	<0.50
	6/18/2009	<3	<3	<3	<3	3.7	<3	<3	520	<3	<3	890	5.2	<3	350	<3
	06/18/2009 DUP	<2.5	<2.5	<2.5	<2.5	3.8	<2.5	<2.5	520	<2.5	<2.5	910	5.6	<2.5	360	<2.5
	9/18/2009	<3	<3	<3	<3	9.8	<3	5.5	930	<3	<3	2,600	10	<3	250	<3
	09/18/2009 DUP	<3	<3	<3	<3	8.7	<3	4.8	850	<3	<3	2,600	9.3	<3	240	<3
	12/18/2009	<5	<5	<5	<5	6.7	<5	<5	330	<5	<5	1,600	6.7	<5	160	<5
	12/18/2009 DUP	<5	<5	<5	<5	6.6	<5	<5	320	<5	<5	1,500	6.6	<5	160	<5
	3/16/2010	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	180	<2.5	<2.5	510	<2.5	<2.5	52	<2.5
	03/16/2010 DUP	<2	<2	<2	<2	<2	<2	<2	180	<2	<2	560	<2	<2	55	<2
	6/17/2010	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	360	<1.5	<1.5	200	2.7	<1.5	72	<1.5
	06/17/2010 DUP	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	360	<1.5	<1.5	200	2.8	<1.5	72	<1.5
	9/23/2010	<3	<3	<3	<3	3.3	<3	<3	690	<3	<3	750	3.5	<3	110	4.8
	09/23/2010 DUP	<3	<3	<3	<3	3.1	<3	<3	700	<3	<3	740	3.8	<3	100	4.1
	12/10/2010	<0.9	<0.9	<0.9	<0.9	1.8	<0.9	<0.9	94	<0.9	<0.9	220	1.6	<0.9	36	1.7
	12/10/2010 DUP	<0.9	<0.9	<0.9	<0.9	1.7	<0.9	<0.9	98	<0.9	<0.9	230	1.7	<0.9	36	1.8
	3/11/2011	<0.90	<0.90	<0.90	<0.90	6.6	<0.90	1.6	150	0.91	<0.90	420	5.1	<0.90	82	9.3
	03/11/2011 DUP	<0.90	<0.90	<0.90	<0.90	6.5	<0.90	1.9	150	1.1	<0.90	400	5.2	<0.90	80	9.7
	6/7/2011	<2.5	<2.5	<2.5	<2.5	4.8	<2.5	3.4	1,400	3.3	<2.5	430	4	<2.5	110	7.9
	06/07/2011 DUP	<6	<6	<6	<6	<6	<6	<6	1,400	<6	<6	400	<6	<6	110	7.8
	9/19/2011	<5	<5	<5	<5	<5	<5	<5	1,300	<5	<5	410	<5	<5	84	78
	09/19/2011 DUP	<7	<7	<7	<7	<7	<7	<7	1,300	<7	<7	420	<7	<7	87	81
	12/7/2011	<5	<5	<5	<5	8	<5	6.9	3,400	6.8	<5	200	<5	<5	32	110
	12/07/2011 DUP	<6	<6	<6	<6	7.6	<6	7.8	3,400	6.8	<6	210	<6	<6	32	110
	3/12/2012	<5	<5	<5	<5	9.2	<5	<5	1,600	<5	<5	41	<5	<5	8.6	600
	03/12/2012 DUP	<7	<7	<7	<7	9.5	<7	<7	1,600	<7	<7	42	<7	<7	8.9	660
	06/22/2012	<2	9.2	<2	<2	9.8	<2	<2	540	<2	<2	24	<2	<2	5.1	300
	06/22/2012 DUP	<2	8.1	<2	<2	9	<2	<2	500	<2	<2	25	<2	<2	5.2	290
	9/14/2012	<0.50	6.3	<0.50	<0.50	3.8	<0.50	0.54	180	0.7	<0.50	28	<0.50	0.52	5.2	80

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-7	09/14/2012 DUP	<0.50	5.7	<0.50	<0.50	3.8	<0.50	<0.50	180	0.78	<0.50	28	<0.50	<0.50	5.3	79
(continued)	12/14/2012	<0.50	6.3	<0.50	<0.50	1.9	<0.50	<0.50	130	<0.50	<0.50	8.2	<0.50	<0.50	5.3	16
	12/14/2012 DUP	<0.50	5.6	<0.50	<0.50	1.8	<0.50	<0.50	130	<0.50	<0.50	11	<0.50	<0.50	6.8	18
	3/15/2013	<0.50	5.2	<0.50	<0.50	0.68	<0.50	<0.50	110	<0.50	<0.50	1.5	<0.50	<0.50	0.75	11
	03/15/2013 DUP	<0.50	5.4	<0.50	<0.50	0.69	<0.50	<0.50	110	<0.50	<0.50	1.6	<0.50	<0.50	0.78	11
	6/14/2013	<0.50	2	<0.50	<0.50	<0.50	<0.50	<0.50	57	<0.50	<0.50	1.6	<0.50	<0.50	<0.50	15
	06/14/2013 DUP	<0.50	2	<0.50	<0.50	0.51	<0.50	<0.50	58	<0.50	<0.50	1.5	<0.50	<0.50	<0.50	16
	9/20/2013	<0.50	3	<0.50	<0.50	1.5	<0.50	<0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10
	09/20/2013 DUP	<0.50	3	<0.50	<0.50	1.5	<0.50	<0.50	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10
	12/16/2013	<0.50	2.4	<0.50	<0.50	2.9	<0.50	<0.50	6.9	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	9.1
	12/16/2013 DUP	<0.50	2.4	<0.50	<0.50	2.4	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.9
	3/24/2014	<0.50	0.97	<0.50	<0.50	1.6	<0.50	<0.50	13	<0.50	<0.50	9.8	<0.50	<0.50	2.6	7.6
	3/24/2014 DUP	<0.50	1	<0.50	<0.50	1.6	<0.50	<0.50	13	<0.50	<0.50	9.4	<0.50	<0.50	2.5	7.7
	6/25/2014	<0.50	1.3	<0.50	<0.50	0.17	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3
	6/25/2014 DUP	<0.50	0.15	<0.50	<0.50	0.19	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4
	9/30/2014	<0.50	1.9	<0.50	<0.50	2.7	<0.50	<0.50	4.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.8
	9/30/2014 DUP	<0.50	1.7	<0.50	<0.50	2.6	<0.50	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.8
	12/15/2014	<0.50	1.2	<0.50	<0.50	3.4	<0.50	<0.50	12	<0.50	<0.50	<0.50	<0.50	<0.50	1	15
	12/15/2014 DUP	<0.50	1.6	<0.50	<0.50	4.5	<0.50	<0.50	16	<0.50	<0.50	0.61	<0.50	<0.50	1.5	21
	3/20/2015	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	1
	3/20/2015 DUP	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	7.7	<0.50	<0.50	0.53	<0.50	<0.50	1	10.4
	6/17/2015	<0.50	0.72	<0.50	<0.50	2.6	<0.50	<0.50	12	<0.50	<0.50	1.2	<0.50	<0.50	1	12.6
	6/17/2015 DUP	<0.50	0.71	<0.50	<0.50	2.6	<0.50	<0.50	12.2	<0.50	<0.50	0.96	<0.50	<0.50	1	12.3
	9/24/2015	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	12.4	<0.50	<0.50	4.5	<0.50	<0.50	4.2	4.6
	9/24/2015 DUP	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	12.7	<0.50	<0.50	4.5	<0.50	<0.50	4.2	4.8
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	9.4	<0.50	<0.50	1.7	1.9
	6/17/2016	<0.50	<2	<0.50	<0.50	0.6	<0.50	<0.50	10.9	<0.50	<0.50	0.69	<0.50	<0.50	2.1	5.4
	6/17/2016 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	0.62	<0.50	<0.50	2	5.4
	9/29/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	5.5
	9/29/2016 DUP	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	10.9	<0.50	<0.50	<0.50	<0.50	<0.50	6	5.5
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.2	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	0.98
	12/14/2016 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.4	<0.50	<0.50	0.78	<0.50	<0.50	<0.50	1
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	0.73	<0.5
	3/28/2017 DUP	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	0.69	<0.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-7	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	2.5
(continued)	6/14/2017 DUP	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	1.7	<0.50	<0.50	2.60	<0.50	<0.50	1.60	1.6
	9/27/2017 DUP	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	1.7	<0.50	<0.50	2.60	<0.50	<0.50	1.60	1.7
	11/7/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	6.30	<0.50	<0.50	7.80	1.4
	11/7/2017 DUP	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	3.80	<0.50	<0.50	6.40	1.5
	3/21/2018	<0.500	<2.50	<0.500	<0.500	0.495 J	<0.500	<0.500	17.6	<0.500	<0.500	0.228 J	<0.500	<0.500	2.86	4.9
	3/21/2018 DUP	<0.500	<2.50	<0.500	<0.500	0.55	<0.500	<0.500	17.2	<0.500	<0.500	0.284 J	<0.500	<0.500	2.99	4.9
	6/29/2018	<0.500	<2.50	<0.500	<0.500	0.461 J	<0.500	<0.500	5.5	<0.500	<0.500	9.89	<0.500	<0.500	3.53	1.5
	6/29/2018 DUP	<0.500	<2.50	<0.500	<0.500	0.437 J	<0.500	<0.500	5.4	<0.500	<0.500	8.94	<0.500	<0.500	3.48	1.6
	9/27/2018	<1.00	<5.00	<1.00	<1.00	1.23	<0.400	<0.400	8.48	<0.400	<0.500	6.50	<0.400	<0.500	10.8	2.08
	12/7/2018	<1.00	<5.00	<1.00	<1.00	3.97	<0.400	0.43	15.4	<0.400	<0.500	30.40	<0.400	<0.500	18.10	1.6
	12/7/2018 DUP	<1.00	<5.00	<1.00	<1.00	3.84	<0.400	0.47	17.7	<0.400	<0.500	26.60	<0.400	<0.500	16.40	1.1
	3/20/2019	<1.00	<5.00	<1.00	<1.00	1.87	<0.400	<0.400	22.2	<0.400	<0.500	22.3	<0.400	<0.500	10.8	0.605
	3/20/2019 DUP	<1.00	<5.00	<1.00	<1.00	1.84	<0.400	<0.400	22.8	<0.400	<0.500	22.8	<0.400	<0.500	10.7	0.553
	6/5/2019	<1.00	<5.00	<1.00	<1.00	2.91	<0.400	0.559	20.2	<0.400	<0.500	28.1	<0.400	<0.500	12.7	1.11
	6/5/2019 DUP	<1.00	<5.00	<1.00	<1.00	2.87	<0.400	0.494	20.2	<0.400	<0.500	28.4	<0.400	<0.500	12.7	1.15
	9/26/2019	<1.00	<5.00	<1.00	<1.00	2.98	<0.400	0.65	20.1	<0.400	<0.500	41.7	<0.400	<0.500	17.9	0.42
	9/26/2019 DUP	<1.00	<5.00	<1.00	<1.00	2.95	<0.400	0.672	21	<0.400	<0.500	39.6	<0.400	<0.500	17.8	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	4.61	<0.400	0.837	29.4	<0.400	<0.500	65.8	<0.400	<0.500	31	<0.400
	12/3/2019 DUP	<1.00	<5.00	<1.00	<1.00	4.58	<0.400	0.839	29.7	<0.400	<0.500	66.1	<0.400	<0.500	31.8	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	0.936	<0.400	<0.400	26.5	<0.400	<0.500	45.8	<0.400	<0.500	14.1	0.476
	3/11/2020 DUP	<1.00	<5.00	<1.00	<1.00	0.912	<0.400	<0.400	25.7	<0.400	<0.500	47.4	<0.400	<0.500	14.3	0.44
	6/18/2020	<1.00	<5.00	<1.00	<1.00	0.78	<0.400	<0.400	10.2	<0.400	<0.500	43	<0.400	<0.500	10	<0.400
	6/18/2020 DUP	<1.00	<5.00	<1.00	<1.00	0.85	<0.400	<0.400	11.1	<0.400	<0.500	40.8	<0.400	<0.500	10.1	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	1.97	<0.400	0.481	23.1	<0.400	<0.500	49.5	<0.400	<0.500	19.7	<0.400
	10/8/2020 DUP	<1.00	<5.00	<1.00	<1.00	1.96	<0.400	0.431	23.6	<0.400	<0.500	50.2	<0.400	<0.500	19.6	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	7.05	<0.400	1.41	56.3	0.552	<0.500	108	<0.400	<0.500	45.4	<0.400
	12/9/2020 DUP	<2.00	<5.00	<1.00	<1.00	6.83	<0.400	1.38	55.6	0.519	<0.500	106	<0.400	<0.500	44.5	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	1.28	<0.400	<0.400	20	<0.400	<0.500	56.4	<0.400	<0.500	22.4	<0.400
	3/3/2021 DUP	<1.00	<5.00	<1.00	<1.00	1.24	<0.400	<0.400	19.2	<0.400	<0.500	54.3	<0.400	<0.500	22.2	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	4.3	<0.400	0.927	35.5	<0.400	<0.500	78	<0.400	<0.500	39.6	0.45
	6/16/2021 DUP	<1.00	<5.00	<1.00	<1.00	4.12	<0.400	0.825	32.6	<0.400	<0.500	72.8	<0.400	<0.500	37.3	0.426
	9/14/2021	<1.00	<5.00	<1.00	<1.00	2.11	<0.400	0.46	25.8	<0.400	<0.500	47.6	<0.400	<0.500	20.6	<0.400
	9/14/2021 DUP	<1.00	<5.00	<1.00	<1.00	2.24	<0.400	0.50	26.7	<0.400	<0.500	46	<0.400	<0.500	21.1	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	4.67	<0.400	0.87	39.1	<0.400	<0.500	118	0.59	<0.500	51.2	0.537
	12/8/2021 DUP	<1.00	<5.00	<1.00	<1.00	4.56	<0.400	0.86	39.1	<0.400	<0.500	116	0.57	<0.500	51.4	0.531
	3/9/2022	<1.00	<5.00	<1.00	<1.00	3.24	<0.400	0.950	37.2	0.530	<0.500	78.8	<0.400	<0.500	38.2	1.20
	3/9/2022 DUP	<1.00	<5.00	<1.00	<1.00	3.34	<0.400	1.01	38.4	0.550	<0.500	84.9	<0.400	<0.400	40.5	1.26
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.76	<0.400	<0.500	77.0	0.77	<0.500	25.4	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-7 (continued)	6/14/2022 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.66	<0.400	<0.500	85.6	0.79	<0.500	27.2	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	1.26	<0.400	<0.400	31.30	<0.400	<0.500	30.900	<0.400	<0.500	13.000	0.66
	9/15/2022 DUP	<1.00	<5.00	<1.00	<1.00	1.33	<0.400	<0.400	32.2	<0.400	<0.500	36.7	<0.400	<0.500	15.6	0.620
	12/7/2022	<1.00	<5.00	<1.00	<1.00	4.22	<0.400	0.93	41.1	0.440	<0.500	118.000	0.57	<0.500	46.300	0.560
	12/7/2022 DUP	<1.00	<5.00	<1.00	<1.00	4.49	<0.400	1.07	43.3	0.500	<0.500	124.000	0.65	<0.500	48.500	0.540
	3/14/2023	<1.00	<5.00	<1.00	<1.00	1.97	<0.400	0.430	22.1	<0.400	<0.500	67.0	<0.400	<0.500	27.3	0.820
	3/14/2023 DUP	<1.00	<5.00	<1.00	<1.00	1.95	<0.400	0.460	22.6	<0.400	<0.500	63.4	<0.400	<0.500	27.8	0.800
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.3	<0.400	<0.500	19.0	<0.400	<0.500	5.8	<0.400
	6/15/2023 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.0	<0.400	<0.500	18.4	<0.400	<0.500	5.7	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	2.30	<0.400	0.620	26.8	<0.400	<0.500	65.5	<0.400	<0.500	30.5	0.250
	9/12/2023 DUP	<4.00	<5.00	<1.00	<1.00	2.47	<0.400	0.640	28.7	<0.400	<0.500	68.8	0.410	<0.500	32.7	0.280
	12/14/2023	<1.00	<5.00	<1.00	<1.00	5.53	<0.400	1.01	44.9	0.790	<0.500	123	1.00	<0.500	52.0	0.690
	12/14/2023 DUP	<1.00	<5.00	<1.00	<1.00	5.88	<0.400	0.960	47.0	0.810	<0.500	122	1.06	<0.500	53.0	0.720
	3/7/2024	<1.00	<5.00	<1.00	<1.00	1.92	<0.400	0.570	22.2	0.430	<0.500	70.0	<0.400	<0.500	36.3	0.320
	3/7/2024 DUP	<1.00	<5.00	<1.00	<1.00	1.69	<0.400	0.540	20.8	<0.400	<0.500	76.8	<0.400	<0.500	34.5	0.280
	6/11/2024	<1.00	<5.00	<1.00	<1.00	6.74	<0.400	1.630	58.7	0.720	<0.400	152.0	1.50	<0.500	87.9	0.660
	6/11/2024 DUP	<1.00	<5.00	<1.00	<1.00	6.34	<0.400	1.420	53.8	0.720	<0.400	179.0	1.40	<0.500	80.5	0.560
MW-8	12/2/1996	<0.50	<0.50	<0.50	<0.20	1	<0.50	0.2	6.5	<1	<0.20	2.3	<1	–	12	<0.50
	11/13/1997	<1	<2	<1	<1	1.72	<1	2.44	9.32	<1	<1	52.4	4	–	38.6	<2
	8/11/1999	<1	<5	<0.50	<0.50	0.75	<0.50	<0.50	1.82	<0.50	<0.50	46.2	4.79	–	24.3	<0.50
	11/16/1999	<1	<2.5	<0.50	<1	1.22	<0.50	<0.50	2.11	<0.50	<0.50	39.8	1.55	–	15.5	<0.50
	2/28/2000	<1	<5	<0.50	<0.50	0.929	<0.50	0.721	2.38	<0.50	<0.50	41.8	3.7	–	20.5	<0.50
	6/27/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.46	<0.50	<0.50	33.7	2.88	–	17.5	<0.50
	5/30/2001	<100	<5	<0.50	<0.50	0.611	<0.50	<0.50	0.601	<0.50	<0.50	11.8	<1	–	5.46	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	1.09	<0.50	<0.50	2.02	<0.50	<0.50	12.1	<0.50	–	4.47	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	40.4	1.55	–	11.2	<0.50
	11/2/2004	<1	<0.50	<0.50	<1	1.02	<0.50	<0.50	1.99	<0.50	<0.50	8.88	<0.50	–	2.4	<0.50
	11/16/2004	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	1.6	<0.50	<0.50	0.6	<0.50	–	3.1	<0.50
	3/23/2005	<1	<0.50	<0.50	<1	0.78	<0.50	<0.50	1.82	<0.50	<0.50	13.5	0.53	–	2.41	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	1.1	<0.50	<0.50	6.45	<0.50	<0.50	13.2	<0.50	–	6.92	<0.50
	05/17/2005 DUP	<1	<0.50	<0.50	<1	1.19	<0.50	<0.50	6.97	<0.50	<0.50	11.4	<0.50	–	6.39	<0.50
	11/16/2005	<1	<0.500	<0.500	<1	0.78	<0.500	<0.500	4.19	<0.500	<0.500	14.8	0.65	–	2.99	<0.500
	6/5/2006	<1	<1	<1	<1	1.26	<1	<1	19.8	<1	<1	20.7	<1	–	11.4	<1
	12/6/2006	<1	<0.50	<0.50	<1	1.11	<0.50	<0.50	14.2	<0.50	<0.50	18.3	<0.50	–	5.08	<0.50
	5/23/2007	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	22.8	<1	–	2.32	<1
	9/12/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	12.4	0.6	–	0.65	<0.50
	12/12/2007	<1	<0.50	<0.50	<1	1.03	<0.50	<0.50	13.7	<0.50	<0.50	8.27	<0.50	–	2.71	<0.50
	3/6/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.64	<0.500	<0.500	19.1 J	<0.500	<0.500	1.4	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-8	6/10/2008[7.]	<1	<1	<1	<1	1.07	<1	<1	10.5	<1	<1	10.8	<1	<1	3.87	<1
(continued)	9/18/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.58	<0.500	<0.500	13.2	0.5	<0.500	1.21	<0.500
	12/9/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	9.1	<0.50	<0.50	0.57	<0.50
	12/09/2008 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	9.7	<0.50	<0.50	0.59	<0.50
	3/26/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	8	<0.50	<0.50	0.56	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	12	<0.50	<0.50	4.8	<0.50	<0.50	1.4	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50
	12/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	8.4	<0.50	<0.50	0.51	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50
	6/14/2010	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	20	0.52	<0.50	4.2	<0.50	<0.50	1.1	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	8.1	<0.5	<0.5	<0.5	<0.5
	12/8/2010	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	20	1.1	<0.5	2.5	<0.5	<0.5	0.6	<0.5
	3/11/2011	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	<0.50	20	0.58	<0.50	7.9	<0.50	<0.50	0.95	<0.50
	6/8/2011	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	40	0.82	<0.5	4	<0.5	<0.5	1.1	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	10	<0.50	<0.50	0.54	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	10	<0.50	<0.50	<0.50	<0.50
	3/6/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.5	<0.50	<0.50	6.8	<0.50	<0.50	0.56	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	0.89	<0.5	<0.5	22	<0.5	<0.5	6.1	<0.5	<0.5	1.4	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	7	<0.50	<0.50	<0.50	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	36	1	<0.50	4.8	<0.50	<0.50	1	<0.80
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	7.2	<0.50	<0.50	<0.50	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	0.84	<0.50	<0.50	18	0.64	<0.50	6.2	<0.50	<0.50	0.76	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	<0.50	4.8	<0.50	<0.50	<0.50	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.5	0.54	<0.50	4	<0.50	<0.50	<0.50	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	21	1.1	<0.50	2.3	<0.50	<0.50	0.85	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	5.6	<0.50	<0.50	<0.50	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	6.1	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	7.6	<0.50	<0.50	<0.50	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	<0.50	<0.50
	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	6.4	<0.50	<0.50	<0.50	<0.50
	6/15/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-8 (continued)	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	35.7	0.96	<0.5	2.3	<0.5	<0.5	0.57	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	14.3	<0.50	<0.50	4.3	<0.50	<0.50	0.56	<0.50
	9/25/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	<0.50	<0.50	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	4.4	<0.50	<0.50	<0.50	<0.50
	3/19/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.6	<0.500	<0.500	4.2	<0.500	<0.500	<0.500	<0.500
	6/29/2018	<0.500	<2.50	<0.500	<0.500	0.139 J	<0.500	<0.500	2.6	<0.500	<0.500	5.4	<0.500	<0.500	0.368 J	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.76	<0.400	<0.500	<0.400	<0.400
	12/7/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.0	<0.400	<0.500	<0.400	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.83	<0.400	<0.500	<0.400	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	0.430	<0.400	<0.400	6.57	<0.400	<0.500	2.05	<0.400	<0.500	<0.400	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	4.2	<0.400	<0.500	<0.400	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	4.06	<0.400	<0.500	<0.400	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.44	<0.400	<0.500	0.929	<0.400	<0.500	<0.400	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	0.770	<0.400	<0.400	12.1	0.45	<0.500	3.51	<0.400	<0.500	0.43	<0.400
	10/6/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	4.56	<0.400	<0.500	<0.400	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.97	<0.400	<0.500	<0.400	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.575	<0.400	<0.500	2.71	<0.400	<0.500	<0.400	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.24	<0.400	<0.500	6.32	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	4.64	<0.400	<0.500	<0.400	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.50	<0.400	<0.500	3.8	<0.400	<0.500	<0.400	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.08	<0.400	<0.500	3.90	<0.400	<0.500	<0.400	<0.400
	06/15/2022	<1.00	<5.00	<1.00	<1.00	0.750	<0.400	<0.400	10.6	0.730	<0.500	1.50	<0.400	<0.500	0.410	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.88	<0.400	<0.500	<0.400	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.75	<0.400	<0.500	3.2	<0.400	<0.500	<0.400	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.49	<0.400	<0.500	<0.400	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.43	<0.400	<0.500	2.83	<0.400	<0.500	<0.400	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.78	<0.400	<0.500	<0.400	<0.200
	12/12/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.04	<0.400	<0.500	2.92	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.42	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.42	0.47	<0.500	1.64	<0.400	<0.500	<0.400	<0.200
MW-9	12/2/1996	<50	<50	<50	<20	<30	<50	<20	<20	<100	<20	5,000	200	--	1,600	<50
	11/13/1997	<50	<100	<50	<50	<50	<50	<50	487	<50	<50	2,890	<50	--	1,840	<100
	8/11/1999	<20	<100	<10	<10	<10	<10	<10	54	<10	<10	1,490	43.2	--	517	<10
	11/16/1999	<20	<50	<10	<20	<10	<10	<10	103	<10	<10	1,730	32	--	305	<10
	2/28/2000	<20	<100	<10	<10	<10	<10	<10	<10	<10	<10	2,040	36.4	--	315	<10

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-9 (continued)	6/27/2000	<50	<250	<25	<25	<25	<25	<25	<25	<25	<25	1,300	<50	--	298	<25
	8/31/2000	<10	<50	<5	<5	<5	<5	<5	<5	<5	<5	1,560	31.3	--	229	<5
	11/30/2000	<10	<50	<5	<5	21.7	<5	10.5	1,330	11.7	<5	823	26.6	--	528	8.15
	9/25/2001	<2.5	<2.5	<2.5	<2.5	3.8	<2.5	<2.5	9.1	<2.5	<2.5	680	16	--	140	<2.5
	12/17/2001	<5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	306	<5	--	74.2	<2.5
	3/18/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	113	<0.50	--	19.1	<0.50
	5/31/2002	<2	<1	<1	<2	<1	<1	<1	1.22	<1	<1	296	1.44	--	44	<1
	8/29/2002	<2	<1	<1	<2	<1	<1	<1	1.88	<1	<1	294	2.12	--	67.4	<1
	11/7/2002	<5	<2.5	<2.5	<5	<2.5	<2.5	<2.5	17.2	<2.5	<2.5	453	4	--	145	<2.5
	1/23/2003	<2	<1	<1	<2	<1	<1	<1	1.66	<1	<1	205	2.74	--	59.5	<1
	5/28/2003	<1	<0.50	<0.50	<1	1.81	<0.50	<0.50	0.97	<0.50	<0.50	141	2.85	--	27.4	<0.50
	11/11/2003	<5	<5	<5	<5	<5	<5	<5	23.7	<5	<5	401	6.25	--	91.4	<5
	1/27/2004	<2	<1	<1	<2	<1	<1	<1	2.58	<1	<1	179	2.54	--	58.1	<1
	5/4/2004	<1	<1	<1	<1	<1	<1	<1	1.09	<1	<1	178	2.56	--	51.9	<1
	8/17/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/2004	<25	<25	<25	<25	28	<25	<25	1,200	27	<25	1,800	<25	--	1,000	<25
	3/24/2005	<5	<2.5	<2.5	<5	3.3	<2.5	<2.5	54.2	<2.5	<2.5	675	8	--	239	<2.5
	5/18/2005	<2	<1	<1	<2	<1	<1	<1	2.68	<1	<1	2.41	2.08	--	62.4	<1
	8/18/2005	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	20.5 B	<2.50	<2.50	551	7.6	--	209	<2.50
	11/15/2005	<10	<5	<5	<10	27.1	<5	6.8	1,020	18.6	<5	1,040	14.1	--	633	21.2
	2/21/2006	<10	<5	<5	<10	<5	<5	<5	16.7	<5	<5	534	<5	--	165	<5
	6/5/2006	<1	<1	<1	<1	<1	<1	<1	1.47	<1	<1	151	2.6	--	57.3	<1
	9/5/2006	<5	<2.50	<2.50	<5	5.5	<2.50	<2.50	117	3.15	<2.50	698	6.8	--	314	<2.50
	12/6/2006	<5	<2.50	<2.50	<5	2.95	<2.50	<2.50	59	<2.50	<2.50	578	5.55	--	237	<2.50
	2/7/2007	<5	<2.50	<2.50	<5	3.15	<2.50	<2.50	72.6	<2.50	<2.50	591	6.1	--	239	2.65
	5/23/2007	<2	<2	<2	<2	<2	<2	<2	6.32	<2	<2	210	3	--	90.4	<2
	9/12/2007	<2	<1	<1	<2	2.34	<1	<1	47.1	1.44	<1	282	5.12	--	184	<1
	12/13/2007	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	253	4.45	--	78.4	<2.50
	3/6/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	1.92	<0.500	<0.500	138	3.77	<0.500	61.5	<0.500
	6/10/2008	<1	<1	<1	<1	<1	<1	<1	2.73	<1	<1	297	5.16	<1	87.7	<1
	9/18/2008	<5	<2.50	<2.50	<5	7.05	<2.50	<2.50	172	3.8	<0.5000	524	5.35	<0.500	315	4.15
	12/9/2008	<0.90	<0.90	<0.90	<0.90	3.8	<0.90	1.3	130	2.5	<0.90	270	5.1	<0.90	140	2.3
	3/26/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	<0.50	170	4	<0.50	56	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	1.1	72	2.8	<0.50	420	4.9	<0.50	180	1.8
	9/17/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	170	4.4	<0.50	60	<0.50
	12/17/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	120	2.5	<0.50	43	<0.50
	3/19/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	160	3	<0.50	48	<0.50
	6/16/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	100	1.4	<0.50	36	<0.50
	9/21/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	140	2.9	<0.5	50	<0.5
	12/10/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	100	1.3	<0.5	330	<0.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-9 (continued)	3/11/2011	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	17	0.82	<0.50	190	2.7	<0.50	81	0.52
	03/11/2011 DUP	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	17	0.85	<0.50	200	2.8	<0.50	84	0.51
	6/10/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	53	1.9	<0.5	31	<0.5
	9/19/2011	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	72	2.3	<0.50	230	3.1	<0.50	120	0.78
	12/9/2011	<0.90	<0.90	<0.90	<0.90	53	<0.90	11	1,800	40	<0.90	600	10	<0.90	590	26
	3/12/2012	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	20	0.57	<0.50	140	2	<0.50	56	<0.50
	6/22/2012	<0.5	<0.5	<0.5	<0.5	3.3	<0.5	1.1	140	4.3	<0.5	220	3.3	<0.5	180	2.3
	9/14/2012	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	<0.90	17	<0.90	<0.90	210	2.4	<0.90	78	<0.90
	12/13/2012	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	29	0.96	<0.50	110	1.1	<0.50	49	<0.50
	3/15/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5	<0.50	<0.50	86	1.8	<0.50	34	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	1	100	3.7	<0.50	240	3.1	<0.50	150	2.2
	9/20/2013	<0.50	<0.50	<0.50	<0.50	2	<0.50	0.51	74	2.2	<0.50	160	2	<0.50	87	0.82
	12/16/2013	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	1.4	230	6.4	<0.50	210	3.5	<0.50	180	2.8
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	39	0.57	<0.50	19	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.68	41	1.6	<0.50	190	2.3	<0.50	91	1.1
	9/30/2014	<0.90	<0.90	<0.90	<0.90	2.3	<0.90	<0.90	77	2.3	<0.90	230	2.9	<0.90	110	1.3
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35	0.64	<0.50	18	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	18.9	0.6	<0.50	155	2	<0.50	59.5	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	0.54	12.5	0.78	<0.50	160	1.9	<0.50	61.8	1.6
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	74.3	2.2	<0.50	31.6	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	0.85	145	4.2	<0.50	199	2.4	<0.50	113	2
	12/8/2015 DUP	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	0.93	153	4.4	<0.50	198	2.5	<0.50	118	2.1
	3/8/2016	<1	<4	<1	<1	4.1	<1	<1	117	3.8	<1	164	2.3	<1	94.6	3.4
	6/17/2016	<0.50	<2	<0.50	<0.50	1.8	<0.50	0.58	60.7	2.4	<0.50	116	1.7	<0.50	68.3	0.89
	9/29/2016	<0.50	<2	<0.50	<0.50	1.2	<0.50	<0.50	39.3	1.8	<0.50	192	2.5	<0.50	91.9	0.76
	12/14/2016	<0.50	<2	<0.50	<0.50	1.3	<0.50	<0.50	59.7	1.6	<0.50	75.8	1.1	<0.50	44.9	0.52
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.77	<0.5	<0.5	27.9	0.89	<0.5	12.5	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	17.5	0.60	<0.50	104	1.3	<0.50	47.2	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	2.80	<1.0	<0.50	83.1	2.50	<0.50	102	2.4	<0.50	66.7	0.99
	11/7/2017	<2.0	<2.0	<0.50	<0.50	20.30	<0.50	3.30	569.0	15.20	<0.50	205	4.5	<0.50	167.0	7.80
	3/21/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	1.2	<0.500	<0.500	39	1.1	<0.500	14.9	<0.500
	6/29/2018	<0.500	<2.50	<0.500	<0.500	6.86	<0.500	1.63	169.0	8.28	<0.500	332	3.5	<0.500	182.0	2.42 J
	9/27/2018	<1.00	<5.00	<1.00	<1.00	5.69	<0.400	1.59	219	7.54	<0.500	243	3.96	<0.500	168	3.90
	12/7/2018	<1.00	<5.00	<1.00	<1.00	0.75	<0.400	<0.400	20.0	0.80	<0.500	178	3.4	<0.500	66.5	0.55
	3/20/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.47	<0.400	<0.500	58.9	1.47	<0.500	20.0	<0.400
	6/7/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.99	<0.400	<0.500	108	1.34	<0.500	49.4	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.34	<0.400	<0.500	81.3	2.34	<0.501	25.4	<0.401

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-9 (continued)	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.34	<0.400	<0.500	67.5	1.46	<0.502	24.3	<0.402
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.21	<0.400	<0.500	55.4	1.41	<0.500	18.1	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.27	<0.400	<0.500	109	1.44	<0.500	45.9	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	1.78	<0.400	0.817	39.0	1.280	<0.500	191	2.95	<0.500	72.2	1.55
	12/9/2020	<2.00	<5.00	<1.00	<1.00	6.49	<0.400	1.63	211	6.980	<0.500	262	3.86	<0.500	158	2.68
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.56	<0.400	<0.500	73.5	1.38	<0.500	26.4	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.35	<0.400	<0.500	87.7	1.83	<0.500	32.4	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	0.429	<0.400	<0.400	6.99	0.448	<0.500	144	3.26	<0.500	43	0.654
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.799	<0.400	<0.500	134	1.62	<0.500	41.2	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	0.410	<0.400	<0.400	10.3	0.500	<0.500	104	1.25	<0.500	36.2	<0.400
	6/14/2022	<1.00	<5.00	<1.00	<1.00	2.98	<0.400	0.55	29.7	<0.400	<0.500	47.8	<0.400	<0.500	21.7	0.67
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.500	<0.400	<0.500	48.2	1.15	<0.500	12.4	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	0.72	<0.400	<0.400	21.4	0.97	<0.500	172	3.26	<0.500	48.6	<0.400
	3/17/2023	<1.00	<5.00	<1.00	<1.00	0.99	<0.400	<0.400	40.2	2.17	<0.500	176	3.06	<0.500	66.6	0.72
	6/15/2023	<1.00	<5.00	<1.00	<1.00	2.01	<0.400	0.81	59.2	2.5	<0.500	175	1.9	<0.500	77.5	2.25
	9/12/2023	<2.00	<5.00	<1.00	<1.00	0.640	<0.400	0.500	18.5	1.21	<0.500	158	2.31	<0.500	46.7	1.28
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	74.0	1.06	<0.500	19.3	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	39.8	0.570	<0.500	11.4	<0.200
	6/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	53.4	0.580	<0.500	13.7	<0.200
MW-10	12/2/1996	<0.50	<0.50	<0.50	<0.20	<0.30	<0.50	<0.20	<0.20	<1	<0.20	2.7	<1	--	0.4	<0.50
	11/13/1997	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.53	<0.50	--	3.65	<1
	8/11/1999	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.02	<1	--	1.24	<0.50
	11/16/1999	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	69.6	1.89	--	10.3	<0.50
	2/28/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.63	<1	--	1.16	<0.50
	6/27/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.72	<1	--	3.74	<0.50
	5/30/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.25	<1	--	2.52	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.05	<0.50	--	1.43	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	2.21	<0.50	--	1.28	<0.50
	11/2/2004	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	--	0.98	<0.50
	11/16/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	--	3.4	<0.50
	3/23/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.02	<0.50	--	1.21	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.26	<0.50	--	1.19	<0.50
	9/12/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59 J	<0.50	--	0.83	<0.50
	3/5/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.66	<0.500	<0.500	1.67	<0.500
	9/18/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	1.13	<0.500	<0.500	1.4	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-10	3/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	1.6	<0.50
(continued)	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	2	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	1.6	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	1.4	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	0.8	<0.50
	9/14/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	2.1	<0.50
	3/6/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	2	<0.50
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	<0.50	1.4	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	<0.50	3.1	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	1.4	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	8.8	<0.50	<0.50	16	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	2	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	1.8	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.6	<0.50
	3/7/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	1.4	<0.50
	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	1.5	<0.5
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	2.4	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	1.1	<0.50
	6/29/2018	<0.500	<2.50	<0.500	<0.500	0.161 J	<0.500	<0.500	0.8	<0.500	<0.500	5.7	0.145 J	<0.500	5.8	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.74	<0.400	<0.500	1.45	<0.400
	9/25/2018 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.76	<0.400	<0.500	1.54	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.24	<0.400	<0.500	2.00	<0.400
	6/6/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	7.51	<0.400	<0.500	4.19	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.03	<0.400	<0.500	1.35	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.65	<0.400	<0.500	1.15	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.97	<0.400	<0.500	1.53	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	9.74	<0.400	<0.500	5	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.34	<0.400	<0.500	1.81	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.40	<0.400	<0.500	1.95	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.66	<0.400	<0.500	1.84	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.19	<0.400	<0.500	2.6	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.34	<0.400	<0.500	1.96	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	4.75	<0.400	<0.500	2.7	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.93	<0.400	<0.500	2.22	<0.400
	06/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.22	<0.400	<0.500	1.77	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.55	<0.400	<0.500	1.66	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.66	<0.400	<0.500	1.9	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-10 (continued)	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.40	<0.400	<0.500	2.09	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	9.89	<0.400	<0.500	4.93	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.71	<0.400	<0.500	1.90	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.70	<0.400	<0.500	1.86	<0.200
	3/5/2024	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	2.06	<0.400	<0.500	1.82	<0.200
	6/11/2024	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	3.21	<0.400	<0.500	1.99	<0.200
MW-11	12/2/1996	<50	<50	<50	<20	<30	<50	52	140	<100	<20	2,200	550	--	5,900	<50
	11/13/1997	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	686	90.3	--	2,720	<100
	8/10/1999	<5	<25	<2.5	<2.5	13.7	<2.5	22.8	14.4	<2.5	<2.5	259	112	--	1,300	<2.5
	11/16/1999	<20	<50	<10	<20	12	<10	16.8	18.8	<10	<10	478	94.8	--	1,500	<10
	2/28/2000	<5	<25	<2.5	<2.5	2.71	<2.5	7.9	5.05	<2.5	<2.5	247	30.2	--	473	<2.5
	6/27/2000	<10	<50	<5	<5	12.1	<5	28.9	14.8	<5	<5	337	108	--	1,390	<5
	8/31/2000	<20	<100	<10	<10	15.4	<10	28	24.8	<10	<10	646	159	--	1,690	<10
	11/30/2000	<20	<100	<10	<10	12.2	<10	26.4	19.3	<10	<10	342	125	--	1,550	<10
	2/27/2001	<5	<25	<2.5	<2.5	3.65	<2.5	7.82	7.1	<2.5	<2.5	198	35.1	--	468	<2.5
	5/30/2001	<10	<50	<5	<5	5.2	<5	13.6	9.09	<5	<5	256	48.8	--	858	<5
	9/25/2001	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	260	57	--	820	<13
	12/17/2001	<10	<50	<5	<5	<5	<5	15.4	25.9	<5	<5	983	40.9	--	1,390	<5
	3/18/2002	<10	<5	<5	<10	11.9	<5	19.4	17.1	<5	<5	433	79.8	--	1,370	<5
	5/30/2002	<10	<5	<5	<10	5.9	<5	10.9	15.6	<5	<5	571	45.6	--	965	<5
	11/7/2002	<10	<5	<5	<10	15	<5	19.3	18.9	<5	<5	347	112	--	1,640	<5
	1/23/2003	<5	<2.5	<2.5	<5	3.35	<2.5	4.3	5.35	<2.5	<2.5	265	24.1	--	534	<2.5
	5/28/2003	<10	<5	<5	<10	13.3	<5	17.9	17.6	<5	<5	305	105	--	1,580	<5
	11/11/2003	<5	<5	<5	<5	5	<5	5.15	9.15	<5	<5	191	38.8	--	504	<5
	1/26/2004	<10	<5	<5	<10	9.6	<5	11.5	13.5	<5	<5	369	73.3	--	1,070	<5
	3/22/2004	Well Abandoned														
MW-12	12/2/1996	<50	<50	<50	<20	<30	<50	<20	29	<100	<20	2,500	<100	--	950	<50
	11/12/1997	<250	<500	<250	<250	<250	<250	<250	2,710	<250	<250	12,900	645	--	5,400	<500
	8/11/1999	<200	<1	<100	<100	120	<100	<100	2,680	<100	<100	11,300	758	--	3,520	<100
	11/16/1999	<200	<500	<100	<200	<100	<100	<100	160	<100	<100	18,200	922	--	4,630	<100
	2/28/2000	<200	<1	<100	<100	<100	<100	<100	908	<100	<100	3,780	<200	--	1,210	<100
	6/27/2000	<100	<500	<50	<50	161	<50	<50	2,880	<50	<50	12,000	712	--	3,180	<50
	5/30/2001	<50	<250	<25	<25	64.8	<25	54	1,650	<25	<25	4,990	298	--	1,810	<25
	5/30/2002	<5	<2.5	<2.5	<5	4.25	<2.5	<2.5	101	<2.5	<2.5	344	6.6	--	81.6	<2.5
	5/29/2003	<5	<2.5	<2.5	<5	28.4	<2.5	8	601	5.7	<2.5	362	18.2	--	199	<2.5
	11/16/2004	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	59	<2.5	<2.5	410	3.5	--	96	<2.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-12 (continued)	3/23/2005	<20	<10	<10	<20	247	<10	53	3,640	40.2	<10	1,080	49.8	--	639	14.2
	5/18/2005	<1	<0.50	<0.50	<1	0.96	<0.50	0.98	30.1	0.57	<0.50	51.1	0.92	--	21.4	<0.50
	5/22/2007	<5	<5	<5	<5	35.6	<5	7.45	785	11.1	<5	233	7.8	--	139	<5
	9/11/2007	<100	<50	<50	<100	316	<50	57	6,700	53	<50	431	<50	--	516	<50
	12/12/2007	<2	<1	<1	<2	1.1	<1	<1	43.8	<1	<1	106	3.16	--	39.6	<1
	3/5/2008	<1	4.97	<0.500	<1	156	2.01	46.2	3,170	41.8	<0.500	440	21.2	<0.500	329	18.5
	9/19/2008	<50	<25	<25	<50	394	<25	66	7,650	69	<25	968	45	<25	924	58
	12/10/2008	<4	<4	<4	<4	33	<4	6.6	670	8.7	<4	99	5	<4	80	<4
	3/27/2009	<4	4.8	<4	<4	230	<4	39	4,800	46	<4	540	28	<4	440	31
	03/27/2009 DUP	<4	5	<4	<4	250	<4	44	4,700	51	<4	600	32	<4	490	35
	6/18/2009	<15	<15	<15	<15	170	<15	32	3,500	36	<15	270	<15	<15	230	26
	06/18/2009 DUP	<15	<15	<15	<15	170	<15	32	3,600	37	<15	310	<15	<15	250	25
	9/18/2009	<15	<15	<15	<15	240	<15	46	4,200	50	<15	540	26	<15	440	51
	09/18/2009 DUP	<15	<15	<15	<15	260	<15	49	4,600	52	<15	590	28	<15	470	56
	12/18/2009	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	100	1.1	1.3	170	2.2	<0.50	65	<0.50
	12/18/2009 DUP	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	96	1.1	1.3	160	2.1	<0.50	62	<0.50
	3/19/2010	<0.50	4.1	<0.50	<0.50	220	2.6	48	4,400	53	<0.50	480	28	0.7	380	37
	03/19/2010 DUP	<15	<15	<15	<15	270	<15	44	4,900	54	<15	600	29	<15	460	39
	6/16/2010	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	19	<0.50	<0.50	38	<0.50	<0.50	17	<0.50
	06/16/2010 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	0.54	<0.50	37	<0.50	<0.50	16	<0.50
	9/23/2010	<15	<15	<15	<15	260	<15	47	4,800	56	<15	780	38	<15	560	68
	9/23/2010 DUP	<15	<15	<15	<15	260	<15	49	4,800	57	<15	800	41	<15	580	65
	12/9/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	5.1	<0.5	<0.5	2.1	<0.5
	12/09/10 DUP	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	5.8	<0.5	<0.5	2	<0.5
	3/10/2011	<0.50	0.67	<0.50	<0.50	94	0.96	17	1,900	19	0.55	340	12	<0.50	220	11
	03/10/2011 DUP	<0.50	0.87	<0.50	<0.50	93	1	17	1,600	19	0.55	260	13	<0.50	180	11
	6/7/2011	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	59	1	<0.5	53	0.7	<0.5	25	<0.5
	06/07/2011 DUP	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	60	1	<0.5	58	0.69	<0.5	27	<0.5
	9/19/2011	<0.50	3	<0.50	<0.50	240	2.5	45	4,700	55	<0.50	860	65	0.94	690	63
	09/19/2011 DUP	<20	<20	<20	<20	240	<20	53	4,700	60	<20	860	60	<20	680	68
	12/7/2011	<0.50	<0.50	<0.50	<0.50	130	1.3	28	2,900	33	<0.50	520	34	0.54	380	40
	12/07/2011 DUP	<0.50	<15	<0.50	<0.50	140	1.3	29	2,900	33	<0.50	580	34	0.55	400	41
	3/12/2012	<15	<15	<15	<15	210	<15	44	3,800	45	<15	770	48	<15	540	46
	03/12/2012 DUP	<20	<20	<20	<20	220	<20	44	4,000	47	<20	740	50	<20	540	45
	06/22/2012	<5	<5	<5	<5	100	<5	16	1,700	39	<5	270	13	<5	200	22
	06/22/2012 DUP	<5	<5	<5	<5	100	<5	16	1,700	39	<5	270	13	<5	190	22
	9/14/2012	<5	<5	<5	<5	220	<5	45	4,700	56	<5	890	61	<5	590	58
	09/14/2012 DUP	<15	<15	<15	<15	270	<15	58	5,400	73	<15	1,100	76	<15	730	84
	12/13/2012	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	0.97	<0.50	38	0.52	<0.50	22	<0.50
	12/13/2012 DUP	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	0.92	<0.50	38	0.53	<0.50	23	<0.50
	3/15/2013	<0.50	1	<0.50	<0.50	200	1.7	40	4,300	55	<0.50	760	53	0.71	540	53

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-12 (continued)	03/15/2013 DUP	<0.50	1	<0.50	<0.50	200	1.8	40	4,200	56	<0.50	750	52	0.66	520	54
	6/13/2013	<15	<15	<15	<15	230	<15	38	4,700	53	<15	590	44	<15	480	55
	06/13/2013 DUP	<15	<15	<15	<15	240	<15	39	4,800	53	<15	610	46	<15	500	59
	9/20/2013	<0.50	<0.50	<0.50	<0.50	170	1.6	37	3,400	49	<0.50	510	37	0.66	400	50
	09/20/2013 DUP	<0.50	<0.50	<0.50	<0.50	180	1.7	36	3,400	48	<0.50	520	37	0.63	400	49
	12/16/2013	<2.5	<2.5	<2.5	<2.5	36	<2.5	7.5	800	10	<2.5	150	5.7	<2.5	110	9.6
	12/16/2013 DUP	<2.5	<2.5	<2.5	<2.5	35	<2.5	7.6	770	9.6	<2.5	140	5.8	<2.5	110	9.8
	3/24/2014	<0.50	<0.50	<0.50	<0.50	110	0.77	18	1,900	25	<0.50	180	8.6	<0.50	170	47
	3/24/2014 DUP	<7	<7	<7	<7	97	<7	16	1,900	22	<7	170	7.5	<7	140	35
	6/24/2014	<1.5	<1.5	<1.5	<1.5	14	<1.5	1.7	300	2.1	<1.5	42	<1.5	<1.5	32	<1.5
	6/24/2014 DUP	<1.5	<1.5	<1.5	<1.5	14	<1.5	1.9	310	2.3	<1.5	42	1.6	<1.5	34	<1.5
	9/30/2014	<15	<15	<15	<15	190	<15	39	3,500	45	<15	670	36	<15	480	42
	9/30/2014 DUP	<15	<15	<15	<15	180	<15	39	3,500	45	<15	680	35	<15	460	42
	12/11/2014	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	34	0.64	<0.50	25	<0.50	<0.50	15	<0.50
	12/11/2014 DUP	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	32	0.6	<0.50	24	<0.50	<0.50	14	<0.50
	3/20/2015	<5	<5	<5	<5	102	<5	25.4	2,110	29.4	<5	584	17.8	<5	344	36.8
	3/20/2015 DUP	<12.5	<12.5	<12.5	<12.5	143	<12.5	25.8	2,490	28.8	<12.5	495	21.7	<12.5	340	29
	6/19/2015	<10	<10	<10	<10	151	<10	28.2	2,570	25	<10	514	23.6	<10	356	31.1
	6/19/2015 DUP	<10	<10	<10	<10	157	<10	31	2,680	30	<10	516	23.4	<10	362	33.2
	9/22/2015	<8.3	<8.3	<8.3	<8.3	120	<8.3	16.9	2,250	23.4	<8.3	343	15.7	<8.3	239	22.5
	9/22/2015 DUP	<8.3	<8.3	<8.3	<8.3	134	<8.3	21.4	2,490	25.7	<8.3	425	20.1	<8.3	282	26.5
	12/8/2015	<5	<5	<5	<5	8	<5	<5	40	0.7	<5	45	0.5	<5	22	<5
	3/8/2016	<3.6	<14.3	<3.6	<3.6	79.9	<3.6	15.4	1,380	16.2	<3.6	325	7.7	<3.6	209	21.3
	3/8/2016 DUP	<3.6	<14.3	<3.6	<3.6	82	<3.6	16.6	1,390	15.6	<3.6	336	7.7	<3.6	210	21.2
	6/16/2016	<8.4	<33.4	<8.4	<8.4	174	<8.4	29.9	3,310	31.6	<8.4	314	12.8	<8.4	288	52.3
	6/16/2016 DUP	<8.4	<33.4	<8.4	<8.4	192	<8.4	31.9	3,420	37.4	<8.4	367	15.4	<8.4	311	67
	9/27/2016	<10	<40	<10	<10	26	<10	<10	525	<10	<10	67.6	<10	<10	45.4	14.8
	9/27/2016 DUP	<2.5	<10	<2.5	<2.5	44.4	<2.5	11.5	867	11.4	<2.5	387	3.9	<2.5	163	22.6
	12/14/2016	<1	<4	<1	<1	<1	<1	<1	6.9	2.3	<1	<1	<1	<1	<1	20.5
	12/14/2016 DUP	<2.5	29.1	<2.5	<2.5	16.5	<2.5	4.7	744	<2.5	<2.5	62.3	<2.5	<2.5	42.2	21.2
	3/30/2017	<10	<40	<10	<10	<10	<10	<10	1,120	<10	<10	55.9	<10	<10	29.6	37.8
	3/30/2017 DUP	<2.5	<10	<2.5	<2.5	11.4	<2.5	3.8	853	6.1	<2.5	49	<2.5	<2.5	26	28.3
	6/12/2017	<125	<12.5	<3.1	<3.1	14.0	<3.1	4.7	893	7.6	<3.1	42.4	<3.1	<3.1	18.1	48.4
	6/12/2017 DUP	<3.1	<12.5	<3.1	<3.1	12.8	<3.1	<3.1	860	7.1	<3.1	40.0	<3.1	<3.1	16.5	47.4
	9/28/2017	<3.1	17.4	<3.1	<3.1	19.5	<3.1	<3.1	457	5.4	<3.1	<3.1	<3.1	<3.1	<3.1	47.7

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-12 (continued)	9/28/2017 DUP	<1.7	16.3	<1.7	<1.7	17.3	<1.7	<1.7	428	5.2	<1.7	<1.7	<1.7	<1.7	<1.7	45.1
	11/9/2017	<2.0	15.4	<0.50	<0.50	4.5	<0.50	<0.50	22	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	49.1
	11/9/2017 DUP	<2.0	12.6	<0.50	<0.50	4.5	<0.50	<0.50	21	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	36.4
	3/20/2018	<0.500	7.50	<0.500	<0.500	0.5	<0.500	<0.500	6	1.3	<0.500	<0.500	<0.500	<0.500	0.271 J	2.8
	3/20/2018 DUP	<0.500	8.18	<0.500	<0.500	0.550 J	<0.500	<0.500	6	1.29 J	<0.500	0.203 J	<0.500	<0.500	0.261 J	2.6
	7/1/2018	<0.500	9.73	<0.500	<0.500	0.9	<0.500	<0.500	4	1.6	<0.500	0.304 J	<0.500	<0.500	1.0	1.5
	7/1/2018 DUP	<0.500	8.34	<0.500	<0.500	0.8	<0.500	<0.500	4	1.6	<0.500	0.289 J	<0.500	<0.500	1.0	1.3
	9/25/2018	<1.00	24.5	<1.00	<1.00	0.730	<0.400	<0.400	1.46	0.520	<0.500	<0.400	<0.400	<0.500	<0.400	1.23
	9/25/2018 DUP	<1.00	23.7	<1.00	<1.00	0.670	<0.400	<0.400	1.31	0.500	<0.500	<0.400	<0.400	<0.500	<0.400	1.21
	12/4/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4	0.4	<0.500	1.3	<0.400	<0.500	1.3	1.7
	12/4/2018 DUP	<1.00	6.03	<1.00	<1.00	0.5	<0.400	<0.400	4	0.4	<0.500	1.0	<0.400	<0.500	1.0	1.6
	3/20/2019	<2.00	<5.00	<1.00	<1.00	0.655	<0.400	<0.400	6.70	0.675	<0.500	2.11	<0.400	<0.500	1.33	1.64
	3/20/2019 DUP	<2.00	<5.00	<1.00	<1.00	0.615	<0.400	<0.400	6.31	0.621	<0.500	2.05	<0.400	<0.500	1.15	1.56
	6/5/2019	<2.00	<5.00	<1.00	<1.00	0.716	<0.400	<0.400	9.17	0.756	<0.500	3.30	<0.400	<0.500	3.45	2.64
	6/5/2019 DUP	<2.00	<5.00	<1.00	<1.00	0.719	<0.400	<0.400	9.36	0.725	<0.500	3.64	<0.400	<0.500	3.41	2.74
	9/26/2019	<1.00	18.1	<1.00	<1.00	6.26	<0.400	<0.400	5.31	0.565	<0.500	<0.400	<0.400	<0.500	0.442	6.82
	9/26/2019 DUP	<1.00	16	<1.00	<1.00	6.12	<0.400	<0.400	5.06	0.55	<0.500	<0.400	<0.400	<0.500	0.459	6.45
	12/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.61	<0.400	<0.500	2.37	<0.400	<0.500	1.41	0.413
	12/5/2019 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.51	<0.400	<0.500	2.18	<0.400	<0.500	1.23	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	0.803	<0.400	<0.400	8.18	0.515	<0.500	7.01	<0.400	<0.500	4.17	0.423
	3/11/2020 DUP	<1.00	<5.00	<1.00	<1.00	0.806	<0.400	<0.400	8.47	0.561	<0.500	6.95	<0.400	<0.500	4.25	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	1.25	<0.400	<0.400	14.2	0.41	<0.500	2.49	<0.400	<0.500	2.6	1.1
	6/18/2020 DUP	<1.00	<5.00	<1.00	<1.00	1.30	<0.400	<0.400	14.1	<0.400	<0.500	2.59	<0.400	<0.500	2.68	1.04
	10/7/2020	<1.00	<10.0	<1.00	<1.00	36.6	<0.400	<0.400	80.9	0.582	<0.500	<0.400	<0.400	<0.500	0.745	184
	10/7/2020 DUP	<1.00	<10.0	<1.00	<1.00	37.8	<0.400	<0.400	81.7	0.632	<0.500	<0.400	<0.400	<0.500	0.750	196
	12/8/2020	<2.00	<5.00	<1.00	<1.00	1.55	<0.400	<0.400	9.92	<0.400	<0.500	13.5	<0.400	<0.500	6.47	7.36
	12/8/2020 DUP	<2.00	<5.00	<1.00	<1.00	1.52	<0.400	<0.400	9.61	<0.400	<0.500	12.9	<0.400	<0.500	6.24	7.12
	3/5/2021	<1.00	<5.00	<1.00	<1.00	1.55	<0.400	<0.400	8.6	<0.400	<0.500	6.73	<0.400	<0.500	4.92	0.436
	3/5/2021 DUP	<1.00	<5.00	<1.00	<1.00	1.48	<0.400	<0.400	8.21	<0.400	<0.500	5.81	<0.400	<0.500	4.39	0.446
	6/16/2021	<1.00	<5.00	<1.00	<1.00	6.90	<0.400	<0.400	34.0	0.426	<0.500	8.85	<0.400	<0.500	9.62	35.7
	6/16/2021 DUP	<1.00	<5.00	<1.00	<1.00	6.53	<0.400	<0.400	32.4	<0.400	<0.500	8.21	<0.400	<0.500	8.87	33.4
	9/14/2021	<1.00	<5.00	<1.00	<1.00	37.4	<0.400	<0.400	59	0.572	<0.500	4.29	<0.400	<0.500	5.59	308
	9/14/2021 DUP	<1.00	<5.00	<1.00	<1.00	34.8	<0.400	<0.400	54.7	0.570	<0.500	3.75	<0.400	<0.500	5.1	282
	12/9/2021	<1.00	<5.00	<1.00	<1.00	0.644	<0.400	<0.400	7.49	<0.400	<0.500	12	<0.400	<0.500	6.54	2.02
	12/9/2021 DUP	<1.00	<5.00	<1.00	<1.00	0.68	<0.400	<0.400	7.36	<0.400	<0.500	12.3	<0.400	<0.500	6.68	2.1
	3/8/2022	<1.00	<5.00	<1.00	<1.00	13.4	<0.400	<0.400	18.6	<0.400	<0.500	8.43	<0.400	<0.500	9.36	168

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-12 (continued)	3/8/2022 DUP	<1.00	<5.00	<1.00	<1.00	9.15	<0.400	<0.400	15.6	<0.400	<0.500	8.70	<0.400	<0.500	9.62	99.5
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.46	<0.400	<0.500	10.6	<0.400	<0.500	5.38	0.49
	6/14/2022 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.48	<0.400	<0.500	10.3	<0.400	<0.500	5.18	0.43
	9/14/2022	<1.00	<5.00	<1.00	<1.00	79.60	<0.400	10.20	2,470	2.58	<0.500	0.850	<0.400	<0.500	11.6	2000
	9/14/2022 DUP	<1.00	<5.00	<1.00	<1.00	77.80	<0.400	9.41	2,260	2.72	<0.500	0.750	<0.400	<0.500	10.0	1710
	12/8/2022	<1.00	<5.00	<1.00	<1.00	8.60	<0.400	0.73	165	0.530	<0.500	7.29	<0.400	<0.500	5.11	124
	12/8/2022 DUP	<1.00	<5.00	<1.00	<1.00	8.50	<0.400	0.73	161	0.510	<0.500	7.02	<0.400	<0.500	5.08	121
	3/16/2023	<1.00	<5.00	<1.00	<1.00	89.1	<0.400	2.23	563	1.35	<0.500	2.51	<0.400	<0.500	4.11	1210
	3/16/2023 DUP	<1.00	<5.00	<1.00	<1.00	88.3	<0.400	2.23	576 CONT	1.55	<0.500	2.43	<0.400	<0.500	4.06	1300 CONT
	6/14/2023	<10.0	<50.0	<10.0	<10.0	108	<4.00	<4.00	208	<10.0	<5.00	4.80	<4.00	<5.00	<4.00	1710
	6/14/23 DUP	<10.0	<50.0	<10.0	<10.0	109	<4.00	<4.00	204	<10.0	<5.00	4.10	<4.00	<5.00	<4.00	1680
	9/13/2023	<20.0	<50.0	<10.0	<10.0	94.2	<4.00	9.00	1100	<4.00	<5.00	<7.50	<4.00	<5.00	7.90	1490
	9/13/2023 DUP	<20.0	<50.0	<10.0	<10.0	105	<4.00	10.4	1310	<4.00	<5.00	<6.00	<4.00	<5.00	8.00	1690
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.14	<0.400	<0.500	6.94	<0.400	<0.500	3.36	1.80
	12/13/2023 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.08	<0.400	<0.500	6.84	<0.400	<0.500	3.30	1.66
	3/5/2024	<20.0	<50.0	<10.0	<10.0	98.8	<4.00	<4.00	80.2	<4.00	<5.00	<4.00	<4.00	<5.00	4.40	1360
	3/5/2024 DUP	<20.0	<50.0	<10.0	<10.0	95.9	<4.00	<4.00	79.5	<4.00	<5.00	<4.00	<4.00	<5.00	<4.00	1330
	6/13/2024	<1.00	<5.00	<1.00	<1.00	29.9	<0.400	0.440	32.8	<0.400	<0.500	3.88	<0.400	<0.500	3.90	22.8
	6/13/2024 DUP	<1.00	<5.00	<1.00	<1.00	27.2	<0.400	0.410	30.2	<0.400	<0.500	3.86	<0.400	<0.500	3.89	16.0
MW-13	12/2/1996	0.7	<0.50	<0.50	<0.20	<0.30	<0.50	0.3	9.1	<1	<0.20	750	6.6	--	82	<0.50
	11/12/1997	<250	<500	<250	<250	291	<250	<250	5,050	<250	<250	18,100	<250	--	9,050	<500
	8/11/1999	<200	<1	<100	<100	<100	<100	<100	2,280	<100	<100	9,590	<200	--	3,920	<100
	11/16/1999	<50	<125	<25	<50	108	<25	51	2,620	<25	<25	7,210	67.5	--	3,050	--
	2/28/2000	<200	<1	<100	<100	<100	<100	<100	562	<100	<100	1,340	<200	--	602	<100
	6/28/2000	<100	<500	<50	<50	132	<50	142	4,210	<50	<50	14,700	155	--	6,360	<50
	5/30/2001	<200	<1,000	<100	<100	<100	<100	<100	2,460	<100	<100	10,300	<200	--	4,620	<100
	5/30/2002	<2	<1	<1	<2	1.44	<1	1.28	60.4	<1	<1	241	1.68	--	86.4	<1
	5/28/2003	<1	<0.50	<0.50	<1	1.71	<0.50	1.75	79.6	1.26	<0.50	121	1.58	--	130	<0.50
	11/16/2004	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	1,200	<12	--	230	<12
	5/18/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	3.14	<0.50	<0.50	71.2	<0.50	--	10.3	<0.50
	9/12/2007	<50	<25	<25	<50	55	<25	28	1,290	<25	<25	2,730	29.5	--	2,020	<25
	12/12/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	3.36	<0.50	<0.50	51.3	0.64	--	19.5	<0.50
	3/5/2008	<1	<0.500	<0.500	<1	8.32	<0.500	4.46	174	4.52	<0.500	383	4.21	<0.500	337	0.96
	6/25/2008	<5	<5	<5	<5	15.2	<5	<5	320	10.4	<5	132	<5	--	160	<5
	9/19/2008	<5	<2.50	<2.50	<5	5.6	<2.50	<2.50	116	2.65	<2.50	266	<2.50	<2.50	187	<2.50
	12/10/2008	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.62	32	0.69	<0.50	25	0.6	<0.50	39	<0.50
	3/27/2009	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	15	<0.50	<0.50	25	<0.50	<0.50	17	<0.50
	03/27/2009 DUP	<0.50	<0.50	<0.50	<0.50	0.79	<0.50	<0.50	15	<0.50	<0.50	25	<0.50	<0.50	17	<0.50
	6/18/2009	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	0.8	58	1.8	<0.50	16	<0.50	<0.50	42	<0.50
	9/17/2009	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	3.3	130	2.9	<0.50	430	4	<0.50	270	1
	12/18/2009	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	16	<0.50	<0.50	66	0.61	<0.50	45	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-13 (continued)	3/19/2010	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	1.4	64	1.2	<0.50	130	1.3	<0.50	110	<0.50
	6/16/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	14	<0.50	<0.50	7.6	<0.50
	9/23/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<0.5	<0.5	45	<0.5	<0.5	12	<0.5
	12/21/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/11/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	0.65	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	6.1	<0.5	<0.5	4.2	<0.5
	9/19/2011	<0.50	0.54	<0.50	<0.50	35	<0.50	17	700	20	<0.50	2,200	17	0.63	1,300	3.6
	12/9/2011	<9	<9	<9	<9	23	<9	11	530	18	<9	2,800	12	<9	1,400	<9
	3/12/2012	<9	<9	<9	<9	24	<9	14	600	14	<9	1,800	11	<9	1,200	<9
	6/22/2012	<4	<4	<4	<4	40	<4	13	940	30	<4	1,300	8.6	<4	1,000	4.5
	9/14/2012	<4	<4	<4	<4	38	<4	21	900	22	<4	3,100	16	<4	1,800	<4
	12/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13	0.62	<0.50	88	<0.50	<0.50	51	<0.50
	3/15/2013	<0.50	<0.50	<0.50	<0.50	34	<0.50	21	890	20	<0.50	2,400	14	0.68	1,700	3.2
	6/14/2013	<4	<4	<4	<4	19	<4	9.4	520	15	<4	1,100	6	<4	920	<4
	9/20/2013	<0.50	<0.50	<0.50	<0.50	40	<0.50	20	770	19	<0.50	2,600	13	0.74	1,700	3.4
	12/13/2013	<4	<4	<4	<4	11	<4	6.6	280	5.8	<4	1,300	4.9	<4	720	<4
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	100	<0.50	<0.50	54	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	880	33	<0.50	1,500	12	0.67	1,300	3.2
	9/30/2014	<4	<4	<4	<4	38	<4	20	890	19	<4	3,100	13	<4	2,000	<4
	12/11/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	0.66	<0.50	91	<0.50	<0.50	65	<0.50
	3/18/2015	<1.6	<1.6	<1.6	<1.6	19	<1.6	3.1	515	7.4	<1.6	551	2.4	<1.6	609	<1.6
	6/18/2015	<0.50	<0.50	<0.50	<0.50	33.9	<0.50	15.9	615	15.3	<0.50	1,960	10.4	<0.50	1,390	2
	9/22/2015	<0.50	<0.50	<0.50	<0.50	33.9	<0.50	21	754	15.6	<0.50	2,370	10.4	<0.50	1,740	2.4
	12/8/2015	<0.50	<0.50	<0.50	<0.50	0.89	<0.50	0.64	30.5	0.88	<0.50	185	0.7	<0.50	121	<0.50
	3/8/2016	<2.5	<10	<2.5	<2.5	14.3	<2.5	6.4	336	4.6	<2.5	839	3.7	<2.5	736	<2.5
	6/16/2016	<8.4	<33.4	<8.4	<8.4	41.3	<8.4	17.8	841	19.2	<8.4	2,470	10.1	<8.4	1,820	<8.4
	9/28/2016	<2.5	<10	<2.5	<2.5	<2.5	<2.5	<2.5	148	<2.5	<2.5	4,840	<2.5	<2.5	895	<2.5
	9/28/2016 DUP	<2.5	<10	<2.5	<2.5	<2.5	<2.5	<2.5	145	<2.5	<2.5	5,090	<2.5	<2.5	951	<2.5
	12/16/2016	<5	<20	<5	<5	<5	<5	<5	509	<5	<5	1,020	<5	<5	394	<5
	3/30/2017	<5	<20	<5	<5	<5	<5	<5	101	<5	<5	176	<5	<5	57.6	<5
	6/15/2017	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	1.2	272	1.6	<1.0	97.7	<1.0	<1.0	56.3	4.1
	9/27/2017	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	5.0	3,220	7.3	<1.0	3.3	<1.0	<1.0	1.3	25.0
	11/7/2017	<16.7	<16.7	<4.2	<4.2	<4.2	<4.2	<4.2	1,360	5.4	<4.2	<4.2	<4.2	<4.2	<4.2	25.0
	3/20/2018	<0.500	3.29	<0.500	<0.500	0.879	<0.500	2.55	1,730	5.20	<0.500	0.396 J	<0.500	<0.500	2.19	211
	7/1/2018	<0.500	<2.50	<0.500	<0.500	18.3	0.148 J	5.98	1680	26.9	<0.500	<0.500	<0.500	<0.500	0.781	2030
	9/25/2018	<1.00	10.9	<1.00	<1.00	1.91	<0.400	<0.400	9.78	1.26	<0.500	0.410	<0.400	<0.500	0.800	113
	12/5/2018	<1.00	6.7	<1.00	<1.00	<0.400	<0.400	<0.400	6.17	0.682	<0.500	0.567	<0.400	<0.500	0.413	55.2
	3/19/2019	<1.00	5.64	<1.00	<1.00	<0.400	<0.400	<0.400	2.69	<0.400	<0.500	<0.400	<0.400	<0.500	0.433	2.02

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-13 (continued)	6/6/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.62	<0.400	<0.500	<0.400	<0.400	<0.500	0.673	2.89
	9/26/2019	<1.00	<5.00	<1.00	<1.00	1.07	<0.400	<0.400	1.94	0.439	<0.500	<0.400	<0.400	<0.500	<0.400	2.01
	12/3/2019	<1.00	<5.00	<1.00	<1.00	1.50	<0.400	<0.400	1.06	0.488	<0.500	<0.400	<0.400	<0.500	<0.400	1.42
	3/10/2020	<1.00	<5.00	<1.00	<1.00	9.19	<0.400	1.97	72.5	2.040	<0.500	<0.400	<0.400	<0.500	7.59	134
	6/18/2020	<1.00	<5.00	<1.00	<1.00	0.610	<0.400	<0.400	1.15	<0.400	<0.500	<0.400	<0.400	<0.500	1.12	5.28
	10/7/2020	<1.00	7.1	<1.00	<1.00	18.1	<0.400	<0.400	3.47	0.920	<0.500	0.470	<0.400	<0.500	0.870	98.8
	12/8/2020	<2.00	<5.00	<1.00	<1.00	2.67	<0.400	<0.400	0.606	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	2.3
	3/4/2021	<1.00	<5.00	<1.00	<1.00	11.9	<0.400	<0.400	3.48	0.494	<0.500	<0.400	<0.400	<0.500	0.996	27.4
	6/15/2021	<1.00	<5.00	<1.00	<1.00	1.12	<0.400	<0.400	13.4	0.673	<0.500	1.01	<0.400	<0.500	2.56	12.9
	9/14/2021	<10.0	<50.0	<10.0	<10.0	34.3	<0.400	<0.400	90.7	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	635
	12/9/2021	<1.00	<5.00	<1.00	<1.00	0.684	<0.400	<0.400	10.4	<0.400	<0.500	4.97	<0.400	<0.500	3.28	6.13
	3/9/2022	<1.00	<5.00	<1.00	<1.00	2.00	<0.400	0.650	13.2	0.500	<0.500	1.07	<0.400	<0.500	3.37	26.3
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.36	<0.400	<0.500	1.81	<0.400	<0.500	0.72	0.40
	9/15/2022	<1.00	<5.00	<1.00	<1.00	29.8	<0.400	15.2	224	4.860	<0.500	4.10	<0.400	<0.500	15.7	764
	12/6/2022	<1.00	<5.00	<1.00	<1.00	2.940	<0.400	<0.400	5.37	<0.400	<0.500	3.4	<0.400	<0.500	4.53	14.10
	3/16/2023	<1.00	<5.00	<1.00	<1.00	22.3 Q-42	<0.400	8.08 Q-42	145	2.900	<0.500	0.68	<0.400	<0.500	1.19	268
	6/14/2023	<5.00	<25.0	<5.00	<5.00	26.1	<2.00	20.3	313	6.500	<2.50	49.4	<2.00	<2.50	117	426
	9/13/2023	<10.0	<25.0	<5.00	<5.00	30.4	<2.00	16.0	204	5.05	<2.50	103	<2.00	<2.50	85.2	788
	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.440	<0.400	<0.400	1.57	<0.400	<0.500	22.3	0.450	<0.500	15.4	0.650
	3/6/2024	<5.00	<25.0	<5.00	<5.00	37.6	<2.00	48.9	1400	17.300	<2.50	955	<2.00	<2.50	986	432
	6/13/2024	<10.0	<50.0	<10.0	<10.0	<4.00	<4.00	<4.00	147	<4.00	<5.00	212	<4.00	<5.00	89.4	35.90
MW-14	11/12/1997	<5	<10	<5	<5	5.01	<5	<5	<5	<5	<5	42.6	<5	–	394	<10
	8/10/1999	<20	<100	<10	<10	<10	<10	<10	15.1	<10	<10	121	35.6	–	853	<10
	11/16/1999	<2	<5	<1	<2	2.48	<1	2.48	4.2	<1	<1	186	10.8	–	313	<1
	2/28/2000	<100	<500	<50	<50	<50	<50	83.2	85.1	<50	<50	711	190	–	5,300	<50
	6/27/2000	<10	<50	<5	<5	10.1	<5	18.9	219	<5	<5	207	46.2	–	1,150	<5
	11/30/2000	<2	<10	<1	<1	1.08	<1	1.88	2.27	<1	<1	21.3	5.54	–	157	<1
	5/30/2001	<1	<50	<5	<5	6.16	<5	13.8	30.4	<5	<5	268	28.2	–	1,280	<5
	5/30/2002	<10	<5	<5	<10	<5	<5	<5	8.4	<5	<5	78.3	11.9	–	303	<5
	5/28/2003	<1	<0.50	<0.50	<1	0.9	<0.50	1.47	4.15	<0.50	<0.50	80.6	4.99	–	188	<0.50
	11/15/2004	<25	<25	<25	<25	<25	<25	<25	96	<25	<25	480	<25	–	1,200	<25
	5/17/2005	<2	<1	<1	<2	4.64	<1	2.3	41.1	<1	<1	127	9.28	–	367	<1
	9/12/2007	<20	<10	<10	<20	21.6	<10	<10	162	<10	<10	180	22.2	–	963	<10
	3/5/2008	<1	<0.500	0.850 J	<1	24.3	<0.500	13.9	217	3.86	<0.500	549	27.2	<0.500	1,770	<0.500
	6/25/2008	<5	<5	<5	<5	15.2	<5	10.2	113	<5	<5	360	18.2	–	1,290	<5
	9/19/2008	<5	<2.50	<2.50	<5	19.1	<2.50	8.6	173	<2.50	<2.50	425	16.6	<2.50	1,320	<2.50
	12/10/2008	<5	<5	<5	<5	17	<5	9.6	160	<5	<5	330	17	<5	1,200	<5
	3/27/2009	<2.5	<2.5	<2.5	<2.5	16	<2.5	6.7	160	2.5	<2.5	320	14	<2.5	980	<2.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-14 (continued)	6/17/2009	<2.5	<2.5	<2.5	<2.5	21	<2.5	12	150	<2.5	<2.5	400	21	<2.5	1,400	<2.5
	9/18/2009	<0.50	<0.50	0.74	<0.50	19	<0.50	8.8	150	2	<0.50	440	17	<0.50	1,300	<0.50
	12/15/2009	<2.5	<2.5	<2.5	<2.5	11	<2.5	4.7	120	<2.5	<2.5	410	7.6	<2.5	820	<2.5
	3/17/2010	<2.5	<2.5	<2.5	<2.5	22	<2.5	9.5	140	<2.5	<2.5	320	15	<2.5	1,300	<2.5
	7/2/2010	<2.5	<2.5	<2.5	<2.5	7	<2.5	4.8	52	<2.5	<2.5	220	5.9	<2.5	610	<2.5
	9/22/2010	<3	<3	<3	<3	16	<3	6.5	140	<3	<3	230	10	<3	800	<3
	12/8/2010	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	0.7	11	<0.5	<0.5	82	1.5	<0.5	150	<0.5
	3/9/2011	<3	<3	<3	<3	6.8	<3	3.8	55	<3	<3	200	5	<3	540	<3
	6/8/2011	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	1.8	<0.5	<0.5	27	1.1	<0.5	66	<0.5
	9/14/2011	<2.5	<2.5	<2.5	<2.5	12	<2.5	5.7	120	<2.5	<2.5	300	8	<2.5	850	<2.5
	12/6/2011	<2.5	<2.5	<2.5	<2.5	8.4	<2.5	3.9	88	<2.5	<2.5	320	5.7	<2.5	740	<2.5
	3/7/2012	<2.5	<2.5	<2.5	<2.5	9.3	<2.5	4.6	87	<2.5	<2.5	270	6.1	<2.5	760	<2.5
	6/19/2012	<2.5	<2.5	<2.5	<2.5	11	<2.5	5.6	70	<2.5	<2.5	200	7.4	<2.5	730	<2.5
	9/11/2012	<2.5	<2.5	<2.5	<2.5	11	<2.5	5.1	110	<2.5	<2.5	280	6.6	<2.5	730	<2.5
	12/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	16	<0.50	<0.50	27	<0.50
	3/12/2013	<0.50	<0.50	0.56	<0.50	12	<0.50	4.4	100	1.7	<0.50	230	7.2	<0.50	670	<0.50
	6/12/2013	<3	<3	<3	<3	11	<3	5	84	<3	<3	260	6.6	<3	770	<3
	9/18/2013	<0.50	<0.50	<0.50	<0.50	13	<0.50	4.6	130	2	<0.50	240	5.9	<0.50	640	<0.50
	12/11/2013	<1.5	<1.5	<1.5	<1.5	8.4	<1.5	2.8	83	<1.5	<1.5	180	3.7	<1.5	460	<1.5
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	20	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	17	<0.50	7	120	1.8	<0.50	210	0.87	<0.50	670	<0.50
	9/24/2014	<2.5	<2.5	<2.5	<2.5	10	<2.5	4	120	<2.5	<2.5	240	4	<2.5	640	<2.5
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	29	0.61	<0.50	63	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	15.4	<0.50	5.9	128	2.2	<0.50	312	5.9	<0.50	912	<0.50
	6/16/2015	<3.1	<3.1	<3.1	<3.1	14.7	<3.1	4.9	117	<3.1	<3.1	248	4.4	<3.1	792	<3.1
	9/21/2015	<0.50	<0.50	<0.50	<0.50	15.2	<0.50	5.6	116	2.1	<0.50	201	4.7	<0.50	654	<0.50
	12/8/2015	Not sampled; well monument under water.														
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	12.5	<0.50	<0.50	29.2	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	7.2	<0.50	2.1	61.8	0.94	<0.50	100	1.7	<0.50	218	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	0.56	<0.50	<0.50	0.97	<0.50
	3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	0.57	69.2	<0.5	<0.5	14.7	<0.5	<0.5	33.4	0.62
	6/13/2017	<2.0	<2.0	<0.50	<0.50	10	<1.0	5.3	432	2.7	<0.50	58.3	2.1	<0.50	204	2.5
	9/26/2017	<0.84	<3.3	<0.84	<0.84	6	<0.84	2.6	279	2.8	<0.84	62.4	<0.84	<0.84	265	<0.84
	11/8/2017	<3.3	<3.3	<0.84	<0.84	5	<0.84	2.1	306	2.2	<0.84	39.3	<0.84	<0.84	160	0.9
	3/20/2018	<0.500	1.67 J	<0.500	<0.500	5	<0.500	3.6	500	2.6	<0.500	36.0	0.6	<0.500	150	1.35 J
	6/28/2018	<0.500	<2.50	<0.500	<0.500	11	<0.500	2.5	255	2.5	<0.500	34.9	1.6	<0.500	247	0.7
	9/26/2018	<10.0	<50.0	<10.0	<10.0	12.1	<4.00	4.40	361	4.50	<5.00	84.3	<4.00	<5.00	484	<4.00
	12/5/2018	<10.0	<50.0	<10.0	<10.0	5	<4.00	<4.00	333	<4.00	<5.00	83.4	<4.00	<5.00	260	<4.00

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-14 (continued)	3/19/2019	<5.00	<25.0	<5.00	<5.00	5.40	<4.00	<4.00	223	2.06	<2.50	31.4	<2.00	<2.50	178	<2.00
	6/6/2019	<1.00	<5.00	<1.00	<1.00	1.74	<0.400	1.09	151	0.937	<0.500	19.1	<0.400	<0.500	76.4	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	12.5	<0.400	4.58	264	3.6	<0.500	91.8	1.47	<0.500	327	0.482
	12/4/2019	<1.00	<5.00	<1.00	<1.00	7.81	<0.400	3.17	242	2.88	<0.500	107	0.704	<0.500	351	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	6.8	<2.00	2.72	186	2.45	<2.50	85.9	<2.00	<2.50	294	<2.00
	6/17/2020	<5.00	<25.0	<5.00	<5.00	3.50	<2.00	<2.00	82.6	<2.00	<2.50	62.6	<2.00	<2.50	197	<2.00
	10/8/2020	<5.00	<25.0	<5.00	<5.00	14.6	<2.00	4.79	207	<2.00	<2.50	124	<2.00	<2.50	680	<2.00
	12/9/2020	<10.0	<25.0	<5.00	<5.00	7.77	<2.00	3.04	180	2.520	<2.50	109	<2.00	<2.50	339	<2.00
	3/4/2021	<1.00	<5.00	<1.00	<1.00	9.39	<0.400	3.76	161	2.51	<0.500	128	1.24	<0.500	410	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	0.87	<0.400	0.485	23.8	<0.400	<0.500	28.3	<0.400	<0.500	80.6	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	11.1	<0.400	4.52	159	3.210	<0.500	156	1.43	<0.500	531	<0.530
	12/9/2021	<1.00	<5.00	<1.00	<1.00	0.522	<0.400	0.47	21.6	<0.400	<0.500	34.9	<0.400	<0.500	72.8	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	2.37	<0.400	1.16	39.3	0.670	<0.500	54.3	0.540	<0.500	194	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	0.740	<0.400	<0.400	7.36	<0.400	<0.500	16.2	<0.400	<0.500	41.7	<0.400
	9/13/2022	<1.00	<5.00	<1.00	<1.00	6.76	<0.400	2.48	115.00	2.1	<0.500	109	0.8	<0.500	321	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	1.1	<0.400	0.74	27.90	0.67	<0.500	59.6	<0.400	<0.500	108	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	3.15	<0.400	1.57	58.80	1.59	<0.500	146	0.74	<0.500	223	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	1.76	<0.400	0.86	27.5	0.76	<0.500	48.5	<0.400	<0.500	158	<0.400
	9/12/2023	<20.0	<25.0	<5.00	<5.00	5.85	<2.00	5.15	82.7	2.45	<2.50	119	<2.00	<2.50	324	<1.00
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	0.400	6.75	<0.400	<0.500	26.6	<0.400	<0.500	48.6	<0.200
	3/5/2024	<10.0	<25.0	<5.00	<5.00	4.30	<2.00	2.05	42.0	<2.00	<2.00	90.7	<2.00	<2.50	262	<1.00
	6/12/2024	<1.00	<5.00	<1.00	<1.00	0.410	<0.400	<0.400	5.75	<0.400	<0.500	20.6	<0.400	<0.500	39.8	<0.200
MW-15	11/13/1997	<0.50	<1	<0.50	<0.50	<0.50	1.1	<0.50	6.78	<0.50	<0.50	2.38	1.68	--	1.81	<1
	11/16/1999	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	967	13.7	--	63.4	<0.50
	2/28/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17.9	1.55	--	1.01	<0.50
	6/27/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.44	1.03	--	0.565	<0.50
	5/30/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.32	<1	--	<0.50	<0.50
	5/31/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.59	0.63	--	<0.50	<0.50
	5/29/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	4.42	<0.50	--	1.3	<0.50
	11/2/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	--	<0.50	<0.50
	11/16/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	12	<0.50	--	3.1	<0.50
	3/24/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	--	1.49	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.54	<0.50	--	0.58	<0.50
	9/13/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54 J	<0.50	--	<0.50	<0.50
	3/7/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	2.63 J	<0.500	<0.500	<0.500	<0.500
	9/18/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.86	<0.500	<0.500	<0.500	<0.500
	3/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	<0.50	<0.50
	9/17/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-15 (continued)	9/23/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.76	<0.5	<0.5	<0.5	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/16/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	<0.50	<0.50
	3/9/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	<0.50	<0.50
	9/10/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	<0.50	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	<0.50	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50
	3/21/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	<0.50	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/28/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	<0.50	<0.50
	7/2/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.60	<0.500	<0.500	<0.500	<0.500
	6/6/2019	<1.00	<5.00	<1.00	<1.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.531	<0.500	<0.500	<0.500	<0.500
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.540	<0.400	<0.500	<0.400	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.599	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.431	<0.400	<0.500	<0.400	<0.400
	12/10/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.583	<0.400	<0.500	<0.400	<0.400
	06/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.400	<0.400	<0.500	<0.400	<0.400
	12/5/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.580	<0.400	<0.500	<0.400	<0.400
	12/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.540	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200
MW-16	11/12/1997	<5	<10	<5	<5	19.8	<5	27.8	23.6	<5	<5	328	57.5	–	142	<10
	8/11/1999	<5	<25	<2.5	<2.5	15.2	<2.5	<2.5	7.2	<2.5	<2.5	205	55.6	–	85.6	<2.5
	2/28/2000	<2	<10	<1	<1	10.4	<1	12	7.4	<1	<1	523	54.5	–	112	<1
	6/27/2000	<10	<50	<5	<5	12.4	<5	13.9	8.39	<5	<5	236	45	–	93.8	<5
	5/30/2001	<10	<50	<5	<5	9.28	<5	12	8.95	<5	<5	302	30.1	–	110	<5
	5/30/2002	<5	<2.5	<2.5	<5	13.5	<2.5	10.6	8.65	<2.5	<2.5	467	24	–	119	<2.5
	5/29/2003	<5	<2.5	<2.5	<5	3.6	<2.5	3.35	2.85	<2.5	<2.5	412	13.4	–	76	<2.5
	11/2/2004	<2	<10	<1	<1	<1	<1	<1	1.66	<1	<1	260	6.9	–	25.4	<1
	11/16/2004	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	300	7.8	–	26	<2.5
	3/24/2005	<2	<1	<1	<2	1.8	<1	1.34	1.96	<1	<1	373	11.8	–	49.4	<1
	5/17/2005	<1	<0.50	<0.50	<1	4.39	<0.50	3.14	9.25	<0.50	<0.50	120	9.09	–	41.5	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-16 (continued)	11/15/2005	<1	<0.500	<0.500	<1	2.75	<0.500	1.86	2.5	<0.500	<0.500	152	8.94	--	33.4	<0.500
	2/21/2006	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/6/2006	<2	<2	<2	<2	12.2	<2	3.38	210	<2	<2	84.6	2.56	--	25.2	5.64
	12/6/2006	<2	<1	<1	<2	4.2	<1	2.12	16.7	<1	<1	176	5.88	--	45.6	<1
	5/23/2007	<1	<1	<1	<1	2.57	<1	<1	14	<1	<1	98.8	3.35	--	23.8	<1
	9/13/2007	<1	<0.50	<0.50	<1	3.15	<0.50	1.08	6.6	<0.50	<0.50	163	5.87	--	49.2	<0.50
	12/12/2007	<2	<1	<1	<1	2.32	<1	1.44	5.9	<1	<1	110	5.92	--	28.2	<1
	3/7/2008	<1	<0.500	<0.500	<1	3	<0.500	1.86	5.93	<0.500	<0.500	280	6.12	<0.500	73.3	<0.500
	9/18/2008	<5	<2.50	<2.50	<5	2.7	<2.50	<2.50	5.15	<2.50	<2.50	300	6.2	<2.50	65.2	<2.50
	12/9/2008	<1	<1	<1	<1	2.6	<1	1.8	5.5	<1	<1	300	5.7	<1	67	<1
	3/26/2009	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	0.82	3.2	<0.50	<0.50	150	5.2	<0.50	28	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	5	<0.50	0.95	29	<0.50	<0.50	54	1.8	<0.50	16	0.68
	9/17/2009	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	1.1	2	<0.50	<0.50	220	4.8	<0.50	33	<0.50
	12/17/2009	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	0.6	1.4	<0.50	<0.50	100	3.2	<0.50	19	<0.50
	3/19/2010	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	1	2	<0.50	<0.50	110	4.5	<0.50	36	<0.50
	6/16/2010	<0.50	<0.50	<0.50	<0.50	4.9	<0.50	0.91	37	<0.50	<0.50	39	0.94	<0.50	9.9	1.6
	9/23/2010	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	0.94	2.8	<0.5	<0.5	240	4.2	<0.5	43	<0.5
	12/10/2010	<0.5	<0.5	<0.5	<0.5	0.85	<0.5	0.54	1.6	<0.5	<0.5	94	2.4	<0.5	18	<0.5
	3/10/2011	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.5	6.2	<0.50	<0.50	110	1.9	<0.50	21	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	4.9	<0.5	1.2	63	<0.5	<0.5	28	<0.5	<0.5	7.1	2.2
	9/19/2011	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	5.1	<0.50	<0.50	160	2.7	<0.50	13	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	0.92	<0.50	0.61	2.2	<0.50	<0.50	210	2.9	<0.50	38	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	3.6	<0.5	0.56	24	<0.5	<0.5	60	0.98	<0.5	14	0.62
	9/13/2012	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	0.61	6.5	<0.50	<0.50	190	2.4	<0.50	35	<0.50
	12/13/2012	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.68	5.7	<0.50	<0.50	110	1.1	<0.50	24	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	0.7	4.7	<0.50	<0.50	200	2	<0.50	50	<0.50
	6/14/2013	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	6	<0.50	<0.50	84	0.96	<0.50	18	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	0.92	<0.50	0.75	7.1	<0.50	<0.50	180	1.4	<0.50	57	<0.50
	12/13/2013	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	0.68	5.9	<0.50	<0.50	160	1.4	<0.50	52	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.89	19	<0.50	<0.50	52	<0.50	<0.50	13	0.55
	6/24/2014	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	10	<0.50	<0.50	70	0.7	<0.50	12	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	0.66	8.8	<0.50	<0.50	200	1.4	<0.50	47	<0.50
	12/11/2014	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	4	<0.50	<0.50	76	0.96	<0.50	17	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	6	<0.50	<0.50	157	0.94	<0.50	31	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	0.61	<0.50	<0.50	10.5	<0.50	<0.50	179	1	<0.50	41.6	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	0.65	10.4	<0.50	<0.50	173	1.2	<0.50	43.5	<0.50
	12/7/2015	Not sampled; well monument under water.														

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-16 (continued)	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	144	0.66	<0.50	35.6	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	51.5	<0.50	<0.50	11.6	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	1.6	<0.5	<0.5	19	<0.5	<0.5	27	<0.5	<0.5	6.4	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.4	<0.50	<0.50	53.7	0.66	<0.50	5.4	<0.50
	9/25/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	1.3	<0.50	<0.50	148.0	1.00	<0.50	11.1	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	150.0	0.96	<0.50	17.4	<0.50
	3/19/2018	<0.500	<2.50	<0.500	<0.500	0.232 J	<0.500	0.190 J	3.8	<0.500	<0.500	99.7	0.82	<0.500	12.6	<0.500
	7/2/2018	<0.500	<2.50	<0.500	<0.500	0.500 J	<0.500	0.209 J	9.6	<0.500	<0.500	72.5	0.86	<0.500	7.4	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	15.8	<0.400	<0.500	171	0.580	<0.500	33.9	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.5	<0.400	<0.500	130.0	0.76	<0.500	20.8	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.90	<0.400	<0.500	136	0.771	<0.500	24.3	<0.400
	6/4/2019	<1.00	<5.00	<1.00	<1.00	0.810	<0.400	<0.400	14.3	<0.400	<0.500	30.1	<0.400	<0.500	5.34	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	14.4	<0.400	<0.500	136	0.658	<0.500	23.9	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.75	<0.400	<0.500	102	0.598	<0.500	19.9	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.67	<0.400	<0.500	79	0.552	<0.500	12.7	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	1.070	<0.400	<0.400	23.8	<0.400	<0.500	27.3	<0.400	<0.500	5.89	0.42
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	26.7	<0.400	<0.500	172	0.642	<0.500	35.9	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	15.7	<0.400	<0.500	122	0.550	<0.500	15.5	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	13.2	<0.400	<0.500	71.1	0.457	<0.500	12.2	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	11.6	<0.400	<0.500	75	0.444	<0.500	12.2	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	38.6	<0.400	<0.500	168	0.547	<0.500	31.6	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.38	<0.400	<0.500	43.1	<0.400	<0.500	5.79	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	14.8	<0.400	<0.500	54.0	<0.400	<0.500	8.82	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	0.840	<0.400	<0.400	26.3	<0.400	<0.500	20.6	<0.400	<0.500	5.48	0.670
	9/14/2022	<1.00	<5.00	<1.00	<1.00	0.490	<0.400	0.48	84.1	<0.400	<0.500	113	0.57	<0.500	25	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	20.8	<0.400	<0.500	22.8	<0.400	<0.500	4.65	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	16.6	<0.400	<0.500	57	0.42	<0.500	7.52	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	27.1	<0.400	<0.500	56.1	0.43	<0.500	10.1	<0.400
	9/13/2023	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	62.4	<0.400	<0.500	95.1	0.530	<0.500	14.9	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	10.6	<0.400	<0.500	37.6	0.460	<0.500	4.44	<0.200
	3/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	25.3	<0.400	<0.500	80.7	0.54	<0.500	8.94	<0.200
	6/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	15	<0.400	<0.500	35.3	<0.400	<0.500	4.02	<0.200
MW-17	11/13/1997	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	--	<0.50	<1
	11/16/1999	<1	<2.5	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	127	1.5	--	9.54	<0.50
	2/28/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.85	<1	--	2.51	<0.50
	6/27/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.27	<1	--	<0.50	<0.50
	5/30/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1	--	<0.50	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	--	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-17	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.75	<0.50	--	0.92	<0.50
(continued)	11/15/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	--	<0.50	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.06	<0.50	--	6.68	<0.50
	5/23/2007	<1	<1	<1	<1	<1	<1	<1	8.82	<1	<1	37.8	<1	--	28.2	<1
	9/11/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50 J	<0.50	--	<0.50	<0.50
	3/5/2008	<1	<0.500	<0.500	<1	0.9	<0.500	<0.500	0.96	<0.500	<0.500	1.05	<0.500	<0.500	3.62	<0.500
	9/19/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.8	<0.500
	3/25/2009	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	1	<0.50	<0.50	0.69	<0.50	<0.50	3	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	0.72	<0.50	<0.50	3.2	<0.50
	3/23/2010	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	3.9	<0.50	<0.50	3.2	0.58	<0.50	18	<0.50
	9/20/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.69	<0.5	<0.5	0.71	<0.5	<0.5	3	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	8.2	<0.50
	9/13/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	0.71	<0.50	<0.50	3.1	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	5.4	<0.50	<0.50	6.8	0.56	<0.50	25	<0.50
	9/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	0.66	<0.50	<0.50	2.5	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	4.1	<0.50	<0.50	11	<0.50
	9/17/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	4.2	<0.50	<0.50	8.9	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	3.2	<0.50	<0.50	6.8	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	2.4	<0.50	<0.50	3.9	<0.50	<0.50	12.6	<0.50
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	2.5	<0.50	<0.50	4.2	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	0.83	<0.50	<0.50	3.3	<0.50	<0.50	9.4	<0.50	<0.50	22.7	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	4.2	<0.50	<0.50	10.4	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/29/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	2.7	<0.50	<0.50	4.6	<0.50	<0.50	11.4	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	<0.50	9.9	<0.50	<0.50	21.9	<0.50
	6/28/2018	<0.500	<2.50	<0.500	<0.500	0.516	<0.500	<0.500	2.7	<0.500	<0.500	3.7	<0.500	<0.500	9.0	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.6	<0.400	<0.500	2.2	<0.400	<0.500	4.6	<0.400
	3/19/2019	<1.00	<5.00	<1.00	<1.00	0.623	<0.400	<0.400	10.5	<0.400	<0.500	6.91	<0.400	<0.500	15.2	<0.400
	6/6/2019	<1.00	<5.00	<1.00	<1.00	0.413	<0.400	<0.400	4.34	<0.400	<0.500	4.34	<0.400	<0.500	10.0	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.87	<0.400	<0.500	2.41	<0.400	<0.500	4.6	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	0.829	<0.400	<0.400	26.8	<0.400	<0.500	5.54	<0.400	<0.500	15.1	<0.400
	3/10/2020	<1.00	<5.00	<1.00	<1.00	1.06	<0.400	<0.400	18.7	<0.400	<0.500	4.74	<0.400	<0.500	11.6	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.11	<0.400	<0.500	4.06	<0.400	<0.500	7.4	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.28	<0.400	<0.500	1.75	<0.400	<0.500	3.61	<0.400
	12/8/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	17.9	<0.400	<0.500	4.76	<0.400	<0.500	8.70	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	0.684	<0.400	<0.400	22.8	<0.400	<0.500	4.19	<0.400	<0.500	11.00	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-17 (continued	6/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.99	<0.400	<0.500	1.9	<0.400	<0.500	3.62	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.23	<0.400	<0.500	1.14	<0.400	<0.500	3.42	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	0.517	<0.400	<0.400	35.3	<0.400	<0.500	7.75	<0.400	<0.500	16.20	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.51	<0.400	<0.500	1.47	<0.400	<0.500	1.69	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.11	<0.400	<0.500	.490	<0.400	<0.500	1.00	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	0.44	<0.400	<0.400	27.4	<0.400	<0.500	5.98	<0.400	<0.500	11.4	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.61	<0.400	<0.500	1.33	<0.400	<0.500	3.13	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.15	<0.400	<0.500	0.990	<0.400	<0.500	1.90	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.64	<0.400	<0.500	0.580	<0.400	<0.500	1.30	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.26	<0.400	<0.500	0.610	<0.200
	3/5/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.04	<0.400	<0.500	1.47	<0.400	<0.500	2.96	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.69	<0.400	<0.500	0.85	<0.400	<0.500	0.66	<0.200
MW-18i	9/29/2000	ND	ND	0.694	ND	0.843	ND	ND	16.5	ND	ND	11.7	ND	--	8.32	ND
	11/30/2000	<1	<5	<0.50	<0.50	0.907	<0.50	<0.50	11.6	<0.50	<0.50	12.4	<1	--	17.6	<0.50
	2/27/2001	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	10.2	<2.5	<2.5	15.2	<5	--	10	<2.5
	5/30/2001	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	6.47	<2.5	<2.5	29.5	<5	--	8.06	<2.5
	9/25/2001	<1	<1	<1	<1	1.8	<1	<1	23	<1	<1	62	2.3	--	39	<1
	3/29/2002	<1	<0.50	<0.50	<1	1.2	<0.50	<0.50	17.3	<0.50	<0.50	71.1	1.22	--	31	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	1.18	<0.50	<0.50	18.6	<0.50	<0.50	53.2	1.14	--	19.3	<0.50
	8/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	6.91	<0.50	<0.50	18.2	<0.50	--	7.34	<0.50
	11/7/2002	<1	<0.50	<0.50	<1	0.56	<0.50	<0.50	10.1	<0.50	<0.50	23.3	<0.50	--	9.7	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	12.3	<0.50	<0.50	27.6	0.5	--	12.5	<0.50
	5/29/2003	<1	<0.50	<0.50	<1	0.59	<0.50	<0.50	10.4	<0.50	<0.50	23.9	0.5	--	10.8	<0.50
	11/11/2003	<1	<1	<1	<1	<1	<1	<1	16.1	<1	<1	31.5	<1	--	16.3	<1
	1/27/2004	<1	<0.50	<0.50	<1	0.67	<0.50	<0.50	14.2	<0.50	<0.50	69.7	0.53	--	12	<0.50
	5/4/2004	<1	<1	<1	<1	<1	<1	<1	15.6	<1	<1	112	<1	--	12.1	<1
	8/17/2004	<1	<0.50	3.76	<0.50	0.81	1.86	<0.50	22.6	0.78	<0.50	43.8	0.96	--	24	<1
	11/2/2004	<0.50	<0.50	<0.50	<0.50	1.09	<0.50	<0.50	21.8	<0.50	<0.50	32.2	0.6	--	17.8	<0.50
	11/16/2004	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	24	<0.50	<0.50	42	0.69	--	21	<0.50
	2/1/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	8.92	<0.50	<0.50	13	<0.50	--	6.01	<0.50
	5/18/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	11	<0.50	<0.50	9.69	<0.50	--	7.3	<0.50
	8/18/2005	<1	<0.500	<0.500	<1	1.17	<0.500	<0.500	18 B	<0.500	<0.500	21.4 B	0.58	--	16.3 B	<0.500
	08/18/2005 DUP	<1	<0.500	<0.500	<1	1.17	<0.500	<0.500	18.5 B	<0.500	<0.500	21.8 B	0.57	--	16.2 B	<0.500
	11/15/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	7.31	<0.500	<0.500	11.4	<0.500	--	6.31	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-18i (continued)	2/21/2006	<1	<0.500	<0.500	<1	0.93	<0.500	<0.500	14.8	<0.500	<0.500	24.3	0.52	--	15.2	<0.500
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	5.88	<1	<1	8.46	<1	--	4.47	<1
	9/6/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	5.79	<0.50	<0.50	7.89	<0.50	--	4.23	<0.50
	12/6/2006	<1	<0.50	<0.50	<1	0.56	<0.50	<0.50	11.6	<0.50	<0.50	11.2	<0.50	--	6.91	<0.50
	2/7/2007	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	12	<0.50	<0.50	15	<0.50	--	9.32	<0.50
	5/23/2007	<1	<1	<1	<1	<1	<1	<1	14.6	<1	<1	17.2	<1	--	11.3	<1
	9/11/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.87	<0.50	<0.50	1.13	<0.50	--	1.46	<0.50
	12/13/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.99	<0.50	<0.50	5.57	<0.50	--	3.32	<0.50
	3/6/2008	<1	<0.500	<0.500	<1	0.82	<0.500	<0.500	13.2	<0.500	<0.500	13.2	<0.500	<0.500	9.78	<0.500
	6/10/2008	<1	1	1	<1	<1	<1	<1	4.17	<1	<1	4.31	<1	--	2.18	<1
	9/17/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	3.95	<0.500	<0.500	3.1	<0.500	<0.500	2.55	<0.500
	12/9/2008	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	12	<0.50	<0.50	8.5	<0.50	<0.50	7.4	<0.50
	3/26/2009	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	8	<0.50	<0.50	4.8	<0.50	<0.50	4.7	<0.50
	6/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	2.5	<0.50	<0.50	1.7	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.2	<0.50	<0.50	5.9	<0.50	<0.50	4.5	<0.50
	12/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	2.5	<0.50	<0.50	1.6	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	11	<0.50	<0.50	9.7	<0.50	<0.50	6	<0.50
	6/15/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	3.6	<0.50	<0.50	1.8	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	0.71	<0.5	0.5	15	<0.5	<0.5	9.8	<0.5	<0.5	7.4	<0.5
	12/9/2010	<0.5	<0.5	<0.5	<0.5	0.66	<0.5	0.5	15	<0.5	<0.5	12	<0.5	<0.5	8	<0.5
	3/10/2011	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	12	<0.50	<0.50	9.4	<0.50	<0.50	5.2	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	2.1	<0.5	<0.5	1	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	2.9	<0.50	<0.50	1.9	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.8	<0.50	<0.50	8.5	<0.50	<0.50	4.8	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	15	<0.50	<0.50	12	<0.50	<0.50	6.4	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.7	<0.5	<0.5	1.5	<0.5	<0.5	0.97	<0.5
	9/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	1.7	<0.50	<0.50	1	<0.50
	12/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	3.9	<0.50	<0.50	2.1	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.2	<0.50	<0.50	3.8	<0.50	<0.50	2.1	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	2.4	<0.50	<0.50	1.3	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	2.2	<0.50	<0.50	1.3	<0.50
	12/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	5.3	<0.50	<0.50	3.6	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1	<0.50	<0.50	0.7	<0.50
	6/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	0.19	<0.50	<0.50	1	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	1.5	<0.50	<0.50	0.93	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	2	<0.50	<0.50	1.3	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-18i (continued)	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	2	<0.50	<0.50	1.1	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	<0.50	3.4	<0.50	<0.50	1.8	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	4	<0.50	<0.50	2.6	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	1	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.98	<0.50	<0.50	0.73	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	0.85	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	1.5	<0.50	<0.50	1.2	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	1.4	<0.5	<0.5	1.2	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.66	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.40	<0.50	<0.50	1.9	<0.50	<0.50	1.30	<0.50
	11/7/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	0.50	<0.50
	3/21/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	1.43	<0.500	<0.500	1.5	<0.500	<0.500	0.82	<0.500
	7/2/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.63	<0.500	<0.500	0.6	0.320 J	<0.500	<0.500	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.7	<0.400	<0.500	<0.400	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.96	<0.400	<0.500	1.3	<0.400	<0.500	0.70	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.53	<0.400	<0.500	1.38	<0.400	<0.500	1.03	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.31	<0.400	<0.500	0.970	<0.400	<0.500	0.560	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.63	<0.400	<0.500	0.920	<0.400	<0.500	0.647	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.300	<0.400	<0.500	0.589	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.6	<0.400	<0.500	0.896	<0.400	<0.500	0.502	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.94	<0.400	<0.500	0.880	<0.400	<0.500	0.400	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.891	<0.400	<0.500	0.419	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.764	<0.400	<0.500	<0.400	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.664	<0.400	<0.500	0.808	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.698	<0.400	<0.500	0.45	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.05	<0.400	<0.500	0.487	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.23	<0.400	<0.500	0.949	<0.400	<0.500	0.533	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.990	<0.400	<0.500	0.730	<0.400	<0.500	0.450	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.850	<0.400	<0.500	0.920	<0.400	<0.500	0.440	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.690	<0.400	<0.500	<0.400	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.77	<0.400	<0.500	<0.400	<0.400
	3/17/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.650	<0.400	<0.500	<0.400	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.750	<0.400	<0.500	0.970	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.570	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.01	<0.400	<0.500	<0.400	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.900	<0.400	<0.500	0.410	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.960	<0.400	<0.500	0.420	<0.200
	11/7/2002	<20	<10	<10	<20	252	<10	66.2	2,450	23	<10	3,100	139	--	1,810	79.2
	5/30/2003	<50	<25	<25	<50	109	<25	36	1,300	<25	<25	7,160	104	--	2,070	35.5
	11/16/2004	<50	<50	<50	<50	<50	65	<50	490	<50	<50	7,300	130	--	1,400	<50
	5/18/2005	<10	<5	<5	<10	19.3	<5	<5	161	<5	<5	1,500	33.8	--	205	24.6
	11/15/2005	<20	<10	<10	<20	27	<10	18.8	230	<10	<10	3,080	67.2	--	785	14.6
	11/15/2005 DUP	<20	<10	<10	<20	25	<10	20.2	221	<10	<10	2,860	64.4	--	762	15.2
	6/5/2006	<10	<10	<10	<10	<10	<10	<10	80.9	<10	<10	1,280	13.1	--	237	<10
	12/6/2006	<20	<10	<10	<20	<10	<10	<10	76.2	<10	<10	2,060	17.2	--	304	<10
	5/22/2007	<20	<20	<20	<20	<20	<20	<20	114	<20	<20	2,720	51.4	--	504	<20
	9/11/2007	<50	<25	<25	<50	<25	<25	<25	85.5	<25	<25	3,370	62.5	--	608	<25
	12/12/2007	<50	<25	<25	<50	<25	<25	<25	80	<25	<25	2,070	38.5	--	326	<25
	03/05/2008[7.]	<1	<0.500	<0.500	<1	12.5	<0.500	20.5	149	4.53	<0.500	4,060	66	<0.500	1,030	6.41
	6/25/2008	<20	<20	<20	<20	45.8	<20	29.6	435	<20	<20	2,790	46.6	--	1,410	<20
	9/19/2008	<50	<25	<25	<50	62	<25	37.5	715	<25	<25	4,990	56.5	<25	2,870	39.5
	12/10/2008	<25	<25	<25	<25	51	<25	<25	500	<25	<25	6,600	110	<25	1,100	<25
	3/27/2009	<15	<15	<15	<15	53	<15	39	650	<15	<15	4,500	120	<15	1,900	25
	03/27/2009 DUP	<15	<15	<15	<15	56	<15	39	670	<15	<15	4,800	130	<15	1,900	25
	6/18/2009	<2.5	<2.5	<2.5	<2.5	5.4	<2.5	5.3	82	<2.5	<2.5	680	8.6	<2.5	240	<2.5
	06/18/2009 DUP	<2.5	<2.5	<2.5	<2.5	5.1	<2.5	5.4	80	<2.5	<2.5	660	8.4	<2.5	240	<2.5
	9/18/2009	<2.5	<2.5	<2.5	<2.5	12	<2.5	36	170	4.6	<2.5	9,400	140	<2.5	2,000	11
	09/18/2009 DUP	<2.5	<2.5	<2.5	<2.5	12	<2.5	36	170	4.4	<2.5	9,700	140	<2.5	2,000	12
	12/18/2009	<10	<10	<10	<10	87	<10	29	780	13	<10	3,200	57	<10	1,200	35
	12/18/2009 DUP	<10	<10	<10	<10	84	<10	27	740	12	<10	3,100	53	<10	1,200	32
	3/19/2010	<5	<5	<5	<5	<5	<5	8.3	45	<5	<5	1,900	19	<5	380	<5
	03/19/2010 DUP	<7	<7	<7	<7	<7	<7	8.3	44	<7	<7	1,800	18	<7	360	<7
	6/17/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.7	<0.50	<0.50	67	<0.50	<0.50	25	<0.50
	06/17/2010 DUP	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	6.9	<0.50	<0.50	65	0.52	<0.50	24	<0.50
	9/23/2010	<2.5	<2.5	<2.5	<2.5	8.7	<2.5	21	110	3.6	<2.5	3,400	50	<2.5	920	12
	09/23/2010 DUP	<2.5	<2.5	<2.5	<2.5	8.5	<2.5	21	110	3.4	<2.5	3,700	49	<0.25	890	13
	12/9/2010	<15	<15	<15	<15	59	<15	38	590	<15	<15	6,200	68	<15	1,500	48
	12/09/2010 DUP	<1.5	<1.5	<1.5	<1.5	58	<1.5	37	590	<1.5	<1.5	6,000	67	<1.5	1,500	48
	3/8/2011	<5	<5	<5	<5	23	<5	12	280	<5	<5	1,500	18	<5	590	13
	6/10/2011	<0.9	<0.9	<0.9	<0.9	22	<0.9	2.7	160	1.4	<0.9	240	3.6	<0.9	130	5.6

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19 (continued)	06/10/2011 DUP	<0.9	<0.9	<0.9	<0.9	19	<0.9	2.3	140	1.3	<0.9	220	3.3	<0.9	120	5
	9/19/2011	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	53	<1.5	<1.5	400	3	<1.5	78	<1.5
	09/19/2011 DUP	<2	<2	<2	<2	<2	<2	<2	53	<2	<2	410	3.2	<2	80	<2
	12/9/2011	<1.5	<1.5	<1.5	<1.5	5	<1.5	4.3	110	<1.5	<1.5	730	10	<1.5	220	3.9
	12/09/2011 DUP	<2	<2	<2	<2	5.4	<2	4.7	120	<2	<2	770	10	<2	230	3.9
	3/9/2012	<2.5	<2.5	<2.5	<2.5	46	<2.5	26	820	1	<2.5	2,400	50	<2.5	1,200	67
	03/09/2012 DUP	<4	<4	<4	<4	43	<4	24	770	8.8	<4	2,400	46	<4	1,200	62
	06/22/2012	<5	<5	<5	<5	74	<5	17	1,000	14	<5	1,300	21	<5	1,000	57
	06/22/2012 DUP	<5	<5	<5	<5	74	<5	18	1,000	13	<5	1,300	22	<5	1,000	57
	9/14/2012	<5	<5	<5	<5	<5	<5	5.7	300	<5	<5	2,200	31	<5	340	8
	09/14/2012 DUP	<5	<5	<5	<5	<5	<5	5.9	300	<5	<5	2,300	31	<5	340	<5
	12/14/2012	<1.5	9.8	<1.5	<1.5	21	<1.5	1.8	330	3.6	<1.5	290	3.2	<1.5	140	3.1
	12/14/2012 DUP	<1	9.3	<1	<1	21	<1	1.7	340	3.7	<1	300	3.1	<1	140	3
	3/15/2013	<1.5	4.7	<1.5	<1.5	29	<1.5	21	870	5.5	<1.5	3,200	67	<1.5	1,600	9
	03/15/2013 DUP	<1.5	4.7	<1.5	<1.5	30	<1.5	20	820	6.1	<1.5	3,200	68	<1.5	1,500	9.2
	6/14/2013	<9	<9	<9	<9	25	<9	13	730	<9	<9	2,500	29	<9	1,000	<9
	06/14/2013 DUP	<9	<9	<9	<9	25	<9	11	720	<9	<9	2,400	26	<9	1,000	<9
	9/20/2013	<0.50	1.2	<0.50	<0.50	14	<0.50	25	520	4.5	<0.50	3,000	61	<0.50	1,100	10
	09/20/2013 DUP	<1	1.1	<1	<1	12	<1	21	490	3.8	<1	3,200	52	<1	1,200	9
	12/16/2013	<15	<15	<15	<15	37	<15	22	680	<15	<15	3,000	36	<15	1,100	<15
	12/16/2013 DUP	<15	<15	<15	<15	36	<15	22	660	<15	<15	2,900	37	<15	1,100	<15
	3/21/2014	<0.50	1.4	<0.50	<0.50	4.8	<0.50	2.4	130	1.2	<0.50	180	1.6	<0.50	51	4.3
	3/21/2014 DUP	<0.50	1.4	<0.50	<0.50	4.8	<0.50	2.2	130	1.1	<0.50	180	1.6	<0.50	51	4.3
	6/26/2014	<5	0.89	<0.50	<0.50	0.54	110	38	2,000	21	<0.50	1,900	36	0.8	1,500	6.2
	6/26/2014 DUP	<5	1.1	<0.50	<0.50	110	<0.50	38	1,900	21	<0.50	1,900	36	0.74	1,600	6.1
	9/30/2014	<15	<15	<15	<15	18	<15	38	520	<15	<15	4,400	61	<15	1,700	32
	9/30/2014 DUP	<15	<15	<15	<15	18	<15	37	510	<15	<15	4,400	60	<15	1,700	30
	12/12/2014	<5	<5	<5	<5	96	<5	20	1,500	12	<5	1,400	19	<5	790	60
	12/12/2014 DUP	<5	<5	<5	<5	110	<5	21	1,500	14	<5	1,500	21	<5	890	68
	3/18/2015	<4.2	<4.2	<4.2	<4.2	72.5	<4.2	48	1,460	17.5	<4.2	5,920	56.5	<4.2	3,970	53.7
	3/18/2015 DUP	<4.2	<4.2	<4.2	<4.2	82.9	<4.2	47.9	1,410	17.8	<4.2	4,930	56.2	<4.2	3,500	46.6
	6/18/2015	<0.50	<0.50	<0.50	<0.50	21.5	<0.5	48.5	628	6.6	<0.50	8,080	94.3	<0.50	2,200	28
	6/18/2015 DUP	<0.50	<0.50	<0.50	<0.50	22.7	<0.50	48.8	614	7.5	<0.50	7,990	985	<0.50	2,090	30.7
	9/22/2015	<0.50	<0.50	<0.50	<0.50	4.9	<0.5	31.7	185	2	<0.50	7,200	74.8	<0.50	791	6.8
	12/8/2015	<0.50	<0.50	<0.50	<0.50	150	<0.5	33.5	1,640	16.4	<0.50	2,900	36	<0.50	1,550	87.3

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19 (continued)	12/8/2015 DUP	<0.50	<0.50	<0.50	<0.50	155	<0.50	35.1	1,680	17.2	<0.50	3,020	37.1	<0.50	1,600	89.8
	3/8/2016	<10	<40	<10	<10	96.6	<10	42	1,520	20.2	<10	4,080	40.8	<10	2,610	64.8
	3/8/2016 DUP	<10	<40	<10	<10	93	<10	42.8	1,460	18.2	<10	3,760	40.4	<10	2,560	72.4
	6/16/2016	<10	<40	<10	<10	<10	<10	22.2	507	<10	<10	3,250	29.2	<10	1,030	18.3
	6/16/2016 DUP	<12.5	<50	<12.5	<12.5	19.5	<12.5	23.8	505	<12.5	<12.5	3,460	28.1	<12.5	1,020	17.6
	9/26/2016	<5	<20	<5	<5	10.4	<5	11	235	<5	<5	1,520	14.5	<5	592	10.1
	12/12/2016	<5	<20	<5	<5	72.8	<5	11.2	1,030	10.7	<5	1,730	10.9	<5	812	28.2
	12/12/2016 DUP	<2.5	<10	<2.5	<2.5	78.7	<2.5	14.2	1,010	11.6	<2.5	1,530	15.5	<2.5	975	31.9
	3/28/2017	<5	<20	<5	<5	197	<5	25.5	1,930	19.7	<5	664	17	<5	826	58.5
	3/28/2017 DUP	<5	<20	<5	<5	214	<5	26.7	1,990	21.5	<5	755	19.9	<5	896	63.2
	6/14/2017	<2.5	<10	<2.5	<2.5	40.6	<2.5	15.4	481	6.1	<2.5	531	8.1	<2.5	481	16.5
	6/14/2017 DUP	<2.5	<10	<2.5	<2.5	41.8	<2.5	15.8	486	6.2	<2.5	566	8.2	<2.5	506	17.2
	9/26/2017	<2.5	<10	<2.5	<2.5	<2.5	<2.5	26.5	1,160	5.4	<2.5	3,620	38.9	<2.5	1,450	111.0
	9/26/2017 DUP	<2.5	<10	<2.5	<2.5	11.1	<2.5	28.9	1,150	5.4	<2.5	3,710	40.4	<2.5	1,480	111.0
	11/9/2017	<20	<20	<5.0	<5.0	104.0	<5.0	24.9	1,660	24.0	<5.0	1,530	20.2	<5.0	1,020	109.0
	11/9/2017 DUP	<2.0	<2.0	<0.50	<0.50	56.5	<0.50	14.7	1,040	14.7	<0.50	970	13.0	0.75	790	115.0
	3/21/2018	<0.500	3.90	<0.500	<0.500	59.0	0.225 J	31.4	2,430	11.2	<0.500	1,250	17.0	0.339 J	1,340	413.0
	3/21/2018 DUP	<0.500	4.26	<0.500	<0.500	58.2	0.242 J	30.7	2,470	10.8	<0.500	996	17.0	0.277 J	1,180	412.0
	6/28/2018	<0.500	<2.50	<0.500	<0.500	81.6	<0.500	35.6	3,890	16.4	<0.500	163	10.9	0.210 J	148	773.0
	6/28/2018 DUP	<0.500	<2.50	<0.500	<0.500	80.2	<0.500	36.3	4,190	18.4	<0.500	177	11.7	0.244 J	191	799.0
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1,900	<0.400	<0.500	3,720	<0.400	<0.500	2,190	115.0
	9/25/2018 DUP	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1,960	<0.400	<0.500	3,830	<0.400	<0.500	2,270	116.0
	12/5/2018	<1.00	<500	<1.00	<1.00	91.8	0.453	39.3	1,750	18.2	<0.500	3,090	21.8	0.67	1,490	79.0
	12/5/2018 DUP	<1.00	<500	<1.00	<1.00	90.1	<0.400	39.2	1,610	18.4	<0.500	2,460	21.3	0.67	1,290	77.1
	3/20/2019	<40.0	<100	<20.0	<20.0	49.7	<8.00	39.5	1,910	13.9	<10.0	2,970	22.7	<10.0	2,090	75.8
	3/20/2019 DUP	<40.0	<100	<20.0	<20.0	46.9	<8.00	37.6	1,820	13.5	<10.0	2,960	23.7	<10.0	2,040	70.2
	6/7/2019	<80.0	<100	<20.0	<20.0	108	<10.0	52.6	1,910	20.4	<12.5	894	<10.0	<12.5	793	70.1
	6/7/2019 DUP	<80.0	<100	<20.0	<20.0	89.6	<8.0	41.6	1,810	16.8	<10.0	772	8.60	<10.0	698	80.8
	9/26/2019	<10.0	<50.0	<10.0	<10.0	33.3	<4	35.1	958	9.59	<5	4,340	26.90	<5	1,430	35.4
	9/26/2019 DUP	<10.0	<50.0	<10.0	<10.0	41.9	<4	40.2	1,160	12.1	<5	4,010	30.60	<5	1,620	39.1
	12/3/2019	<50.0	<250	<50.0	<50.0	57.4	<20.0	28.6	1,250	<20.0	<25.0	1,670	<20.0	<25.0	1,190	25.6
	12/3/2019 DUP	<50.0	<250	<50.0	<50.0	53.4	<20.0	27.2	1,190	<20.0	<25.0	1,650	<20.0	<25.0	1,200	23.2
	3/11/2020	<25.0	<125	<25.0	<25.0	31.8	<10.0	55.4	1,290	<10.0	<12.5	4,600	28.80	<12.5	1,800	143
	3/11/2020 DUP	<25.0	<125	<25.0	<25.0	35.4	<10.0	60.4	1,450	14.8	<12.5	4,730	29.10	<12.5	2,010	154

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19 (continued)	6/18/2020	<10.0	<50.0	<10.0	<10.0	25.7	<4.00	21.1	1,060	5.6	<5.00	1,000	9.40	<5.00	580	96.3
	6/18/2020 DUP	<50.0	<250	<50.0	<50.0	32.5	<20.0	27.5	956	<20.0	<25.0	1,080	<20.0	<25.0	697	95
	10/7/2020	<50.0	<250	<50.0	<50.0	44.5	<20.0	53.20	1,470	<20.0	<25.0	7,450	39.00	<25.0	2,760	52.4
	10/7/2020 DUP	<50.0	<250	<50.0	<50.0	46.9	<20.0	58.80	1,510	<20.0	<25.0	8,110	39.00	<25.0	2,920	53.8
	12/8/2020	<200	<500	<100	<100	54.5	<40.0	<40.0	1,150	<40.0	<50.0	3,880	<40.0	<50.0	1,110	117
	12/8/2020 DUP	<200	<500	<100	<100	70.8	<40.0	<40.0	1,330	<40.0	<50.0	3,300	<40.0	<50.0	1,210	87.9
	3/3/2021	<1.00	<5.00	<1.00	<1.00	41.4	<0.400	51.00	1,120	11.4	<0.500	4,470	27.8	<0.500	1,880	53.6
	3/3/2021 DUP	<50.0	<250	<50.0	<50.0	35.8	<20.0	48.5	1,140	<20.0	<25.0	4,620	26.4	<25.0	1,920	50
	6/16/2021	<25.0	<125	<25.0	<25.0	58	<10.0	28.2	1,260	15.1	<12.5	4,770	22.5	<12.5	1,190	80.8
	6/16/2021 DUP	<25.0	<125	<25.0	<25.0	54.1	<10.0	26.8	1,160	<10.0	<12.5	4,430	19.9	<12.5	1,090	76.1
	9/15/2021	<25.0	<125	<25.0	<25.0	19.6	<10.0	53.60	922	<10.0	<12.5	6,790	60.80	<12.5	2,540	45.1
	9/15/2021 DUP	<25.0	<125	<25.0	<25.0	19.3	<10.0	52.40	945	<10.0	<12.5	5,880	63.40	<12.5	2,670	49.1
	12/8/2021	<100	<500	<100	<100	223	<40.0	86.00	3,650	<40.0	<50.0	9,310	55.30	<50.0	3,420	110
	12/8/2021 DUP	<100	<500	<100	<100	226	<40.0	80.30	3,690	<40.0	<50.0	7,030	51.10	<50.0	3,040	117
	3/9/2022	<50.0	<250	<50.0	<50.0	71.0	<20.00	31.0	1,240	<20.0	<25.0	3,500	20.5	<25.0	942	33.0
	3/9/2022 DUP	<50.0	<250	<50.0	<50.0	69.5	<20.00	29.0	1,220	<20.0	<25.0	3,490	<20.0	<25.0	918	31.5
	6/14/2022	<1.00	<5.00	<1.00	<1.00	0.94	<0.400	<0.400	14.6	<0.400	<0.500	44.8	<0.400	<0.500	16.5	0.95
	6/14/2022 DUP	<1.00	<5.00	<1.00	<1.00	0.89	<0.400	<0.400	14.2	<0.400	<0.500	46.2	<0.400	<0.500	16.5	0.93
	9/15/2022	<1.00	<5.00	<1.00	<1.00	16.80	<0.400	44.80	1,050	5.79	<0.500	6010	48.2	<0.500	1100	196
	9/15/2022 DUP	<1.00	<5.00	<1.00	<1.00	15.10	<0.400	42.60	898	5.98	<0.500	9670	53.2	<0.500	1600	156
	12/6/2022	<50.0	<250	<50.0	<50.0	69.00	<20.00	36.50	1,130	<20.0	<25.0	4340	25	<25.0	1390	36.5
	12/6/2022 DUP	<50.0	<250	<50.0	<50.0	74.50	<20.0	33.50	1,160	<20.0	<25.0	4230	25	<25.0	1360	39.5
	3/14/2023	<1.00	<5.00	<1.00	<1.00	21.00	<0.400	42.80	690	7.58	<0.500	5770	34.1	<0.500	1860	51.3
	3/14/2023 DUP	<5.00	<25.0	<5.00	<5.00	20.50	<2.00	36.20	697	12.6	<2.50	5260	32.2	<2.50	1840	45.8
	6/14/2023	<20.0	<100	<20.0	<20.0	30.00	<8.00	22.20	813	11	<10.0	1720	12	<10.0	975	25.8
	6/14/23 DUP	<20.0	<100	<20.0	<20.0	28.80	<8.00	22.80	803	8.2	<10.0	2290	12.4	<10.0	1060	25.6
	9/14/2023	<50.00	<250	<50.0	<50.0	<20.0	<20.0	27.0	387	<20.0	<25.0	6120	33.5	<25.0	1130	23.0
	9/14/2023 DUP	<50.0	<250	<50.0	<50.0	<20.0	<20.0	25.5	374	<20.0	<25.0	5180	30.5	<25.0	1060	19.5
	12/15/2023	<50.0	<250	<50.0	<50.0	158	<20.0	25.5	1500	<20.0	<25.0	1820	<20.0	<25.0	856	58.0
	12/15/2023 DUP	<50.0	<250	<50.0	<50.0	106	<20.0	28.0	1270	<20.0	<25.0	1830	<20.0	<25.0	739	56.5
	3/6/2024	<50.0	<250	<50.0	<50.0	54.0	<20.0	26.6	1010	15.4	<25.0	2420	14.2	<25.0	1270	87.8
	3/6/2024 DUP	<50.0	<250	<50.0	<50.0	50.2	<20.0	27.4	961	14.0	<25.0	2760	14.4	<25.0	1350	89.2
	6/12/2024	<10.0	<50.0	<10.0	<10.0	66.3	<4.00	19.9	1150	10.9	<5.00	2600	12.6	<5.00	894	39.8
	6/12/2024 DUP	<10.0	<50.0	<10.0	<10.0	62.0	<4.00	18.8	1100	9.40	<5.00	2440	12.8	<5.00	896	36.2

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19i	6/10/2008	<1	<1	<1	<1	<1	<1	<1	8.46	<1	<1	<1	<1	<1	1.28	<1
	9/17/2008	<1	<0.500	<0.500	<1	1.93	0.53	<0.500	27.1	<0.500	<0.500	1.72	<0.500	<0.500	5.77	<0.500
	12/10/2008	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	28	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	<0.50
	3/26/2009	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	25	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	10	<0.50	<0.50	0.67	<0.50	<0.50	1.5	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	1.7	0.64	<0.50	28	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	0.79
	12/15/2009	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	10	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	1.1	0.53	<0.50	15	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50
	6/15/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	1.2	0.58	<0.5	20	<0.5	<0.5	<0.5	<0.5	<0.5	2.4	<0.5
	12/9/2010	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	14	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	14	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.88	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50
	12/9/2011	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	8.8	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50
	3/12/2012	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	13	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	9.5	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50
	6/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	6.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2013	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	0.83	<0.50	<0.50	1.6	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	6.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-19i (continued)	9/28/2016	<5	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/28/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.228 J	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	7/2/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.212 J	<0.500	<0.500	0.223 J	<0.500	<0.500	<0.500	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.43	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.489	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.566	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.796	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.700	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	06/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.890	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.57	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.13	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.69	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.02	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.500	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.610	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.430	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-20i	6/10/2008	<1	<1	<1	<1	<1	<1	<1	18	<1	<1	5.77	<1	<1	3.2	<1
	9/17/2008	<1	<0.500	<0.500	<1	2.12	<0.500	<0.500	42.3	<0.500	<0.500	12.8	<0.500	<0.500	11	<0.500
	12/11/2008	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	47	<0.50	<0.50	11	<0.50	<0.50	9.3	<0.50
	3/25/2009	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	36	<0.50	<0.50	8.4	<0.50	<0.50	6.4	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-20i (continued)	6/16/2009	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	30	<0.50	<0.50	6.3	<0.50	<0.50	5.1	<0.50
	9/17/2009	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	34	<0.50	<0.50	7.4	<0.50	<0.50	5	<0.50
	12/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	<0.50	1.1	<0.50	<0.50	0.69	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	47	<0.50	<0.50	11	<0.50	<0.50	6.9	<0.50
	6/15/2010	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	13	<0.50	<0.50	4.3	<0.50	<0.50	2.3	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	43	<0.5	<0.5	17	<0.5	<0.5	10	<0.5
	12/9/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	13	<0.5	<0.5	3.7	<0.5	<0.5	2	<0.5
	3/11/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.6	<0.50	<0.50	2.4	<0.50	<0.50	2.3	<0.50
	6/8/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	21	<0.50	<0.50	7.6	<0.50	<0.50	4.5	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	26	<0.50	<0.50	6.4	<0.50	<0.50	4.2	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	32	<0.50	<0.50	11	<0.50	<0.50	5.9	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.3	<0.5	<0.5	2.6	<0.5	<0.5	1.5	<0.5
	9/13/2012	<0.50	<0.50	<0.50	<0.50	0.83	<0.50	<0.50	18	<0.50	<0.50	6.1	<0.50	<0.50	3.8	<0.50
	12/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.9	<0.50	<0.50	1.4	<0.50	<0.50	0.84	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	28	<0.50	<0.50	9.2	<0.50	<0.50	6	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	<0.50	14	<0.50	<0.50	7.3	<0.50	<0.50	3.7	<0.50
	9/19/2013	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	11	<0.50	<0.50	3.9	<0.50	<0.50	2.4	<0.50
	12/13/2013	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	16	<0.50	<0.50	2.4	<0.50	<0.50	1.9	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	0.56	<0.50	<0.50	<0.50	<0.50
	6/30/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	1.1	<0.50	<0.50	0.58	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	0.68	<0.50	<0.50	12	<0.50	<0.50	4.3	<0.50	<0.50	2.6	<0.50
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.3	<0.50	<0.50	3	<0.50	<0.50	1.7	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.8	<0.50	<0.50	3.7	<0.50	<0.50	2.2	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.69	<0.50	<0.50	13.8	<0.50	<0.50	4.1	<0.50	<0.50	2.1	<0.50
	12/7/2015	Not sampled; well monument under water.														
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	3.4	<0.50	<5	1.8	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.4	<0.50	<0.50	2.1	<0.50	<0.50	1.5	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.7	<0.50	<0.50	4	<0.50	<0.50	2.2	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	5.6	<0.50	<0.50	1.5	<0.50	<0.50	0.84	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	<0.50	<0.50
	11/7/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	2.8	<0.50	<0.50	1.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-20i (continued)	3/21/2018	<0.500	<2.50	<0.500	<0.500	0.303 J	<0.500	<0.500	5.7	<0.500	<0.500	1.4	<0.500	<0.500	0.90	<0.500
	7/2/2018	<0.500	<2.50	<0.500	<0.500	0.436 J	<0.500	<0.500	9.7	<0.500	<0.500	2.3	<0.500	<0.500	1.60	<0.500
	9/25/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.7	<0.400	<0.500	2.1	<0.400	<0.500	1.39	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	0.43	<0.400	<0.400	10.7	<0.400	<0.500	2.2	<0.400	<0.500	1.55	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	0.492	<0.400	<0.400	10.5	<0.400	<0.500	2.04	<0.400	<0.500	1.65	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.58	<0.400	<0.500	0.950	<0.400	<0.500	0.590	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	0.461	<0.400	<0.400	9.43	<0.400	<0.500	2.340	<0.400	<0.500	1.440	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.68	<0.400	<0.500	1.370	<0.400	<0.500	0.897	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	9.21	<0.400	<0.500	2.320	<0.400	<0.500	1.260	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.93	<0.400	<0.500	0.410	<0.400	<0.500	<0.400	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.66	<0.400	<0.500	1.11	<0.400	<0.500	0.850	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	10.0	<0.400	<0.500	1.57	<0.400	<0.500	0.856	<0.400
	3/2/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.68	<0.400	<0.500	1.16	<0.400	<0.500	0.902	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	9.16	<0.400	<0.500	1.66	<0.400	<0.500	1.12	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	0.401	<0.400	<0.400	10.3	<0.400	<0.500	1.76	<0.400	<0.500	1.12	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.2	<0.400	<0.500	0.832	<0.400	<0.500	<0.400	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.13	<0.400	<0.500	1.25	<0.400	<0.500	0.770	<0.400
	06/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.07	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.99	<0.400	<0.500	1.10	<0.400	<0.500	0.860	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.42	<0.400	<0.500	1.4	<0.400	<0.500	0.72	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.97	<0.400	<0.500	7.44	<0.400	<0.500	1.15	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7	<0.400	<0.500	1.67	<0.400	<0.500	1.05	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.44	<0.400	<0.500	1.09	<0.400	<0.500	0.820	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.86	<0.400	<0.500	0.730	<0.400	<0.500	0.430	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.48	<0.400	<0.500	1.66	<0.400	<0.500	1.14	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.68	<0.400	<0.500	1.55	<0.400	<0.500	0.990	<0.200
MW-21i-105	6/10/2008	<2	<2	<2	<2	2	<2	<2	15.8	<2	<2	53.2	<2	<0.50	25.1	<2
	9/18/2008	<1	<0.500	<0.500	<1	0.78	<0.500	<0.500	5.42	<0.500	<0.500	2.97	<0.500	<0.50	1.77	<0.500
	12/11/2008	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	0.88	61	<0.50	<0.50	33	0.87	<0.50	17	<0.50
	3/26/2009	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	61	<0.50	<0.50	0.76	<0.50	<0.50	0.7	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	76	<0.50	<0.50	4.3	0.6	<0.50	3.4	<0.50
	9/17/2009	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	73	<0.50	<0.50	11	0.59	<0.50	6.7	<0.50
	12/16/2009	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	<0.50	60	<0.50	<0.50	14	0.65	<0.50	9.3	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	<0.50	64	<0.50	<0.50	6.2	0.58	<0.50	7.6	<0.50
	6/15/2010	<0.50	<0.50	<0.50	<0.50	1.7	<0.50	0.63	60	<0.50	<0.80	29	0.84	<0.50	22	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-21i-105	9/22/2010	<0.5	<0.5	<0.5	<0.5	1.7	<0.5	<0.5	75	<0.5	<0.5	5.2	0.55	<0.50	5.1	<0.5
(continued)	12/8/2010	<0.5	<0.5	<0.5	<0.5	2	<0.5	0.52	72	<0.5	<0.5	27	0.91	<0.50	14	<0.50
	3/9/2011	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	0.69	61	<0.50	<0.50	32	1.1	<0.50	17	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	1.6	<0.5	0.61	63	<0.5	<0.5	29	0.7	<0.5	17	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	88	<0.50	<0.50	12	0.59	<0.50	12	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	73	<0.50	<0.50	15	0.58	<0.50	9.3	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	38	<0.50	<0.50	5.6	<0.50	<0.50	5.7	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	52	<0.5	<0.5	1.4	<0.5	<0.5	3	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	<0.50	34	<0.50	<0.50	5	<0.50	<0.50	6.3	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	60	1	<0.50	13	<0.50	<0.50	15	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	0.9	<0.50	<0.50	42	<0.50	<0.50	2.4	<0.50	<0.50	3.7	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	48	<0.50	<0.50	1.2	<0.50	<0.50	9.9	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	51	<0.50	<0.50	2.8	<0.50	<0.50	4.2	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	61	1.6	<0.50	4	<0.50	<0.50	5.4	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	52	<0.50	<0.50	4.4	<0.50	<0.50	6.8	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	5.4	<0.50	<0.50	3.3	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	37	<0.50	<0.50	5.4	<0.50	<0.50	9.6	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13.3	<0.50	<0.50	6.6	<0.50	<0.50	5.4	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20.8	<0.50	<0.50	3.5	<0.50	<0.50	4	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.91	<0.50	<0.50	41.4	<0.50	<0.50	3.4	<0.50	<0.50	5.4	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	0.79	<0.50	<0.50	28.5	<0.50	<0.50	4.9	<0.50	<0.50	8.1	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/26/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	11.7	<0.50	<0.50	5.8	<0.50	<0.50	5.1	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	4.8	<0.5	<0.5	5.7	<0.5	<0.5	2.9	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	4.7	<0.50	<0.50	7.6	<0.50	<0.50	4.1	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	4.3	<0.50	<0.50	5.7	<0.50	<0.50	3.9	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	13.0	<0.50	<0.50	7.4	<0.50	<0.50	6.4	<0.50
	3/22/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.7	<0.500	<0.500	0.5	<0.500	<0.500	0.477 J	<0.500
	6/29/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	1.9	<0.500	<0.500	1.8	<0.500	<0.500	1.3	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	0.82	<0.400	<0.400	36.4	<0.400	<0.500	8.6	<0.400	<0.500	11.0	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.6	<0.400	<0.500	9.5	<0.400	<0.500	5.9	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.04	<0.400	<0.500	1.08	<0.400	<0.500	0.760	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-21i-105 (continued)	6/6/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.11	<0.400	<0.500	3.90	<0.400	<0.500	2.38	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.08	<0.400	<0.500	4.93	<0.400	<0.500	2.62	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.09	<0.400	<0.500	5.61	<0.400	<0.500	2.79	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.48	<0.400	<0.500	3.60	<0.400	<0.500	2.02	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.59	<0.400	<0.500	3.08	<0.400	<0.500	1.49	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.76	<0.400	<0.500	4.60	<0.400	<0.500	1.96	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.88	<0.400	<0.500	3.53	<0.400	<0.500	1.62	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.23	<0.400	<0.500	3.32	<0.400	<0.500	1.74	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.37	<0.400	<0.500	1.7	<0.400	<0.500	1.01	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	0.432	<0.400	<0.400	8.73	<0.400	<0.500	11.4	<0.400	<0.500	6.37	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.38	<0.400	<0.500	2.32	<0.400	<0.500	1.5	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.560	<0.400	<0.500	<0.400	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.80	<0.400	<0.500	6.51	<0.400	<0.500	3.88	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	0.44	<0.400	<0.400	7.43	<0.400	<0.500	10.8	<0.400	<0.500	5.57	<0.400
	12/6/2022	<1.00	<5.00	<1.00	<1.00	0.88	<0.400	0.41	21.2	<0.400	<0.500	20.9	<0.400	<0.500	9.95	<0.400
	3/14/2023	<1.00	<5.01	<1.00	<1.00	<0.400 V-01	<0.400 V-01	<0.400 V-01	1.09 V-01	<0.400 V-01	<0.500 V-01	3.12 V-01	<0.400 V-01	<0.500 V-01	1.23 V-01	<0.400 V-01
	6/13/2023	<1.00	<5.00	<1.00	<1.00	0.7	<0.400	<0.400	13.3	<0.400	<0.500	20.9	<0.400	<0.500	11	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	0.890	<0.400	0.540	20.7	<0.400	<0.500	16.9	<0.400	<0.500	11.0	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	1.15	<0.400	0.570	19.3	<0.400	<0.500	44.5	<0.400	<0.500	17.2	<0.200
	3/5/2024	<2.00	<5.00	<1.00	<1.00	0.800	<0.400	0.530	15.9	<0.400	<0.500	32.3	<0.400	<0.500	15.1	<0.200
	6/13/2024	<1.00	<5.00	<1.00	<1.00	0.730	<0.400	<0.400	17.4	0.540	<0.500	21.6	<0.400	<0.500	10.9	<0.200
MW-21i-40	9/18/2008	<1	<0.500	<0.500	<1	7.48	<0.500	4.38	124	0.77	<0.500	107	2.01	<0.500	133	<0.500
	12/11/2008	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	3.6	130	0.84	<0.50	100	1.6	<0.50	110	<0.50
	3/26/2009	<0.50	<0.50	<0.50	<0.50	6.2	<0.50	3.6	130	0.63	<0.50	77	1.3	<0.50	88	<0.50
	6/17/2009	<0.50	<0.50	<0.50	<0.50	6.6	<0.50	3.1	120	0.79	<0.50	71	1.5	<0.50	88	<0.50
	9/18/2009	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	3.2	120	1	<0.50	75	1.3	<0.50	92	0.55
	12/16/2009	<0.50	<0.50	<0.50	<0.50	5.7	<0.50	2.6	120	1	<0.50	90	1.2	<0.50	89	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	5.5	<0.50	2.8	120	0.74	<0.50	84	1.1	<0.50	91	<0.50
	6/15/2010	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	2.4	120	0.89	<0.50	62	1.2	<0.50	64	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	4.9	<0.5	2.2	110	0.73	<0.5	68	0.93	<0.5	75	<0.5
	12/8/2010	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	2.3	110	0.77	<0.5	72	1	<0.5	69	<0.5
	3/10/2011	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.9	100	0.64	<0.50	53	1	<0.50	57	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	4.7	<0.5	2.1	110	0.7	<0.5	50	0.96	<0.5	55	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	5	<0.50	1.9	110	0.65	<0.50	54	1.1	<0.50	57	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	2.1	110	0.66	<0.50	61	0.96	<0.50	60	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	2.1	110	0.76	<0.50	74	1.5	<0.50	58	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	5	<0.5	2	160	0.84	<0.5	19	0.81	<0.5	23	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	5	<0.50	1.8	110	0.63	<0.50	50	1.1	<0.50	48	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-21i-40 (continued)	12/12/2012	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	2	120	0.69	<0.50	74	1.1	<0.50	53	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.8	120	0.6	<0.50	43	0.83	<0.50	42	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	48	<0.50	<0.50	12	<0.50	<0.50	9.9	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	4.7	<0.50	1.4	100	0.53	<0.50	38	0.68	<0.50	33	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	4.6	<0.50	1.3	100	1	<0.50	41	0.73	<0.50	37	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	1.5	100	0.61	<0.50	40	0.76	<0.50	34	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	1.3	100	0.51	<0.50	33	0.65	<0.50	29	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	4	<0.50	1.4	100	86	<0.50	31	0.51	<0.50	32	<0.50
	12/10/2014	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	1.4	100	0.6	<0.50	30	0.51	<0.50	32	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	1.5	102	0.51	<0.50	43.6	<0.50	<0.50	37.2	<0.50
	6/19/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.76	61.6	<0.50	<0.50	24.7	<0.50	<0.50	21.8	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	0.95	84.2	<0.50	<0.50	26.3	<0.50	<0.50	26.6	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	0.7	63.6	<0.50	<0.50	24.7	<0.50	<0.50	21.1	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	2.1	<0.50	<0.50	58.6	<0.50	<0.50	14.2	<0.50	<0.50	15.1	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	2.3	<0.50	0.8	67.8	<0.50	<0.50	18.1	<0.50	<0.50	17.1	<0.50
	9/26/2016	<0.50	<2	<0.50	<0.50	2.6	<0.50	0.87	77.2	<0.50	<0.50	20.1	<0.50	<0.50	19.8	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	2.4	<0.50	0.83	74.2	<0.50	<0.50	21.4	<0.50	<0.50	19.4	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	2.6	<0.5	0.91	87.6	0.58	<0.5	21.8	<0.5	<0.5	16.2	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	2.3	<1.0	0.63	63.6	0.56	<0.50	24.1	<0.50	<0.50	15.1	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	2.3	<1.0	0.70	60.0	<0.50	<0.50	18.1	<0.50	<0.50	15.0	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	2.6	<0.50	0.84	65.4	0.63	<0.50	17.4	<0.50	<0.50	14.6	<0.50
	3/22/2018	<0.500	<2.50	<0.500	<0.500	2.1	<0.500	0.64	55.1	0.391 J	<0.500	22.5	<0.500	<0.500	16.5	<0.500
	6/28/2018	<0.500	<2.50	<0.500	<0.500	2.6	<0.500	0.75	63.2	0.53	<0.500	26.0	0.145 J	<0.500	17.0	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	2.5	<0.400	0.70	62.1	0.69	<0.500	24.5	<0.400	<0.500	17.1	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	2.4	<0.400	0.67	59.1	0.48	<0.500	32.7	<0.400	<0.500	19.3	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	2.48	<0.400	0.700	48.8	0.500	<0.500	24.6	<0.400	<0.500	16.2	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	2.23	<0.400	0.730	60.9	0.470	<0.500	24.1	<0.400	<0.500	16.9	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	2.48	<0.400	0.768	55.5	0.657	<0.500	22.5	<0.400	<0.500	14.9	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	2.5	<0.400	0.614	56.3	0.521	<0.500	32.1	<0.400	<0.500	19.1	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	1.95	<0.400	0.626	47.4	0.411	<0.500	31.2	<0.400	<0.500	17.6	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	1.95	<0.400	0.540	45.9	0.400	<0.500	31.1	<0.400	<0.500	14.6	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	2.16	<0.400	0.527	50.7	0.433	<0.500	32.7	<0.400	<0.500	18.7	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	2.46	<0.400	0.558	53.3	0.486	<0.500	30.0	<0.400	<0.500	15.8	<0.400
	3/2/2021	<1.00	<5.00	<1.00	<1.00	1.73	<0.400	0.403	38.1	<0.400	<0.500	19.6	<0.400	<0.500	12.7	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	1.62	<0.400	<0.400	35.1	<0.400	<0.500	19.0	<0.400	<0.500	13.2	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	2.04	<0.400	0.517	45.2	0.463	<0.500	30.1	<0.400	<0.500	16.3	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	1.64	<0.400	<0.400	36.2	<0.400	<0.500	29.9	<0.400	<0.500	15.4	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	1.89	<0.400	0.450	38.4	0.420	<0.500	28.0	<0.400	<0.500	15.3	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-21i-40 (continued)	6/16/2022	<1.00	<5.00	<1.00	<1.00	1.57	<0.400	<0.400	32.9	<0.400	<0.500	20.7	<0.400	<0.500	11.7	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	1.68	<0.400	<0.400	34.8	0.420	<0.500	20.8	<0.400	<0.500	12.3	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	1.03	<0.400	<0.400	22	<0.400	<0.500	16.9	<0.400	<0.500	8.44	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	1.50	<0.400	<0.400	30.7	<0.400	<0.500	23.2	<0.400	<0.500	11	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	1.69	<0.400	<0.400	34.9	0.41	<0.500	21.3	<0.400	<0.500	12.6	<0.400
	9/13/2023	<2.00	<5.00	<1.00	<1.00	1.19	<0.400	<0.400	27.1	<0.400	<0.500	21.1	<0.400	<0.500	9.38	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	1.60	<0.400	<0.400	27.4	0.500	<0.500	26.2	<0.400	<0.500	11.2	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	1.46	<0.400	<0.400	26.5	<0.400	<0.500	18.6	<0.400	<0.500	11.3	<0.200
	6/13/2024	<1.00	<5.00	<1.00	<1.00	1.10	<0.400	<0.400	23.0	<0.400	<0.500	16.3	<0.400	<0.500	9.18	<0.200
MW-22i	6/10/2008	<1	<1	<1	<1	1.02	<1	<1	30	<1	<1	10.3	<1	<1	30	<1
	9/17/2008	<1	<0.500	<0.500	<1	7.48	<0.500	4.38	124	0.77	<0.500	107	2.01	<0.500	133	<0.500
	12/11/2008	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.73	63	<0.50	<0.50	1.1	<0.50	<0.50	6.8	<0.50
	3/25/2009	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	0.64	50	<0.50	<0.50	2.5	<0.50	<0.50	14	<0.50
	6/16/2009	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.52	39	<0.50	<0.50	8.5	<0.50	<0.50	24	<0.50
	9/17/2009	<0.50	<0.50	<0.50	<0.50	1	<0.50	0.57	40	<0.50	<0.50	3.3	<0.50	<0.50	21	<0.50
	12/15/2009	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	28	<0.50	<0.50	3.8	<0.50	<0.50	20	<0.50
	3/18/2010	<0.50	<0.50	<0.50	<0.50	0.86	<0.50	<0.50	34	<0.50	<0.50	2.6	<0.50	<0.50	16	<0.50
	6/14/2010	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	17	<0.50	<0.50	4	<0.50	<0.50	18	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	0.75	<0.5	<0.5	24	<0.5	<0.5	3.6	<0.5	<0.5	18	<0.5
	12/8/2010	<0.5	<0.5	<0.5	<0.5	0.73	<0.5	<0.5	21	<0.5	<0.5	3.5	<0.5	<0.5	18	<0.5
	3/11/2011	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	17	<0.50	<0.50	3.6	<0.50	<0.50	17	<0.50
	6/8/2011	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	18	<0.5	<0.5	1.8	<0.5	<0.5	12	<0.5
	9/14/2011	<0.50	<0.50	<0.50	<0.50	0.55	<0.50	<0.50	18	<0.50	<0.50	1.3	<0.50	<0.50	11	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	17	<0.50	<0.50	2.5	<0.50	<0.50	14	<0.50
	3/6/2012	<0.50	<0.50	<0.50	<0.50	0.51	<0.50	<0.50	13	<0.50	<0.50	2.4	<0.50	<0.50	13	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	12	<0.5	<0.5	1.9	<0.5	<0.5	11	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	16	<0.50	<0.50	1.5	<0.50	<0.50	10	<0.50
	12/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	13	<0.50	<0.50	1.8	<0.50	<0.50	11	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	2.2	<0.50	<0.50	11	<0.50
	6/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	1.1	<0.50	<0.50	9.6	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.3	<0.50	<0.50	1.4	<0.50	<0.50	8.2	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	1.3	<0.50	<0.50	9.6	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9	<0.50	<0.50	1.1	<0.50	<0.50	5.7	<0.50
	9/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.8	<0.50	<0.50	1.7	<0.50	<0.50	9.8	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-22i (continued)	12/10/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.2	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.2	<0.50	<0.50	1.8	<0.50	<0.50	8.7	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.6	<0.50	<0.50	1.6	<0.50	<0.50	9	<0.50
	9/23/2015	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	10	<0.50	<0.50	2.1	<0.50	<0.50	1.15	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8	<0.50	<0.50	2.1	<0.50	<0.50	11	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8	<0.50	<0.50	2.2	<0.50	<0.50	12	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	1	<0.50	<0.50	7.9	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	1.3	<0.50	<0.50	9	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	8.6	<0.50	<0.50	2	<0.50	<0.50	10.2	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	10	<0.5	<0.5	1.1	<0.5	<0.5	9.7	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	9.6	<0.50	<0.50	0.63	<0.50	<0.50	6.2	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	8.8	<0.50	<0.50	0.88	<0.50	<0.50	6.3	<0.50
	11/7/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	9.7	<0.50	<0.50	1.20	<0.50	<0.50	6.4	<0.50
	3/22/2018	<0.500	<2.50	<0.500	<0.500	0.330 J	<0.500	<0.500	9.6	<0.500	<0.500	1.76	<0.500	<0.500	7.8	<0.500
	6/29/2018	<0.500	<2.50	<0.500	<0.500	0.52	<0.500	<0.500	12.4	<0.500	<0.500	2.77	<0.500	<0.500	8.1	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	0.42	<0.400	<0.400	12.5	<0.400	<0.500	2.42	<0.400	<0.500	6.8	<0.400
	12/5/2018	<1.00	<5.00	<1.00	<1.00	0.47	<0.400	<0.400	11.7	<0.400	<0.500	3.34	<0.400	<0.500	8.2	<0.400
	3/21/2019	<1.00	<5.00	<1.00	<1.00	0.510	<0.400	<0.400	12.2	<0.400	<0.500	1.24	<0.400	<0.500	4.92	<0.400
	6/6/2019	<1.00	<5.00	<1.00	<1.00	0.584	<0.400	<0.400	15.5	<0.400	<0.500	2.22	<0.400	<0.500	7.22	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	0.577	<0.400	<0.400	15.5	<0.400	<0.500	3.12	<0.400	<0.500	6.88	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	0.461	<0.400	<0.400	15.2	<0.400	<0.500	1.94	<0.400	<0.500	7.35	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	0.587	<0.400	<0.400	16.1	<0.400	<0.500	3.32	<0.400	<0.500	8.23	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	0.580	<0.400	<0.400	13.6	<0.400	<0.500	3.17	<0.400	<0.500	7.62	<0.400
	10/8/2020	<1.00	<5.00	<1.00	<1.00	0.502	<0.400	<0.400	16.0	<0.400	<0.500	3.68	<0.400	<0.500	8.02	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	0.565	<0.400	<0.400	15.6	<0.400	<0.500	4.07	<0.400	<0.500	7.86	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	0.51	<0.400	<0.400	13.3	<0.400	<0.500	2.12	<0.400	<0.500	6.62	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	0.643	<0.400	<0.400	16.5	<0.400	<0.500	4.47	<0.400	<0.500	8.86	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	0.656	<0.400	<0.400	19.5	<0.400	<0.500	3.01	<0.400	<0.500	6.53	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	0.514	<0.400	<0.400	13.9	<0.400	<0.500	5	<0.400	<0.500	8.62	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	0.630	<0.400	<0.400	17.4	<0.400	<0.500	3.51	<0.400	<0.500	7.53	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	0.580	<0.400	<0.400	13.0	<0.400	<0.500	5.85	<0.400	<0.500	7.52	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	0.450	<0.400	<0.400	11.5	<0.400	<0.500	4.31	<0.400	<0.500	5.88	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	0.52	<0.400	<0.400	16.3	<0.400	<0.500	3.35	<0.400	<0.500	6.04	<0.400
	3/16/2023	<1.00	<5.00	<1.00	<1.00	0.64	<0.400	<0.400	17.4	<0.400	<0.500	3.81	<0.400	<0.500	6.63	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	0.51	<0.400	<0.400	12.3	<0.400	<0.500	6.04	<0.400	<0.500	6.15	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-22i (continued)	9/12/2023	<4.00	<5.00	<1.00	<1.00	0.530	<0.400	<0.400	15.6	<0.400	<0.500	2.81	<0.400	<0.500	5.83	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	0.710	<0.400	<0.400	15.7	<0.400	<0.500	4.05	<0.400	<0.500	6.76	<0.200
	3/5/2024	<2.00	<5.00	<1.00	<1.00	0.550	<0.400	<0.400	15.3	<0.400	<0.500	2.64	<0.400	<0.500	5.54	<0.200
	6/14/2024	<1.00	<5.00	<1.00	<1.00	0.460	<0.400	<0.400	15.0	<0.400	<0.500	1.55	<0.400	<0.500	4.29	<0.200
MW-23i	6/10/2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	06/10/2008 DUP	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	9/17/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	12/9/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/17/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	7/2/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	12/8/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/8/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/13/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/6/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/7/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/19/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.67	<0.50	<0.50	<0.50	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-23i	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
(continued)	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/26/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.207 J	<0.500	<0.500	0.402 J	<0.500	<0.500	0.215 J	<0.500
	6/28/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.202 J	<0.500	<0.500	0.247 J	<0.500	<0.500	0.212 J	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.59	<0.400	<0.500	<0.400	<0.400
	12/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/2/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.68	<0.400	<0.500	<0.400	<0.400
	3/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.52	<0.400	<0.500	<0.400	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.43	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.700	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/13/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-24i	10/1/2010	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	0.94	52	<0.50	<0.50	52	1.9	<0.50	29	<0.50
	12/10/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.5	<0.5	<0.5	6.3	<0.5	<0.5	2	<0.5
	3/14/2011	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	15	<0.50	<0.50	23	1	<0.50	7.4	<0.50
	6/7/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	6.6	<0.5	<0.5	1.4	<0.5
	9/16/2011	<0.50	<0.50	<0.50	<0.50	13	<0.50	2.5	270	1.7	<0.50	27	5.6	<0.50	24	19
	12/7/2011	<0.50	<0.50	<0.50	<0.50	5	<0.50	0.84	100	<0.50	<0.50	19	2.9	<0.50	14	7.5
	3/12/2012	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	79	<0.50	<0.50	30	2.3	<0.50	11	4.5
	6/22/2012	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	14	<0.5	<0.5	0.85	<0.5	<0.5	<0.50	2.6
	9/14/2012	<0.50	<0.50	<0.50	<0.50	4.4	<0.50	0.87	58	<0.50	<0.50	31	0.79	<0.50	20	<0.50
	12/14/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	2.1	<0.50	<0.50	0.65	<0.50
	3/15/2013	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	48	<0.50	<0.50	23	0.57	<0.50	15	<0.50
	6/14/2013	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	28	<0.50	<0.50	6.2	<0.50	<0.50	3.6	<0.80
	9/20/2013	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	15	<0.50	<0.50	15	<0.50	<0.50	5.9	<0.80
	12/16/2013	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	8.4	<0.50	<0.50	6.7	<0.50	<0.50	3.4	<0.50
	3/24/2014	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	16	<0.50	<0.50	10	<0.50	<0.50	5.5	<0.80
	6/23/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	13	<0.50	<0.50	1.3	<0.50	<0.50	5.2	2.1
	9/30/2014	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	21	<0.50	<0.50	20	<0.50	<0.50	10	<0.50
	12/15/2014	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	<0.50	12	<0.50	<0.50	2.4	<0.50	<0.50	1.1	<0.50
	3/20/2015	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	5.9	<0.50	<0.50	6.1	<0.50	<0.50	3.1	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	4.7	<0.50	<0.50	2.2	<0.50	<0.50	0.8	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	<0.50	18	<0.50	<0.50	189	<0.50	<0.50	36.4	<0.50
	3/8/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	<0.50	4.1	<0.50	<0.50	1.6	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	0.99	<0.50	<0.50	7.8	<0.50	<0.50	11.5	<0.50	<0.50	6.3	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	0.53	<0.50	<0.50	5.4	<0.50	<0.50	5.8	<0.50	<0.50	3.1	<0.50
	12/12/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
	3/30/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	1	<0.5	<0.5	<0.50	<0.5
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	3.2	<0.50	<0.50	6.6	<0.50	<0.50	2.8	<0.50
	9/26/2017	<2.0	<2.0	<0.50	<0.50	2.10	<1.0	<0.50	24.5	<0.50	<0.50	30.1	<0.50	<0.50	16.6	<0.50
	11/9/2017	<2.0	<2.0	<0.50	<0.50	1.10	<0.50	<0.50	9.6	<0.50	<0.50	12.7	<0.50	<0.50	5.9	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-24i (continued)	3/21/2018	<0.500	<2.50	<0.500	<0.500	1.42	<0.500	<0.500	13.5	<0.500	<0.500	19.1	<0.500	<0.500	10.2	<0.500
	6/28/2018	<0.500	<2.50	<0.500	<0.500	1.44	<0.500	<0.500	13.6	1.09	<0.500	10.3	<0.500	<0.500	5.93	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	2.18	<0.400	<0.400	25.0	<0.400	<0.500	24.8	<0.400	<0.500	14.3	<0.400
	12/4/2018	<1.00	<5.00	<1.00	<1.00	0.80	<0.400	<0.400	5.1	<0.400	<0.500	10.2	<0.400	<0.500	3.76	<0.400
	3/25/2019	<1.00	<5.00	<1.00	<1.00	0.888	<0.400	<0.400	8.46	<0.400	<0.500	11.7	<0.400	<0.500	5.91	<0.400
	6/7/2019	<1.00	<5.00	<1.00	<1.00	0.601	<0.400	<0.400	4.99	<0.400	<0.500	7.39	<0.400	<0.500	3.55	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	0.775	<0.400	<0.400	3.82	<0.400	<0.500	8.78	<0.400	<0.500	3.72	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	1.3	<0.400	<0.400	15.4	<0.400	<0.500	17	<0.400	<0.500	8.42	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	0.61	<0.400	<0.400	2.91	<0.400	<0.500	6.24	<0.400	<0.500	2.84	<0.400
	10/9/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.08	<0.400	<0.500	1.35	<0.400	<0.500	<0.400	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	1.73	<0.400	<0.400	20	<0.400	<0.500	29.7	<0.400	<0.500	13	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.505	<0.400	<0.500	0.955	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	0.989	<0.400	<0.400	9.31	<0.400	<0.500	15.7	<0.400	<0.500	8	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	1.98	<0.400	<0.400	27.5	<0.400	<0.500	36.7	<0.400	<0.500	17.2	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.54	<0.400	<0.500	2.22	<0.400	<0.500	0.629	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	0.900	<0.400	<0.400	7.93	<0.400	<0.500	13.2	<0.400	<0.500	6.19	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.430	<0.400	<0.500	0.710	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	1.07	<0.400	<0.400	15.5	<0.400	<0.500	38.6	<0.400	<0.500	9.46	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	1.04	<0.400	<0.400	15.9	<0.400	<0.500	16.1	<0.400	<0.500	7.95	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	0.85	<0.400	<0.400	14.3	<0.400	<0.500	9.97	<0.400	<0.500	5.21	<0.400
	9/13/2023	<2.00	<5.00	<1.00	<1.00	0.990	<0.400	<0.400	23.0	<0.400	<0.500	17.8	<0.400	<0.500	9.01	<0.200
	12/11/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.11	<0.400	<0.500	2.09	<0.400	<0.500	0.680	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	1.59	<0.400	<0.400	16.3	<0.400	<0.500	16.1	<0.400	<0.500	9.70	<0.200
	6/13/2024	<1.00	<5.00	<1.00	<1.00	1.09	<0.400	<0.400	17.5	<0.400	<0.500	16.7	<0.400	<0.500	8.68	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-24d	9/14/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/8/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/14/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/15/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/16/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	4	<0.50	<0.50	1.6	<0.50
	6/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/2/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	3.8	<0.50	<0.50	1.7	<0.50
	9/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/12/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/25/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/6/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.259 J	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.199 J
	6/27/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.275 J
	9/28/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/10/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/4/2019	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	0.415	<0.400	<0.400	1.00	<0.400	<0.500	1.62	<0.400	<0.500	0.845	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-24d (continued)	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/9/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/16/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-25i	9/16/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/6/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/20/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	9/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/18/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-25i (continued)	3/9/2016 DUP	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/15/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/29/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.81	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/29/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/15/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/21/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.245 J	<0.500	<0.500	0.248 J	<0.500	<0.500	<0.500	<0.500
	6/29/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	0.274 B J	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	9/27/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/6/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/22/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/4/2019	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/3/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.54	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/18/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.44	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/9/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/2/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.560	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.41	<0.400	<0.500	<0.400	<0.400
	9/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.430	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.570	<0.400	<0.500	<0.400	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-26	9/16/2011	<2	<2	<2	<2	7	<2	2.2	120	2.6	<2	250	5.7	<2	490	<2
	12/8/2011	<2	<2	<2	<2	7.1	<2	2.5	110	2.2	<2	300	5.8	<2	500	<2
	3/6/2012	<2	<2	<2	<2	8.2	<2	2.2	99	<2	<2	210	4.6	<2	450	<2
	6/19/2012	<2	<2	<2	<2	14	<2	3	90	<2	<2	160	5.2	<2	460	<2
	9/11/2012	<2	<2	<2	<2	6.3	<2	2.3	110	3	<2	280	4.3	<2	460	<2
	12/12/2012	<2	<2	<2	<2	5.6	<2	<2	120	3.7	<2	300	3.8	<2	470	<2
	3/13/2013	<2	<2	<2	<2	4.9	<2	<2	83	<2	<2	210	2.9	<2	390	<2
	6/12/2013	<2	<2	<2	<2	8.2	<2	<2	80	<2	<2	170	4.5	<2	360	<2
	9/18/2013	<2	<2	<2	<2	5.7	<2	<2	96	2.4	<2	210	3.2	<2	410	<2
	12/11/2013	<2	<2	<2	<2	7.8	<2	<2	75	<2	<2	150	3.9	<2	370	<2
	3/19/2014	<2	<2	<2	<2	4.9	<2	<2	95	2.1	<2	220	2.9	<2	350	<2
	6/24/2014	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	6.4	49	0.86	<0.50	150	2.1	<0.50	200	<0.50
	9/24/2014	<2	<2	<2	<2	3.9	<2	<2	68	<2	<2	220	3.1	<2	340	<2
	12/9/2014	<0.90	<0.90	<0.90	<0.90	3.8	<0.90	0.96	55	1.3	<0.90	160	2.8	<0.90	280	<0.90
	3/17/2015	<1	<1	<1	<1	5.8	<1	1.7	75.7	1.8	<1	265	3.7	<1	458	<1
	6/16/2015	<1.7	<1.7	<1.7	<1.7	5	<1.7	<1.7	77.9	<1.7	<1.7	205	2.8	<1.7	385	<1.7
	9/21/2015	<1.7	<1.7	<1.7	<1.7	4.3	<1.7	<1.7	72.4	1.7	<1.7	176	2.7	<1.7	326	<1.7
	12/7/2015	<1.2	<1.2	<1.2	<1.2	8.5	<1.2	1.7	75	1.6	<1.2	179	3.5	<1.2	393	<1.2
	3/8/2016	<1.2	<5	<1.2	<1.2	8	<1.2	1.5	76.1	1.8	<1.2	171	3.7	<1.2	370	<1.2
	6/15/2016	<1	<4	<1	<1	4.6	<1	1.4	83.1	2.2	<1	192	2.2	<1	343	<1
	9/27/2016	<0.50	<2	<0.50	<0.50	3.9	<0.50	1.1	61.1	1.6	<0.50	160	2.4	<0.50	288	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	8.9	<0.50	2.4	85.9	2	<0.50	167	3.3	<0.50	410	<0.50
	3/29/2017	<5	<20	<5	<5	<5	<5	<5	170	<5	<5	214	<5	<5	452	<5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	6.7	<1.0	1.9	113	2.0	<0.50	160	2.1	<0.50	311 E, J	0.65
	9/26/2017	<2.0	<2.0	<0.50	<0.50	5.1	<1.0	1.0	192	2.1	<0.50	68	0.8	<0.50	192	0.98
	11/8/2017	<2.0	2	<0.50	<0.50	4.8	<0.50	1.5	204	2.3	<0.50	88	1.0	<0.50	170	1.80
	3/20/2018	<0.500	0.633 J	0.149 J	<0.500	4.9	<0.500	1.4	157	1.9	<0.500	108	1.2	<0.500	190	1.75
	6/29/2018	<0.500	<2.50	<0.500	<0.500	5.1	<0.500	1.5	114	1.9	<0.500	138	1.9	<0.500	221	1.02
	9/24/2018	<1.00	<5.00	<1.00	<1.00	4.2	<0.400	1.2	141	2.1	<0.500	117	1.2	<0.500	233	1.18
	12/5/2018	<2.00	<10.0	<2.00	<2.00	3.0	<0.800	1.1	147	1.9	<1.00	139	0.8	<1.00	210	0.85
	3/22/2019	<2.00	<10.0	<2.00	<2.00	7.74	<0.800	2.18	142	3.18	<1.00	139	2.09	<1.00	383	<0.800

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-26 (continued)	6/3/2019	<20.0	<25.0	<5.00	<5.00	5.75	<2.00	<2.00	92.2	2.35	<2.50	148	2.10	<2.50	336	<2.00
	9/26/2019	<5.00	<25.0	<5.00	<5.00	5.14	<2.00	<2.00	104	2.6	<2.50	133	<2.00	<2.50	272	<2.00
	12/3/2019	<5.00	<25.0	<5.00	<5.00	2.63	<2.00	<2.00	95	<2.00	<2.50	137	<2.00	<2.50	216	<2.00
	3/11/2020	<5.00	<25.0	<5.00	<5.00	3.65	<2.00	<2.00	59.7	<2.00	<2.50	79.1	<2.00	<2.50	205	<2.00
	6/17/2020	<2.00	<10.0	<2.00	<2.00	5.16	<0.800	1.38	64.2	1.9	<1.00	143	2.20	<1.00	299	<0.800
	10/7/2020	<5.00	<25.0	<5.00	<5.00	2.64	<2.00	<2.00	62.8	<2.00	<2.50	118	<2.00	<2.50	208	<2.00
	12/9/2020	<10.0	<25.0	<5.00	<5.00	3.34	<2.00	<2.00	64.3	<2.00	<2.50	147	<2.00	<2.50	218	<2.00
	3/4/2021	<1.00	<5.00	<1.00	<1.00	5.92	<0.400	1.89	89.4	2.39	<0.500	151	2.04	<0.500	320	<0.400
	6/17/2021	<2.50	<12.5	<2.50	<2.50	4.35	<1.00	1.43	72.3	1.92	<1.25	132	2.06	<1.25	366	<1.00
	9/15/2021	<5.00	<25.0	<5.00	<5.00	3.33	<2.00	<2.00	71.7	<2.00	<2.50	162	<2.00	<2.50	257	<2.00
	12/7/2021	<5.00	<25.0	<5.00	<5.00	2.74	<2.00	<2.00	43.5	<2.00	<2.50	205	<2.00	<2.50	255	<2.00
	3/8/2022	<1.00	<5.00	<1.00	<1.00	2.56	<0.400	0.930	44	1.18	<0.500	184	1.81	<0.500	247	<0.400
	6/15/2022	<5.00	<25.0	<5.00	<5.00	4.30	<2.00	<2.00	63.8	<2.00	<2.50	283	2.40	<2.50	362	<2.00
	9/14/2022	<5.00	<25.0	<5.00	<5.00	2.4	<2.00	<2.00	31.9	<2.00	<2.50	87.9	<2.00	<2.50	151	<2.00
	12/8/2022	<2.00	<10.0	<2.00	<2.00	1.86	<0.800	<0.800	28.1	<0.800	<1.00	129	0.98	<1.00	156	<0.800
	3/15/2023	<5.00	<25.0	<5.00	<5.00	2.70	<2.00	<2.00	35.9	<2.00	<2.50	161	<2.00	<2.50	203	<2.00
	6/14/2023	<5.00	<25.0	<5.00	<5.00	3.50	<2.00	<2.00	43.7	<2.00	<2.50	141	<2.00	<2.50	219	3.05
	9/14/2023	<5.00	<25.0	<5.00	<5.00	3.25	<2.00	<2.00	44.3	<2.00	<2.50	121	<2.00	<2.50	208	<1.00
	12/15/2023	<2.00	<10.0	<2.00	<2.00	3.20	<0.800	0.880	48.7	1.10 Q	<1.00	211	1.48	<1.00	253	<0.400
	3/6/2024	<2.50	<12.5	<2.50	<2.50	2.60	<1.00	<1.00	31.0	<1.00	<1.25	133	1.38	<1.25	221	<0.500
	6/14/2024	<2.50	<12.5	<2.50	<2.50	2.38	<1.00	<1.00	37.4	1.32	<1.25	160	1.40	<1.25	204	<0.500
MW-32s	3/24/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.79	<0.50	--	<0.50	<0.50
	8/18/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/6/1908	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	9/17/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	12/9/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	7/2/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/9/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	0.94	<0.5	<0.5	1.1	<0.5
	9/15/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/8/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-32s (continued)	9/13/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/14/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/11/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/16/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/25/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/11/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/19/2015	<0.50	<0.50	0.77	<0.50	1.5	<0.50	<0.50	73.5	2.5	<0.50	<0.50	3.5	<0.50	52	<0.50
	6/17/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/7/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/14/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/14/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/10/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/22/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	10/1/2018	<2.0	<2.0	<0.50	<0.50	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	12/10/2018	<0.500	<2.50	<0.500	<0.500	0.860	<0.400	<0.400	16.5	<0.400	<0.500	14.7	<0.400	<0.500	5.99	<0.400
	3/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/26/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/13/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	10/9/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/2/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/9/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	3/17/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
MW-32i	11/10/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	7	<0.50	<0.50	8.2	<0.50	<0.50	3.4	<0.50
	3/17/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.93	<0.400	<0.500	3.68	<0.400	<0.500	1.43	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MW-F	6/14/1995	--	<10	<5	<5	<5	5	<5	15	<5	--	<5	<5	--	<5	<10
	2/27/2001	<1	<5	<0.50	<0.50	0.754	<0.50	<0.50	5.99	<0.50	<0.50	0.506	<1	--	1.18	<0.50
	5/29/2001	<1	<5	<0.50	<0.50	0.58	<0.50	<0.50	6.47	<0.50	<0.50	<0.50	<1	--	0.585	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	6.5	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	1.44	<0.50	<0.50	17.9	<0.50	<0.50	<0.50	<1	--	0.709	<0.50
	3/18/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/31/2002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/28/2002	<1	<0.50	<0.50	<1	1.12	0.65	<0.50	9.54	<0.50	<0.50	<0.50	<0.50	--	0.69	<0.50
	11/8/2002	<1	<0.50	<0.50	<1	1.15	0.81	<0.50	9.86	<0.50	<0.50	<0.50	<0.50	--	0.65	<0.50
	1/23/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/29/2003	<1	<0.50	<0.50	<1	1.11	0.83	<0.50	10.6	<0.50	<0.50	<0.50	<0.50	--	0.62	<0.50
	11/10/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/26/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/17/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/24/2005	<1	<0.50	<0.50	<1	0.87	0.64	<0.50	8.31	<0.50	<0.50	0.52	<0.50	--	0.74	<0.50
	5/17/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/18/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/14/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/13/2007	<1	<0.50	<0.50	<1	0.5	0.52	<0.50	5.93	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	9/18/2008	<1	<0.500	<0.500	<1	0.85	0.72	<0.500	8.57	<0.500	<0.500	<0.500	<0.500	<0.500	0.57	<0.500
EW-1	4/25/1991	--	<2	--	--	35	20	--	750	--	--	9,100	280	--	440	9.3
	11/17/1993	--	<200	---	--	<100	<100	--	1,700	--	--	8,600	<100	--	480	<200
	9/1/1995	<25	<50	<25	<25	<25	<25	<25	140	<25	<25	2,400	74	--	340	<50
	9/24/1996	<1	<4	3	<0.4	8.5	2.1	<0.40	260	6.2	<0.40	49	34	--	29	89
	12/2/1996	0.7	<0.50	1.9	<0.20	5.7	5	1	530	3.3	<0.20	310	86	--	98	10
	11/12/1997	<2.5	<5	<2.5	<2.5	5.05	3.38	<2.5	68.5	4.91	<2.5	111	5.1	--	47.4	9.2
	8/11/1999	<10	<50	<5	<5	<5	<5	<5	14.5	<5	<5	369	<10	--	39.9	<5
	11/16/1999	<5	<12.5	<2.5	<5	<2.5	3.15	<2.5	41.7	3	<2.5	314	6.9	--	35.5	5.1
	2/29/2000	<2	<10	<1	<1	<1	6.42	<1	13.7	<1	<1	97.3	3.48	--	20.8	<1
	6/27/2000	<2	<10	2.12	<1	<1	6.42	<1	17.5	<1	<1	293	5.37	--	35.1	<1
	8/31/2000	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	31.9	<2.5	<2.5	325	<5	--	38.4	<2.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
EW-1 (continued)	1/30/2000	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	45.6	<2.5	<2.5	380	5.86	--	53.9	<2.5
	2/27/2001	<2	<10	1.42	<1	2.51	2.83	<1	35	<1	<1	240	7.98	--	47.5	2.43
	5/29/2001	<10	<50	<5	<5	<5	<5	<5	22.4	<5	<5	338	<10	--	61.1	<5
	9/25/2001	<5	<5	<5	<5	<5	<5	<5	14	<5	<5	320	9.5	--	61	<5
	12/17/2001	<2	<10	<1	<1	1.19	<1	<1	25.8	<1	<1	217	12.8	--	47.1	<1
	3/19/2002	<2	<1	<1	<2	1.04	<1	<1	17.5	<1	<1	323	5.66	--	46.1	<1
	5/30/2002	<2	<1	1.38	<2	1	1.68	<1	23.5	<1	<1	319	6.46	--	39.9	<1
	8/29/2002	<2	<1	1.36	<2	2.44	1.24	<1	20.4	<1	<1	307	3.38	--	37.8	<1
	11/8/2002	<2	<1	1.46	<2	3.02	3.96	<1	28.4	<1	<1	274	5.54	--	50.2	<1
	1/23/2003	<2	<1	1.36	<2	2.34	<1	<1	17	<1	<1	252	5.06	--	51.9	<1
	5/30/2003	<2	<1	5.22	<2	<1	<1	<1	6.12	<1	<1	255	5.06	--	41.1	<1
	11/10/2003	<5	<5	<5	<5	<5	<5	<5	9	<5	<5	85.8	<5	--	16.2	<5
	1/27/2004	<1	<0.50	2.07	<1	0.87	0.78	<0.50	5.2	<0.50	<0.50	151	4.26	--	37.6	<0.50
	5/4/2004	<1	<1	4.73	<1	<1	1.25	<1	4.36	<1	<1	168	3.09	--	30.8	<1
	8/17/2004	<1	<0.50	3.76	<0.50	0.81	1.86	<0.50	6.83	<0.50	<0.50	144	1.73	--	23.2	<0.50
	11/17/2004	<2.5	<2.5	4	<2.5	<2.5	<2.5	<2.5	9.6	<2.5	<2.5	180	3.6	--	33	<2.5
	5/18/2005	<2	<1	<1	<2	<1	<1	<1	8.28	<1	<1	207	<1	--	23.2	2.3
	11/14/2005	<2	<1	1.06	<2	1.36	2.7	<1	11.1	<1	<1	187	<1	--	26.1	<1
	6/5/2006	<1	<1	2.4	<1	<1	<1	<1	6.18	<1	<1	102	3.55	--	19.1	<1
	12/6/2006	<1	<0.50	2.07	<1	1.13	<0.50	<0.50	8.98	<0.50	<0.50	133	2.1	--	28.3	<0.50
	9/12/2007	<1	<0.50	2.66	<1	0.51	1.14	<0.50	6.28	<0.50	<0.50	76.9	1.47	--	18.3	<0.50
	3/6/2008	<1	<0.500	1.71 J	<1	0.64	1.04	<0.500	5.75	<0.500	<0.500	80.9	1.45	<0.500	19.9	<0.500
	9/19/2008	<5	<2.50	<2.50	<5	<2.50	<2.50	<2.50	14.6	<2.50	<2.50	86.1	<2.50	<2.50	20.8	<2.50
	3/26/2009	<0.50	<0.50	3.6	<0.50	<0.50	0.76	<0.50	3.8	<0.50	<0.50	81	1	<0.50	14	<0.50
	9/17/2009	<0.50	<0.50	3.4	<0.50	0.63	<0.50	<0.50	8.3	<0.50	<0.50	100	0.74	<0.50	17	<0.50
	3/19/2010	<0.50	<0.50	3.5 BE	<0.50	<0.50	<0.50	0.52	4.1	<0.50	<0.50	89	1.5	<0.50	22	<0.50
	9/23/2010	<0.50	<0.50	1.7 BE	<0.50	0.86	0.94	<0.50	10	<0.50	<0.50	87	0.64	<0.50	17	<0.50
	3/10/2011	<0.50	<0.50	5.2	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	67	0.89	<0.50	13	<0.50
	9/16/2011	<0.50	<0.50	2.7	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	75	0.69	<0.50	9.9	<0.50
	3/12/2012	<0.50	<0.50	4.4	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	52	0.68	<0.50	13	<0.50
	9/13/2012	<0.50	<0.50	1.7	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	<0.50	60	0.58	<0.50	8.6	<0.50
	3/15/2012	<0.50	<0.50	2.4	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	78	0.63	<0.50	12	<0.50
	9/19/2013	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	63	0.57	<0.50	14	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	<0.50	<0.50	32	1.6	<0.50	12	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
EW-1	9/27/2014	Insufficient water for sampling during monitoring event.														
(continued)	9/21/2015	<0.50	<0.50	2	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	45.3	0.56	<0.50	12.5	<0.50
	3/8/2016	<0.50	<2	2	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	<0.50	62.6	0.83	<0.50	14.3	<0.50
	9/29/2016	<0.50	<2	1.1	<0.50	<0.50	1.5	<0.50	5.4	<0.50	<0.50	38.6	<0.50	<0.50	10.5	<0.50
	3/30/2017	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.7	<0.50	<0.50	2.4	<0.50
	9/28/2017	<2.0	<2.0	2.4	<0.50	<0.50	<1.0	<0.50	1.8	<0.50	<0.50	32.4	<0.50	<0.50	7.2	<0.50
	11/9/2017	<2.0	<2.0	0.91	<0.50	<0.50	<0.50	<0.50	3.30	<0.50	<0.50	33.0	0.66	<0.50	7.3	<0.50
	7/1/2018	<0.500	<2.50	1.94	<0.500	0.134 J	<0.500	<0.500	1.15 B	<0.500	<0.500	30.7	0.56	<0.500	7.6	<0.500
	9/27/2018	<1.00	<5.00	1.15	<1.00	0.41	1.03	<0.400	3.18	<0.400	<0.500	29.7	0.41	<0.500	8.4	<0.400
	3/25/2019	<1.00	<5.00	1.85	<1.00	<0.400	<0.400	<0.400	1.70	<0.400	<0.500	30.7	0.676	<0.500	11.2	<0.400
	6/4/2019	<1.00	<5.00	1.45	<1.00	<0.400	0.590	<0.400	2.56	<0.400	<0.500	27.4	0.690	<0.500	9.53	<0.400
	9/26/2019	<1.00	<5.00	1.54	<1.00	<0.400	<0.4	<0.400	2.39	<0.400	<0.500	24.4	0.482	<0.500	7.4	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	0.552	<0.400	3.34	<0.400	<0.500	28.3	0.488	<0.500	9.99	<0.400
	3/11/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.811	<0.400	<0.500	15	<0.400	<0.500	5.04	<0.400
	6/17/2020	<1.00	<5.00	1.33	<1.00	<0.400	<0.400	<0.400	1.20	<0.400	<0.500	29.9	0.900	<0.500	6.78	<0.400
	10/7/2020	<1.00	<5.00	1.36	<1.00	<0.400	<0.400	<0.400	3.30	<0.400	<0.500	44.7	0.449	<0.500	10.6	<0.400
	12/9/2020	<2.00	<5.00	1.16	<1.00	<0.400	<0.400	<0.400	1.61	<0.400	<0.500	32.2	0.766	<0.500	8.64	<0.400
	3/2/2021	<1.00	<5.00	3.05	<1.00	<0.400	<0.400	<0.400	0.609	<0.400	<0.500	37.8	0.938	<0.500	15	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	21.6	0.711	<0.500	8.39	<0.400
	9/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.62	<0.400	<0.500	24.2	0.406	<0.500	8.06	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	24.5	1.330	<0.500	8.36	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	18.2	0.530	<0.500	6.02	<0.400
	6/16/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	9.19	0.400	<0.500	2.51	<0.400
	9/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.17	<0.400	<0.500	29.2	0.52	<0.500	7.36	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.68	<0.400	<0.500	23.2	0.4	<0.500	5.76	<0.400
	3/14/2023	<1.00	<5.00	1.42	<1.00	<0.400	<0.400	<0.400	0.88	<0.400	<0.500	26.7	0.59	<0.500	7.81	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.73	<0.400	<0.500	19.3	0.41	<0.500	6.22	<0.400
	9/12/2023	<4.00	<5.00	1.32	<1.00	<0.400	<0.400	<0.400	0.850	<0.400	<0.500	19.9	0.480	<0.500	5.52	<0.200
	12/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.740	<0.400	<0.500	21.4	1.04	<0.500	5.83	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
S-1	8/10/1999	<1	<5	<0.50	<1	<0.50	<0.50	<0.50	2.63	<0.50	<0.50	7.81	1.3	--	20.6	<0.50
	2/29/2000	<1	<5	<0.50	<0.50	0.761	<0.50	<0.50	2.21	<0.50	<0.50	60.6	2.98	--	24.4	<0.50
	6/28/2000	<5	<25	<2.5	<2.5	<2.5	<2.5	2.7	58.2	<2.5	<2.5	749	14.5	--	232	<2.5
	8/31/2000	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	4.98	<2.5	<2.5	313	5.14	--	60.4	<2.5
	11/30/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.61	<0.50	<0.50	9.78	1.95	--	29.8	<0.50
	2/27/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	0.551	1.66	<0.50	<0.50	13.5	2.26	--	45.2	<0.50
	5/30/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	0.974	<0.50	<0.50	7.38	<1	--	12.6	<0.50
	9/25/2001	<2.5	<2.5	<2.5	<2.5	2.6	<2.5	4	2.7	<2.5	<2.5	39	18	--	210	<2.5
	3/19/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.21	<0.50	--	3.73	<0.50
	5/30/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.45	<0.50	--	10.4	<0.50
	11/7/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.34	<0.50	<0.50	8.71	1.02	--	19.7	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	6.15	0.56	--	13	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	<0.500	--	8.67	<0.50
	11/11/2003	<1	<1	<1	<1	<1	<1	<1	1.85	<1	<1	4.22	<1	--	13.2	<1
	1/26/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.57	0.67	--	15.5	<0.50
	5/4/2004	<1	<1	<1	<1	<1	<1	<1	1.17	<1	<1	4.07	<1	--	10.6	<1
	11/15/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	8.4	0.82	--	18	<0.50
	2/1/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	1.89	<0.50	--	2.87	<0.50
	5/18/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	2.24	<0.50	<0.50	3.73	<0.50	--	8.39	<0.50
	5/23/2007	<1	<1	<1	<1	<1	<1	<1	3.63	<1	<1	4.02	<1	--	6.85	<1
	12/13/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.61	<0.50	<0.50	4.87	<0.50	--	8.44	<0.50
	3/5/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	5.15	<0.500	<0.500	<0.500	4.14	<0.500	<0.500	<0.500
	6/25/2008	<1	<1	<1	<1	<1	<1	<1	1.67	<1	<1	<1	1.37	<1	<1	<1
	9/17/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	5.55	<0.500	<0.500	2.81	<0.500	<0.500	6.07	<0.500
	12/9/2008	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	0.62	<0.50	<0.50	1.4	<0.50
	3/25/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.4	<0.50	<0.50	2.7	<0.50
	6/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.91	<0.50	<0.50	0.81	<0.50	<0.50	1.8	<0.50
	9/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.7	<0.50	<0.50	5	<0.50
	12/16/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	<0.50	1.7	<0.50	<0.50	6.1	<0.50
	3/17/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1	<0.50
	7/2/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/22/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.66	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5
	12/8/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5	0.77	<0.5	<0.5	3	<0.5
	3/9/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
S-1	6/8/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.66	<0.5
(continued)	9/14/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1.4	<0.50	<0.50	4	<0.50
	12/6/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	1.3	<0.50	<0.50	3.1	<0.50
	3/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	<0.50	<0.50	0.74	<0.50	<0.50	1.8	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.98	<0.5	<0.5	0.94	<0.5	<0.5	3.5	<0.5
	9/14/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	<0.50	<0.50	0.88	<0.50	<0.50	2.6	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	0.96	<0.50	<0.50	3.8	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.78	<0.50	<0.50	1.5	<0.50
	6/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	2.2	<0.50
	9/20/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	<0.50	1.8	<0.50	<0.50	5.4	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	1.2	<0.50	<0.50	5.1	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	<0.50	<0.50	2.1	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1.3	<0.50	<0.50	4.3	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.3	<0.50	<0.50	4.9	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	1.4	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	1.6	<0.50	<0.50	5.1	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	<0.50
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	0.73	<0.50	<0.50	3	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	<0.50	<0.50	0.54	<0.50	<0.50	1.6	<0.50
	3/27/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	6/13/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/28/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	6/28/2018	<0.500	<2.50	<0.500	<0.500	1.01	<0.500	0.336 J	3.62	<0.500	<0.500	3.16	0.90	<0.500	24.20	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	0.51	<0.400	<0.400	2.58	<4.00	<0.500	2.11	0.41	<0.500	10.40	<0.400
	12/5/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.10	<4.00	<0.500	1.94	<0.400	<0.500	7.39	<0.400
	3/19/2019	<1.00	<5.00	<1.00	<1.00	0.764	<0.400	<0.400	6.27	<0.400	<0.500	0.921	<0.400	<0.500	3.60	<0.400
	6/5/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.11	<0.400	<0.500	0.783	<0.400	<0.500	2.17	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.86	<0.400	<0.500	1.1	<0.400	<0.500	2.71	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
S-1 (continued)	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.988	<0.400	<0.500	0.971	<0.400	<0.500	2.86	<0.400
	3/10/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	1.06	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.440	<0.400
	10/7/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.95	<0.400	<0.500	1.20	<0.400	<0.500	2.06	<0.400
	12/8/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	1.30	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.2	<0.400	<0.500	0.852	<0.400	<0.500	1.60	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.849	<0.400	<0.500	0.571	<0.400	<0.500	0.881	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.453	<0.400	<0.500	0.97	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.548	<0.400	<0.500	1.20	<0.400
	3/8/2022	<1.00	<5.00	<1.00	<1.00	0.440	<0.400	<0.400	3.94	<0.400	<0.500	1.12	<0.400	<0.500	1.92	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.30	<0.400	<0.500	1.59	<0.400	<0.400	1.44	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.98	<0.400	<0.500	1.68	<0.400	<0.500	1.14	<0.400
	3/16/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.45	<0.400	<0.500	0.87	<0.400	<0.500	0.46	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/14/2023	<1.00	<5.00	<1.00	<1.00	0.620	<0.400	<0.400	5.89	<0.400	<0.500	1.08	<0.400	<0.500	1.69	<0.200
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	0.420	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.470	<0.400	<0.500	<0.400	<0.200
S-2	8/11/1999	<1	<5	<0.50	<0.50	2.37	<0.50	<0.50	<0.50	<0.50	<0.50	1.7	<1	--	0.843	<0.50
	11/15/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	<0.50	4.4	<0.50	--	1.6	<0.50
	12/12/2012	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/13/2013	<0.50	<0.50	<0.50	<0.50	3.4	<0.50	<0.50	2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/12/2013	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/20/2013	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/12/2013	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2014	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/24/2014	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/27/2014	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/9/2014	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	4.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	5.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2015	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	3	<0.50	<0.50	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	6/16/2016	<0.50	<2	<0.50	<0.50	4.3	<0.50	<0.50	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/26/2016	<0.50	<2	<0.50	<0.50	6.2	<0.50	<0.50	11	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	12/13/2016	<0.50	<2	<0.50	<0.50	3.5	<0.50	<0.50	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
S-2	3/27/2017	<0.5	<2	<0.5	<0.5	2.6	<0.5	<0.5	4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
(continued)	6/13/2017	<2.0	<2.0	<0.50	<0.50	3.3	<1.0	<0.50	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	9/28/2017	<2.0	<2.0	<0.50	<0.50	8.0	<1.0	<0.50	13.2	<0.50	<0.50	<0.50	0.86	<0.50	0.51	<0.50
	11/8/2017	<2.0	<2.0	<0.50	<0.50	7.1	<0.50	<0.50	12.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	3/20/2018	<0.500	<2.50	<0.500	<0.500	3.7	<0.500	<0.500	5.9	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
	6/28/2018	<0.500	<2.50	<0.500	<0.500	4.1	<0.500	<0.500	23.2	0.56	<0.500	<0.500	1.00	<0.500	2.34	<0.500
	9/26/2018	<1.00	<5.00	<1.00	<1.00	10.0	<0.400	<0.400	50.9	0.70	<0.500	<4.00	1.74	<0.500	4.00	0.42
	12/5/2018	<1.00	<5.00	<1.00	<1.00	7.0	<0.400	<0.400	28.5	<4.00	<0.500	<0.400	<0.400	<0.500	2.18	<0.400
	3/19/2019	<1.00	<5.00	<1.00	<1.00	2.65	<0.400	<0.400	8.23	<4.00	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	6/5/2019	<1.00	<5.00	<1.00	<1.00	5.38	<0.400	<0.400	19.8	<0.400	<0.500	<0.400	<0.400	<0.500	0.925	<0.400
	9/25/2019	<1.00	<5.00	<1.00	<1.00	8.88	<0.400	<0.400	49.6	0.64	<0.500	<0.400	0.94	<0.500	2.85	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	7.12	<0.400	<0.400	30.5	<0.400	<0.500	<0.400	<0.400	<0.500	1.75	<0.400
	3/10/2020	<1.00	<5.00	<1.00	<1.00	6.54	<0.400	<0.400	26.4	0.52	<0.500	<0.400	<0.400	<0.500	1.15	<0.400
	6/17/2020	<1.00	<5.00	<1.00	<1.00	4.24	<0.400	<0.400	15.5	<0.400	<0.500	<0.400	<0.400	<0.500	0.58	<0.400
	10/7/2020	<1.00	<5.00	<1.00	<1.00	10.2	<0.400	<0.400	54.4	0.539	<0.500	<0.400	1.01	<0.500	3.08	0.448
	12/8/2020	<2.00	<5.00	<1.00	<1.00	7.72	<0.400	<0.400	31.4	<0.400	<0.500	<0.400	<0.400	<0.500	1.13	<0.400
	3/3/2021	<1.00	<5.00	<1.00	<1.00	8	<0.400	<0.400	37.2	0.578	<0.500	<0.400	<0.400	<0.500	1.44	<0.400
	6/15/2021	<1.00	<5.00	<1.00	<1.00	6.15	<0.400	<0.400	29.9	<0.400	<0.500	<0.400	<0.400	<0.500	1.17	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	8.15	<0.400	<0.400	45.2	0.603	<0.500	<0.400	0.65	<0.500	2.16	<0.400
	12/8/2021	<1.00	<5.00	<1.00	<1.00	6.32	<0.400	<0.400	35.9	<0.400	<0.500	<0.400	<0.400	<0.500	1.38	<0.400
	3/28/2022	<1.00	<5.00	<1.00	<1.00	5.72	<0.400	<0.400	28.6	<0.400	<0.500	<0.400	0.410	<0.500	1.07	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	5.13	<0.400	<0.400	28.3	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.400
	9/13/2022	<1.00	<5.00	<1.00	<1.00	6.43	<0.400	<0.400	39.8	0.810	<0.500	<0.400	0.82	<0.500	2.06	<0.400
	12/7/2022	<1.00	<5.00	<1.00	<1.00	9.13	<0.400	<0.400	55.4	0.87	<0.500	<0.400	0.41	<0.500	3.05	<0.400
	3/14/2023	<1.00	<5.00	<1.00	<1.00	9.16	<0.400	<0.400	50.4	0.61	<0.500	<0.400	<0.400	<0.500	1.74	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	5.99	<0.400	<0.400	36.2	0.51	<0.500	<0.400	0.65	<0.500	1.78	<0.400
	9/14/2023	<1.00	<5.00	<1.00	<1.00	9.75	<0.400	<0.400	57.0	0.950	<0.500	<0.400	0.920	<0.500	3.18	0.290
	12/13/2023	<1.00	<5.00	<1.00	<1.00	9.75	<0.400	<0.400	57.6	0.980	<0.500	<0.400	<0.400	<0.500	1.52	0.320
	3/6/2024	<1.00	<5.00	<1.00	<1.00	8.24	<0.400	<0.400	39.3	0.510	<0.500	<0.400	0.550	<0.500	1.12	0.280
	6/12/2024	<1.00	<5.00	<1.00	<1.00	5.70	<0.400	<0.400	30.5	0.760	<0.500	<0.400	<0.400	<0.500	0.570	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-3(43)	6/28/2000	<50	<250	<25	<25	278	<25	55.9	4,270	<25	<25	734	<50	--	1,840	<25
	8/30/2000	<200	<1	<100	<100	420	<100	116	8,850	<100	<100	5,940	<200	--	3,040	<100
	11/29/2000	<100	<500	<50	<50	249	<50	76.2	4,560	<50	<50	1,210	<100	--	1,140	<50
	2/27/2001	<100	<500	<50	<50	697	<50	164	14,000	<50	<50	148	<100	--	1,390	133
	5/31/2001	<100	<500	<50	<50	<50	<50	<50	5,870	<50	<50	130	<100	--	599	<50
	9/24/2001	<13	<13	<13	<13	150	<13	32	4,700	<13	<13	310	<13	--	450	25
	12/18/2001	<50	<250	<25	<25	153	<25	33.3	3,600	<25	<25	276	<50	--	568	<25
	3/19/2002	<100	<50	<50	<100	310	<50	103	6,700	<50	<50	2,090	<50	--	1,720	86
	5/29/2002	<50	<25	<25	<50	188	<25	39	4,700	<25	<25	470	<25	--	624	37.5
	8/29/2002	<1	<0.50	<0.50	<1	3.72	<0.50	0.84	94.7	0.54	<0.50	34.9	0.75	--	35.7	1.46
	11/11/2002	<100	<50	<50	<100	183	<50	<50	4,810	<50	<50	757	<50	--	831	51
	1/23/2003	<100	<50	<50	<100	378	<50	76	10,500	<50	<50	782	<50	--	1,290	109
	5/28/2003	<100	<50	<50	<100	402	<50	72	9,510	<50	<50	270	<50	--	841	114
	11/11/2003	<50	<50	<50	<50	252	<50	<50	9,710	<50	<50	516	<50	--	1,020	58
	1/27/2004	<50	<25	<25	<50	290	<25	54.5	8,160	53.5	<25	393	<25	--	808	95
	5/3/2004	<100	<100	<100	<100	370	<100	<100	12,300	<100	<100	830	<100	--	1,520	111
	8/17/2004	<100	<50	<50	<100	401	<50	114	12,700	109	<50	1,540	<50	--	2,340	151
	11/15/2004	<120	<120	<120	<120	270	<120	<120	9,600	<120	<120	1,400	<120	--	1,600	<120
	3/24/2005	<100	<50	<50	<100	481	<50	148	15,600	135	<50	1,390	<50	--	2,090	266
	5/16/2005	<50	<25	<25	<50	327	<25	89	9,670	83	<25	802	<25	--	1,410	157
	5/17/2005	<100	<50	<50	<100	353	<50	86	10,600	94	<50	920	<50	--	1,660	173
	11/17/2005	<100	<50	<50	<100	392	<50	121	13,400	133	<50	1,310	<50	--	2,280	186
	6/6/2006	<100	<100	<100	<100	385	<100	<100	11,800	115	<100	628	<100	--	1,370	192
	12/6/2006	<100	<50	<50	<100	256	<50	72	9,960	92	<50	843	<50	--	1,260	155
	5/22/2007	<100	<100	<100	<100	439	<100	119	14,200	152	<100	910	<100	--	1,920	245
	9/11/2007	<100	<50	<50	<100	303	<50	109	11,700	128	<50	1,100	<50	--	2,060	189
	12/12/2007	<100	<50	<50	<100	270	<50	75	8,740	93	<50	1,010	<50	--	1,540	167
	3/5/2008	<50	<25	<25	<50	370	<25	128	6,740	220	<25	1,480	36	<25	2,350	234
	9/16/2008	<100	<50	<50	<100	302	<50	112	10,400	139	<50	2,700	<50	<50	2,500	171
	12/8/2008	<4	<4	<4	<4	190	<4	63	6,000	78	<4	1,300	19	<4	1,200	100
	3/25/2009	<15	<15	<15	<15	110	<15	66	3,500	34	<15	3,600	49	<15	2,100	49
	9/15/2009	<15	<15	<15	<15	140	<15	74	4,200	45	<15	4,300	44	<15	2,300	84
	12/14/2009	<15	<15	<15	<15	140	<15	46	4,000	55	<15	1,500	15	<15	1,100	67
	3/17/2010	<15	<15	<15	<15	160	<15	63	4,600	44	<15	2,800	32	<15	1,900	78

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-3(43) (continued)	6/14/2010	<25	<25	<25	<25	220	<25	46	5,400	69	<25	790	<25	<25	900	85
	9/21/2010	<15	<15	<15	<15	130	<15	55	3,800	43	<15	2,900	37	<15	1,900	68
	12/7/2010	<15	<15	<15	<15	190	<15	63	5,500	69	<15	2,500	23	<15	1,800	96
	3/8/2011	<20	<20	<20	<20	170	<20	52	4,600	56	<20	1,400	<20	<20	1,300	86
	6/6/2011	<15	<15	<15	<15	190	<15	36	4,700	71	<15	610	<15	<15	790	97
	9/13/2011	<20	<20	<20	<20	290	<20	78	8,000	160	<20	900	<20	<20	1,800	160
	3/8/2012	<4	<40	<40	<40	340	<40	62	9,500	150	<40	240	<40	<40	690	890
	6/21/2012	<20	<20	<20	<20	220	<20	25	4,400	76	<20	74	<20	<20	260	1,100
	9/12/2012	<20	<20	<20	<20	280	<20	72	8,800	180	<20	360	<20	<20	970	890
	12/11/2012	<20	<20	<20	<20	220	<20	40	6,100	110	<20	160	<20	<20	430	680
	3/12/2013	<20	<20	<20	<20	220	<20	21	4,700	74	<20	110	<20	<20	340	1,600
	6/11/2013	<20	<20	<20	<20	190	<20	<20	3,900	56	<20	78	<20	<20	260	1,100
	9/17/2013	<15	<15	<15	<15	190	<15	21	4,600	66	<15	100	<15	<15	350	1,100
	12/10/2013	<15	<15	<15	<15	210	<15	18	3,600	54	<15	95	<15	<15	270	1,800
	3/18/2014	<20	<20	<20	<20	150	<20	<20	3,600	40	<20	93	<20	<20	260	440
	6/26/2014	<7	<7	<7	<7	120	<7	14	2,000	14	<7	21	<7	<7	57	480
	9/23/2014	<15	<15	<15	<15	190	<15	35	4,700	69	<15	120	<15	<15	420	550
	12/12/2014	<7	<7	<7	<7	200	<7	23	4,000	52	<7	100	<7	<7	350	810
	3/19/2015	<12.5	<12.5	<12.5	<12.5	131	<12.5	<12.5	2,450	16.6	<12.5	31.7	<12.5	<12.5	129	249
	6/18/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	<0.50	59.1	<0.50	<0.50	0.84	<0.50	<0.50	2.8	3.1
	9/21/2015	<10	<10	<10	<10	124	<10	14.1	2,810	24.8	<10	53.5	<10	<10	171	129
	12/8/2015	<0.50	<0.50	<0.50	<0.50	92	<0.50	<0.50	1,580	11.5	<0.50	26.2	<0.50	<0.50	88	230
	3/9/2016	<10	<40	<10	<10	93.9	<10	<10	1,700	12.4	<10	24.1	<10	<10	81.9	209
	6/17/2016	<8.3	<33.3	<8.3	<8.3	163	<8.3	26.6	3,130	36.1	<8.3	64.6	<8.3	<8.3	248	288
	9/30/2016	<8.3	<33.3	<8.3	<8.3	81.9	<8.3	13.5	1,980	24.2	<8.3	230	<8.3	<8.3	366	52
	12/16/2016	<8.4	<33.4	<8.4	<8.4	92.6	<8.4	9.5	1,810	20.1	<8.4	64.1	<8.4	<8.4	171	239
	3/31/2017	<8.4	<33.4	<8.4	<8.4	90.8	<8.4	12.5	1,430	15.2	<8.4	45.8	<8.4	<8.4	119	348
	6/12/2017	<8.3	<33.3	<8.3	<8.3	173	<8.3	16.7	2,620	18.7	<8.3	24.4	<8.3	<8.3	116	681
	9/29/2017	<2.5	<10.0	<2.5	<2.5	60	<2.5	6.9	901	12.9	<2.5	70.7	<2.5	<2.5	126	117
	11/7/2017	<10.0	<10.0	<2.5	<2.5	153	<2.5	13.7	2,350 J-	26.6	<2.5	108	<2.5	<2.5	211	181
	3/22/2018	<0.500	<2.50	<0.500	<0.500	192	<0.500	18.0	2,450	34.9	<0.500	80	0.8	0.200 J	278	236
	7/1/2018	<0.500	<2.50 J3	<0.500	<0.500	116	<0.500	13.8	1,880	32.8	<0.500	107	0.6	<0.500	246	118
	9/28/2018	<20.0	<100	<20.0	<20.0	141	<8.00	27.8	3,150	47.4	<10.0	252	<8.00	<10.0	528	134
	12/4/2018	<1.00	<5.00	<1.00	<1.00	148	<0.400	22.5	2,750	48.1	<0.500	146	1.1	<0.500	388	129

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-3(43) (continued)	3/26/2019	<40.0	<100	<20.0	<20.0	160	<8.00	22.3	3,210	42.2	<10.0	145	<8.00	<10.0	372	105
	6/7/2019	<20.0	<100	<20.0	<20.0	169	<8.00	26.5	3090	40.8	<10.0	115	<8.00	<10.0	315	145
	9/27/2019	<20.0	<100	<20.0	<20.0	156	<8.00	30.5	3240	53.9	<10.0	212	<8.00	<10.0	434	113
	12/4/2019	<20.0	<100	<20.0	<20.0	124	<8.00	17.5	2860	40.9	<10.0	162	<8.00	<10.0	398	11.8
	3/11/2020	<25.0	<125	<25.0	<25.0	157	<10.0	29.7	3230	60.4	<12.5	228	<10.0	<12.5	495	157
	6/16/2020	<25.0	<125	<25.0	<25.0	114	<10.0	21.8	2520	31.5	<12.5	116	<10.0	<12.5	264	152
	10/6/2020	<25.0	<125	<25.0	<25.0	124	<10.0	26.0	2980	45.5	<12.5	219	<10.0	<12.5	507	48.2
	12/10/2020	<100	<250	<50	<50	131	<20	<20	2620	34.300	<25	151	<20	<25	294	40.6
	3/4/2021	<10.0	<50.0	<10.0	<10.0	128	<0.400	29.00	2840	38.500	<0.500	135	<0.400	<0.500	388	161
	6/16/2021	<25.0	<125	<25.0	<25.0	103	<10.0	20.80	2690	34.900	<12.5	90.5	<10.0	<12.5	297	153
	9/14/2021	<25.0	<125	<25.0	<25.0	152	<10.0	31.20	3550	49.600	<12.5	170	<10.0	<12.5	464	61.6
	12/7/2021	<25.0	<125	<25.0	<25.0	87.6	<10.0	17.20	2280	61.200	<12.5	139	<10.0	<12.5	338	177
	3/10/2022	<10.0	<50.0	<10.0	<10.0	114	<4.00	23.5	2,250	28.7	<5.00	53.6	<4.00	<5.00	209	322
	6/15/2022	<50.0	<250	<50.0	<50.0	74.5	<20.0	<20.0	1250	<20.0	<25.0	43.5	<20.0	<25.0	140	572
	9/12/2022	<10.0	<50.0	<10.0	<10.0	124	<4.00	27.9	2960	55.2	<5.00	193	<4.00	<5.00	471	176
	12/8/2022	<25.0	<125	<25.0	<25.0	104	<10.0	25	2630	39.8	<12.5	175	<10.0	<12.5	385	41.2
	3/16/2023	<10.0	<50.0	<10.0	<10.0	113	<4.00	22.6	2920	45.9	<5.00	161	<4.00	<5.00	428	42.6
	6/13/2023	<20.0	<100	<20.0	<20.0	104	<8.00	21	2520	35.6	<10.0	133	<8.00	<10.0	370	141
	9/12/2023	<80.0	<100	<20.0	<20.0	91.2	<8.00	22.4	2350	46.6	<10.0	126	<8.00	<10.0	339	39.4
	12/11/2023	<20.0	<100	<20.0	<20.0	113	<8.00	23.2	2630	42.8	<10.0	160	<8.00	<10.0	390	145 Q
	3/6/2024	<20.0	<100	<20.0	<20.0	119	<8.00	23.8	3090	44.6	<10.0	170	<8.00	<10.0	446	78.8
	6/12/2024	<10.0	<50.0	<10.0	<10.0	103	<4.00	18.5	2150	40.7	<5.00	98.3	<4.00	<5.00	306	36.6
MGMS1-2(60)	6/28/2000	<10	<50	<5	<5	53.6	<5	<5	369	<5	<5	658	19.7	–	240	<5
	8/30/2000	<20	<100	<10	<10	21.7	<10	13.1	267	<10	<10	2,590	108	–	586	<10
	11/29/2000	<2	<10	<1	<1	1.58	<1	1.09	57.7	<1	<1	121	4.58	–	40.3	<1
	2/27/2001	<1	<5	<0.5	<0.5	0.838	<0.5	0.686	32.9	<0.5	<0.5	54.6	2.06	–	24.7	<0.5
	5/31/2001	<1	<5	<0.50	<0.50	0.662	<0.50	0.581	39	<0.50	<0.50	69.4	<1	–	27.8	0.52
	9/24/2001	<13	<13	<13	<13	<13	<13	<13	89	<13	<13	830	14	–	150	<13
	12/18/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	20.4	<0.50	<0.50	12.8	<1	–	15.7	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	2.52	<0.50	0.99	68	<0.50	<0.50	62.9	1.2	–	34	3.48
	5/29/2002	<1	<0.50	<0.50	<1	0.78	<0.50	<0.50	22.8	<0.50	<0.50	23.4	<0.50	–	14.2	0.6
	8/29/2002	<10	<5	<5	<10	30.6	<5	5.1	661	<5	<5	138	<5	–	116	<5
	11/11/2002	<1	<0.50	<0.50	<1	2.99	<0.50	0.83	86	<0.50	<0.50	38.2	1.16	–	38.9	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	1.53	<0.50	0.74	42.6	<0.50	<0.50	42.8	0.78	–	34.2	1.04
	5/28/2003	<1	<0.50	<0.50	<1	2.87	<0.50	1.21	72	<0.50	<0.50	51.1	1.18	–	47.6	0.63

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-2(60) (continued)	11/11/2003	<1	<1	<1	<1	1.84	<1	<1	48.8	<1	<1	45.9	<1	--	36	<1
	1/27/2004	<1	<0.50	<0.50	<1	2.06	<0.50	1.06	72.3	0.69	<0.50	40.9	0.66	--	43.1	0.63
	5/3/2004	<1	<1	<1	<1	4.07	<1	1.22	70.7	<1	<1	54.8	1.36	--	43.5	2.53
	8/17/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/2/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/15/2004	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.68	39	<0.50	<0.50	31	<0.50	--	28	0.67
	2/1/2005	<1	<0.50	<0.50	<1	1.31	<0.50	<0.50	37.5	0.56	<0.50	33.2	<0.50	--	21.7	1.3
	5/16/2005	<1	<0.50	<0.50	<1	0.95	<0.50	<0.50	40.6	<0.50	<0.50	21.7	<0.50	--	19.8	<0.50
	05/16/2005 DUP	<1	<0.50	<0.50	<1	1.02	<0.50	<0.50	42.1	<0.50	<0.50	21.4	<0.50	--	20.5	<0.50
	8/18/2005	<1	<0.500	<0.500	<1	7.28	<0.500	2.41	145	1.2	<0.500	76.5 B	1.46	--	65.6	5.16 B
	11/17/2005	<1	<0.500	<0.500	<1	2.53	<0.500	0.99	87	0.59	<0.500	34.8	<0.500	--	26.4	0.93
	2/20/2006	<1	<0.500	<0.500	<1	6.17	<0.500	1.93	136	1.1	<0.500	61.9	0.93	--	45.5	4.17
	6/6/2006	<1	<1	<1	<1	1.02	<1	<1	33.7	<1	<1	23.4	<1	--	18.7	<1
	9/5/2006	<1	<0.50	<0.50	<1	5.37	<0.50	1.75	115	0.84	<0.50	55.9	0.8	--	37.5	4.79
	12/6/2006	<1	<0.50	<0.50	<1	3.39	<0.50	1.12	90.9	0.62	<0.50	39.5	<0.50	--	28.3	2.15
	2/7/2007	<1	<0.50	<0.50	<1	4.37	<0.50	1.37	116	0.93	<0.50	55.9	0.58	--	40.7	3
	5/22/2007	<1	<1	<1	<1	1.18	<1	<1	38.5	<1	<1	31.6	<1	--	25.2	<1
	9/11/2007	<5	<2.50	<2.50	<5	26.6	<2.50	8.75	711	7.2	<2.50	81.4	2.95	--	216	11.9
	12/12/2007	<1	<0.50	<0.50	<1	1.83	<0.50	0.79	64.9	0.65	<0.50	28.1	<0.50	--	24.9	0.67
	3/4/2008	<1	<0.500	<0.500	<1	6.65	<0.500	2.22	166	2.92	<0.500	75.4	0.81	<0.500	60.5	2.79
	9/16/2008	<5	<2.50	<2.50	<2.50	5.5	<2.50	<2.50	160	<2.50	<2.50	38.8	<2.50	<2.50	65.5	<2.50
	12/8/2008	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	1.2	88	1.1	<0.50	40	0.51	<0.50	38	1.3
	12/08/2008 DUP	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	1.2	84	1.1	<0.50	42	0.52	<0.50	38	1.3
	3/25/2009	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	1.3	71	0.75	<0.50	40	0.65	<0.50	37	0.54
	6/15/2009	<0.50	<0.50	<0.50	<0.50	1	<0.50	0.8	47	0.9	<0.50	26	<0.50	<0.50	30	0.55
	9/15/2009	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.82	44	0.58	<0.50	42	<0.50	<0.50	30	0.82
	12/14/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17	<0.50	<0.50	18	<0.50	<0.50	16	<0.50
	3/17/2010	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	0.96	61	0.68	<0.50	40	0.51	<0.50	38	<0.50
	6/14/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	17	<0.50	<0.50	15	<0.50
	9/21/2010	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	0.57	46	<0.5	<0.5	42	<0.5	<0.5	32	0.8
	12/7/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	16	<0.5	<0.5	19	<0.5	<0.5	15	<0.5
	3/8/2011	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	19	<0.50	<0.50	27	<0.50	<0.50	16	<0.50
	6/6/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	8.3	<0.5	<0.5	16	<0.5	<0.5	11	<0.5
	9/13/2011	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.73	42	0.5	<0.50	42	0.89	<0.50	30	0.74
	12/6/2011	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	30	<0.50	<0.50	33	<0.50	<0.50	22	0.6

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-2(60)	3/8/2012	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	32	<0.50	<0.50	36	<0.50	<0.50	21	<5
(continued)	6/19/2012	<0.5	<0.5	<0.5	<0.5	0.71	<0.5	<0.5	28	<0.5	<0.5	22	<0.5	<0.5	16	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.66	36	<0.50	<0.50	33	<0.50	<0.50	20	1.1
	12/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	19	<0.50	<0.50	11	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	1.8	<0.50	0.56	38	<0.50	<0.50	35	<0.50	<0.50	20	0.66
	6/11/2013	<0.50	<0.50	<0.50	<0.50	0.66	<0.50	<0.50	29	<0.50	<0.50	27	<0.50	<0.50	18	<0.50
	9/17/2013	<0.50	<0.50	<0.50	<0.50	0.89	<0.50	<0.50	20	<0.50	<0.50	32	<0.50	<0.50	16	0.54
	12/10/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	16	<0.50	<0.50	17	<0.50	<0.50	11	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	8.5	<0.50	<0.50	10	<0.50	<0.50	5.8	<0.50
	6/26/2014	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	33	<0.50	<0.50	21	<0.50	<0.50	20	<0.50
	9/23/2014	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	26	<0.50	<0.50	34	<0.50	<0.50	20	12
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	20	<0.50	<0.50	14	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	26.1	<0.50	<0.50	22.7	<0.50	<0.50	16.1	<0.50
	6/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.95	<0.50	<0.50	17.7	<0.50	<0.50	9.1	<0.50
	9/21/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.6	<0.50
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18.8	<0.50	<0.50	13.8	<0.50	<0.50	12.4	<0.50
	3/9/2016	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	17.5	<0.50	<0.50	16.9	<0.50	<0.50	14	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	11.8	<0.50	<0.50	18	<0.50	<0.50	11.1	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	0.89	<0.50	<0.50	17.7	<0.50	<0.50	22.5	<0.50	<0.50	17.6	<0.50
	12/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	7.6	<0.50	<0.50	4.7	<0.50
	3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	15.6	<0.5	<0.5	13.6	<0.5	<0.5	13.2	<0.5
	6/12/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	6.0	<0.50	<0.50	12.8	<0.50	<0.50	7.1	<0.50
	9/29/2017	<2.0	<2.0	<0.50	<0.50	2.00	<1.0	<0.50	18.3	<0.50	<0.50	18.3	<0.50	<0.50	13.4	<0.50
	11/7/2017	<2.0	<2.0	<0.50	<0.50	1.60	<0.50	<0.50	24.9	<0.50	<0.50	14.0	<0.50	<0.50	14.7	<0.50
	3/22/2018	<0.500	<2.50	<0.500	<0.500	1.30	<0.500	<0.500	13.4	<0.500	<0.500	23.3	<0.500	<0.500	13.9	<0.500
	7/1/2018	<0.500	<2.50	<0.500	<0.500	0.89	<0.500	<0.500	11.8	<0.500	<0.500	18.4	<0.500	<0.500	8.5	<0.500
	10/1/2018	<1.00	<5.00	<1.00	<1.00	6.66	<0.400	<0.400	23.9	<0.400	<0.500	29.4	<0.400	<0.500	16.6	20.00
	12/4/2018	<1.00	<5.00	<1.00	<1.00	0.67	<0.400	<0.400	9.6	<0.400	<0.500	14.4	<0.400	<0.500	8.2	<0.400
	3/26/2019	<1.00	<5.00	<1.00	<1.00	0.439	<0.400	<0.400	9.10	<0.400	<0.500	12.9	<0.400	<0.500	8.37	<0.400
	6/7/2019	<1.00	<5.00	<1.00	<1.00	0.651	<0.400	<0.400	11.4	<0.400	<0.500	15.5	<0.400	<0.500	9.57	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	4.58	<0.400	0.44	27.9	<0.400	<0.500	33.2	<0.400	<0.500	19	7.9
	12/4/2019	<1.00	<5.00	<1.00	<1.00	0.465	<0.400	<0.400	8.86	<0.400	<0.500	16.8	<0.400	<0.500	9.35	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	1.32	<0.400	<0.400	15.6	<0.400	<0.500	26.5	<0.400	<0.500	11.8	<0.400
	6/16/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.23	<0.400	<0.500	12.4	<0.400	<0.500	6.01	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-2(60) (continued)	10/6/2020	<1.00	<5.00	<1.00	<1.00	1.16	<0.400	<0.400	16.5	<0.400	<0.500	24	<0.400	<0.500	15.3	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	1.54	<0.400	<0.400	13.1	<0.400	<0.500	20.3	<0.400	<0.500	10	0.64
	3/4/2021	<1.00	<5.00	<1.00	<1.00	1.19	<0.400	<0.400	18.4	<0.400	<0.500	20.3	<0.400	<0.500	14.9	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.28	<0.400	<0.500	13	<0.400	<0.500	7.17	<0.400
	9/14/2021	<1.00	<5.00	<1.00	<1.00	17.2	<0.400	0.75	71.4	0.44	<0.500	29.8	<0.400	<0.500	18	60.5
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.67	<0.400	<0.500	11.2	<0.400	<0.500	6.32	<0.400
	3/10/2022	<1.00	<5.00	<1.00	<1.00	0.690	<0.400	<0.400	10.5	<0.400	<0.500	14.4	<0.400	<0.500	8.03	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.36	<0.400	<0.500	7.70	<0.400	<0.500	4.30	<0.400
	9/12/2022	<1.00	<5.00	<1.00	<1.00	1.29	<0.400	<0.400	16	<0.400	<0.500	20.9	<0.400	<0.500	9.74	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	6.73	<0.400	<0.400	26	<0.400	<0.500	20.6	<0.400	<0.500	11.6	13.3
	3/16/2023	<1.00	<5.00	<1.00	<1.00	2.88	<0.400	<0.400	21.4	<0.400	<0.500	25.2	<0.400	<0.500	11.8	<0.400
	6/14/2023	<1.00	<5.00	<1.00	<1.00	1.03	<0.400	<0.400	14.9	<0.400	<0.500	18.4	<0.400	<0.500	11.3	<0.400
	9/12/2023	<4.00	<5.00	<1.00	<1.00	1.37	<0.400	<0.400	19.2	<0.400	<0.500	17.6	<0.400	<0.500	14.1	0.290
	12/11/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.05	<0.400	<0.500	8.48	<0.400	<0.500	3.32	<0.200
	3/6/2024	<1.00	<5.00	<1.00	<1.00	1.82	<0.400	<0.400	14.8	<0.400	<0.500	18.6	<0.400	<0.500	11.0	<0.200
	6/12/2024	<1.00	<5.00	<1.00	<1.00	0.620	<0.400	<0.400	10.8	<0.400	<0.500	14.6	<0.400	<0.500	9.52	<0.200
MGMS1-1(110)	6/28/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.78	<0.50	<0.50	3.9	<1	--	3.35	<0.50
	8/30/2000	<5	<25	<2.5	<2.5	3.7	<2.5	3.32	55	<2.5	<2.5	510	24	--	130	<2.5
	11/29/2000	<5	<25	<2.5	<2.5	4.21	<2.5	4.59	51	<2.5	<2.5	583	23.2	--	166	<2.5
	2/27/2001	<5	<25	<2.5	<2.5	5.21	<2.5	3.39	47.5	<2.5	<2.5	385	16.5	--	105	<2.5
	5/31/2001	<10	<50	<5	<5	<5	<5	<5	55.8	<5	<5	639	13.8	--	141	<5
	9/24/2001	<1.3	<1.3	<1.3	<1.3	6.1	<1.3	2.9	57	<1.3	<1.3	580	20	--	120	<1.3
	12/18/2001	<5	<25	<2.5	<2.5	5.04	<2.5	2.68	54.8	<2.5	<2.5	527	20.2	--	131	<2.5
	3/19/2002	<5	<2.5	<2.5	<5	5.25	<2.5	<2.5	54	<2.5	<2.5	454	10.8	--	98	<2.5
	5/29/2002	<5	<2.5	<2.5	<5	4.9	<2.5	<2.5	62.3	<2.5	<2.5	299	9.7	--	65.1	<2.5
	8/29/2002	<1	<0.50	<0.50	<1	5.43	<0.50	1.32	110	0.8	<0.50	60.2	3.62	--	47.8	<0.50
	11/11/2002	<2	<1	<1	<2	4.74	<1	1.2	46.1	<1	<1	208	7.84	--	66.1	<1
	1/23/2003	<2	<1	<1	<2	4.44	<1	1.24	65.3	<1	<1	210	6.54	--	74.1	<1
	5/28/2003	<2	<1	<1	<2	3.96	<1	<1	69.2	<1	<1	109	2.48	--	57.5	<1
	11/11/2003	<2	<2	<2	<2	4.14	<2	<2	44.8	<2	<2	256	3.6	--	60.2	<2
	1/27/2004	<2	<1	<1	<2	4.22	<1	1.1	67.1	<1	<1	167	4.16	--	69.7	<1
	5/3/2004	<1	<1	<1	<1	3.66	<1	<1	47.2	<1	<1	190	2.18	--	55.9	<1
	11/15/2004	<2.5	<2.5	<2.5	<2.5	3.7	<2.5	<2.5	95	<2.5	<2.5	76	<2.5	--	64	<2.5
	6/20/2005	<2	<1	<1	<2	9.22	<1	2.58	283	1.8	<1	23.6	1.62	--	70	1.24
	11/17/2005	<1	<0.500	<0.500	<1	2.93	<0.500	<0.500	51.3	<0.500	<0.500	102	1.95	--	76.1	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS1-1(110)	6/6/2006	<1	<1	<1	<1	2.15	<1	<1	44	<1	<1	94.4	1.36	--	66.8	<1
(continued)	12/6/2006	<1	<0.50	<0.50	<1	5.81	<0.50	0.6	142	<0.50	<0.50	53.8	0.88	--	74.6	0.57
	9/11/2007	<2	<1	<1	<2	3.78	<1	1.2	189	<1	<1	31.6	<1	--	61.1	<1
	3/4/2008	<1	<0.500	<0.500	<1	3.73	<0.500	0.91	242	2.37	<0.500	32.7	0.64	<0.500	44.4	<0.500
	3/25/2009	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	0.87	160	0.9	<0.50	25	<0.50	<0.50	39	<0.50
	6/15/2009	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	0.74	130	1	<0.50	24	<0.50	<0.50	39	<0.50
	9/15/2009	<2.5	<2.5	<2.5	<2.5	20	<2.5	2.7	620	3.6	<2.5	24	<2.5	<2.5	75	<2.5
	3/17/2010	<2.5	<2.5	<2.5	<2.5	20	<2.5	4.3	720	3.7	<2.5	20	<2.5	<2.5	79	<2.5
	9/21/2010	<0.5	<0.5	<0.5	<0.5	2.5	<0.5	1.1	150	1	<0.5	28	<0.5	<0.5	53	<0.5
	3/10/2011	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	0.57	83	0.52	<0.50	26	<0.50	<0.50	31	<0.50
	9/13/2011	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	1.2	110	0.96	<0.50	30	<0.50	<0.50	59	<0.50
	3/8/2012	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	62	<0.50	<0.50	22	<0.50	<0.50	21	<0.50
	9/12/2012	<0.50	<0.50	<0.50	<0.50	0.93	<0.50	0.53	60	<0.50	<0.50	22	<0.50	<0.50	25	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	0.95	<0.50	<0.50	65	<0.50	<0.50	23	<0.50	<0.50	24	<0.50
	9/17/2013	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	0.56	68	<0.50	<0.50	26	<0.50	<0.50	32	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	63	<0.50	<0.50	23	<0.50	<0.50	27	0.65
	9/24/2014	Not sampled; 60-foot port accidentally sampled twice.														
	3/19/2015	<0.50	<0.50	<0.50	<0.50	2.7	<0.50	0.69	126	<0.50	<0.50	23.7	<0.50	<0.50	41.5	0.82
	9/21/2015	<0.50	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	49	<0.50	<0.50	19.4	<0.50	<0.50	20.4	<0.50
	9/30/2016	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	<0.50	56.7	<0.50	<0.50	18.4	<0.50	<0.50	28.7	<0.50
	3/31/2017	<0.50	<20	<0.50	<0.50	13.3	<0.50	1.1	328	0.7	<0.50	20.1	<0.50	<0.50	62.0	6.5
	9/29/2017	<2.0	<2.0	<0.50	<0.50	5.9	<1.0	0.540	173	<0.50	<0.50	9.0	<0.50	<0.50	32.8	0.6
	11/7/2017	<2.0	<2.0	<0.50	<0.50	10.5	<0.50	0.910	257	0.7	<0.50	11.5	<0.50	<0.50	41.8	0.9
	7/1/2018	<0.500	<2.50	<0.500	<0.500	3.30	<0.500	0.462 J	104	0.357 J	<0.500	18.5	0.132 J	<0.500	36.6	0.6
	10/1/2018	<1.00	<5.00	<1.00	<1.00	6.12	<0.400	0.723	153	0.485	<0.500	13.0	<0.400	<0.500	39.3	0.7
	6/7/2019	<1.00	<5.00	<1.00	<1.00	3.55	<0.400	<0.400	102	<0.400	<0.500	13.8	<0.400	<0.500	24.2	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	4.61	<0.400	<0.400	134	<0.400	<0.500	14.0	<0.400	<0.500	31.9	<0.400
	6/16/2020	<1.00	<5.00	<1.00	<1.00	4.22	<0.400	0.450	141	<0.400	<0.500	17.6	<0.400	<0.500	33.2	<0.400
	12/8/2020	<2.00	<5.00	<1.00	<1.00	5.56	<0.400	0.523	163	0.488	<0.500	16.1	<0.400	<0.500	32.7	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	4.87	<0.400	0.408	166	0.464	<0.500	14.1	<0.400	<0.500	34.6	<0.400
	12/7/2021	<1.00	<5.00	<1.00	<1.00	4.06	<0.400	<0.400	132	<0.400	<0.500	18.0	<0.400	<0.500	33.2	<0.400
	6/15/2022	<1.00	<5.00	<1.00	<1.00	2.17	<0.400	<0.400	70.7	<0.400	<0.500	14.2	<0.400	<0.500	19.1	<0.400
	12/8/2022	<1.00	<5.00	<1.00	<1.00	5.17	<0.400	0.59	154	0.66	<0.500	17.6	<0.400	<0.500	32.5	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	3.94	<0.400	<0.400	122	0.49	<0.500	12.2	<0.400	<0.500	21.4	<0.400
	12/11/2023	<1.00	<5.00	<1.00	<1.00	3.83	<0.400	<0.400	115	0.580	<0.500	16.0	<0.400	<0.500	22.0	<0.200

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-4(40)	6/12/2024	<1.00	<5.00	<1.00	<1.00	2.91	<0.400	<0.400	101	0.460	<0.500	13.7	<0.400	<0.500	19.4	<0.200
	6/28/2000	<50	<250	<25	<25	44.9	<25	<25	1,210	<25	<25	5,030	215	--	3,090	<25
	8/30/2000	<10	<50	<5	<5	23.4	<5	31.3	644	7.28	<5	2,980	152	--	1,850	<5
	11/29/2000	<100	<500	<50	<50	51.3	<50	94	1,420	<50	<50	8,740	424	--	3,980	<50
	2/27/2001	<50	<250	<25	<25	35.6	<25	66.2	753	<25	<25	7,360	280	--	3,360	<25
	5/31/2001	<50	<250	<25	<25	<25	<25	<25	604	<25	<25	3,610	94.4	--	2,050	<25
	9/24/2001	<5	<5	<5	<5	28	<5	26	780	13	<5	2,600	170	--	1,700	<5
	12/18/2001	<50	<250	<25	<25	175	<25	77	1,350	<25	<25	5,590	374	--	3,220	<25
	3/19/2002	<50	<25	<25	<50	36	<25	36	868	<25	<25	6,240	180	--	3,040	<25
	5/29/2002	<50	<25	<25	<50	76	<25	53	1,330	<25	<25	6,580	230	--	2,530	<25
	11/11/2002	<20	<10	<10	<20	19.8	<10	13.6	639	<10	<10	3,080	89.4	--	1,820	<10
	1/23/2003	<20	<10	<10	<20	13.4	<10	<10	353	<10	<10	2,290	52.6	--	1,480	<10
	5/28/2003	<10	<5	<5	<10	5.4	<5	<5	110	<5	<5	1,190	19.1	--	474	<5
	11/11/2003	<10	<10	<10	<10	<10	<10	<10	54.1	<10	<10	1,820	14	--	398	<10
	1/27/2004	<20	<10	<10	<20	45.2	<10	10	397	<10	<10	1,740	55.8	--	688	<10
	5/3/2004	<10	<10	<10	<10	<10	<10	<10	41.2	<10	<10	599	<10	--	200	<10
	8/17/2004	<10	<5	<5	<10	9.7	<5	6.1	158	<5	<5	1,530	30.7	--	705	<5
	11/15/2004	<25	<25	<25	<25	<25	<25	<25	310	<25	<25	2,900	<25	--	1,300	<25
	3/24/2005	<20	<10	<10	<20	10.8	<10	<10	159	<10	<10	1,900	25.8	--	834	<10
	5/16/2005	<20	<10	<10	<20	34.2	<10	28.2	489	<10	<10	2,540	52.2	--	1,150	<10
	11/16/2005	<50	<25	<25	<50	43.5	<25	<25	396	<25	<25	4,240	82.5	--	1,750	<25
	6/6/2006	<50	<50	<50	<50	62	<50	<50	917	<50	<50	4,820	55	--	1,770	<50
	12/5/2006	<50	<25	<25	<50	<25	<25	<25	370	<25	<25	3,090	31.5	--	1,200	<25
	5/21/2007	<20	<20	<20	<20	27.4	<20	<20	359	<20	<20	2,880	38.2	--	1,080	<20
	9/10/2007	<50	<25	<25	<50	<25	<25	<25	402	<25	<25	2,010	52.5	--	1,600	<25
	12/12/2007	<50	<25	<25	<50	26	<25	<25	330	<25	<25	2,080	35.5	--	914	<25
	03/04/2008[7.]	<1	<0.500	<0.500	<1	20.4	<0.500	16.1	181	7.71	<0.500	1,810	53.7	0.51	950	4.68
	9/16/2008	<50	<25	<25	<25	<25	<25	<25	208	<25	<25	2,330	32	<25	1,130	<25
	12/8/2008	Not sampled. Air leak in sampling point prohibited the collection of the sample.														
	3/24/2009	<2	<2	<2	<2	8.4	<2	3.6	100	2	<2	990	14	<2	430	<2
	9/15/2009	<1.5	<1.5	<1.5	<1.5	3.1	<1.5	<1.5	52	<1.5	<1.5	440	4.1	<1.5	200	<1.5
	12/14/2009	<1.5	<1.5	<1.5	<1.5	54	<1.5	16	360	6.9	<1.5	2,400	62	<1.5	1,000	2.6
	3/16/2010	<7	<7	<7	<7	16	<7	<7	140	<7	<7	1,800	19	<7	810	<7
	6/14/2010	<25	<25	<25	<25	72	<25	41	1,400	<25	<25	6,400	68	<25	1,500	43
	9/21/2010	<2.5	<2.5	<2.5	<2.5	35	<2.5	17	480	9	<2.5	3,500	48	<2.5	1,500	5.4

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-4(40) (continued)	12/7/2010	<15	<15	<15	<15	69	<15	26	700	<15	<15	4,100	83	<15	1,600	<15
	3/7/2011	<15	<15	<15	<15	88	<15	30	930	<15	<15	3,700	91	<15	1,600	<15
	6/7/2011	<15	<15	<15	<15	65	<15	30	1,600	17	<15	4,400	57	<15	1,400	48
	9/12/2011	<15	<15	<15	<15	44	<15	28	7,400	20	<15	790	48	<15	380	58
	12/7/2011	<15	<15	<15	<15	35	<15	<15	5,300	<15	<15	61	<15	<15	39	460
	3/8/2012	<2	<2	<2	<2	38	<2	2.3	470	2.8	<2	9.9	5.2	<2	5.4	260
	6/19/2012	<0.5	3.9	<0.5	<0.5	53	<0.5	<0.5	20	1.3	<0.5	7.2	<0.5	<0.5	2.5	63
	9/13/2012	<1.5	1.8	<1.5	<1.5	39	<1.5	2.8	310	3.2	<1.5	89	5	<1.5	80	440
	12/11/2012	<0.50	30	<0.50	<0.50	4.8	<0.50	<0.50	33	1.3	<0.50	10	<0.50	<0.50	3.4	4
	3/12/2013	<0.50	8.2	<0.50	<0.50	28	<0.50	1.9	300	2	<0.50	5.6	2.5	<0.50	2.2	270
	6/11/2013	<0.50	15	<0.50	<0.50	8.3	<0.50	<0.50	7.9	<0.50	<0.50	0.94	<0.50	<0.50	<0.50	4.8
	9/17/2013	<0.50	9.4	<0.50	<0.50	28	<0.50	4.8	290	1.4	<0.50	16	1.6	<0.50	17	330
	12/16/2013	<0.50	6.9	<0.50	<0.50	9.7	<0.50	<0.50	8.4	<0.50	<0.50	2.4	<0.50	<0.50	1.4	3.4
	3/24/2014	<0.50	2.4	<0.50	<0.50	45	<0.50	2.9	84	<0.50	<0.50	2.6	<0.50	<0.50	1.8	270
	6/26/2014	<0.50	6.1	<0.50	<0.50	31	<0.50	10	88	0.84	<0.50	21	<0.50	<0.50	22	90
	9/23/2014	<0.50	2.5	<0.50	<0.50	30	<0.50	30	590	2.4	<0.50	170	3.2	<0.50	110	800
	12/12/2014	<0.50	12	<0.50	<0.50	35	<0.50	<0.50	10	<0.50	<0.50	3.4	<0.50	<0.50	2.3	18
	3/20/2015	<0.50	<0.50	<0.50	<0.50	4.3	<0.50	3.9	47	<0.50	<0.50	30.6	<0.50	<0.50	22.1	17.3
	6/19/2015	<0.50	<0.50	<0.50	<0.50	13.8	<0.50	1.3	53.8	<0.50	<0.50	18.4	<0.50	<0.50	12.8	48.3
	9/25/2015	<0.50	<0.50	<0.50	<0.50	12.3	<0.50	4.2	105	0.61	<0.50	67.4	0.92	<0.50	45.9	57.8
	12/8/2015	<0.50	3.8	<0.50	<0.50	13.5	<0.50	<0.50	7	<0.50	<0.50	4	<0.50	<0.50	2.8	3.3
	3/9/2016	<0.50	<2	<0.50	<0.50	20.6	<0.50	1.6	36	<0.50	<0.50	6.5	<0.50	<0.50	6.2	36
	6/17/2016	<0.50	<2	<0.50	<0.50	24.9	<0.50	26.4	744	2.8	<0.50	223	3.1	<0.50	146	227
	9/29/2016	<0.50	<2	<0.50	<0.50	12.1	<0.50	<0.50	115	<0.50	<0.50	33.3	<0.50	<0.50	24.8	142

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-4(40) (continued)	12/16/2016	<0.50	<2	<0.50	<0.50	10.3	<0.50	<0.50	5.2	<0.50	<0.50	2.6	<0.50	<0.50	1.9	2
	3/31/2017	<0.5	<2	<0.5	<0.5	57.6	<0.5	14.3	236	0.6	<0.5	4.3	<0.5	<0.5	14.4	235
	6/15/2017	<0.50	<2.0	<0.50	<0.50	38.6	<0.50	3.5	46.2	<0.50	<0.50	5.1	<0.50	<0.50	4.9	98.9
	9/29/2017	<2.0	<2.0	<0.50	<0.50	21.7	<1.0	6.8	195.0	0.74	<0.50	41.5	0.67	<0.50	31.3	428.0
	11/9/2017	<2.0	<2.0	<0.50	<0.50	21.3	<0.50	0.9	61.6	0.52	<0.50	13.2	<0.50	<0.50	9.2	170.0
	3/22/2018	<0.500	<2.50	<0.500	<0.500	25.9	<0.500	4.2	109.0	0.57	<0.500	46.0	0.259 J	<0.500	27.3	122.0
	7/1/2018	<0.500	<2.50	<0.500	<0.500	12.7	<0.500	5.9	151.0	0.97	<0.500	62.1	1.04	<0.500	48.9	38.2
	9/28/2018	<2.00	<10.00	<2.00	<2.00	8.7	<0.800	1.4	140.0	<0.800	<1.00	66.9	<0.800	<1.00	43.3	106.0
	12/10/2018	<1.00	<5.00	<1.00	<1.00	20.9	<0.400	0.6	24.9	<0.400	<0.500	18.7	<0.400	<0.500	12.0	123.0
	3/25/2019	<1.00	<5.00	<1.00	<1.00	26.6	<0.400	2.58	136	0.752	<0.500	62.0	0.581	<0.500	35.9	155
	6/4/2019	<1.00	<5.00	<1.00	<1.00	28.2	<0.400	0.960	37.8	<0.400	<0.500	14.6	<0.400	<0.500	10.4	145
	9/27/2019	<1.00	<5.00	<1.00	<1.00	11.2	<0.400	0.729	73.8	<0.400	<0.500	17	<0.400	<0.500	13.1	101
	12/4/2019	<1.00	<5.00	<1.00	<1.00	20.6	<0.400	0.778	40.5	<0.400	<0.500	32.3	<0.400	<0.500	17.9	65.4
	3/12/2020	<1.00	<5.00	<1.00	<1.00	24.1	<0.400	2.730	105	0.64	<0.500	86.3	0.45	<0.500	43.3	134
	6/16/2020	<1.00	<5.00	<1.00	<1.00	27.3	<0.400	1.250	85	<0.400	<0.500	14.8	<0.400	<0.500	9.09	138
	10/6/2020	<1.00	<5.00	<1.00	<1.00	19.1	<0.400	2.45	98.4	0.635	<0.500	101	0.593	<0.500	56.2	148
	12/8/2020	<4.00	<10.0	<2.00	<2.00	17.8	<0.800	1.85	82.6	<0.800	<1.00	41.0	<0.800	<1.00	19.4	80.2
	3/4/2021	<1.00	<5.00	<1.00	<1.00	25.1	<0.400	3.83	159	1.120	<0.500	115.0	<0.400	<0.500	59.9	72.5
	6/17/2021	<1.00	<5.00	<1.00	<1.00	20.7	<0.400	3.25	181	0.975	<0.500	68.8	<0.400	<0.500	35.6	66.3
	9/16/2021	<1.00	<5.00	<1.00	<1.00	9.92	<0.400	1.40	98.7	0.734	<0.500	42.2	<0.400	<0.500	28.3	34.2
	12/7/2021	<1.00	<5.00	<1.00	<1.00	22.7	<0.400	6.97	178	1.500	<0.500	190.0	<0.400	<0.500	106	0.989
	3/10/2022	<10.0	<50.0	<50.0	<10.0	21.8	<4.00	8.70	260	<4.00	<5.00	155	<4.00	<5.00	92.9	<4.00
	6/14/2022	<5.00	<25.0	<5.00	<5.00	35.2	<2.00	7.20	209	<2.00	<2.50	138	4.75	<2.50	69.3	<2.00
	9/12/2022	<1.00	<5.00	<1.00	<1.00	16.2	<0.400	9.45	330	2.55	<0.500	271	0.96	<0.500	142	1.41
	12/6/2022	<1.00	<5.00	<1.00	<1.00	19.6	<0.400	9.63	297	2.58	<0.500	245	1.55	<0.500	153	0.4
	3/16/2023	<10.0	<50.0	<50.0	<10.0	17.7	<4.00	10	311	<4.00	<5.00	299	<4.00	<5.00	169	<4.00
	6/13/2023	<2.00	<10.00	<2.00	<2.00	19.1	<0.800	8.5	352	2.64	<1.00	173	1.02	<1.00	121	<0.800
	9/11/2023	<1.00	<5.00	<1.00	<1.00	16.6	<0.400	10.8	338	2.92	<0.500	162	0.570	<0.500	101	1.11
	12/12/2023	<1.00	<5.00	<1.00	<1.00	27.6	<0.400	12.7	396	3.29	<0.500	408	4.16	<0.500	204	0.780
	3/4/2024	<4.00	<10.0	<2.00	<2.00	22.5	<0.800	12.5	331	3.60	<1.00	405	2.60	<0.100	294	0.680
	6/10/2024	<5.00	<25.0	<5.00	<5.00	25.8	<2.00	13.0	403	3.55	<2.50	315	3.10	<2.50	232	<1.00

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-3(60)	6/28/2000	<5	<25	<2.5	<2.5	35.6	<2.5	8.3	433	<2.5	<2.5	110	22.3	–	198	<2.5
	8/30/2000	<10	<50	<5	<5	36	<5	13	1,120	<5	<5	164	32	–	136	<5
	11/29/2000	<5	<25	<2.5	<2.5	5.08	<2.5	3.88	279	<2.5	<2.5	26.8	<5	–	38	<2.5
	2/27/2001	<2	<10	<1	<1	40.2	<1	2.65	46.6	<1	<1	20.7	12.4	–	27	173
	5/31/2001	<1	<5	<0.50	<0.50	2.47	<0.50	2.3	39.1	<0.50	<0.50	113	3.44	–	75.6	5.06
	9/24/2001	<2.5	<2.5	<2.5	<2.5	14	<2.5	11	180	3.6	<2.5	340	11	–	220	48
	12/18/2001	<1	<5	<0.50	<0.50	0.607	<0.50	1.01	15	<0.50	<0.50	64.4	2.06	–	47.7	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	5.4	<0.50	2.96	62.9	0.81	<0.50	91.9	5.78	–	80.1	15.2
	5/29/2002	<1	<0.50	<0.50	<1	2.55	<0.50	2.02	59.7	0.82	<0.50	119	4.8	–	67.6	1.06
	1/23/2003	<1	<0.50	<0.50	<1	10.1	<0.50	2.7	114	1.12	<0.50	111	6.06	–	96	22.8
	5/28/2003	<2	<1	<1	<2	15	<1	3.28	178	1.48	<1	131	9.3	–	126	15.6
	11/11/2003	<2	<2	<2	<2	21.3	<2	4.56	208	<2	<2	223	9.06	–	139	20.6
	1/27/2004	<1	<0.50	<0.50	<1	17.2	<0.50	2.83	117	1.57	<0.50	96.3	5.38	–	92.2	17.7
	5/3/2004	<1	<1	<1	<1	4.79	<1	1.96	86.4	<1	<1	121	3.31	–	84	<1
	11/15/2004	<2.5	<2.5	<2.5	<2.5	<2.5	13	4.4	220	2.8	<2.5	170	6.4	–	140	11
	2/1/2005	<1	<0.50	<0.50	<1	2.49	<0.50	1.47	92	2.46	<0.50	97.7	2.41	–	73.9	0.6
	5/16/2005	<1	<0.50	<0.50	<1	1.49	<0.50	1.51	45.2	0.59	<0.50	74.1	1.61	–	41.5	<0.50
	8/18/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	27.6 B	<0.500	<0.500	23.5 B	<0.500	–	13 B	<0.500
	11/16/2005	<1	<0.500	<0.500	<1	7.5	<0.500	2.05	90.9	1.16	<0.500	107	3.1	–	78.3	2.68
	2/20/2006	<1	<0.500	<0.500	<1	3.35	<0.500	1.6	65	0.82	<0.500	99.5	1.55	–	62.3	1.27
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	55	<1	<1	76.3	1.01	–	36.2	<1
	9/5/2006	<1	<0.50	<0.50	<1	2.85	<0.50	1.13	75.1	0.73	<0.50	73	1.11	–	45.6	0.83
	12/5/2006	<1	<0.50	<0.50	<1	2.58	<0.50	1.44	77	0.75	<0.50	98.7	1.27	–	61.2	0.79
	2/7/2007	<1	<0.50	<0.50	<1	3.36	<0.50	1.3	96.5	0.79	<0.50	76.3	1.64	–	55	1.51
	5/21/2007	<1	<1	<1	<1	2.45	<1	1.33	73.7	<1	<1	99.1	1.51	–	54.5	<1
	9/10/2007	<10	<5	<5	<10	31.2	<5	8.2	559	<5	<5	221	10.8	–	192	26.7
	12/12/2007	<1	<0.50	<0.50	<1	1.49	<0.50	0.88	78.6	0.56	<0.50	66.1	0.98	–	36.8	1.75
	3/4/2008	<1	<0.500	<0.500	<1	4.46	<0.500	2.19	164	1.37	<0.500	89.7	2.32	<0.500	72.2	6.88
	9/16/2008	<5	<2.50	<2.50	<5	10.4	<2.50	3.65	166	<2.50	<2.50	111	3.85	<2.50	96.4	7.15
	12/8/2008	<0.80	<0.80	<0.80	<0.80	11	<0.80	3	160	1.7	<0.80	110	3.2	<0.80	80	10
	3/24/2009	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	1.6	110	1	<0.50	84	2.2	<0.50	53	3.7
	9/15/2009	<0.50	<0.50	<0.50	<0.50	6.4	<0.50	2.3	91	1.2	<0.50	110	2.4	<0.50	72	4.2
	12/14/2009	<0.50	<0.50	<0.50	<0.50	2.1	<0.50	1.1	61	0.75	<0.50	84	1.1	<0.50	54	0.96
	3/16/2010	<0.50	<0.50	<0.50	<0.50	15	<0.50	3.6	140	1.6	<0.50	160	8.2	<0.50	110	12

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-3(60) (continued)	6/14/2010	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	0.75	46	0.55	<0.50	73	0.86	<0.50	38	0.88
	9/21/2010	<0.5	<0.5	<0.5	<0.5	11	<0.5	3	130	1.5	<0.5	150	5.8	<0.5	100	6.8
	12/7/2010	<0.5	<0.5	<0.5	<0.5	4.1	<0.5	1.8	86	1.2	<0.5	120	1.7	<0.5	77	1.6
	3/7/2011	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.86	73	0.62	<0.50	61	1.2	<0.50	34	1.4
	6/6/2011	<0.5	<0.5	<0.5	<0.5	0.64	<0.5	<0.5	22	<0.5	<0.5	64	0.54	<0.5	27	<0.5
	9/12/2011	<0.50	<0.50	<0.50	<0.50	10	<0.50	3.2	110	1.4	<0.50	170	6	<0.50	100	2
	12/5/2011	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	0.95	51	0.54	<0.50	84	1	<0.50	41	<0.50
	3/8/2012	<0.50	<0.50	<0.50	<0.50	10	<0.50	2.9	300	1.9	<0.50	71	1.5	<0.50	45	43
	6/19/2012	<0.5	<0.5	<0.5	<0.5	2	<0.5	1	79	0.87	<0.5	78	0.78	<0.5	45	5.3
	9/12/2012	<0.50	<0.50	<0.50	<0.50	1.5	<0.50	0.56	48	<0.50	<0.50	44	<0.50	<0.50	20	2.7
	12/11/2012	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	2.5	59	1.5	<0.50	57	0.62	<0.50	36	16
	3/12/2013	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	22	<0.50	<0.50	16	<0.50	<0.50	9	<0.50
	6/11/2013	<0.50	<0.50	<0.50	<0.50	2.4	<0.50	1.5	53	0.58	<0.50	29	0.55	<0.50	21	12
	9/17/2013	<0.50	<0.50	<0.50	<0.50	5.4	<0.50	0.98	73	0.66	<0.50	24	0.6	<0.50	13	29
	12/10/2013	<0.50	<0.50	<0.50	<0.50	3	<0.50	1	88	0.88	<0.50	23	0.6	<0.50	18	13
	3/18/2014	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	<0.50	28	<0.50	<0.50	33	<0.50	<0.50	13	1.7
	9/23/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	12/12/2014	Insufficient air pressure to inflate dedicated bladder; no sample collected.														
	3/20/2015	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	29.4	<0.50	<0.50	41.4	<0.50	<0.50	24.3	5.2
	6/19/2015	<0.50	<0.50	<0.50	<0.50	2	<0.50	0.56	38.1	<0.50	<0.50	35.1	<0.50	<0.50	23.5	7.9
	9/25/2015	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	0.5	51.6	<0.50	<0.50	18.4	<0.50	<0.50	15.8	9.7
	12/8/2015	Well Damaged, Unable to Sample														
	6/17/2016	<0.50	<2	<0.50	<0.50	1.1	<0.50	<0.50	19.4	<0.50	<0.50	17.2	<0.50	<0.50	11.8	3.4
	9/30/2016	<0.50	<2	<0.50	<0.50	2	<0.50	<0.50	40	<0.50	<0.50	9.6	<0.50	<0.50	11.5	9.6
	12/16/2016	<0.50	<2	<0.50	<0.50	1.7	<0.50	<0.50	35.3	<0.50	<0.50	40.7	<0.50	<0.50	24.8	1.4
	3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	18.5	<0.5	<0.5	26	<0.5	<0.5	11.2	0.75
	6/15/2017	<2.0	<2.0	<0.50	<0.50	0.88	<1.0	<0.50	20.7	<0.50	<0.50	40.4	<0.50	<0.50	17.3	1.3
	9/29/2017	<2.0	<2.0	<0.50	<0.50	2.30	<1.0	<0.50	30.4	<0.50	<0.50	17.5	<0.50	<0.50	12.0	6.7
	11/9/2017	<2.0	<2.0	<0.50	<0.50	1.80	<0.50	<0.50	30.2	<0.50	<0.50	34.2	<0.50	<0.50	20.1	1.1
	3/22/2018	<0.500	<2.50	<0.500	<0.500	0.82	<0.500	0.244 J	17.3	0.164 J	<0.500	20.6	0.205 J	<0.500	11.6	1.2
	7/1/2018	<0.500	<2.50	<0.500	<0.500	0.73	<0.500	<0.500	14.1	<0.500	<0.500	19.6	0.20	<0.500	10.1	1.6
	12/10/2018	<0.500	<2.50	<0.500	<0.500	2.26	<0.500	0.43	41.7	0.43	<0.500	36.1	<0.400	<0.500	20.7	4.4
	3/25/2019	<1.00	<5.00	<1.00	<1.00	1.86	<0.400	<0.400	36.8	0.415	<0.500	40.1	<0.400	<0.500	23.3	0.773

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-3(60) (continued)	6/4/2019	<1.00	<5.00	<1.00	<1.00	0.580	<0.400	<0.400	18.00	<0.400	<0.500	32.3	<0.400	<0.500	15.7	0.420
	9/27/2019	<1.00	<5.00	<1.00	<1.00	1.590	<0.400	<0.400	35.20	0.47	<0.500	25	<0.400	<0.500	13.8	3.080
	12/4/2019	<1.00	<5.00	<1.00	<1.00	2.030	<0.400	0.427	54.50	0.42	<0.500	28.9	<0.400	<0.500	19.4	2.850
	3/12/2020	<1.00	<5.00	<1.00	<1.00	0.541	<0.400	<0.400	12.30	<0.400	<0.500	21.7	<0.400	<0.500	9.24	0.642
	6/16/2020	<1.00	<5.00	<1.00	<1.00	0.820	<0.400	<0.400	16.50	<0.400	<0.500	23.7	<0.400	<0.500	10.4	0.850
	10/6/2020	<1.00	<5.00	<1.00	<1.00	1.21	<0.400	<0.400	28.9	<0.400	<0.500	32.3	<0.400	<0.500	17.9	1.38
	12/8/2020	<2.00	<5.00	<1.00	<1.00	0.860	<0.400	<0.400	20.2	<0.400	<0.500	21.8	<0.400	<0.500	10.5	0.757
	3/4/2021	<1.00	<5.00	<1.00	<1.00	0.455	<0.400	<0.400	10.2	<0.400	<0.500	11.7	<0.400	<0.500	5.95	0.524
	6/17/2021	<1.00	<5.00	<1.00	<1.00	0.621	<0.400	<0.400	11.8	<0.400	<0.500	15.5	<0.400	<0.500	8.23	0.602
	9/16/2021	<1.00	<5.00	<1.00	<1.00	1.290	<0.400	<0.400	26.9	<0.400	<0.500	18.9	<0.400	<0.500	11.5	0.956
	12/7/2021	<1.00	<5.00	<1.00	<1.00	1.570	<0.400	0.41	40.5	<0.400	<0.500	41.8	<0.400	<0.500	21	1.5
	3/10/2022	<1.00	<5.00	<1.00	<1.00	0.530	<0.400	<0.400	11.0	<0.400	<0.500	9.29	<0.400	<0.500	5.21	1.10
	6/14/2022	<1.00	<5.00	<1.00	<1.00	0.490	<0.400	<0.400	15.6	<0.400	<0.500	39.3	<0.400	<0.500	14.7	<0.400
	9/12/2022	<1.00	<5.00	<1.00	<1.00	0.990	<0.400	<0.400	22.4	<0.400	<0.500	18.5	<0.400	<0.500	9.37	0.780
	12/6/2022	<1.00	<5.00	<1.00	<1.00	0.81	<0.400	<0.400	15.2	<0.400	<0.500	26.6	<0.400	<0.500	10.2	<0.400
	3/16/2023	<1.00	<5.00	<1.00	<1.00	0.45	<0.400	<0.400	9.02	<0.400	<0.500	8.98	<0.400	<0.500	4.33	<0.400
	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.8	<0.400	<0.500	8.57	<0.400	<0.500	4.09	<0.400
	9/11/2023	<1.00	<5.00	<1.00	<1.00	0.720	<0.400	<0.400	15.2	<0.400	<0.500	8.63	<0.400	<0.500	5.48	0.530
	12/12/2023	<1.00	<5.00	<1.00	<1.00	1.19	<0.400	<0.400	24.6	<0.400	<0.500	42.3	<0.400	<0.500	18.4	0.460
	3/4/2024	<2.00	<5.00	<1.00	<1.00	0.610	<0.400	<0.400	11.3	<0.400	<0.500	16.2	<0.400	<0.500	8.51	0.240
	6/10/2024	<1.00	<5.00	<1.00	<1.00	0.630	<0.400	<0.400	15.2	<0.400	<0.500	21.0	<0.400	<0.500	9.83	0.230
MGMS2-2(110)	6/28/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	6.04	<1	--	17.1	<0.50
	8/30/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.41	<0.50	<0.50	16.4	<1	--	14.7	<0.50
	11/29/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	0.717	8.23	<0.50	<0.50	13	<1	--	19.3	<0.50
	2/27/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	0.756	7.31	<0.50	<0.50	15.2	<1	--	21.6	<0.50
	5/31/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	0.938	10.7	<0.50	<0.50	24.4	1.14	--	29.1	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	6.8	<0.50	<0.50	37	1.1	--	34	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	0.62	4.91	<0.50	<0.50	35.1	<1	--	27.5	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	0.61	9.97	<0.50	<0.50	35.6	1.23	--	24.6	<0.50
	5/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	1.21	31.9	<0.50	<0.50	114	2.39	--	51	0.61
	1/23/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	1.01	57.1	<0.50	<0.50	47.8	2.79	--	44.1	2.98
	5/28/2003	<1	<0.50	<0.50	<1	0.61	<0.50	0.73	63.9	<0.50	<0.50	54.6	1.98	--	43.1	1.13
	11/11/2003	<1	<1	<1	<1	1.14	<1	<1	76.7	1.07	<1	32.4	2.19	--	30.8	2.03
	1/27/2004	<1	<0.50	<0.50	<1	0.63	<0.50	<0.50	49	<0.50	<0.50	67.9	1.17	--	30	1
	5/3/2004	<1	<1	<1	<1	<1	<1	<1	14	<1	<1	28	<1	--	13.6	<1
	11/15/2004	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	0.62	60	<0.50	<0.50	50	1.6	--	30	<0.50
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	27.9	<0.50	<0.50	21.5	0.52	--	10.9	<0.50
	11/16/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	15.1	<0.500	<0.500	18	<0.500	--	8.42	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-2(110)	6/6/2006	<1	<1	<1	<1	<1	<1	<1	30.9	<1	<1	13.9	<1	--	6.59	<1
(continued)	12/5/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	36.2	<0.50	<0.50	17.9	<0.50	--	8.27	<0.50
	9/10/2007	<5	<2.50	<2.50	<5	<2.50	<2.50	3.2	512	<2.50	<2.50	146	5.65	--	94.4	14.9
	3/4/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	59.5	<0.500	<0.500	33.4	0.75	<0.500	16.7	2.82
	9/16/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	0.71	77	<0.500	<0.500	44	1.18	<0.500	23.8	3.45
	3/24/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	40	<0.50	<0.50	27	<0.50	<0.50	11	2.5
	6/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	31	<0.50	<0.50	20	0.57	<0.50	8.9	2.3
	9/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	16	<0.50		6.7	1.8
	3/15/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28	<0.50	<0.50	21	<0.50	<0.50	8.1	1.6
	9/21/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	33	<0.5	<0.5	34	0.6	<0.5	14	1.3
	3/7/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	24	<0.50	<0.50	26	<0.50	<0.50	8.6	1
	9/12/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	22	<0.50	<0.50	8.3	<0.50
	3/8/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	31	<0.50	<0.50	23	<0.50	<0.50	9.3	2.4
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18	<0.50	<0.50	20	<0.50	<0.50	8.3	1.4
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	34	<0.50	<0.50	23	0.52	<0.50	10	2.7
	9/17/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	30	<0.50	<0.50	18	<0.50	<0.50	8.7	2.2
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	21	<0.50	<0.50	13	<0.50	<0.50	6.2	2.5
	9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	25	<0.50	<0.50	12	<0.50	<0.50	7.3	4.9
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	18.3	<0.50	<0.50	7.9	<0.50	<0.50	4.8	4.6
	9/25/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15.3	<0.50	<0.50	9.4	<0.50	<0.50	5.9	4.1
	3/9/2016	<0.50	<2	<0.50	<0.50	0.73	<0.50	<0.50	22.6	<0.50	<0.50	7.1	<0.50	<0.50	8	10
	9/29/2016	<0.50	<2	<0.50	<0.50	0.62	<0.50	<0.50	16.8	<0.50	<0.50	6.5	<0.50	<0.50	6.3	5.8
	3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	19.5	<0.5	<0.5	6.4	<0.5	<0.5	6.6	6.4
	9/29/2017	<2.0	<2.0	<0.50	<0.50	2.8	<1.0	<0.50	63.5	<0.50	<0.50	2.2	<0.50	<0.50	5.3	25.0
	11/9/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	3.9	<0.50	<0.50	3.1	1.9
	7/1/2018	<0.500	<2.50	<0.500	<0.500	0.446 J	<0.500	<0.500	<0.500	6.7	<0.500	4.4	0.175 J	<0.500	3.4	3.87
	9/28/2018	<1.00	<5.00	<1.00	<1.00	0.4	<0.400	<0.400	11.3	<0.400	<0.500	5.0	<0.400	<0.500	4.3	4.63
	6/4/2019	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.37	<0.400	<0.500	3.44	<0.400	<0.500	2.04	0.770
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.49	<0.400	<0.500	4.29	<0.400	<0.500	2.73	2.320
	6/16/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.91	<0.400	<0.500	4.19	<0.400	<0.500	2.5	1.170
	12/8/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.63	<0.400	<0.500	3.21	<0.400	<0.500	2.52	1.560
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.23	<0.400	<0.500	2.89	<0.400	<0.500	3.01	1.74
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.50	<0.400	<0.500	4.06	<0.400	<0.500	3.23	1.410
	06/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.51	<0.400	<0.500	3.86	<0.400	<0.500	2.29	0.820
	12/6/2022	<1.00	<5.00	<1.00	<1.00	0.590	<0.400	<0.400	17.6	<0.400	<0.500	3.48	<0.400	<0.500	3.83	3.65

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-2(110) (continued)	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.26	<0.400	<0.500	2.31	<0.400	<0.500	1.86	0.720
	12/12/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.57	<0.400	<0.500	3.81	<0.400	<0.500	2.16	0.670
	6/10/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.94	<0.400	<0.500	3.05	<0.400	<0.500	1.94	0.630
MGMS2-1(132)	6/28/2000	<1	<5	<0.50	<0.50	1.25	<0.50	1.77	27.6	<0.50	<0.50	27.5	2.06	--	54.3	<0.50
	8/30/2000	<1	<5	<0.50	<0.50	0.903	<0.50	<0.50	23	<0.50	<0.50	77.8	2.47	--	52.9	<0.50
	11/29/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	0.569	12.4	<0.50	<0.50	25.3	<1	--	27.8	<0.50
	2/27/2001	<1	<5	<0.50	<0.50	0.537	<0.50	0.605	11.4	<0.50	<0.50	25.2	<1	--	24.4	2.6
	5/31/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	8.86	<0.50	<0.50	25.5	<1	--	24.4	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	7.6	<0.50	<0.50	29	1.1	--	30	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	0.773	6.81	<0.50	<0.50	26.8	1.36	--	23.8	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	0.53	8.62	<0.50	<0.50	33.5	0.77	--	24.2	<0.50
	5/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	1.29	35.4	0.52	<0.50	117	2.5	--	53.6	0.62
	1/23/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	0.96	57.4	<0.50	<0.50	49.9	2.35	--	46.2	3.19
	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	0.53	27.2	<0.50	<0.50	29.3	0.98	--	24	1.07
	11/11/2003	<1	<1	<1	<1	<1	<1	<1	46.3	<1	<1	28.8	1.56	--	29.7	1.49
	1/27/2004	<1	<0.50	<0.50	<1	0.63	<0.50	0.56	37.6	<0.50	<0.50	28	0.96	--	22.2	1.51
	5/4/2004	<1	<1	<1	<1	<1	<1	<1	38.2	<1	<1	7.55	<1	--	5.22	<1
	11/15/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.58	62	<0.50	<0.50	38	1.1	--	26	0.85
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	29.5	<0.50	<0.50	23.7	0.56	--	15.2	0.86
	11/16/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	8.85	<0.500	<0.500	13	<0.500	--	6.06	<0.500
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	23.1	<1	<1	14.8	<1	--	6.71	<1
	12/5/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	27.6	<0.50	<0.50	14.9	<0.50	--	7.89	<0.50
	9/10/2007	<5	<2.50	<2.50	<5	4.55	<2.50	3	615	<2.50	<2.50	93.2	5.5	--	61	21.5
	3/4/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	37.3 J	<0.500	<0.500	22.6 J	0.59	<0.500	12.9 J	2.4
	9/16/2008	<1	<0.500	<0.500	<1	0.53	<0.500	1	101	0.56	<0.500	38.3	1.37	<0.500	26.1	6.11
	3/24/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	24	0.57	<0.50	11	1.5
	6/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	24	<0.50	<0.50	12	1.6
	9/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	18	<0.50		8	1.5
	3/15/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28	<0.50	<0.50	23	<0.50	<0.50	9.9	1.6
	9/21/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	28	<0.5	<0.5	31	<0.5	<0.5	12	1.1
	3/7/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	30	<0.50	<0.50	41	0.56	<0.50	13	0.97
	3/8/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	24	<0.50	<0.50	9.4	1.8
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	22	<0.50	<0.50	9	2
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	24	<0.50	<0.50	19	<0.50	<0.50	8.3	1.9
	9/17/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	35	<0.50	<0.50	15	<0.50	<0.50	8.1	2.7

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS2-1(132) (continued)	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	22	<0.50	<0.50	12	<0.50	<0.50	5.4	2.6
	9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	32	<0.50	<0.50	9.8	<0.50	<0.50	6	5.5
	3/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10.5	<0.50	<0.50	9.4	<0.50	<0.50	4.4	0.75
	3/9/2016	<0.50	<0.50	<0.50	<0.50	0.860	<0.50	<0.50	36.8	<0.50	<0.50	7.9	0.69	<0.50	10.7	12.4
	9/29/2016	<0.50	<0.50	<0.50	<0.50	0.700	<0.50	<0.50	31.4	<0.50	<0.50	6.4	<0.50	<0.50	7.9	8.2
	3/31/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	15.6	<0.5	<0.5	5.2	<0.5	<0.5	4.7	4.8
	9/29/2017	<2.0	<2.0	<0.50	<0.50	2.20	<1.0	<0.50	64.9	<0.50	<0.50	2.4	0.6	<0.50	6.3	19.4
	11/9/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	14.3	<0.50	<0.50	3.6	<0.50	<0.50	4.5	5.0
	7/1/2018	<0.500	<2.50	<0.500	<0.500	0.531	<0.500	<0.500	13.8	<0.500	<0.500	4.5	0.191 J	<0.500	4.9	4.6
	9/28/2018	<1.00	<5.00	<1.00	<1.00	0.520	<0.400	<0.400	17.8	<0.400	<0.500	4.8	<0.400	<0.500	5.6	6.7
	6/4/2019	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.43	<0.400	<0.500	2.76	<0.400	<0.500	2.13	2.07
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.96	<0.400	<0.500	3.66	<0.400	<0.500	3.07	3.29
	6/16/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.37	<0.400	<0.500	3.79	<0.400	<0.500	2.50	1.99
	12/8/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.82	<0.400	<0.500	3.34	<0.400	<0.500	3.14	2.84
	6/17/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.06	<0.400	<0.500	2.9	<0.400	<0.500	3.34	2.54
	12/7/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	7.65	<0.400	<0.500	3.47	<0.400	<0.500	3.4	2.12
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.34	<0.400	<0.500	2.47	<0.400	<0.500	1.53	0.870
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.72	<0.400	<0.500	3.3	<0.400	<0.500	2.11	0.98
	6/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.13	<0.400	<0.500	1.99	<0.400	<0.500	1.76	0.91
	12/12/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.65	<0.400	<0.500	2.91	<0.400	<0.500	2.27	1.16
	6/11/20204	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.78	<0.400	<0.500	2.43	<0.400	<0.500	2.43	1.17
MGMS3-4(40)	8/30/2000	<10	<50	<5	<5	13.2	<5	5.01	858	14.1	<5	580	10.8	--	205	6.65
	11/29/2000	<20	<100	<10	<10	<10	<10	<10	820	10.6	<10	2,810	<20	--	395	<10
	2/27/2001	<50	<250	<25	<25	39.4	<25	29.2	4,570	<25	<25	2,970	<50	--	756	79.3
	5/31/2001	<50	<250	<25	<25	<25	<25	<25	2,920	38.5	<25	3,960	<50	--	716	<25
	9/24/2001	<2.5	<2.5	<2.5	<2.5	5.8	<2.5	<2.5	730	5.4	<2.5	1,400	9.2	--	230	3.5
	12/18/2001	<50	<250	<25	<25	<25	<25	<25	2,550	<25	<25	3,310	<50	--	631	31
	3/19/2002	<20	<10	<10	<20	34.6	<10	15.4	3,370	30.2	<10	3,560	23.8	--	707	57
	5/29/2002	<50	<25	<25	<50	71.5	<25	26	5,180	38.5	<25	2,470	33.5	--	728	86
	11/11/2002	<50	<25	<25	<50	<25	<25	<25	1,520	<25	<25	2,750	<25	--	309	<25
	1/23/2003	<20	<10	<10	<20	137	<10	38.4	3,530	32.6	<10	2,380	118	--	1,400	83.6
	5/28/2003	<50	<25	<25	<50	56	<25	28.5	1,720	<25	<25	3,560	<25	--	1,470	<25
	11/11/2003	<10	<10	<10	<10	<10	<10	<10	672	<10	<10	58.3	<10	--	32.4	<10
	1/27/2004	<20	<10	<10	<20	20	<10	<10	1,900	19.4	<10	1,350	10	--	246	20
	5/3/2004	<20	<20	<20	<20	50	<20	<20	1,420	<20	<20	2,700	34.2	--	913	24.8
	8/17/2004	<20	<10	<10	<20	71.6	<10	17	3,300	31	<10	1,360	29.2	--	569	45.2
	11/15/2004	<25	<25	<25	<25	<25	<25	<25	1,400	<25	<25	1,600	<25	--	290	<25
	3/24/2005	<20	<10	<10	<20	79.4	<10	30	3,440	34.2	<10	2,330	43.8	--	1,080	60.2

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-4(40)	03/24/2005 DUP	<20	<10	<10	<20	83.2	<10	29.2	3,450	34	<10	2,150	44	--	1,040	58.6
(continued)	5/16/2005	<10	<5	<5	<10	7	<5	<5	657	11.3	<5	1,130	8.1	--	224	<5
	11/16/2005	<10	<5	<5	<10	5.8	<5	<5	794	8.4	<5	1,180	7.6	--	210	<5
	3/14/2006	<50	<50	<50	<50	51	<50	<50	4,130	<50	<50	1,410	<50	--	484	<50
	6/6/2006	<20	<20	<20	<20	20.4	<20	<20	2,290	32.2	<20	1,410	<20	--	401	23.6
	12/5/2006	<20	<10	<10	<20	29.8	<10	<10	3,570	29	<10	1,020	<10	--	360	95.4
	5/22/2007	<20	<20	<20	<20	20.8	<20	<20	2,640	20.2	<20	952	<20	--	349	22.6
	9/10/2007	<50	<25	<25	<50	<25	<25	<25	2,340	<25	<25	499	<25	--	215	25.5
	12/12/2007	<50	<25	<25	<50	<25	<25	<25	723	<25	<25	536	<25	--	133	<25
	3/4/2008	<1	<0.500	<0.500	<1	32.4	3.08	22	2,280	25.4	3.86	1,580	27.5	<0.500	972	85.1
	9/16/2008	<50	<25	<25	<50	64.5	<25	<25	2,700	<25	<25	714	<25	<25	462	47
	12/8/2008	<9	<9	<9	<9	24	<9	<9	1,800	20	<9	350	<9	<9	160	90
	3/24/2009	<7	<7	<7	<7	36	<7	7.9	1,600	12	<7	600	11	<7	280	33
	9/15/2009	<5	<5	<5	<5	15	<5	<5	1,500	13	<5	550	<5	<5	180	8.2
	09/15/2009 DUP	<5	<5	<5	<5	15	<5	<5	1,400	13	<5	540	<5	<5	170	9.8
	12/14/2009	<2.5	<2.5	<2.5	<2.5	8.1	<2.5	<2.5	750	5.3	<2.5	180	<2.5	<2.5	74	19
	3/17/2010	<2.5	<2.5	<2.5	<2.5	52	<2.5	14	1,800	18	2.9	810	16	<2.5	490	41
	03/17/2010 DUP	<5	<5	<5	<5	51	<5	14	1,600	18	<5	780	16	<5	470	39
	6/14/2010	<0.90	<0.90	<0.90	<0.90	2.4	<0.90	<0.90	230	2.3	<0.90	300	2.2	<0.90	88	1.5
	9/20/2010	<7	<7	<7	<7	32	<7	8.6	1,800	16	<7	530	7.9	<7	230	31
	09/20/2010 DUP	<6	<6	<6	<6	31	<6	7.4	1,700	15	<6	510	7.4	<6	220	29
	12/7/2010	<2	<2	<2	<2	5.3	<2	<2	460	3.9	<2	330	2.2	<2	95	3.2
	3/7/2011	<2	<2	<2	<2	20	<2	4.7	1,300	10	<2	330	4	<2	140	53
	03/07/2011 DUP	<4	<4	<4	<4	19	<4	4.9	1,200	10	<4	320	<4	<4	140	46
	6/6/2011	<3	<3	<3	<3	6.5	<3	4.1	780	7	<3	370	5.4	<3	150	8.5
	9/13/2011	<5	<5	<5	<5	45	<5	13	1,800	19	<5	560	15	<5	380	29
	09/13/2011 DUP	<7	<7	<7	<7	40	<7	12	1,700	16	<7	570	12	<7	330	23
	12/6/2011	<5	<5	<5	<5	14	<5	<5	1,000	9.3	<5	140	<5	<5	64	44
	3/8/2012	<5	<5	<5	<5	33	<5	13	1,400	14	<5	930	17	<5	450	28
	03/08/2012 DUP	<6	<6	<6	<6	35	<6	14	1,400	14	<6	990	18	<6	480	30
	06/21/2012	<5	<5	<5	<5	22	<5	5.6	1,300	11	<5	220	<5	<5	140	44
	9/12/2012	<5	<5	<5	<5	23	<5	6.2	1,400	13	<5	220	<5	<5	120	85
	09/12/2012 DUP	<5	<5	<5	<5	23	<5	5.3	1,400	13	<5	230	<5	<5	120	86
	12/11/2012	<2	<2	<2	<2	7.1	<2	<2	510	6.5	<2	180	<2	<2	72	6.5

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-4(40) (continued)	3/12/2013	<2	<2	<2	<2	30	<2	8.4	1,400	12	<2	510	8.7	<2	260	35
	03/12/2013 DUP	<2	<2	<2	<2	29	<2	8.8	1,300	12	<2	470	8.4	<2	250	35
	6/11/2013	<2.5	<2.5	<2.5	<2.5	11	<2.5	<2.5	740	7.1	<2.5	110	<2.5	<2.5	58	34
	9/16/2013	<2	<2	<2	<2	7.7	<2	<2	360	4.6	<2	100	<2	<2	48	24
	09/16/2013 DUP	<2	<2	<2	<2	8.5	<2	<2	380	5.1	<2	100	<2	<2	49	25
	12/10/2013	<0.90	<0.90	<0.90	<0.90	4.7	<0.90	<0.90	230	2.8	<0.90	60	<0.90	<0.90	29	2
	12/10/2013 DUP	<0.90	<0.90	<0.90	<0.90	4.6	<0.90	<0.90	230	2.7	<0.90	61	<0.90	<0.90	29	1.9
	3/18/2014	<0.90	<0.90	<0.90	<0.90	2.7	<0.90	0.98	280	1.8	0.91	84	<0.90	<0.90	38	<0.90
	3/18/2014 DUP	<0.90	<0.90	<0.90	<0.90	2.6	<0.90	<0.90	280	1.9	0.93	86	<0.90	<0.90	39	<0.90
	6/26/2014	<0.90	<0.90	<0.90	<0.90	12	<0.90	3.5	690	5.7	<0.90	180	1.3	<0.90	100	20
	6/26/2014 DUP	<0.90	<0.90	<0.90	<0.90	11	<0.90	2.8	490	5	<0.90	160	1.1	<0.90	930	14
	9/23/2014	<0.90	<0.90	<0.90	<0.90	10	<0.90	1.7	410	5.8	<0.90	72	<0.90	<0.90	55	74
	9/23/2014 DUP	<0.20	<0.20	<0.20	<0.20	11	<0.20	<0.20	430	5.5	<0.20	70	<0.20	<0.20	53	75
	12/12/2014	<2	<2	<2	<2	7.9	<2	<2	490	4.2	<2	36	<2	<2	28	20
	3/18/2015	<1.6	<1.6	<1.6	<1.6	20	<1.6	3.2	896	7.3	<1.6	249	<1.6	<1.6	159	21.7
	3/18/2015 DUP	<0.50	<0.50	<0.50	<0.50	17	<0.50	2.4	713	5.5	<0.50	194	<0.50	<0.50	124	16.8
	6/19/2015	<0.84	<0.84	<0.84	<0.84	7.2	<0.84	<0.84	339	3.2	<0.84	34.4	<0.84	<0.84	32.8	73.3
	9/22/2015	<0.50	<0.50	<0.50	<0.50	2.8	<0.50	<0.50	164	<0.50	<0.50	2.5	<0.50	<0.50	8.6	61.9
	9/22/2015 DUP	<0.50	<0.50	<0.50	<0.50	2.5	<0.50	<0.50	151	1.2	<0.50	2.3	<0.50	<0.50	7.8	51.9
	12/7/2015	<0.50	<0.50	<0.50	<0.50	9.1	<0.50	2	370	3.1	<0.50	109	<0.50	<0.50	94.8	4
	3/9/2016	<2.5	<10	<2.5	<2.5	11.6	<2.5	<2.5	610	4	<2.5	86.7	<2.5	<2.5	89.7	22.9
	3/8/2016 DUP	<2.5	<10	<2.5	<2.5	12.4	<2.5	<2.5	643	5.4	<2.5	97.4	<2.5	<2.5	102	28
	6/17/2016	<1.2	<5	<1.2	<1.2	24.5	<1.2	6	955	9.1	<1.2	232	<1.2	<1.2	209	85.9
	9/30/2016	<0.50	<2	<0.50	<0.50	4.1	<0.50	0.54	226	1.8	<0.50	1.7	<0.50	<0.50	1.3	45.8
	9/30/2016 DUP	<0.50	<2	<0.50	<0.50	4.5	<0.50	0.6	219	2	<0.50	1.5	<0.50	<0.50	1.4	52.1
	12/16/2016	<0.50	<2	<0.50	<0.50	1	<0.50	<0.50	1.3	0.97	<0.50	0.63	<0.50	<0.50	<0.50	0.88
	3/28/2017	<0.5	<2	<0.5	<0.5	22.5	0.68	2.8	979	5.5	<0.5	1.4	<0.5	<0.5	0.6	257
	3/28/2017 DUP	<2.5	<10	<2.5	<2.5	20.7	<2.5	3.3	1,050	6	<2.5	<2.5	<2.5	<2.5	<2.5	323
	6/12/2017	<0.50	<2.0	<0.50	<0.50	3.3	<0.50	<0.50	1.7	<0.50	<0.50	0.97	<0.50	<0.50	<0.50	<0.50
	9/26/2017	<2.0	<2.0	<0.50	<0.50	1.1	<1.0	<0.50	0.7	<0.50	<0.50	0.79	<0.50	<0.50	<0.50	<0.50
	9/26/2017 DUP	<2.0	<2.0	<0.50	<0.50	1.1	<1.0	<0.50	0.8	<0.50	<0.50	0.86	<0.50	<0.50	<0.50	<0.50
	11/10/2017	<2.0	<2.0	<0.50	<0.50	4.2	<0.50	<0.50	7.6	<0.50	<0.50	0.85	<0.50	<0.50	<0.50	12.80
	11/10/2017 DUP	<2.0	<2.0	<0.50	<0.50	4.3	<0.50	<0.50	8.0	<0.50	<0.50	0.71	<0.50	<0.50	<0.50	15.80
	3/22/2018	<0.500	<2.50	<0.500	<0.500	8.6	<0.500	<0.500	9.8	0.179 J	0.63	1.45	<0.500	<0.500	0.53	39.80

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-4(40)	7/1/2018	<0.500	<2.50	<0.500	<0.500	1.4	<0.500	<0.500	7.6	<0.500	0.279 J	0.498 J	<0.500	<0.500	0.169 J	8.98
(continued)	7/1/2018 DUP	<0.500	<2.50	<0.500	<0.500	2.0	<0.500	<0.500	9.4	<0.500	0.318 J	0.63	<0.500	<0.500	0.163 J	17.30
	9/28/2018	<1.00	<5.00	<1.00	<1.00	6.7	<0.400	<0.400	116.0	<0.400	<0.500	0.97	<0.400	<0.500	<0.400	129.0
	9/28/2018 DUP	<1.00	<5.00	<1.00	<1.00	9.1	<0.400	0.56	143.0	<0.400	<0.500	0.69	<0.400	<0.500	<0.400	129.0
	12/10/2018	<1.00	<5.00	<1.00	<1.00	1.5	<0.400	<0.400	1.8	<0.400	<0.500	0.60	<0.400	<0.500	<0.400	5.44
	3/26/2019	<2.00	<5.00	<1.00	<1.00	8.36	<0.400	0.709	117	<0.400	<0.500	0.680	<0.400	<0.500	<0.400	151
	6/3/2019	<2	<5	<0.5	<0.5	7.22	<0.400	0.440	74.7	<0.400	0.520	0.530	<0.400	<0.500	<0.400	157
	6/3/2019 DUP	<2	<5	<0.5	<0.5	7.40	<0.400	0.420	75.6	<0.400	0.610	0.560	<0.400	<0.500	<0.400	144
	9/27/2019	<1.00	<5.00	<1.00	<1.00	5.09	<0.400	<0.400	80.5	<0.400	<0.500	0.497	<0.400	<0.500	<0.400	106
	9/27/2019 DUP	<1.00	<5.00	<1.00	<1.00	5.09	<0.400	0.413	80.4	<0.400	<0.500	0.578	<0.400	<0.500	<0.400	104
	12/4/2019	<1.00	<5.00	<1.00	<1.00	1.63	<0.400	<0.400	2.57	<0.400	<0.500	1.350	<0.400	<0.500	0.45	4.5
	12/4/2019 DUP	<1.00	<5.00	<1.00	<1.00	1.67	<0.400	<0.400	2.66	<0.400	<0.500	1.130	<0.400	<0.500	<0.400	5.79
	3/12/2020	<1.00	<5.00	<1.00	<1.00	12.80	<0.400	2.430	418	0.64	<0.500	0.529	<0.400	<0.500	0.44	330
	6/16/2020	<1.00	<5.00	<1.00	<1.00	3.54	<0.400	<0.400	135	<0.400	0.670	0.660	<0.400	<0.500	<0.400	129
	6/16/2020 DUP	<1.00	<5.00	<1.00	<1.00	3.71	<0.400	<0.400	138	<0.400	0.700	0.600	<0.400	<0.500	<0.400	134
	10/6/2020	<1.00	<5.00	<1.00	<1.00	4.23	<0.400	<0.400	67.2	<0.400	<0.500	0.85	<0.400	<0.500	<0.400	83.9
	10/6/2020 DUP	<1.00	<5.00	<1.00	<1.00	4.38	<0.400	<0.400	66.9	<0.400	<0.500	0.828	<0.400	<0.500	<0.400	84
	12/10/2020	<40.0	<100	<20.0	<20.0	<8.00	<8.00	<8.00	104	<8.00	<10.0	<8.00	<8.00	<10.0	<8.00	131
	12/10/2020 DUP	<40.0	<100	<20.0	<20.0	<8.00	<8.00	<8.00	125	<8.00	<10.0	<8.00	<8.00	<10.0	<8.00	155
	3/4/2021	<1.00	<5.00	<1.00	<1.00	6.69	<0.400	<0.400	111	<0.400	<0.500	0.698	<0.400	<0.500	<0.400	137
	3/4/2021 DUP	<1.00	<5.00	<1.00	<1.00	6.81	<0.400	<0.400	116	<0.400	<0.500	0.617	<0.400	<0.500	<0.400	137
	6/16/2021	<1.00	<5.00	<1.00	<1.00	4.74	<0.400	<0.400	16.3	<0.400	<0.500	0.486	<0.400	<0.500	<0.400	109
	6/16/2021 DUP	<1.00	<5.00	<1.00	<1.00	4.8	<0.400	<0.400	17	<0.400	<0.500	0.466	<0.400	<0.500	<0.400	108
	9/16/2021	<1.00	<5.00	<1.00	<1.00	2.86	<0.400	<0.400	9.61	<0.400	<0.500	0.547	<0.400	<0.500	<0.400	30.7
	9/16/2021 DUP	<1.00	<5.00	<1.00	<1.00	2.86	<0.400	<0.400	9.86	<0.400	<0.500	0.549	<0.400	<0.500	<0.400	30.5
	12/10/2021	<1.00	<5.00	<1.00	<1.00	2.32	<0.400	<0.400	6.02	<0.400	<0.500	0.509	<0.400	<0.500	<0.400	25.7
	12/10/2021 DUP	<1.00	<5.00	<1.00	<1.00	2.13	<0.400	<0.400	5.65	<0.400	<0.500	0.535	<0.400	<0.500	<0.400	24.6
	3/10/2022	<1.00	<5.00	<1.00	<1.00	5.70	<0.400	<0.400	102	<0.400	<0.500	0.510	<0.400	<0.500	<0.400	122
	3/10/2022 DUP	<1.00	<5.00	<1.00	<1.00	6.34	<0.400	0.400	114	<0.400	<0.500	0.870	<0.400	<0.500	0.400	136
	6/14/2022	<1.00	<5.00	<1.00	<1.00	12.8	<0.400	1.85	234	0.560	0.540	0.720	<0.400	<0.500	2.12	267
	6/14/2022	<1.00	<5.00	<1.00	<1.00	12.6	<0.400	1.80	280	0.610	0.520	0.570	<0.400	<0.500	2.15	292
	9/14/2022	<5.00	<25.0	<5.00	<5.00	7.85	<2.00	<2.00	391	<2.00	<2.5	<2.00	<2.00	<2.50	<2.00	171
	9/14/2022 DUP	<5.00	<25.0	<5.00	<5.00	8.9	<2.00	<2.00	391	<2.00	<2.50	<2.00	<2.00	<2.50	<2.00	190
	12/6/2022	<1.00	<5.00	<1.00	<1.00	3.61	<0.400	<0.400	8.19	<0.400	<0.500	0.54	<0.400	<0.500	<0.400	58.5
	12/6/2022 DUP	<1.00	<5.00	<1.00	<1.00	3.78	<0.400	<0.400	7.94	<0.400	<0.500	1.02	<0.400	<0.500	<0.400	59.6
	3/16/2023	<10.0	<50.0	<10.0	<10.0	9.9	<4.00	<4.00	374	<4.00	<5.00	<4.00	<4.00	<5.00	<4.00	270
	3/16/2023 DUP	<10.0	<50.0	<10.0	<10.0	10.2	<4.00	<4.00	394	<4.00	<5.00	<4.00	<4.00	<5.00	<4.00	298
	6/15/2023	<1.00	<5.00	<1.00	<1.00	7.35	<0.400	<0.400	55.7	<0.400	<0.500	0.41	<0.400	<0.500	<0.400	90.1
	6/15/2023 DUP	<1.00	<5.00	<1.00	<1.00	7.81	<0.400	<0.400	56.9	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	92
	9/11/2023	<1.00	<5.00	<1.00	<1.00	3.88	<0.400	<0.400	32.3	<0.400	<0.500	0.410	<0.400	<0.500	<0.400	67.4

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-4(40) (continued)	9/11/2023 DUP	<1.00	<5.00	<1.00	<1.00	3.95	<0.400	<0.400	27.0	<0.400	<0.500	0.420	<0.400	<0.500	<0.400	66.0
	12/13/2023	<1.00	<5.00	<1.00	<1.00	7.15	0.420	<0.400	29.2	<0.400	0.580	0.490	<0.400	<0.500	<0.400	173
	12/13/2023 DUP	<1.00	<5.00	<1.00	<1.00	7.99	0.450	<0.400	32.6	<0.400	0.640	0.500	<0.400	<0.500	<0.400	199
	3/4/2024	<2.00	<5.00	<1.00	<1.00	7.74	<0.400	0.780	193	0.480	<0.500	1.34	<0.400	<0.500	0.630	197
	3/4/2024 DUP	<2.00	<5.00	<1.00	<1.00	7.63	<0.400	0.770	183	0.470	<0.500	0.450	<0.400	<0.500	0.440	205
	6/10/2024	<1.00	<5.00	<1.00	<1.00	3.74	<0.400	<0.400	1.95	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	53.4
	6/10/2024 DUP	<1.00	<5.00	<1.00	<1.00	3.82	<0.400	<0.400	2.06	<0.400	<0.500	0.450	<0.400	<0.500	<0.400	54.5
MGMS3-3(60)	8/30/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	7.03	<1	--	3.31	<0.50
	11/29/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.11	<0.50	<0.50	2.8	<1	--	1.28	<0.50
	2/27/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	21.5	<0.50	<0.50	14.9	<1	--	7.32	<0.50
	5/31/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	10.1	<0.50	<0.50	9.84	<1	--	4.76	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.1	<0.50	<0.50	9.7	<0.50	--	3.7	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	3.26	<0.50	<0.50	17	<1	--	3.84	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	0.68	<0.50	<0.50	17.6	<0.50	<0.50	32.3	0.5	--	14	<0.50
	5/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	40.5	<0.50	<0.50	20.8	<0.50	--	7.92	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	0.5	<0.50	<0.50	33.9	<0.50	<0.50	20.3	<0.50	--	12.7	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	0.58	<0.50	<0.50	88.3	0.53	<0.50	16.9	<0.50	--	11.9	0.7
	11/11/2003	<2	<2	<2	<2	<2	<2	<2	298	<2	<2	36.1	<2	--	23	<2
	1/27/2004	<2	<1	<1	<2	1.2	<1	<1	274	1.24	<1	25.2	<1	--	23.4	1.28
	5/3/2004	<2	<2	<2	<2	<2	<2	<2	274	<2	<2	46.6	<2	--	27	<2
	11/15/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	43	<0.50	<0.50	8.8	<0.50	--	3.4	<0.50
	2/1/2005	<2	<1	<1	<2	<1	<1	<1	179	1.72	<1	15.6	<1	--	7.9	<1
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	33.8	<0.50	<0.50	5.7	<0.50	--	2.39	<0.50
	8/18/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	47.9	<0.500	<0.500	4.39	<0.500	--	1.96	0.66
	11/16/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	8.39	<0.500	<0.500	2.59	<0.500	--	0.83	<0.500
	2/21/2006	<5	<2.50	<2.50	<5	2.65	<2.50	<2.50	558	<2.50	<2.50	25	<2.50	--	14.4	21.6
	3/14/2006	<1	<1	<1	<1	2.92	<1	1.37	97.1	<1	<1	50.6	<1	--	39.2	<1
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	7.97	<1	<1	2.84	<1	--	1.04	<1
	9/5/2006	<1	<0.50	<0.50	<1	2.75	<0.50	1.17	108	0.78	<0.50	47.3	0.93	--	34.2	0.65
	12/5/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	19.8	<0.50	<0.50	10.5	<0.50	--	5.57	<0.50
	2/7/2007	<1	<0.50	<0.50	<1	1.08	<0.50	<0.50	44.3	<0.50	<0.50	21.5	<0.50	--	15.4	<0.50
	5/22/2007	<1	<1	<1	<1	<1	<1	<1	32.5	<1	<1	45.2	<1	--	18.2	<1
	9/10/2007	<2	<1	<1	<2	2.98	<1	<1	148	<1	<1	28.8	<1	--	31.6	1.67
	12/12/2007	<2	<1	<1	<2	<1	<1	<1	11.5	<1	<1	4.22	<1	--	1.9	1.18
	3/4/2008	<1	<0.500	<0.500	<1	1.58	<0.500	0.68	72.1	0.6	<0.500	27.2	0.5	<0.500	22.7	2.33
	12/8/2008	<0.50	<0.50	<0.50	<0.50	0.73	<0.50	<0.50	44	<0.50	<0.50	12	<0.50	<0.50	9.2	1.3
	3/24/2009	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	42	<0.50	<0.50	21	<0.50	<0.50	14	0.91

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-3(60)	9/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	8.5	<0.50	<0.50	4.3	0.84
(continued)	12/14/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	2	<0.50	<0.50	0.85	<0.50
	3/17/2010	<0.50	<0.50	<0.50	<0.50	0.69	<0.50	<0.50	25	<0.50	<0.50	17	<0.50	<0.50	10	0.57
	6/14/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.8	<0.50	<0.50	2.4	<0.50	<0.50	1.1	0.69
	9/20/2010	<0.5	<0.5	<0.5	<0.5	0.81	<0.5	<0.5	28	<0.5	<0.5	18	<0.5	<0.5	11	0.52
	12/7/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9	<0.5	<0.5	3.4	<0.5	<0.5	1.5	0.94
	3/7/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	17	<0.50	<0.50	10	<0.50	<0.50	4.6	0.67
	6/6/2011	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	2	<0.5	<0.5	0.73	<0.5
	9/13/2011	<0.50	<0.50	<0.50	<0.50	0.94	<0.50	<0.50	34	<0.50	<0.50	17	<0.50	<0.50	12	<0.50
	12/5/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	14	<0.50	<0.50	7.3	<0.50
	3/8/2012	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	21	<0.50	<0.50	15	<0.50	<0.50	9	<0.50
	6/21/2012	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.9	<0.5	<0.5	3	<0.5	<0.5	1.2	<0.5
	9/12/2012	<0.50	<0.50	<0.50	<0.50	1	<0.50	<0.50	39	<0.50	<0.50	18	<0.50	<0.50	12	<0.50
	12/11/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.1	<0.50	<0.50	2.3	<0.50	<0.50	0.9	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	22	<0.50	<0.50	16	<0.50	<0.50	9	<0.50
	6/11/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	16	<0.50	<0.50	11	<0.50	<0.50	5.4	<0.50
	9/16/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	11	<0.50	<0.50	6.8	<0.50	<0.50	3.3	<0.50
	12/10/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	3.6	<0.50	<0.50	1.5	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4	<0.50	<0.50	2.5	<0.50	<0.50	0.89	<0.50
	6/26/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.5	<0.50	<0.50	3.4	<0.50	<0.50	1.4	<0.50
	9/23/2014	<0.50	<0.50	<0.50	<0.50	0.71	<0.50	<0.50	2	<0.50	<0.50	8.8	<0.50	<0.50	4.7	<0.50
	12/12/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.9	<0.50	<0.50	2.2	<0.50	<0.50	0.72	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12.2	<0.50	<0.50	6	<0.50	<0.50	3.7	<0.50
	6/19/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6	<0.50	<0.50	3.5	<0.50	<0.50	1.6	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	3.9	<0.50	<0.50	2	0.6
	12/7/2015	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	<0.50	13.9	<0.50	<0.50	4.2	<0.50	<0.50	2.5	16.7
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	2.8	<0.50	<0.50	0.78	<0.50
	6/17/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	17.4	<0.50	<0.50	5.8	<0.50	<0.50	5	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	3.7	<0.50	<0.50	1.9	<0.50
	12/16/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	<0.50	<0.50	1.7	<0.50	<0.50	0.68	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	0.62	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5
	6/12/2017	<0.50	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2.3	<0.50	<0.50	1.3	<0.50	<0.50	0.64	<0.50
	9/26/2017	<2.0	<2.0	<0.50	<0.50	1.20	<1.0	<0.50	34.2	<0.50	<0.50	8.6	<0.50	<0.50	7.80	<0.50
	11/10/2017	<2.0	<2.0	<0.50	<0.50	1.70	<0.50	<0.50	37.6	<0.50	<0.50	0.8	<0.50	<0.50	1.50	13.90
	3/22/2018	<0.500	<2.50	<0.500	<0.500	0.76	<0.500	<0.500	15.6	<0.500	<0.500	2.2	<0.500	<0.500	1.76	5.89

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-3(60) (continued)	7/2/2018	<0.500	<2.50 J3	<0.500	<0.500	0.67	<0.500	<0.500	12.7	<0.500	<0.500	2.7	<0.500	<0.500	1.92	3.36
	9/28/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	9.3	<0.400	<0.500	3.3	<0.400	<0.500	2.31	<0.400
	12/10/2018	<1.00	<5.00	<1.00	<1.00	1.21	<0.400	<0.400	17.7	<0.400	<0.500	0.9	<0.400	<0.500	1.16	0.86
	3/26/2019	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.23	<0.400	<0.500	1.04	<0.400	<0.500	0.420	<0.400
	6/3/2019	<4.00	<5.00	<1.00	<1.00	0.420	<0.400	<0.400	8.52	<0.400	<0.500	0.790	<0.400	<0.500	0.730	<0.400
	9/27/2019	<1.00	<5.00	<1.00	<1.00	1.130	<0.4	<0.4	21.8	<0.400	<0.500	1.030	<0.400	<0.500	1.230	3.980
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.62	<0.400	<0.500	1.170	<0.400	<0.500	0.634	<0.400
	3/12/2020	<1.00	<5.00	<1.00	<1.00	0.761	<0.400	<0.400	14.7	<0.400	<0.500	1.660	<0.400	<0.500	1.720	0.659
	6/16/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.92	<0.400	<0.500	1.170	<0.400	<0.500	0.510	<0.400
	10/6/2020	<1.00	<5.00	<1.00	<1.00	0.444	<0.400	<0.400	10.9	<0.400	<0.500	2.36	<0.400	<0.500	2.03	<0.400
	12/10/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.76	<0.400	<0.500	1.86	<0.400	<0.500	1.11	<0.400
	3/4/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	9.54	<0.400	<0.500	2.44	<0.400	<0.500	1.95	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.65	<0.400	<0.500	1.38	<0.400	<0.500	0.949	<0.400
	9/16/2021	<1.00	<5.00	<1.00	<1.00	0.786	<0.400	<0.400	17.8	<0.400	<0.500	2.06	<0.400	<0.500	1.94	1.59
	12/10/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.84	<0.400	<0.500	1.07	<0.400	<0.500	<0.400	0.542
	3/10/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	8.18	<0.400	<0.500	1.60	<0.400	<0.500	1.74	0.410
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.840	<0.400	<0.500	<0.400	<0.400
	9/14/2022	<1.00	<5.00	<1.00	<1.00	0.45	<0.400	<0.400	15.3	<0.400	<0.500	2.51	<0.400	<0.500	2.62	0.43
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.2	<0.400	<0.500	1.84	<0.400	<0.500	1.21	0.56
	3/16/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	19.3	<0.400	<0.500	2.73	<0.400	<0.500	2.92	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	0.42	<0.400	<0.400	9.33	<0.400	<0.500	1.72	<0.400	<0.500	1.19	0.71
	9/11/2023	<1.00	<5.00	<1.00	<1.00	0.400	<0.400	<0.400	17	<0.400	<0.500	2.35	<0.400	<0.500	2.12	<0.200
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	0.830	<0.400	<0.500	<0.400	0.200
	3/4/2024	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	6.63	<0.400	<0.500	1.96	<0.400	<0.500	1.57	<0.200
	6/10/2024					<0.400	<0.400	<0.400	2.68	<0.400	<0.500	1.43	<0.400	<0.500	0.780	0.350
MGMS3-2(101)	8/30/2000	<10	<50	<5	<5	7.28	<5	<5	120	<5	<5	154	12.1	--	98.2	<5
	11/29/2000	<5	<25	<2.5	<2.5	<2.5	<2.5	<2.5	11.4	<2.5	<2.5	11.5	<5	--	13	<2.5
	2/27/2001	<2	<10	<1	<1	<1	<1	<1	2.4	<1	<1	3.36	<2	--	1.98	<1
	5/31/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.24	<0.50	<0.50	3.07	<1	--	1.85	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.6	<0.50	<0.50	5.3	<0.50	--	2.4	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	0.864	<0.50	0.913	10.3	<0.50	<0.50	50.9	2.98	--	23.9	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.02	<0.50	<0.50	6.88	<0.50	--	2.54	<0.50
	5/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	8.19	<0.50	<0.50	11.5	<0.50	--	3.9	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	21.2	<0.50	<0.50	17.2	<0.50	--	8.38	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	28.6	<0.50	<0.50	18.4	<0.50	--	8.76	<0.50

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-2(101)	11/11/2003	<1	<1	<1	<1	<1	<1	<1	53.7	<1	<1	18.3	<1	--	9.3	<1
(continued)	1/27/2004	<1	<0.50	<0.50	<1	0.53	<0.50	<0.50	114	0.8	<0.50	24	<0.50	--	15.1	<0.50
	5/3/2004	<1	<1	<1	<1	<1	<1	<1	22.1	<1	<1	6.74	<1	--	4.21	<1
	11/15/2004	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	47	<0.50	<0.50	6.3	<0.50	--	2.9	<0.50
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	66.5	<0.50	<0.50	3.59	<0.50	--	1.48	0.77
	11/16/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	25.3	<0.500	<0.500	4.93	<0.500	--	1.66	0.66
	3/14/2006	<1	<1	<1	<1	<1	<1	<1	23.1	<1	<1	2.91	<1	--	1.14	1.06
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	15.9	<1	<1	3.56	<1	--	1.88	1.06
	12/5/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	32.6	<0.50	<0.50	2.84	<0.50	--	1.17	2.85
	9/10/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	40.4	<0.50	<0.50	6.32	<0.50	--	3.7	13.2
	3/4/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	18.1	<0.500	<0.500	3.4	<0.500	<0.500	1.47	5.64
	9/16/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	20.4	<0.500	<0.500	6.34	<0.500	<0.500	3.5	4.24
	3/24/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15	<0.50	<0.50	3	<0.50	<0.50	1.5	2.3
	6/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	2.4	<0.50	<0.50	1.2	2.2
	9/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14	<0.50	<0.50	3.8	<0.50	<0.50	2.1	3.2
	3/17/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7	<0.50	<0.50	3.1	<0.50	<0.50	1.8	1.2
	9/20/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.5	<0.5	<0.5	3	<0.5	<0.5	1.4	1.2
	3/7/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	3.7	<0.50	<0.50	2.2	0.86
	3/8/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.9	<0.50	<0.50	5.9	<0.50	<0.50	4.5	<0.50
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	<0.50	2.7	<0.50	<0.50	1.3	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.9	<0.50	<0.50	5.6	<0.50	<0.50	4.4	0.59
	9/16/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.9	<0.50	<0.50	3.6	<0.50	<0.50	2.1	<0.50
	3/18/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	9.1	<0.50	<0.50	6.5	<0.50
	9/23/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	<0.50	<0.50	3	<0.50	<0.50	1.5	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	<0.50	<0.50	4.4	<0.50	<0.50	2.8	<0.50
	9/22/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.3	<0.50	<0.50	3.8	<0.50	<0.50	2.6	1.2
	3/9/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	7.3	<0.50	<0.50	7.5	<0.50	<0.50	6.1	<0.50
	9/30/2016	<0.50	<2	<0.50	<0.50	<0.50	<0.50	<0.50	6.5	<0.50	<0.50	4.4	<0.50	<0.50	3	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	7	<0.5	<0.5	7	<0.5	<0.5	6	<0.5
	9/26/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	5	<0.50	<0.50	0.96	<0.50	<0.50	1	0.9
	11/10/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	2	<0.50	<0.50	2.50	<0.50	<0.50	2	<0.50
	7/1/2018	<0.500	<2.50	<0.500	<0.500	<0.500	<0.500	<0.500	2	<0.500	<0.500	1.82	<0.500	<0.500	1	0.359 J
	9/28/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2	<0.400	<0.500	1.98	<0.400	<0.500	1	<0.400
	6/3/2019	<4.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.930	<0.400	<0.500	1.89	<0.400	<0.500	1.11	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.852	<0.400	<0.500	1.84	<0.400	<0.500	0.958	<0.400
	6/16/2020	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.000	<0.400	<0.500	3.01	<0.400	<0.500	1.33	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.45	<0.400	<0.500	<0.400	<0.400
	6/16/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.482	<0.400	<0.500	1.34	<0.400	<0.500	0.572	<0.400

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-2(101) (continued)	12/10/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.480	<0.400	<0.500	3.49	<0.400	<0.500	1.92	<0.400
	6/14/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.46	<0.400	<0.500	6.31	<0.400	<0.500	3.61	<0.400
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.52	<0.400	<0.500	0.46	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	1.18	<0.400	<0.500	<0.400	<0.400
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.72	<0.400	<0.500	3.28	<0.400	<0.500	1.90	<0.200
	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.72	<0.400	<0.500	3.28	<0.400	<0.500	1.90	<0.200
	6/10/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	0.400	<0.400	<0.500	1.47	<0.400	<0.500	0.790	<0.200
MGMS3-1(132)	8/30/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	5.58	<1	--	0.746	<0.50
	11/29/2000	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	2.04	<0.50	<0.50	0.754	<1	--	<0.50	<0.50
	2/27/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	1.08	<0.50	<0.50	2.62	<1	--	0.722	<0.50
	5/31/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	6.67	<0.50	<0.50	3.13	<1	--	1.44	<0.50
	9/24/2001	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.8	<0.50	<0.50	6.1	<0.50	--	1.9	<0.50
	12/18/2001	<1	<5	<0.50	<0.50	<0.50	<0.50	<0.50	4.11	<0.50	<0.50	8.75	<1	--	2.24	<0.50
	3/19/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	4.88	<0.50	<0.50	9.63	<0.50	--	3.02	<0.50
	5/29/2002	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	11.8	<0.50	<0.50	14.6	<0.50	--	4.28	<0.50
	1/23/2003	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	16.8	<0.50	<0.50	11.4	<0.50	--	6.04	<0.50
	5/28/2003	<1	<0.50	<0.50	<1	0.59	<0.50	<0.50	93.3	0.76	<0.50	16.3	<0.50	--	10.1	0.83
	11/11/2003	<1	<1	<1	<1	<1	<1	<1	72.4	<1	<1	12.2	<1	--	8	<1
	1/27/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	34.9	0.61	<0.50	12.7	<0.50	--	9.47	<0.50
	5/3/2004	<1	<1	<1	<1	<1	<1	<1	11.9	<1	<1	<1	<1	--	14.2	<1
	11/15/2004	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	200	<2.5	<2.5	6.2	<2.5	--	3.4	<2.5
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	42.6	0.79	<0.50	4.42	<0.50	--	2.23	<0.50
	11/16/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	19.9	<0.500	<0.500	2.41	<0.500	--	0.8	<0.500
	3/14/2006	<1	<1	<1	<1	<1	<1	<1	20.3	<1	<1	2.13	<1	--	<1	<1
	6/6/2006	<1	<1	<1	<1	<1	<1	<1	18.6	<1	<1	1.57	<1	--	<1	1.36
	12/5/2006	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	24.1	<0.50	<0.50	3.05	<0.50	--	1.08	4.68
	9/10/2007	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	36.5	<0.50	<0.50	4.69	<0.50	--	3.17	16.8
	3/4/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	21.8	<0.500	<0.500	3.37	<0.500	<0.500	1.64	6.83
	9/16/2008	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	26	<0.500	<0.500	4.86	<0.500	<0.500	3.52	4.96
	3/24/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6.3	<0.50	<0.50	1.8	<0.50	<0.50	0.79	2.4
	03/24/2009 DUP	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.8	<0.50	<0.50	1.6	<0.50	<0.50	0.78	2.3
	6/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12	<0.50	<0.50	4.3	<0.50	<0.50	1.9	1.6
	9/15/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.7	<0.50	<0.50	2.1	<0.50	<0.50	1.2	2
	3/17/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	7.2	<0.50	<0.50	2.6	<0.50	<0.50	1.9	0.92
	9/20/2010	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	6.5	<0.5	<0.5	2.9	<0.5	<0.5	2.3	1.3
	3/7/2011	<0.50	<0.50	<0.50	<0.50	0.64	<0.50	<0.50	18	<0.50	<0.50	4	<0.50	<0.50	3.8	4.3

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MGMS3-1(132)	9/13/2011	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5.6	<0.50	<0.50	3.8	<0.50	<0.50	3.4	0.55
(continued)	3/8/2012	<0.50	<0.50	<0.50	<0.50	0.5	<0.50	<0.50	9.3	<0.50	<0.50	7	<0.50	<0.50	6.9	0.67
	9/12/2012	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	6	<0.50	<0.50	4.9	<0.50	<0.50	4	<0.50
	3/12/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	9.4	<0.50	<0.50	8.1	<0.50	<0.50	7.2	0.98
	9/16/2013	<0.50	<0.50	<0.50	<0.50	0.58	<0.50	<0.50	9.8	<0.50	<0.50	7.9	<0.50	<0.50	8.1	0.84
	3/18/2014	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	0.51	11	<0.50	<0.50	13	<0.50	<0.50	11	0.76
	9/23/2014	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	8.9	<0.50	<0.50	9	<0.50	<0.50	7.9	<0.50
	3/18/2015	<0.50	<0.50	<0.50	<0.50	0.53	<0.50	<0.50	9.3	<0.50	<0.50	6.3	<0.50	<0.50	6	0.56
	9/22/2015	<0.50	<0.50	<0.50	<0.50	0.74	<0.50	<0.50	13.3	<0.50	<0.50	8.1	<0.50	<0.50	8.2	1.2
	3/9/2016	<0.50	<2	<0.50	<0.50	1	<0.50	0.56	14.4	<0.50	<0.50	13.5	0.56	<0.50	12.7	0.8
	9/30/2016	<0.50	<2	<0.50	<0.50	0.84	<0.50	0.54	12.9	<0.50	<0.50	13.8	<0.50	<0.50	11.9	<0.50
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	7.9	<0.5	<0.5	13.8	<0.5	<0.5	9.6	<0.5
	9/26/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<1.0	<0.50	3.4	<0.50	<0.50	3.0	<0.50	<0.50	2.8	<0.50
	11/10/2017	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	<0.50	<0.50	5.1	<0.50	<0.50	3.8	<0.50
	7/1/2018	<0.500	<2.50	<0.500	<0.500	0.247 J	<0.500	<0.500	4.0	<0.500	<0.500	5.6	<0.500	<0.500	4.1	0.359 J
	9/28/2018	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.5	<0.400	<0.500	3.8	<0.400	<0.500	3.2	<0.400
	6/5/2019	<4.00	<5.00	<1.00	<1.00	0.412	<0.400	<0.400	5.97	<0.400	<0.500	9.45	<0.400	<0.500	6.79	<0.400
	12/4/2019	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	5.34	<0.400	<0.500	8.69	<0.400	<0.500	6.21	<0.400
	6/16/2020	<1.00	<5.00	<1.00	<1.00	0.43	<0.400	<0.400	4.61	<0.400	<0.500	9.87	<0.400	<0.500	6.01	<0.400
	12/10/2020	<2.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.73	<0.400	<0.500	3.61	<0.400	<0.500	2.46	<0.400
	12/10/2021	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	4.86	<0.400	<0.500	7.3	<0.400	<0.500	5.35	<0.400
	6/14/2022	<1.00	<5.00	<1.00	<1.00	0.440	<0.400	<0.400	6.23	<0.400	<0.500	11.0	<0.400	<0.500	6.88	<0.400
	12/6/2022	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.71	<0.400	<0.500	3.29	<0.400	<0.500	1.85	<0.400
	6/15/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	1.46	<0.400	<0.500	2.83	<0.400	<0.500	1.74	<0.400
	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.480	<0.400	<0.400	5.04	<0.400	<0.500	8.17	<0.400	<0.500	5.20	0.240
	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.480	<0.400	<0.400	5.04	<0.400	<0.500	8.17	<0.400	<0.500	5.20	0.240
	6/10/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	2.40	<0.400	<0.500	3.35	<0.400	<0.500	2.69	<0.200
CMT1-1	11/11/2003	<1	<1	2.87	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	1/26/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	5/3/2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	8/19/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/2004	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5
	3/23/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	5/17/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	--	<0.500	<0.500

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
CMT1-2	5/26/2006	Well Abandoned														
	11/11/2003	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	1/26/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.75	<0.50	--	1.03	<0.50
	5/3/2004	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	8/19/2004	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/2004	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.7	<0.50	--	0.88	<0.50
	2/1/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.37	<0.50	--	0.99	<0.50
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.77	<0.50	--	0.69	<0.50
	11/17/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	0.6	<0.500	--	<0.500	<0.500
	5/26/2006	Well Abandoned														
CMT1-3	11/11/2003	<2	<2	3.56	<2	<2	<2	<2	<2	<2	<2	<2	<2	--	<2	<2
	1/26/2004	<1	<0.50	1.1	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	5/3/2004	<1	<1	2.97	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
	8/19/2004	<1	<0.50	2.16	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
	11/17/2004	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	--	<25	<25
	5/16/2005	<1	<0.50	<0.50	<1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.6	<0.50	--	<0.50	<0.50
	11/17/2005	<1	<0.500	<0.500	<1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	--	<0.500	<0.500
	5/26/2006	Well Abandoned														
EX	2/6/2007	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	68.2	<10.0	<10.0	2,810	40.0	<10.0	564	<10.0
	12/9/2008	<15	<15	<15	<15	54	<15	<15	490	<15	<15	4,500	71	<15	830	<15
	3/23/2009	<5	<5	<5	<5	<5	<5	<5	50	<5	<5	1,400	43	<5	420	<5
	6/18/2009	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.2	<0.50	<0.50	24	1.1	<0.50	11	<0.50
	9/18/2009	<0.50	<0.50	<0.50	<0.50	4.1	<0.50	3.3	120	0.76	<0.50	2,100	38	<0.50	380	1.1
	12/18/2009	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	5.6	<2.5	<2.5	700	3.7	<2.5	56	<2.5
	3/16/2010	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20	<0.50	<0.50	150	3.2	<0.50	33	<0.50
	6/17/2010	<0.50	<0.50	<0.50	<0.50	0.97	<0.50	<0.50	92	<0.50	<0.50	150	2.3	<0.50	39	2.2
	9/23/2010	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	1.6	90	0.53	<0.5	2,400	20	<0.5	220	1.8
	12/21/2010	<0.5	<0.5	<0.5	<0.5	0.83	<0.5	0.59	30	<0.50	<0.5	900	6.7	<0.5	99	0.71
	3/31/2011	<4	<4	<4	<4	8.2	<4	8.1	240	<4	<4	6,800	110	<4	910	5.1
	6/7/2011	<4	<4	<4	<4	<4	<4	<4	140	<4	<4	1,400	15	<4	170	<4
	9/19/2011	<5	<5	<5	<5	7.9	<5	11	290	<5	<5	4,100	73	<5	460	14
	12/7/2011	<5	<5	<5	<5	16	<5	19	12,000	9.3	<5	<50	17	<5	<50	140
	3/9/2012	<4	<4	<4	<4	5	<4	<4	1,400	8.6	<4	33	<4	<4	10	290
	6/22/2012	<0.5	5.5	<0.5	<0.5	3.4	<0.5	0.68	170	1.3	<0.5	3	0.59	<0.5	1.1	120

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
EX (continued)	9/14/2012	<1.5	2.7	<1.5	<1.5	1.5	<1.5	<1.5	320	<1.5	<1.5	3	<1.5	<1.5	<1.5	42
	12/14/2012	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	26	<0.50	<0.50	0.87	<0.50	<0.50	<0.50	12
	3/15/2013	<0.50	2.8	<0.50	<0.50	<0.50	<0.50	<0.50	9.5	<0.50	<0.50	1.2	<0.50	<0.50	<0.50	4.4
	6/14/2013	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	<0.50	<0.50	0.79	<0.50	<0.50	<0.50	<0.50
	9/20/2013	<0.50	1.9	<0.50	<0.50	1.9	<0.50	0.54	71	0.68	<0.50	4.1	<0.50	<0.50	2.6	30
	12/16/2013	<0.50	1.4	<0.50	<0.50	3.8	<0.50	<0.50	34	<0.50	<0.50	2	<0.50	<0.50	1.4	28
	3/24/2014	<0.50	<0.50	<0.50	<0.50	0.8	<0.50	<0.50	30	<0.50	<0.50	20	<0.50	<0.50	7.5	11
	6/23/2014	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	1.1	160	0.97	<0.50	29	<0.50	<0.50	15	38
	9/30/2014	Insufficient water for sampling .														
	12/15/2014	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	10	<0.50	<0.50	22	<0.50	<0.50	2.7	<0.50
	3/19/2015	<0.50	<0.50	<0.50	<0.50	3.5	<0.50	2.1	688	1.9	<0.50	168	2.5	<0.50	55.8	2.8
	6/18/2015	<0.50	<0.50	<0.50	<0.50	2.6	<0.50	2.6	420	1.6	<0.50	186	0.88	<0.50	42	3.2
	9/22/2015	<0.50	<0.50	<0.50	<0.50	2.9	<0.50	3.7	543	2.6	<0.50	302	0.65	<0.50	61.9	24.4
	12/8/2015	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	427	<0.50	<0.50	94	<0.50	<0.50	21.3	2.1
	3/8/2016	<1.2	<5	<1.2	<1.2	4	<1.2	2.9	1,160	3.6	<1.2	274	5	<1.2	71.1	13.3
	6/17/2016	<5	<20	<5	<5	<5	<5	<5	1,040	<5	<5	592	<5	<5	90.8	<5
	9/28/2016	<1.7	<6.7	<1.7	<1.7	4.6	<1.7	3.5	2,230	3.8	<1.7	39.4	2.5	<1.7	549	128
	12/12/2016	<0.50	3.7	<0.50	<0.50	<0.50	<0.50	<0.50	8.1	<0.50	<0.50	4.3	<0.50	<0.50	0.96	51.9
	3/28/2017	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	5.2	<0.5	<0.5	6.1	<0.5	<0.5	1.9	<0.5
	6/14/2017	<2.0	10.2	<0.50	<0.50	10.7	<1.0	<0.50	11.7	0.56	<0.50	9.5	<0.50	<0.50	3.0	1.3
	9/26/2017	<2.0	3.4	<0.50	<0.50	8.8	<1.0	<0.50	6.9	<0.50	<0.50	0.8	<0.50	<0.50	0.6	10.1
	3/21/2018	<0.500	1.45 J	<0.500	<0.500	1.3	<0.500	<0.500	22.6	<0.500	<0.500	1.5	<0.500	<0.500	2.7	10.8
	6/28/2018	<0.500	42.9	<0.500	<0.500	4.6	<0.500	1.11	722.0	8.72	<0.500	1.9	<0.500	<0.500	0.8	424.0
	9/24/2018	<1.00	<5.00	<1.00	<1.00	1.4	<0.400	<0.400	3.4	0.75	<0.500	3.1	<0.400	<0.500	2.4	7.6
	12/4/2018	<1.00	<5.00	<1.00	<1.00	0.9	<0.400	<0.400	8.2	<0.400	<0.500	6.4	<0.400	<0.500	3.6	1.9
	6/17/2021	<1.00	<5.00	<1.00	<1.00	4.55	<0.400	3.90	415	2.33	<0.500	4,570	12.4	<0.500	322	22.2
	9/16/2021	<1.00	<5.00	<1.00	<1.00	11.3	<0.400	7.65	739	6.50	<0.500	2,940	7.80	<0.500	380	20.6
	12/10/2021	<1.00	<5.00	<1.00	<1.00	3.1	<0.400	3.73	198	1.55	<0.500	4,900	10.60	<0.500	268	6.8
	3/8/2022	<1.00	<5.00	<1.00	<1.00	3.27	<0.400	4.40	224	1.74	<0.500	6,930	19.8	<0.500	321	9.0
	6/16/2022	<10.0	<50.0	<10.0	<10.0	22.7	<4.00	7.80	412	8.50	<5.00	1,590	7.20	<5.00	344	7.30
	9/14/2022	<50.0	<250	<50.0	<50.0	<20.0	<20.0	<20.0	466	<20.0	<25.0	2340	<20.0	<25.0	224	24.5
	12/8/2022	<50.0	<250	<50.0	<50.0	<20.0	<20.0	<20.0	608	<20.0	<25.0	4040	<20.0	<25.0	334	<20.0
	3/15/2023	<50.0	<250	<50.0	<50.0	<20.0	<20.0	<20.0	677	<20.0	<25.0	2860	<20.0	<25.0	276	<20.0
	6/14/2023	<50.0	<250	<50.0	<50.0	<20.0	<20.0	<20.0	944	<20.0	<25.0	3120	<20.0	<25.0	402	<20.0

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
EX (continued)	9/12/2023	<40.0	<100	<20.0	<20.0	<8.00	<8.00	<8.00	562	<8.00	<10.0	2290	<8.00	<10.0	198	6.80
	12/14/2023	<20.0	<100	<20.0	<20.0	<8.00	<8.00	<8.00	83.6	<8.00	<10.0	2450	10.2	<10.0	148	<4.00
	3/6/2024	<2.00	<10.0	<2.00	<2.00	<8.00	<8.00	<8.00	436	<8.00	<10.0	2060	8.60	<10.0	214	5.40
	6/13/2024	<1.00	<5.00	<1.00	<1.00	<4.00	<4.00	<4.00	141	<4.00	<5.00	1850	<4.00	<5.00	113	2.20
MP-1	2/6/2007	<10.0	<5.00	<5.00	<10.0	18.4	<5.00	<5.00	347	8.50	<5.00	1,610	11.2	<5.00	421	23.6
	12/9/2008	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	70	<5.0	<5.0	1,600	10	<5.0	230	<5.0
	3/23/2009	<4	<4	<4	<4	6	<4	<4	89	<4	<4	1,200	10	<4	180	<4
	6/18/2009	<4	<4	<4	<4	4.3	<4	<4	43	<4	<4	1,500	12	<4	180	<4
	9/18/2009	<4	<4	<4	<4	14	<4	<4	240	8.9	<4	1,100	8.2	<4	310	7.3
	12/18/2009	<4	<4	<4	<4	<4	<4	<4	58	<4	<4	1,000	7.1	<4	180	<4
	3/16/2010	<3	<3	<3	<3	22	<3	4.7	410	13	<3	1,500	8.6	<3	400	10
	6/17/2010	<3	<3	<3	<3	3.2	<3	<3	120	<3	<3	800	5.4	<3	140	<3
	9/23/2010	<3	<3	<3	<3	<3	<3	<3	41	<3	<3	730	4	<3	120	<3
	12/10/2010	<3	<3	<3	<3	<3	<3	<3	27	<3	<3	1,000	4.5	<3	150	<3
	3/14/2011	<3	<3	<3	<3	7.1	<3	<3	150	<3	<3	1,200	6.4	<3	180	5.9
	6/7/2011	<2.5	<2.5	<2.5	<2.5	4.9	<2.5	<2.5	75	<2.5	<2.5	640	3.3	<2.5	130	<2.5
	9/19/2011	<1.5	<1.5	<1.5	<1.5	2.4	<1.5	<1.5	41	<1.5	<1.5	300	1.9	<1.5	72	1.6
	12/7/2011	<2.5	<2.5	<2.5	<2.5	2.6	<2.5	<2.5	49	3.1	<2.5	640	3.1	<2.5	120	<2.5
	3/9/2012	<1.5	<1.5	<1.5	<1.5	9.4	<1.5	2.8	440	6.3	<1.5	490	3.5	<1.5	140	21
	6/22/2012	<2.5	<2.5	<2.5	<2.5	5.6	<2.5	2.8	530	2.9	<2.5	690	12	<2.5	120	48
	9/14/2012	<1.5	<1.5	<1.5	<1.5	4	<1.5	<1.5	170	2.2	<1.5	340	2	<1.5	83	4.5
	12/14/2012	<0.90	<0.90	<0.90	<0.90	2	<0.90	<0.90	170	1.7	<0.90	230	1	<0.90	48	1.8
	3/15/2013	<0.90	<0.90	<0.90	<0.90	5.1	<0.90	0.94	140	2.5	<0.90	230	1	<0.90	69	1.8
	6/14/2013	<0.90	<0.90	<0.90	<0.90	4.5	<0.90	1.4	190	1.6	<0.90	330	1.4	<0.90	70	1.8
	9/20/2013	<0.90	<0.90	<0.90	<0.90	2.9	<0.90	<0.90	77	1.5	<0.90	260	0.95	<0.90	66	<0.90
	12/16/2013	<0.90	<0.90	<0.90	<0.90	1.7	<0.90	1.1	67	0.92	<0.90	290	1.2	<0.90	70	<0.90
	3/24/2014	<1.5	<1.5	<1.5	<1.5	2.2	<1.5	<1.5	240	<1.5	<1.5	360	1.8	<1.5	54	<1.5
	6/23/2014	<1.5	<1.5	<1.5	<1.5	4.9	<1.5	2.3	290	1.7	<1.5	1,200	9.5	<1.5	130	5
	9/30/2014	<2	<2	<2	<2	2.8	<2	<2	110	<2	<2	360	<2	<2	63	16
	12/15/2014	<1.5	<1.5	<1.5	<1.5	1.7	<1.5	<1.5	58	<1.5	<1.5	320	<1.5	<1.5	59	<1.5
	3/20/2015	<1	<1	<1	<1	3.6	<1	1.5	188	1.5	<1	565	1	<1	95.6	24.8
	6/18/2015	<0.84	<0.84	<0.84	<0.84	2.9	<0.84	1.5	91	0.87	<0.84	376	<0.84	<0.84	80.8	<0.84
	9/22/2015	<1.2	<1.2	<1.2	<1.2	1.8	<1.2	1.4	38.3	<1.2	<1.2	343	<1.2	<1.2	68.3	<1.2
	12/8/2015	<1.2	<1.2	<1.2	<1.2	1.8	<1.2	1.5	50.9	<1.2	<1.2	308	<1.2	<1.2	62.6	<1.2
	3/8/2016	<0.84	<3.3	<0.84	<0.84	7.5	<0.84	2.1	148	1.2	<0.84	433	<0.84	<0.84	100	<0.84

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MP-1 (continued)	6/17/2016	<0.50	<2	<0.50	<0.50	5	<0.50	1.5	125	0.97	<0.50	206	<0.50	<0.50	67.3	<0.50
	9/28/2016	<0.50	<2	<0.50	<0.50	1.3	<0.50	3.1	40.5	<0.50	<0.50	99.4	<0.50	<0.50	35.5	3.3
	12/13/2016	<0.50	<2	<0.50	<0.50	0.64	<0.50	0.92	209	0.55	<0.50	2.9	<0.50	<0.50	1	4.3
	3/30/2017	<0.5	71.4	<0.5	<0.5	7.5	<0.5	<0.5	177	6	<0.5	<0.5	<0.5	<0.5	0.79	186
	6/14/2017	<2.0	4.0	<0.50	<0.50	2.3	<1.0	<0.50	143	1.9	<0.50	16.2	<0.50	<0.50	8.5	29.4
	9/26/2017	<2.0	<2.0	<0.50	<0.50	3.4	<1.0	4.50	83	0.8	<0.50	307.0	<0.50	<0.50	65.9	2.3
	11/9/2017	<2.0	<2.0	<0.50	<0.50	3.3	<0.50	4.30	105	0.9	<0.50	198.0	<0.50	<0.50	74.0	2.6
	3/21/2018	<0.500	<2.50	<0.500	<0.500	3.2	<0.500	4.04	151	1.0	<0.500	245.0	<0.500	<0.500	64.5	1.6
	6/28/2018	<0.500	<2.50	<0.500	<0.500	10.2	<0.500	9.34	353	1.7	<0.500	747.0	0.56	<0.500	140.0	5.3
	9/26/2018	<20.0	<100	<20.0	<20.0	<8.00	<8.00	<8.00	60	<8.00	<10.0	322.0	<8.00	<10.0	57.0	<8.00
	12/4/2018	<1.00	<5.00	<1.00	<1.00	<0.400	2.79	6.59	130	0.8	<0.500	355.0	<0.400	<0.500	76.7	1.2
	3/20/2019	<2.00	<5.00	<1.00	<1.00	1.43	<0.400	3.08	69.0	<0.400	<0.500	146	<0.400	<0.500	36.6	1.55
	6/7/2019	<10	<100	<10	<10	<8.00	<8.00	<8.00	205	<8.00	<10.0	769	<8.00	<10.0	111	<8.00
	9/26/2019	<2.00	<5.00	<2.00	<2.00	1.36	<0.800	1.14	37.1	<0.800	<1.00	176	<0.800	<1.00	26.8	<0.800
	12/3/2019	<2.00	<10.0	<2.00	<2.00	1.57	<0.800	1.8	40.6	<0.800	<1.00	306	<0.800	<1.00	57.8	<0.800
	3/11/2020	<2.00	<10.0	<2.00	<2.00	3.94	<0.800	5.63	177	1.14	<1.00	1370	1.77	<1.00	190	<0.800
	6/17/2020	<10.0	<50.0	<10.0	<10.0	<4.00	<4.00	<4.00	72	<4.00	<5.00	427	<4.00	<5.00	61.2	<4.00
	10/8/2020	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	36.7	<2.00	<2.50	510	<2.00	<2.50	52.3	<2.00
	12/9/2020	<4.00	<10.0	<2.00	<2.00	1.15	<0.800	<0.800	29.5	<0.800	<1.00	362	<0.800	<1.00	41.3	<0.800
	3/3/2021	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	2.34	70.1	<2.00	<2.5	831	<2.00	<2.5	100	<2.00
	6/16/2021	<10.0	<50.0	<10.0	<10.0	<0.400	<0.400	<0.400	70.7	<4.00	<5.00	309	<4.00	<5.00	52	<4.00
	9/15/2021	<2.00	<10.0	<2.00	<2.00	1.67	<0.800	1.27	38.1	<0.800	<1.00	392	<0.800	<1.00	63.8	<0.800
	12/8/2021	<5.00	<25.0	<5.00	<5.00	<0.400	<2.00	<2.00	9.16	<2.00	<2.50	152	<2.00	<2.50	29.2	<2.00
	3/9/2022	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	33.4	<2.00	<2.50	322	<2.00	<2.50	59.0	<2.00
	6/14/2022	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	40.0	<2.00	<2.50	417	<2.00	<2.50	41.9	<2.00
	9/14/2022	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	24.6	<2.00	<2.50	470	<2.00	<2.50	39.4	<2.00

Appendix B

Historical Groundwater Analytical Results

NuStar Vancouver Facility
Vancouver, Washington

Well Number	Sample Date	Concentrations in µg/L (ppb)														
		Bromo-form	Chloro-ethane	Chloro-form	Dibromo-chloro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	1,2-Dichloro-propane	Tetra-chloro-ethene	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Vinyl Chloride
MP-1 (continued)	12/7/2022	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	27.6	<2.00	<2.50	436	<2.00	<2.50	56.8	<2.00
	3/17/2023	<5.00	<25.0	<5.00	<5.00	<2.00	<2.00	<2.00	11.1	<2.00	<2.50	199	<2.00	<2.50	26.1	<2.00
	6/15/2023	<5.00	<25.0	<5.00	<5.00	3.3	<2.00	<2.00	65.9	<2.00	<2.50	1000	2.850	<2.50	85	<2.00
	9/13/2023	<4.00	<10.0	<2.00	<2.00	<0.800	<0.800	<0.800	13.4	<0.800	<1.00	277	<0.800	<1.00	31.9	<0.800
	12/15/2023	<2.00	<10.0	<2.00	<2.00	<0.800	<0.800	<0.800	6.76	<0.800	<1.00	189	<0.800	<1.00	29.6	<0.400
	3/7/2024	<1.00	<5.00	<1.00	<1.00	<1.00	<1.00	<1.00	9.85	<1.00	<1.25	224	<1.00	<1.25	35.0	<0.500
	6/13/2024	<2.50	<12.5	<2.50	<2.50	<1.00	<1.00	<1.00	10.0	<1.00	<1.25	159	<1.00	<1.25	35.6	<0.500
MP-3	6/28/2018	<0.500	<2.50	<0.500	<0.500	5.24	<0.500	1.78	203	1.31	<0.500	398	1.82	<0.500	65.1	8.96
	9/27/2018	<1.00	<5.00	<1.00	<1.00	4.06	<0.400	3.52	187	1.60	<0.500	721	0.950	<0.500	148	0.730
NKW-1	12/12/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	3.50	<0.400	<0.500	33.8	<0.400	<0.500	11.4	<0.200
	3/5/2024	<25.0	<125	<25.0	<25.0	16.4	<4.00	<4.00	166	<4.00	<5.00	250	<4.00	<5.00	74.8	10.4
	6/11/2024	<1.00	<5.00	<1.00	<1.00	3.05	<0.400	0.64	47.2	<0.400	<0.500	84.3	<0.400	<0.500	27	0.29
NKW-2	12/12/2023	<1.00	<5.00	<1.00	<1.00	3.72	<0.400	2.53	147	1.03	<0.500	109	1.40	<0.500	110	0.220
	3/5/2024	<20.0	<50.0	<10.0	<10.0	89.9	<4.00	33.5	4010	41.8	<5.00	38.3	<4.00	<5.00	80.9	12.1
	6/11/2024	<1.00	<5.00	<1.00	<1.00	66.0	<20.0	29.5	2140	27.0	<25.0	55.0	<20.0	<25.0	107	<10.0
KMW-4	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	16.9	<0.400	<0.500	11.7	<0.200
	6/10/2024	<1.00	<5.00	<1.00	<1.00	0.940	<0.400	0.600	3.12	<0.400	<0.500	27.4	1.28	<0.500	84.7	<0.200
KMW-5	12/13/2023	<1.00	<5.00	<1.00	<1.00	0.430	<0.400	<0.400	3.16	<0.400	<0.500	0.580	<0.400	<0.500	2.08	3.05
	6/10/2024	<1.00	<5.00	<1.00	<1.00	0.410	<0.400	<0.400	4.81	<0.400	<0.500	<0.400	<0.400	<0.500	0.400	2.29
KMW-6	12/13/2023	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200
	6/11/2024	<1.00	<5.00	<1.00	<1.00	<0.400	<0.400	<0.400	<0.400	<0.400	<0.500	<0.400	<0.400	<0.500	<0.400	<0.200

Notes:

1. HVOCs = Halogenated volatile organic compounds analysis by U.S. Environmental Protection Agency (EPA) Method 8260B; results reported in micrograms per liter (µg/L).
2. TPH = Total petroleum hydrocarbons in the diesel and heavy oil range analysis by Washington Department of Ecology (WDOE) Method TPH-418.1 Results reported in milligrams per liter (mg/L).
3. -- = Not sampled or not analyzed.
4. < = Not detected at or above the specified laboratory method reporting limit (MRL).
5. B = Estimated concentration based on data quality review - similar detection in associated field blank/equipment blanks (less than 5x difference).
6. J = Estimated concentration based on data quality review.
7. n-Propylbenzene, 1,1,1,2-Tetrachloro-ethane, and 1,1,2-Trichloroethane were detected during the first semi-annual 2008 monitoring event. Refer to Table 3 of the *First Semi-Annual 2008 Groundwater Monitoring Report* for detection concentrations.
8. ND = Not detected and no reporting limit specified.
10. E = Chloroform was detected in the equipment blank during the March 2010 and September 2010 sampling events. Chloroform was flagged with an "E" in samples where the concentration was five times or less than the maximum detection in the equipment blank.
11. * = Well EX was decommissioned during the third quarter 2019 and a replacement well was installed adjacent (offset 3-4 ft) in April 2021. Historically the well has been referred to as EX or EX-1.
12. MW-23i - 3Q23 - R-06 Reporting level raised due to possible carryover from a previous sample.

APPENDIX C
Laboratory Analytical Reports and Data Quality Review (on CD)

APPENDIX C
DATA QUALITY REVIEW

1.0 INTRODUCTION

This appendix documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for groundwater samples collected during the March and June 2024 groundwater sampling events. The samples were collected at the NuStar Terminals Services, Inc. (NuStar) Vancouver Facility (Facility) in Vancouver, Washington, and Apex Labs in Tigard, Oregon. A list of the laboratory reports is presented below. A copy of each analytical laboratory report is included in this appendix.

Report	Report Date	Sample Date	Sampling Event
A4C0919	4/2/2024	3/4/2024	First Quarter Groundwater Monitoring Event
A4C0976	3/21/2024	3/5/2024	First Quarter Groundwater Monitoring Event
A4C1027	3/22/2024	3/6/2024	First Quarter Groundwater Monitoring Event
A4C1074	4/2/2024	3/7/2024	First Quarter Groundwater Monitoring Event
A4C1121	3/25/2024	3/11/2024	First Quarter Groundwater Monitoring Event
A4F1045	6/26/2024	6/10/2024	Second Quarter Groundwater Monitoring Event
A4F1085	6/26/2024	6/11/2024	Second Quarter Groundwater Monitoring Event
A4F1140	6/27/2024	6/12/2024	Second Quarter Groundwater Monitoring Event
A4F1166	6/27/2024	6/13/2024	Second Quarter Groundwater Monitoring Event
A4F1169	6/27/2024	6/13/2024	Second Quarter Groundwater Monitoring Event
A4F1206	7/3/2024	6/14/2024	Second Quarter Groundwater Monitoring Event

2.0 DATA VALIDATION

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

- Analytical preparation and quantitation methods;
- Analytical method holding times;
- Sample handling;
- Chain-of-custody handling;
- Detection and reporting limits;
- Method blank, field blank, equipment blank and trip blank detections;
- Laboratory control samples, matrix spikes and surrogates to assess laboratory accuracy;

- Laboratory control sample duplicates, matrix spike duplicates and laboratory duplicates to assess laboratory precision; and
- Field duplicates to assess sampling and laboratory precision.

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

3.0 ANALYTICAL METHODS

Chemical analyses for water samples consisted of halogenated volatile organic compounds (HVOCs) by U.S. Environmental Protection Agency (EPA) Method 8260C. Select groundwater samples were also analyzed for total organic carbon (TOC) by EPA Method 5310, ethene by Method RSK-175, ammonia as nitrogen by EPA Method 4500-NH3 G and nitrate as nitrogen and nitrite as nitrogen by EPA Method 300.0.

4.0 QUALITY ASSURANCE OBJECTIVES AND REVIEW

The general QA objectives for this project were to develop and implement procedures for obtaining, evaluating, and confirming the usability of data of a specified quality for monitoring groundwater quality trends at the Facility. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.

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

Sample Receipt. Groundwater samples were received by the laboratory in good condition and on ice. Volatile Organic Analysis (VOA) containers for HVOC analysis arrived without headspace. (Note: One of 6 VOA containers for KMW-6 arrived at the lab with headspace; however, that VOA was not used for laboratory analysis.)

Reporting Limits. Detection limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested detection limits by the EPA or the Washington State Department of Ecology (Ecology). In some cases, the detection limits may be raised due to high concentrations of analytes in the samples or matrix interferences. Detection limits were generally consistent with industry standards and below promulgated regulatory standards when possible (if not raised, as previously discussed). Reporting limits were reviewed and are generally acceptable for this project. Reporting limits for individual samples are varied based on the magnitude of the chemical impact. It is not expected that any of the raised detection limits would compromise the usability of the data.

Holding Times. Samples were analyzed within the recommended method holding time with the exception of nitrate and nitrite nitrogen in the June sample collected from well MW-12 and nitrate nitrogen in the field duplicate collected from well MW-12. While the sample from well MW-12 (and duplicate) were analyzed slightly out of hold time, the data for the well are generally consistent with historical results. The results are considered representative for routine monitoring purposes.

Calibration and Analysis. Calibration verification was outside of acceptable limits for select HVOCs in some sample batches. As the corresponding sample results are below method reporting limits and/or are not considered chemicals of concern (COCs) for this project, no data were flagged. Other calibrations were within the control limits for analytes presented in Table 3.

Method Blanks. A method, or laboratory, blank is a sample prepared in the laboratory along with the actual samples, that is analyzed for the same parameters at the same time. It is used to assess if detected contaminants may have been the result of contamination of the samples in the laboratory. No analytes were detected in the laboratory method blanks for the water analyses; therefore, no sample data were flagged.

Laboratory Control Samples and Laboratory Control Sample Duplicate. Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) were analyzed to assess the accuracy of the analytical equipment and methods. LCS are prepared from an analyte-free matrix that is then spiked with known levels of the constituents of interest (COI; i.e., a standard). The concentrations are measured, and the results compared to the known spiked levels. This comparison is expressed as percent recovery. The LCS and LCSD recovery for COCs for each QC batch was within acceptable recovery limits, with the following exceptions:

- Report A4C0919. The LCS recovery for four analytes which have not been identified as site COCs (over the monitoring history of the project), was outside acceptable limits for sample batch 24C0112. The LCS recovery of five analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0163. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C0976. The LCS recovery for five analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0163. The LCS recovery for three analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0229. The LCS recovery for four analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0292. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C1027. The LCS recovery for three analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0229. The LCS recovery for four analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0292. The LCS recovery for six analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0338. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C1074 The LCS recovery for five analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0407. The LCS recovery for four analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0448. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C1121. The LCS recovery for four analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24C0448. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1045. The LCS recovery for six analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0459. The LCS recovery for seven analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0534. The LCS recovery for one analyte which has not been identified as site COCs was outside acceptable limits for sample batch 24F0693. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1085. The LCS recovery for five analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0538. The LCS recovery for one analyte which has not been identified as site COCs was outside acceptable limits for sample batch 24F0693. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1140. The LCS recovery for one analyte which has not been identified as site COCs was outside acceptable limits for sample batch 24F0754. The LCS recovery for one analyte which has not been identified as site COCs was outside acceptable limits for sample batch 24F0773. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1166. The LCS recovery for one analyte which has not been identified as site COCs was outside acceptable limits for sample batch 24F0773. The LCS recovery for three analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0779. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1169. The LCS recovery for three analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0779. The LCS recovery for four analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0827. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1206. The LCS recovery for three analytes which have not been identified as site COCs was outside acceptable limits for sample batch 24F0779. No associated sample data were detected; therefore, no sample data were flagged.

The LCS is then compared to the LCSD of the same batch and expressed as a relative percent difference (RPD) value. The percent recovery and RPD values are then compared to control limits to assess data quality. The RPDs between the LCS and LCSD were within an acceptable range.

Matrix Spike Analyses. A matrix spike QC sample is used to assess the performance of the analytical method by determining potential matrix interferences. Matrix spike (MS) and matrix spike duplicate (MSD) analyses are performed on one environmental sample per analytical batch. An MS sample uses an environmental sample that is spiked with known concentrations of analytes of interest. The MS is then prepared and analyzed with the same analytical procedures as environmental samples in the analytical batch. The resulting concentration of the MS is then compared to the known—or true—values plus the non-spiked environmental sample concentration. This comparison is expressed as a percent recovery. The MSD is then compared to the MS of the same batch and expressed as an RPD value. The percent recovery and RPD values are then compared to control limits to assess data quality.

The recovery from the following MS and MSD samples was outside of control limits:

- Report A4C0919. The MS recovery percentage was outside acceptable limits for four analytes which have not been identified as site COCs for sample batch 24C0112. For sample batch 24C0163, the MS recovery percentage (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. Additionally, the LCS for vinyl chloride was outside control limits in sample batch 24C0163. Associated data for vinyl chloride were not flagged as LCS recoveries were within acceptable limits.
- Report A4C0976. For sample batch 24C0163, the MS recovery percentage was outside acceptable limits for four analytes which have not been identified as site COCs. Additionally, for sample batch 24C0163, the LCS for vinyl chloride was outside control limits. Project sample data for vinyl chloride were not flagged as LCS recoveries were within acceptable limits. For sample batch 24C0229, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. For sample batch 24C0292, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged
- Report A4C1027. For sample batch 24C0229, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. For sample batch 24C0292, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. For sample batch 24C0338, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C1074. For sample batch 24C0407, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. For sample batch 24C0448, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.
- Report A4C1121. For sample batch 24C0448, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. For sample batch 24C0393, the MS percent recovery was outside acceptable limits for nitrite and nitrate. However, the LCS recoveries for these analytes were within acceptable limits. Therefore, no sample data were flagged.
- Report A4F1045. For sample batch 24F0534, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. For sample batch 24F0741, the MS percent recovery (using the non-source sample) was outside acceptable limits for one analyte which has not been identified as site COCs. Associated sample data that were detected had associated LCS recoveries within acceptable limits; therefore, no sample data were flagged as a result.
- Report A4F1085. For sample batch 24F0538, the MS percent recovery (using the non-source sample) was outside acceptable limits for five analytes which have not been identified as site COCs. For sample batch 24F0693, the MS percent recovery (using the non-source sample) was outside acceptable limits for four analytes which have not been identified as site COCs. For sample batch

24F0741, the MS percent recovery (using the non-source sample) was outside acceptable limits for one analyte which has not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1140. For sample batch 24F0741, the MS percent recovery (using the non-source sample) was outside acceptable limits for one analyte which has not been identified as a site COC. For sample batch 24F0754, the MS percent recovery (using the non-source sample) was outside acceptable limits for two analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1166. For sample batch 24F0779, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F1169. For sample batch 24F0779, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs For sample batch 24F0827, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.

- Report A4F12-6. For sample batch 24F0779, the MS percent recovery (using the non-source sample) was outside acceptable limits for three analytes which have not been identified as site COCs. No associated sample data were detected; therefore, no sample data were flagged.

The RPD between the corresponding MS and MSD samples was within an acceptable range, indicating that the precision of the analysis process was acceptable with the following exception:

- Report A4C0976. For sample batch 24C0170, the MSD percent recovery %REC was outside of acceptable limits for nitrite-nitrogen. The LCS recoveries for associated sample data were within acceptable limits; therefore, no sample data were flagged as a result.
- Report A4F1045. For sample batch 24F0534, the MS percent recovery for three analytes which have not been identified as site COCs were outside of acceptable limits. For sample batch 24F0741, the MS percent recovery of one analyte which has not been identified as a site COC was outside of acceptable limits.

- Report A4F1085. For sample batch 24F0741, the MS percent recovery of one analyte which has not been identified as a site COC was outside of acceptable limits.

- Report A4F1140. For sample batch 24F0741, the MS percent recovery of one analyte which has not been identified as a site COC was outside of acceptable limits.

- Report A4F1169. For sample batch 24F0779, the MS percent recovery of one analyte which has not been identified as a site COC was outside of acceptable limits

- Report A4F1206. For sample batch 24F0779, the MS percent recovery of one analyte which has not been identified as a site COC was outside of acceptable limits

Calibration verification was outside of acceptable limits for select HVOCs in each sample batch. As the corresponding sample results are below method reporting limits and are not considered chemicals of concern for this project, no data were flagged.

Surrogate Recovery. Surrogates are organic compounds that are similar in chemical composition to the COI and are spiked into environmental and batch QC samples prior to sample preparation and analysis. Surrogate recoveries for environmental samples are used to evaluate matrix interference on a sample-specific basis. Surrogate recoveries were within acceptable control limits with the occasional exception of 1,4-difluorobenzene in some March 2024 sample batches. Recovery of this surrogate was determined to be either inaccurately quantified due to coeluting organic compounds and/or chemicals of concern were not detected; therefore, no sample data were flagged as a result.

Laboratory Duplicate. A laboratory duplicate is a second analysis of an environmental sample received by the laboratory, which serves as an internal check on laboratory quality as well as potential variability of the sample matrix. The laboratory duplicate concentration is compared to the primary sample concentration to assess the precision of the analytical method. This comparison can be expressed by the RPD between the original and duplicate samples. The laboratory duplicate sample RPD values were within the recommended RPD range. Therefore, no sample data were flagged as a result.

Field Duplicate. A field duplicate is a second field sample collected from a selected monitoring point. Field duplicate samples serve as a check on laboratory quality as well as potential variability of the sample matrix. The field duplicate is analyzed and compared with the primary sample to assess the precision of the analytical method. This comparison can be expressed by the RPD between the primary and duplicate samples. The field duplicate sample RPD values were within the recommended limit of +/- 30% with the exceptions of tetrachloroethene and trichloroethene in the March 2024 MGMS3-4(40). These values have been flagged with a "**" footnote qualifier describing that their RPD is outside of the recommended limits. No additional data have been flagged as a result.

Conclusion. In conclusion, the overall QA objectives have been met and the data are of adequate quality for use in this project with appropriate qualifiers.

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

ANALYTICAL REPORT

Tuesday, April 2, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4C0919 - NuStar Vancouver Main 1Q24 - 19001-009-19

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 A4C0919, which was received by the laboratory on 3/4/2024 at 4:10:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 3.4 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MGMS2-4(40)	A4C0919-01	Water	03/04/24 12:31	03/04/24 16:10
MGMS2-3(60)	A4C0919-02	Water	03/04/24 13:07	03/04/24 16:10
MGMS3-4(40)	A4C0919-03	Water	03/04/24 13:46	03/04/24 16:10
MGMS3-3(60)	A4C0919-04	Water	03/04/24 14:26	03/04/24 16:10
MGMS3-4(40)DUP	A4C0919-05	Water	03/04/24 13:46	03/04/24 16:10

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-4(40) (A4C0919-01)				**Matrix: Water**		**Batch: 24C0112**		
Bromobenzene	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Bromochloromethane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Bromodichloromethane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Bromoform	ND	---	4.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Bromomethane	ND	---	10.0	ug/L	2	03/06/24 00:09	EPA 8260D	
Carbon tetrachloride	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Chlorobenzene	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Chloroethane	ND	---	10.0	ug/L	2	03/06/24 00:09	EPA 8260D	
Chloroform	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Chloromethane	ND	---	10.0	ug/L	2	03/06/24 00:09	EPA 8260D	
2-Chlorotoluene	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
4-Chlorotoluene	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Dibromochloromethane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	10.0	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Dibromomethane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2-Dichlorobenzene	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,3-Dichlorobenzene	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,4-Dichlorobenzene	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Dichlorodifluoromethane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1-Dichloroethane	**22.5**	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1-Dichloroethene	**12.5**	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
trans-1,2-Dichloroethene	**3.60**	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2-Dichloropropane	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,3-Dichloropropane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
2,2-Dichloropropane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1-Dichloropropene	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Hexachlorobutadiene	ND	---	10.0	ug/L	2	03/06/24 00:09	EPA 8260D	
Methylene chloride	ND	---	20.0	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-4(40) (A4C0919-01)				**Matrix: Water**		**Batch: 24C0112**		
1,1,2,2-Tetrachloroethane	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	4.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1,2-Trichloroethane	ND	---	1.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	4.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,1,1-Trichloroethane	**2.60**	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
Trichloroethene (TCE)	**294**	---	0.800	ug/L	2	03/06/24 00:09	EPA 8260D	
Trichlorofluoromethane	ND	---	4.00	ug/L	2	03/06/24 00:09	EPA 8260D	
1,2,3-Trichloropropane	ND	---	2.00	ug/L	2	03/06/24 00:09	EPA 8260D	
Vinyl chloride	**0.680**	---	0.400	ug/L	2	03/06/24 00:09	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*122 %*	*Limits: 80-120 %*	*1*	*03/06/24 00:09*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/06/24 00:09*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/06/24 00:09*	*EPA 8260D*	
MGMS2-4(40) (A4C0919-01RE1)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	10.0	ug/L	20	03/06/24 15:40	EPA 8260D	
Bromochloromethane	ND	---	20.0	ug/L	20	03/06/24 15:40	EPA 8260D	
cis-1,2-Dichloroethene	**331**	---	8.00	ug/L	20	03/06/24 15:40	EPA 8260D	
Tetrachloroethene (PCE)	**405**	---	8.00	ug/L	20	03/06/24 15:40	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*03/06/24 15:40*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/06/24 15:40*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/06/24 15:40*	*EPA 8260D*	
MGMS2-3(60) (A4C0919-02)				**Matrix: Water**		**Batch: 24C0112**		
Bromobenzene	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/05/24 21:26	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-3(60) (A4C0919-02)				**Matrix: Water**		**Batch: 24C0112**		
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1-Dichloroethane	**0.610**	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
cis-1,2-Dichloroethene	**11.3**	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
Tetrachloroethene (PCE)	**16.2**	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
Trichloroethene (TCE)	**8.51**	---	0.400	ug/L	1	03/05/24 21:26	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/05/24 21:26	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:26	EPA 8260D	
Vinyl chloride	**0.240**	---	0.200	ug/L	1	03/05/24 21:26	EPA 8260D	

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ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-3(60) (A4C0919-02)				**Matrix: Water**		**Batch: 24C0112**		
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*03/05/24 21:26*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/05/24 21:26*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/05/24 21:26*	*EPA 8260D*	
MGMS3-4(40) (A4C0919-03)				**Matrix: Water**		**Batch: 24C0112**		
Vinyl chloride	**197**	---	2.00	ug/L	10	03/05/24 22:47	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*03/05/24 22:47*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/05/24 22:47*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/05/24 22:47*	*EPA 8260D*	
MGMS3-4(40) (A4C0919-03RE1)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/06/24 14:46	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1-Dichloroethane	**7.74**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1-Dichloroethene	**0.780**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	

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ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-4(40) (A4C0919-03RE1)				**Matrix: Water**		**Batch: 24C0163**		
cis-1,2-Dichloroethene	**193**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
trans-1,2-Dichloroethene	**0.480**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
Tetrachloroethene (PCE)	**1.34**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
Trichloroethene (TCE)	**0.630**	---	0.400	ug/L	1	03/06/24 14:46	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/06/24 14:46	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/06/24 14:46	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*108 %*	*Limits:* *80-120 %*	*1*	*03/06/24 14:46*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/06/24 14:46*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/06/24 14:46*	*EPA 8260D*	
MGMS3-3(60) (A4C0919-04)				**Matrix: Water**		**Batch: 24C0112**		
Bromobenzene	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-3(60) (A4C0919-04)				**Matrix: Water**		**Batch: 24C0112**		
Chloromethane	ND	---	5.00	ug/L	1	03/05/24 21:53	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
cis-1,2-Dichloroethene	**6.63**	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
Tetrachloroethene (PCE)	**1.96**	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/05/24 21:53	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/05/24 21:53	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
Trichloroethene (TCE)	**1.57**	---	0.400	ug/L	1	03/05/24 21:53	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/05/24 21:53	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-3(60) (A4C0919-04)				**Matrix: Water**		**Batch: 24C0112**		
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/05/24 21:53	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/05/24 21:53	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits: 80-120 %*	*1*	*03/05/24 21:53*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/05/24 21:53*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/05/24 21:53*	*EPA 8260D*	
MGMS3-4(40)DUP (A4C0919-05)				**Matrix: Water**		**Batch: 24C0112**		
Vinyl chloride	**205**	---	2.00	ug/L	10	03/05/24 22:20	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*03/05/24 22:20*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*03/05/24 22:20*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/05/24 22:20*	*EPA 8260D*	
MGMS3-4(40)DUP (A4C0919-05RE1)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/06/24 15:13	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1-Dichloroethane	**7.63**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0919 - 04 02 24 1246

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-4(40)DUP (A4C0919-05RE1)				**Matrix: Water**		**Batch: 24C0163**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1-Dichloroethene	**0.770**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
cis-1,2-Dichloroethene	**183**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
trans-1,2-Dichloroethene	**0.470**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
Tetrachloroethene (PCE)	**0.450**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
Trichloroethene (TCE)	**0.440**	---	0.400	ug/L	1	03/06/24 15:13	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/06/24 15:13	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/06/24 15:13	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*109 %*	*Limits:*	*80-120 %*	*1*	*03/06/24 15:13*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*03/06/24 15:13*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/06/24 15:13*	*EPA 8260D*	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-4(40) (A4C0919-01RE2)				**Matrix: Water**			**Batch: 24C0311**	
Ammonia as N	**62.0**	---	1.00	mg/L	50	03/08/24 14:15	SM 4500-NH3 G	
MGMS2-3(60) (A4C0919-02)				**Matrix: Water**			**Batch: 24C0122**	
Ammonia as N	ND	---	0.0200	mg/L	1	03/05/24 12:59	SM 4500-NH3 G	
MGMS3-4(40) (A4C0919-03)				**Matrix: Water**			**Batch: 24C0122**	
Ammonia as N	**3.77**	---	0.0200	mg/L	1	03/05/24 13:00	SM 4500-NH3 G	
MGMS3-3(60) (A4C0919-04)				**Matrix: Water**			**Batch: 24C0122**	
Ammonia as N	ND	---	0.0200	mg/L	1	03/05/24 13:05	SM 4500-NH3 G	
MGMS3-4(40)DUP (A4C0919-05)				**Matrix: Water**			**Batch: 24C0122**	
Ammonia as N	**3.69**	---	0.0200	mg/L	1	03/05/24 13:06	SM 4500-NH3 G	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-4(40) (A4C0919-01RE1)				**Matrix: Water**				
Batch: 24C0114								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 13:34	EPA 300.0	
MGMS2-4(40) (A4C0919-01RE2)				**Matrix: Water**				
Batch: 24C0114								
Nitrate-Nitrogen	**117**	---	5.00	mg/L	20	03/05/24 18:14	EPA 300.0	
MGMS2-3(60) (A4C0919-02)				**Matrix: Water**				
Batch: 24C0114								
Nitrate-Nitrogen	**1.41**	---	0.250	mg/L	1	03/05/24 14:39	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 14:39	EPA 300.0	
MGMS3-4(40) (A4C0919-03)				**Matrix: Water**				
Batch: 24C0114								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 15:00	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 15:00	EPA 300.0	
MGMS3-3(60) (A4C0919-04)				**Matrix: Water**				
Batch: 24C0114								
Nitrate-Nitrogen	**0.930**	---	0.250	mg/L	1	03/05/24 15:22	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 15:22	EPA 300.0	
MGMS3-4(40)DUP (A4C0919-05)				**Matrix: Water**				
Batch: 24C0114								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 15:43	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/05/24 15:43	EPA 300.0	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C							**Water**					
Blank (24C0112-BLK1)			Prepared: 03/05/24 13:00 Analyzed: 03/05/24 15:31									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C									Water			
Blank (24C0112-BLK1)			Prepared: 03/05/24 13:00 Analyzed: 03/05/24 15:31									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
LCS (24C0112-BS1)			Prepared: 03/05/24 13:00 Analyzed: 03/05/24 13:36									
EPA 8260D												
Bromobenzene	18.4	---	0.500	ug/L	1	20.0	---	92	80-120%	---	---	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromodichloromethane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Bromoform	17.6	---	2.00	ug/L	1	20.0	---	88	80-120%	---	---	
Bromomethane	23.6	---	5.00	ug/L	1	20.0	---	118	80-120%	---	---	
Carbon tetrachloride	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
Chlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Chloroethane	24.6	---	5.00	ug/L	1	20.0	---	**123**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	21.5	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Chloromethane	15.5	---	5.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
2-Chlorotoluene	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
4-Chlorotoluene	18.7	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
Dibromochloromethane	17.8	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
1,2-Dibromo-3-chloropropane	16.3	---	5.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,2-Dibromoethane (EDB)	19.6	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dibromomethane	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichlorobenzene	19.7	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C							**Water**					
LCS (24C0112-BS1)			Prepared: 03/05/24 13:00 Analyzed: 03/05/24 13:36									
1,3-Dichlorobenzene	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
1,4-Dichlorobenzene	19.0	---	0.500	ug/L	1	20.0	---	95	80-120%	---	---	
Dichlorodifluoromethane	10.4	---	1.00	ug/L	1	20.0	---	**52**	**80-120%**	---	---	Q-55
1,1-Dichloroethane	20.8	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloroethene	19.4	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	19.4	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	18.5	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dichloropropane	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
1,3-Dichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
2,2-Dichloropropane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,1-Dichloropropene	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	16.7	---	1.00	ug/L	1	20.0	---	83	80-120%	---	---	
trans-1,3-Dichloropropene	17.9	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
Hexachlorobutadiene	17.8	---	5.00	ug/L	1	20.0	---	89	80-120%	---	---	
Methylene chloride	20.2	---	10.0	ug/L	1	20.0	---	101	80-120%	---	---	
1,1,1,2-Tetrachloroethane	18.8	---	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,1,2,2-Tetrachloroethane	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
Tetrachloroethene (PCE)	18.9	---	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,2,3-Trichlorobenzene	19.2	---	2.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,1,2-Trichloroethane	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,2,4-Trichlorobenzene	17.6	---	2.00	ug/L	1	20.0	---	88	80-120%	---	---	
1,1,1-Trichloroethane	20.3	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichloroethene (TCE)	19.9	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Trichlorofluoromethane	26.8	---	2.00	ug/L	1	20.0	---	**134**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Vinyl chloride	16.2	---	0.200	ug/L	1	20.0	---	81	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				
Duplicate (24C0112-DUP1)			Prepared: 03/05/24 14:40 Analyzed: 03/05/24 20:04									
QC Source Sample: Non-SDG (A4C0944-01)												
Bromobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C							**Water**					
Duplicate (24C0112-DUP1)			Prepared: 03/05/24 14:40 Analyzed: 03/05/24 20:04									
QC Source Sample: Non-SDG (A4C0944-01)												
Bromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	**297**	---	40.0	ug/L	100	---	282	---	---	5	30%	
1,2-Dichloroethane (EDC)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	**295**	---	40.0	ug/L	100	---	276	---	---	7	30%	
cis-1,2-Dichloroethene	**9680**	---	40.0	ug/L	100	---	9160	---	---	6	30%	
trans-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	32.0	---	---	***	30%	
1,2-Dichloropropane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	1000	ug/L	100	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C							**Water**					
Duplicate (24C0112-DUP1)			Prepared: 03/05/24 14:40 Analyzed: 03/05/24 20:04									
QC Source Sample: Non-SDG (A4C0944-01)												
1,1,2,2-Tetrachloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**7480**	---	40.0	ug/L	100	---	7040	---	---	6	30%	
1,2,3-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**1240**	---	40.0	ug/L	100	---	1160	---	---	7	30%	
Trichloroethene (TCE)	**3520**	---	40.0	ug/L	100	---	3320	---	---	6	30%	
Trichlorofluoromethane	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Vinyl chloride	**1220**	---	20.0	ug/L	100	---	1140	---	---	7	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 118 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*99 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*			*"*					
Matrix Spike (24C0112-MS1)			Prepared: 03/05/24 14:40 Analyzed: 03/05/24 23:15									
QC Source Sample: MGMS3-4(40) (A4C0919-03)												
EPA 8260D												
Bromobenzene	197	---	5.00	ug/L	10	200	ND	98	80-120%	---	---	
Bromochloromethane	239	---	10.0	ug/L	10	200	ND	120	78-123%	---	---	
Bromodichloromethane	220	---	10.0	ug/L	10	200	ND	110	79-125%	---	---	
Bromoform	186	---	20.0	ug/L	10	200	ND	93	66-130%	---	---	
Bromomethane	301	---	50.0	ug/L	10	200	ND	**151**	**53-141%**	---	---	Q-01
Carbon tetrachloride	225	---	10.0	ug/L	10	200	ND	112	72-136%	---	---	
Chlorobenzene	213	---	5.00	ug/L	10	200	ND	106	80-120%	---	---	
Chloroethane	324	---	50.0	ug/L	10	200	ND	**162**	**60-138%**	---	---	ICV-01, Q-54d
Chloroform	241	---	10.0	ug/L	10	200	ND	121	79-124%	---	---	
Chloromethane	172	---	50.0	ug/L	10	200	ND	86	50-139%	---	---	Q-54f
2-Chlorotoluene	203	---	10.0	ug/L	10	200	ND	101	79-122%	---	---	
4-Chlorotoluene	203	---	10.0	ug/L	10	200	ND	101	78-122%	---	---	
Dibromochloromethane	189	---	10.0	ug/L	10	200	ND	94	74-126%	---	---	
1,2-Dibromo-3-chloropropane	157	---	50.0	ug/L	10	200	ND	78	62-128%	---	---	
1,2-Dibromoethane (EDB)	206	---	5.00	ug/L	10	200	ND	103	77-121%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0112 - EPA 5030C							**Water**					
Matrix Spike (24C0112-MS1)			Prepared: 03/05/24 14:40 Analyzed: 03/05/24 23:15									
QC Source Sample: MGMS3-4(40) (A4C0919-03)												
Dibromomethane	229	---	10.0	ug/L	10	200	ND	114	79-123%	---	---	
1,2-Dichlorobenzene	205	---	5.00	ug/L	10	200	ND	103	80-120%	---	---	
1,3-Dichlorobenzene	208	---	5.00	ug/L	10	200	ND	104	80-120%	---	---	
1,4-Dichlorobenzene	204	---	5.00	ug/L	10	200	ND	102	79-120%	---	---	
Dichlorodifluoromethane	131	---	10.0	ug/L	10	200	ND	66	32-152%	---	---	Q-54e
1,1-Dichloroethane	241	---	4.00	ug/L	10	200	8.20	116	77-125%	---	---	
1,2-Dichloroethane (EDC)	228	---	4.00	ug/L	10	200	ND	114	73-128%	---	---	
1,1-Dichloroethene	224	---	4.00	ug/L	10	200	ND	112	71-131%	---	---	
cis-1,2-Dichloroethene	386	---	4.00	ug/L	10	200	146	120	78-123%	---	---	
trans-1,2-Dichloroethene	208	---	4.00	ug/L	10	200	ND	104	75-124%	---	---	
1,2-Dichloropropane	222	---	5.00	ug/L	10	200	ND	111	78-122%	---	---	
1,3-Dichloropropane	208	---	10.0	ug/L	10	200	ND	104	80-120%	---	---	
2,2-Dichloropropane	192	---	10.0	ug/L	10	200	ND	96	60-139%	---	---	
1,1-Dichloropropene	229	---	10.0	ug/L	10	200	ND	115	79-125%	---	---	
cis-1,3-Dichloropropene	148	---	10.0	ug/L	10	200	ND	**74**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	182	---	10.0	ug/L	10	200	ND	91	73-127%	---	---	
Hexachlorobutadiene	175	---	50.0	ug/L	10	200	ND	88	66-134%	---	---	
Methylene chloride	222	---	100	ug/L	10	200	ND	111	74-124%	---	---	
1,1,1,2-Tetrachloroethane	208	---	4.00	ug/L	10	200	ND	104	78-124%	---	---	
1,1,2,2-Tetrachloroethane	228	---	5.00	ug/L	10	200	ND	114	71-121%	---	---	
Tetrachloroethene (PCE)	214	---	4.00	ug/L	10	200	ND	107	74-129%	---	---	
1,2,3-Trichlorobenzene	194	---	20.0	ug/L	10	200	ND	97	69-129%	---	---	
1,1,2-Trichloroethane	215	---	5.00	ug/L	10	200	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	163	---	20.0	ug/L	10	200	ND	81	69-130%	---	---	
1,1,1-Trichloroethane	238	---	4.00	ug/L	10	200	ND	119	74-131%	---	---	
Trichloroethene (TCE)	221	---	4.00	ug/L	10	200	ND	111	79-123%	---	---	
Trichlorofluoromethane	335	---	20.0	ug/L	10	200	ND	**168**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	218	---	10.0	ug/L	10	200	ND	109	73-122%	---	---	
Vinyl chloride	370	---	2.00	ug/L	10	200	197	86	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr) *Recovery: 107 %* *Limits: 80-120 %* *Dilution: 1x*
Toluene-d8 (Surr) *96 %* *80-120 %* *"*
4-Bromofluorobenzene (Surr) *92 %* *80-120 %* *"*

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Blank (24C0163-BLK1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 13:52									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C									**Water**			
Blank (24C0163-BLK1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 13:52									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
LCS (24C0163-BS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 12:21									
EPA 8260D												
Bromobenzene	18.7	---	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromodichloromethane	19.8	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
Bromoform	17.1	---	2.00	ug/L	1	20.0	---	85	80-120%	---	---	
Bromomethane	29.5	---	5.00	ug/L	1	20.0	---	**148**	**80-120%**	---	---	Q-56
Carbon tetrachloride	18.3	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Chlorobenzene	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Chloroethane	46.9	---	5.00	ug/L	1	20.0	---	**234**	**80-120%**	---	---	Q-56, ICV-01
Chloroform	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	21.0	---	5.00	ug/L	1	20.0	---	105	80-120%	---	---	
2-Chlorotoluene	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
4-Chlorotoluene	18.8	---	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
Dibromochloromethane	17.4	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
1,2-Dibromo-3-chloropropane	14.8	---	5.00	ug/L	1	20.0	---	**74**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	19.3	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dibromomethane	21.5	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
1,2-Dichlorobenzene	19.5	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
LCS (24C0163-BS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 12:21									
1,3-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
1,4-Dichlorobenzene	19.1	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	22.8	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
1,1-Dichloroethane	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,1-Dichloroethene	20.7	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	18.5	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dichloropropane	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
2,2-Dichloropropane	17.9	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
1,1-Dichloropropene	19.7	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
cis-1,3-Dichloropropene	16.0	---	1.00	ug/L	1	20.0	---	80	80-120%	---	---	
trans-1,3-Dichloropropene	17.2	---	1.00	ug/L	1	20.0	---	86	80-120%	---	---	
Hexachlorobutadiene	15.4	---	5.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	18.6	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Tetrachloroethene (PCE)	18.8	---	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,2,3-Trichlorobenzene	18.5	---	2.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2-Trichloroethane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,4-Trichlorobenzene	15.9	---	2.00	ug/L	1	20.0	---	80	80-120%	---	---	
1,1,1-Trichloroethane	19.6	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Trichloroethene (TCE)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichlorofluoromethane	26.6	---	2.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.9	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Vinyl chloride	20.5	---	0.200	ug/L	1	20.0	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									
QC Source Sample: Non-SDG (A4C0976-01)												
Bromobenzene	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									
QC Source Sample: Non-SDG (A4C0976-01)												
Bromochloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromoform	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
Bromomethane	ND	---	50.0	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%	
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	**13.6**	---	4.00	ug/L	10	---	14.6	---	---	7	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%	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
Methylene chloride	ND	---	100	ug/L	10	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	---	ND	---	---	---	30%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									
QC Source Sample: Non-SDG (A4C0976-01)												
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**26.8**	---	4.00	ug/L	10	---	29.7	---	---	10	30%	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	5.00	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%	
Trichloroethene (TCE)	**13.3**	---	4.00	ug/L	10	---	14.4	---	---	8	30%	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	2.00	ug/L	10	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Matrix Spike (24C0163-MS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 21:07									
QC Source Sample: Non-SDG (A4C0976-09)												
EPA 8260D												
Bromobenzene	185	---	5.00	ug/L	10	200	ND	92	80-120%	---	---	
Bromochloromethane	222	---	10.0	ug/L	10	200	ND	111	78-123%	---	---	
Bromodichloromethane	200	---	10.0	ug/L	10	200	ND	100	79-125%	---	---	
Bromoform	165	---	20.0	ug/L	10	200	ND	82	66-130%	---	---	
Bromomethane	299	---	50.0	ug/L	10	200	ND	**150**	**53-141%**	---	---	Q-54c
Carbon tetrachloride	209	---	10.0	ug/L	10	200	ND	104	72-136%	---	---	
Chlorobenzene	198	---	5.00	ug/L	10	200	ND	99	80-120%	---	---	
Chloroethane	313	---	50.0	ug/L	10	200	ND	**157**	**60-138%**	---	---	ICV-01, Q-54
Chloroform	222	---	10.0	ug/L	10	200	ND	111	79-124%	---	---	
Chloromethane	228	---	50.0	ug/L	10	200	ND	114	50-139%	---	---	
2-Chlorotoluene	188	---	10.0	ug/L	10	200	ND	94	79-122%	---	---	
4-Chlorotoluene	187	---	10.0	ug/L	10	200	ND	93	78-122%	---	---	
Dibromochloromethane	168	---	10.0	ug/L	10	200	ND	84	74-126%	---	---	
1,2-Dibromo-3-chloropropane	144	---	50.0	ug/L	10	200	ND	72	62-128%	---	---	Q-54g
1,2-Dibromoethane (EDB)	188	---	5.00	ug/L	10	200	ND	94	77-121%	---	---	
Dibromomethane	213	---	10.0	ug/L	10	200	ND	106	79-123%	---	---	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Matrix Spike (24C0163-MS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 21:07									
QC Source Sample: Non-SDG (A4C0976-09)												
1,2-Dichlorobenzene	192	---	5.00	ug/L	10	200	ND	96	80-120%	---	---	
1,3-Dichlorobenzene	193	---	5.00	ug/L	10	200	ND	97	80-120%	---	---	
1,4-Dichlorobenzene	190	---	5.00	ug/L	10	200	ND	95	79-120%	---	---	
Dichlorodifluoromethane	272	---	10.0	ug/L	10	200	ND	136	32-152%	---	---	
1,1-Dichloroethane	320	---	4.00	ug/L	10	200	95.9	112	77-125%	---	---	
1,2-Dichloroethane (EDC)	210	---	4.00	ug/L	10	200	ND	105	73-128%	---	---	
1,1-Dichloroethene	224	---	4.00	ug/L	10	200	ND	112	71-131%	---	---	
cis-1,2-Dichloroethene	301	---	4.00	ug/L	10	200	79.5	111	78-123%	---	---	
trans-1,2-Dichloroethene	205	---	4.00	ug/L	10	200	ND	102	75-124%	---	---	
1,2-Dichloropropane	206	---	5.00	ug/L	10	200	ND	103	78-122%	---	---	
1,3-Dichloropropane	191	---	10.0	ug/L	10	200	ND	96	80-120%	---	---	
2,2-Dichloropropane	166	---	10.0	ug/L	10	200	ND	83	60-139%	---	---	
1,1-Dichloropropene	223	---	10.0	ug/L	10	200	ND	111	79-125%	---	---	
cis-1,3-Dichloropropene	133	---	10.0	ug/L	10	200	ND	**66**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	160	---	10.0	ug/L	10	200	ND	80	73-127%	---	---	
Hexachlorobutadiene	170	---	50.0	ug/L	10	200	ND	85	66-134%	---	---	Q-54f
Methylene chloride	213	---	100	ug/L	10	200	ND	106	74-124%	---	---	
1,1,1,2-Tetrachloroethane	183	---	4.00	ug/L	10	200	ND	92	78-124%	---	---	
1,1,2,2-Tetrachloroethane	208	---	5.00	ug/L	10	200	ND	104	71-121%	---	---	
Tetrachloroethene (PCE)	204	---	4.00	ug/L	10	200	2.80	101	74-129%	---	---	
1,2,3-Trichlorobenzene	182	---	20.0	ug/L	10	200	ND	91	69-129%	---	---	
1,1,2-Trichloroethane	196	---	5.00	ug/L	10	200	ND	98	80-120%	---	---	
1,2,4-Trichlorobenzene	155	---	20.0	ug/L	10	200	ND	78	69-130%	---	---	
1,1,1-Trichloroethane	219	---	4.00	ug/L	10	200	ND	109	74-131%	---	---	
Trichloroethene (TCE)	215	---	4.00	ug/L	10	200	3.20	106	79-123%	---	---	
Trichlorofluoromethane	326	---	20.0	ug/L	10	200	ND	**163**	**65-141%**	---	---	Q-54a
1,2,3-Trichloropropane	200	---	10.0	ug/L	10	200	ND	100	73-122%	---	---	
Vinyl chloride	1410	---	2.00	ug/L	10	200	1330	**39**	**58-137%**	---	---	Q-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*96 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0122 - Method Prep: Aq							**Water**					
Blank (24C0122-BLK1)			Prepared: 03/05/24 09:58 Analyzed: 03/05/24 12:18									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0122-BS1)			Prepared: 03/05/24 09:58 Analyzed: 03/05/24 12:20									
SM 4500-NH3 G												
Ammonia as N	2.04	---	0.0200	mg/L	1	2.00	---	102	90-111%	---	---	
Matrix Spike (24C0122-MS1)			Prepared: 03/05/24 09:58 Analyzed: 03/05/24 12:24									
QC Source Sample: Non-SDG (A4B1631-05RE1)												
SM 4500-NH3 G												
Ammonia as N	2.61	---	0.0250	mg/L	1	2.50	0.0480	102	90-111%	---	---	
Matrix Spike Dup (24C0122-MSD1)			Prepared: 03/05/24 09:58 Analyzed: 03/05/24 12:26									
QC Source Sample: Non-SDG (A4B1631-05RE1)												
Ammonia as N	2.60	---	0.0250	mg/L	1	2.50	0.0480	102	90-111%	0.2	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0296 - Method Prep: Aq							**Water**					
Blank (24C0296-BLK1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:40							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0296-BS1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:41							
SM 4500-NH3 G												
Ammonia as N	2.05	---	0.0200	mg/L	1	2.00	---	102	90-111%	---	---	
Matrix Spike (24C0296-MS1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:46							
QC Source Sample: Non-SDG (A4C0948-02)												
SM 4500-NH3 G												
Ammonia as N	6.69	---	0.0400	mg/L	2	4.00	2.50	105	90-111%	---	---	
Matrix Spike Dup (24C0296-MSD1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:47							
QC Source Sample: Non-SDG (A4C0948-02)												
Ammonia as N	6.65	---	0.0400	mg/L	2	4.00	2.50	104	90-111%	0.7	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0311 - Method Prep: Aq								**Water**				
Blank (24C0311-BLK1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:04									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0311-BS1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:06									
SM 4500-NH3 G												
Ammonia as N	2.01	---	0.0200	mg/L	1	2.00	---	100	90-111%	---	---	
Matrix Spike (24C0311-MS1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:10									
QC Source Sample: Non-SDG (A4C1007-01)												
SM 4500-NH3 G												
Ammonia as N	2.83	---	0.0250	mg/L	1	2.50	0.292	102	90-111%	---	---	
Matrix Spike Dup (24C0311-MSD1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:12									
QC Source Sample: Non-SDG (A4C1007-01)												
Ammonia as N	2.94	---	0.0250	mg/L	1	2.50	0.292	106	90-111%	4	13%	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0919 - 04 02 24 1246

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0114 - Method Prep: Aq							Water					
Blank (24C0114-BLK1)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 10:42									
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0114-BS1)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 11:03									
EPA 300.0												
Nitrate-Nitrogen	1.94	---	0.250	mg/L	1	2.00	---	97	90-110%	---	---	
Nitrite-Nitrogen	1.93	---	0.250	mg/L	1	2.00	---	97	90-110%	---	---	
Duplicate (24C0114-DUP1)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 11:46									
QC Source Sample: Non-SDG (A4B1633-01)												
Nitrate-Nitrogen	**0.999**	---	0.250	mg/L	1	---	0.999	---	---	0.05	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24C0114-DUP2)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 17:10									
QC Source Sample: Non-SDG (A4C0935-01)												
Nitrate-Nitrogen	**2.08**	---	0.250	mg/L	1	---	2.08	---	---	0.01	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0114-MS1)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 12:08									
QC Source Sample: Non-SDG (A4B1633-01)												
EPA 300.0												
Nitrate-Nitrogen	3.47	---	0.312	mg/L	1	2.50	0.999	99	87-112%	---	---	
Nitrite-Nitrogen	2.45	---	0.312	mg/L	1	2.50	ND	98	90-114%	---	---	
Matrix Spike (24C0114-MS2)			Prepared: 03/05/24 08:37 Analyzed: 03/05/24 17:31									
QC Source Sample: Non-SDG (A4C0935-01)												
EPA 300.0												
Nitrate-Nitrogen	4.55	---	0.312	mg/L	1	2.50	2.08	99	87-112%	---	---	
Nitrite-Nitrogen	2.44	---	0.312	mg/L	1	2.50	ND	98	90-114%	---	---	

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SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0112							
A4C0919-01	Water	EPA 8260D	03/04/24 12:31	03/05/24 14:40	5mL/5mL	5mL/5mL	1.00
A4C0919-02	Water	EPA 8260D	03/04/24 13:07	03/05/24 14:40	5mL/5mL	5mL/5mL	1.00
A4C0919-03	Water	EPA 8260D	03/04/24 13:46	03/05/24 14:40	5mL/5mL	5mL/5mL	1.00
A4C0919-04	Water	EPA 8260D	03/04/24 14:26	03/05/24 14:40	5mL/5mL	5mL/5mL	1.00
A4C0919-05	Water	EPA 8260D	03/04/24 13:46	03/05/24 14:40	5mL/5mL	5mL/5mL	1.00
Batch: 24C0163							
A4C0919-01RE1	Water	EPA 8260D	03/04/24 12:31	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
A4C0919-03RE1	Water	EPA 8260D	03/04/24 13:46	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
A4C0919-05RE1	Water	EPA 8260D	03/04/24 13:46	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0122							
A4C0919-02	Water	SM 4500-NH3 G	03/04/24 13:07	03/05/24 09:58	10mL/10mL	10mL/10mL	1.00
A4C0919-03	Water	SM 4500-NH3 G	03/04/24 13:46	03/05/24 09:58	10mL/10mL	10mL/10mL	1.00
A4C0919-04	Water	SM 4500-NH3 G	03/04/24 14:26	03/05/24 09:58	10mL/10mL	10mL/10mL	1.00
A4C0919-05	Water	SM 4500-NH3 G	03/04/24 13:46	03/05/24 09:58	10mL/10mL	10mL/10mL	1.00
Batch: 24C0311							
A4C0919-01RE2	Water	SM 4500-NH3 G	03/04/24 12:31	03/08/24 13:29	10mL/10mL	5mL/5mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0114							
A4C0919-01RE1	Water	EPA 300.0	03/04/24 12:31	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00
A4C0919-01RE2	Water	EPA 300.0	03/04/24 12:31	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00
A4C0919-02	Water	EPA 300.0	03/04/24 13:07	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00
A4C0919-03	Water	EPA 300.0	03/04/24 13:46	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00
A4C0919-04	Water	EPA 300.0	03/04/24 14:26	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00
A4C0919-05	Water	EPA 300.0	03/04/24 13:46	03/05/24 08:37	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

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ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +114%. 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 8260/8270 by +13%. 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 8260/8270 by +14%. 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 8260/8270 by +28%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +3%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -28%. The results are reported as Estimated Values.
Q-54f	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -3%. The results are reported as Estimated Values.
Q-54g	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -6%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

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ANALYTICAL REPORT

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

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

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

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

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



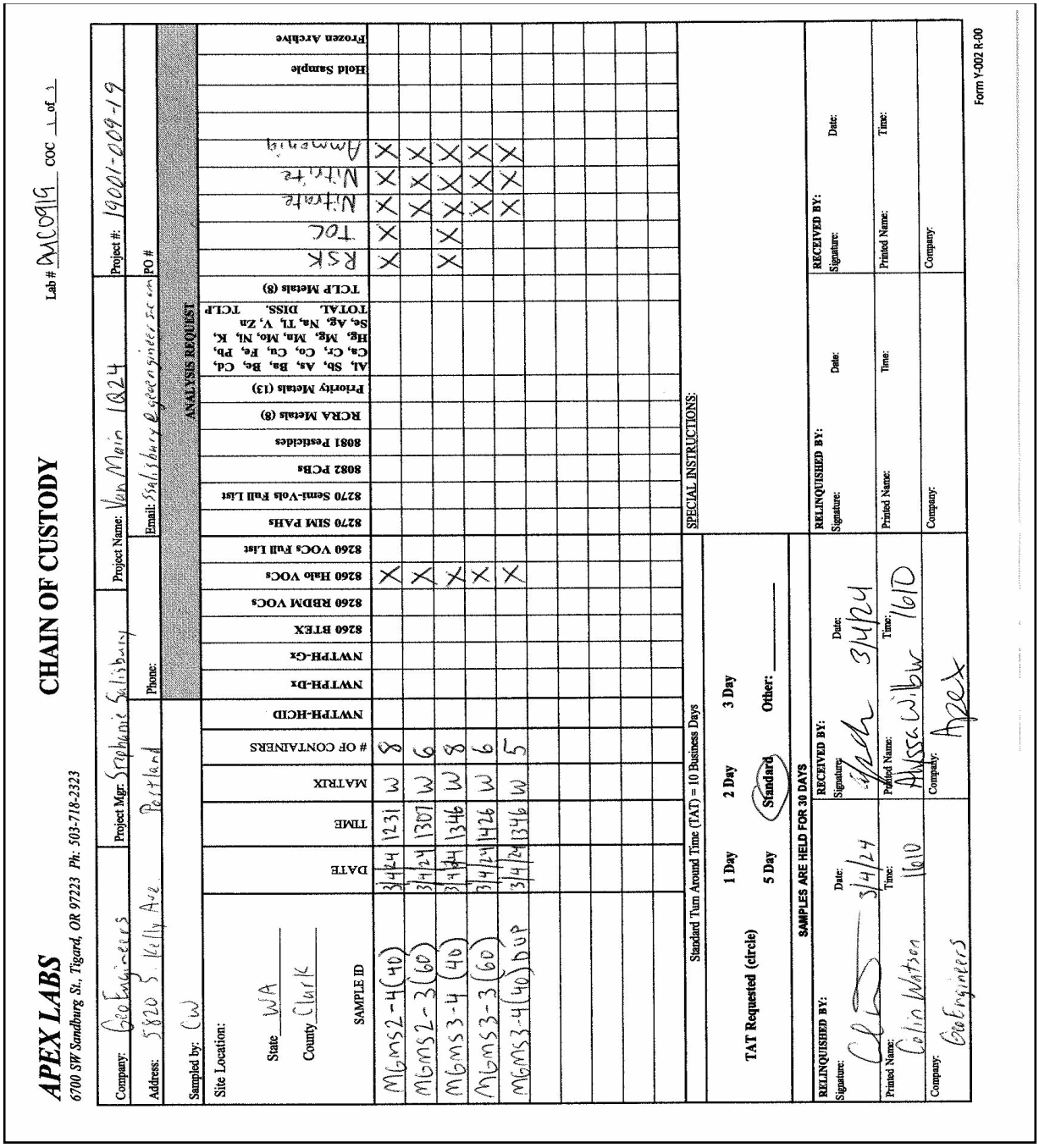
Darrell Auvil, Client Services Manager

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

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**



APEX LABS — 6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY — Lab # A4C0919 COC 1 of 1

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 | Project #: 19001-009-19
Address: 5820 S Kelly Ave Portland | Phone: | Email: ssalisbury@geoengineers.com | PO #
Sampled by: CW

Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	RSK	TOC	Nitrate	Nitrite	Ammonia	Hold Sample	Frozen Archive
MGMS2-4(40)	3/4/24	1231	W	8						X										X	X	X	X		
MGMS2-3(60)	3/4/24	1307	W	6						X										X	X	X	X		
MGMS3-4(40)	3/4/24	1346	W	8						X										X	X	X	X		
MGMS3-3(60)	3/4/24	1426	W	6						X											X	X	X		
MGMS3-4(40)DUP	3/4/24	1346	W	5						X											X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: ____

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

	RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
	Signature:			Signature:		
	Printed Name:			Printed Name:		
	Company:			Company:		

	RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
	Signature:	3/4/24	1610	Signature:	3/4/24	1610
	Printed Name:	Colin Watson		Printed Name:	Alyssa Wilbur	
	Company:	GeoEngineers		Company:	Apex	

Form Y-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0919 - 04 02 24 1246**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4C0919

Project/Project #: Van Main 1Q24 19001-009-19

Delivery Info:

Date/time received: 3/4/24 @ 1610 By: APW

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 3/4/24 @ 1610 By: APW

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

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

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

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

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 3/4/24 @ 16:23 By: APW

All samples intact? Yes X No ___ Comments: _____

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

COC/container discrepancies form initiated? Yes ___ No X

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

Do VOA vials have visible headspace? Yes ___ No X NA X APW 3/4

Comments _____

Water samples: pH checked: Yes X No___NA___ pH appropriate? Yes X No___NA___ pH ID: A23172

Comments: _____

Labeled by: APW Witness: [signature] Cooler Inspected by: APW

Form Y-003 R-02

Apex Laboratories

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

Darrell Auvil, Client Services Manager

March 19, 2024 Service Request No:K2402376

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

Laboratory Results for: A4C0919

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory March 05, 2024
For your reference, these analyses have been assigned our service request number **K2402376.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Client: Apex Laboratories
Project: A4C0919
Sample Matrix: Water

Service Request: K2402376
Date Received: 03/05/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two water samples were received for analysis at ALS Environmental on 03/05/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 03/19/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MGMS2-4(40)			Lab ID: K2402376-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	3.50		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MGMS3-4(40)			Lab ID: K2402376-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	2.80		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2402376

Project: A4C0919

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2402376-001	MGMS2-4(40)	3/4/2024	1231
K2402376-002	MGMS3-4(40)	3/4/2024	1346

W24023716

SUBCONTRACT ORDER

Apex Laboratories

ARC 3/4/24

A4C0919

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MGMS2-4(40) **Sampled: 03/04/24 12:31** (A4C0919-01)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C) *Containers Supplied:* (F)250 mL Poly - Sulfuric (H2SO4)	03/15/24 17:00	04/01/24 12:31	ALS Kelso, no data package

Sample Name: MGMS3-4(40) **Sampled: 03/04/24 13:46** (A4C0919-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C) *Containers Supplied:* (F)250 mL Poly - Sulfuric (H2SO4)	03/15/24 17:00	04/01/24 13:46	ALS Kelso, no data package

Standard TAT

Released By	Date	Received By	Date
	3/5/24 1140		3/5/24 1140
	3/5/24 1250		3/5/24 1250

PM HH

Cooler Receipt and Preservation Form

Client APEX Service Request K24 2376

Received: 3/5/24 Opened: 3/5/24 By: VM Unloaded: 3/5/24 By: VM

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	0.2	IR06					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
14. Was C12/Res negative? NA Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM NA Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Apex Laboratories
Project: A4C0919/

Service Request: K2402376

Sample Name: MGMS2-4(40)
Lab Code: K2402376-001
Sample Matrix: Water

Date Collected: 03/4/24
Date Received: 03/5/24

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name: MGMS3-4(40)
Lab Code: K2402376-002
Sample Matrix: Water

Date Collected: 03/4/24
Date Received: 03/5/24

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402376
Project:	A4C0919	**Date Collected:**	03/04/24 12:31
Sample Matrix:	Water	**Date Received:**	03/05/24 12:50
Sample Name:	MGMS2-4(40)	**Basis:**	NA
Lab Code:	K2402376-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**3.50**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402376
Project:	A4C0919	**Date Collected:**	03/04/24 13:46
Sample Matrix:	Water	**Date Received:**	03/05/24 12:50
Sample Name:	MGMS3-4(40)	**Basis:**	NA
Lab Code:	K2402376-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**2.80**	mg/L	0.50	0.08	1	03/14/24 15:11	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

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Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402376
Project:	A4C0919	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2402376-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	03/14/24 15:11	

Client:	Apex Laboratories	**Service Request:**	K2402376
Project:	A4C0919	**Date Collected:**	03/04/24
Sample Matrix:	Water	**Date Received:**	03/05/24
		Date Analyzed:	03/14/24
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	MGMS2-4(40)	**Units:**	mg/L
Lab Code:	K2402376-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2402376-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	3.50	27.0	25.0	94	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client:	Apex Laboratories	**Service Request:**	K2402376
Project	A4C0919	**Date Collected:**	03/04/24
Sample Matrix:	Water	**Date Received:**	03/05/24
		Date Analyzed:	03/14/24

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	MGMS2-4(40)	**Units:**	mg/L
Lab Code:	K2402376-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K2402376-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.08	3.50	3.40	3.45	3	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Apex Laboratories	**Service Request:**	K2402376
Project:	A4C0919	**Date Analyzed:**	03/14/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	834990

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2402376-LCS	23.7	25.0	95	83-117

Air TECHNOLOGY
Laboratories, Inc.

March 22, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4C0919
Lab Number: R031201-01/02

Enclosed are results for sample(s) received 3/12/24 by Air Technology Laboratories. Samples were received intact and chilled to 4° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

EST

SUBCONTRACT ORDER

Apex Laboratories

A4C0919

R031201-01/02

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

Sample Name: MGMS2-4(40) **Water** **Sampled: 03/04/24 12:31** (A4C0919-01)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub) *Containers Supplied:* (D)40 mL VOA - HCL (E)40 mL VOA - HCL	03/15/24 17:00	03/18/24 12:31	air tech lab

Sample Name: MGMS3-4(40) **Water** **Sampled: 03/04/24 13:46** (A4C0919-03)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub) *Containers Supplied:* (D)40 mL VOA - HCL (E)40 mL VOA - HCL	03/15/24 17:00	03/18/24 13:46	air tech lab

4°C
tlo 3/12/24

Released By	Date	Received By	Date
[signature]	3/12/24	UPS (Shipper)	
UPS (Shipper)	3/12/24 10:04	[signature]	3/12/24 10:04
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4C0919**
Date Received:	**03/12/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R031201-01		R031201-02					
Client Sample I.D.:	MGMS2-4(40) (A4C0919-01)		MGMS3-4(40) (A4C0919-03)					
Date/Time Sampled:	3/4/24 12:31		3/4/24 13:46					
Date/Time Analyzed:	3/18/24 11:32		3/18/24 11:45					
QC Batch No.:	240318GC8A1		240318GC8A1					
Analyst Initials:	RC		RC					
Dilution Factor:	1.0		1.0					
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**				
Ethene	ND	1.0	4.9	1.0				
Ethane	ND	1.0	57	1.0				
Methane	3.6	1.0	2,300	1.0				

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 03-27-24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 240318GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	3/18/24 11:11			3/18/24 10:00		3/18/24 10:39					
Analyst Initials:	RC			RC		RC					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,150	1,470	128	1,410	124	3.5	70	130	30
Ethane	ND	1.0	1,200	1,390	114	1,370	112	1.8	70	130	30
Methane	ND	1.0	650	714	109	705	108	1.3	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 03-21-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Thursday, March 21, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4C0976 - NuStar Vancouver Main 1Q24 - 19001-009-19

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 A4C0976, which was received by the laboratory on 3/5/2024 at 6:03:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 4.6 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-21i-105	A4C0976-01	Water	03/05/24 08:38	03/05/24 18:03
NKW-1	A4C0976-02	Water	03/05/24 09:45	03/05/24 18:03
NKW-2	A4C0976-03	Water	03/05/24 10:30	03/05/24 18:03
MW-22i	A4C0976-04	Water	03/05/24 09:45	03/05/24 18:03
MW-10	A4C0976-05	Water	03/05/24 10:52	03/05/24 18:03
MW-17	A4C0976-06	Water	03/05/24 11:59	03/05/24 18:03
MW-14	A4C0976-07	Water	03/05/24 13:33	03/05/24 18:03
MW-12	A4C0976-08	Water	03/05/24 14:43	03/05/24 18:03
MW-12 DUP	A4C0976-09	Water	03/05/24 14:43	03/05/24 18:03

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4C0976-01RE1)				**Matrix: Water**		**Batch: 24C0292**		
Bromobenzene	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/08/24 14:02	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1-Dichloroethane	**0.800**	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1-Dichloroethene	**0.530**	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
cis-1,2-Dichloroethene	**15.9**	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/08/24 14:02	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4C0976-01RE1)				**Matrix: Water**		**Batch: 24C0292**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
Tetrachloroethene (PCE)	**32.3**	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
Trichloroethene (TCE)	**15.1**	---	0.400	ug/L	1	03/08/24 14:02	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/08/24 14:02	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/08/24 14:02	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/08/24 14:02	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*	*1*	*03/08/24 14:02*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/08/24 14:02*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*	*1*	*03/08/24 14:02*	*EPA 8260D*	
NKW-1 (A4C0976-02)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Bromoform	ND	---	20.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	03/06/24 17:29	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-1 (A4C0976-02)				**Matrix: Water**		**Batch: 24C0163**		
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1-Dichloroethane	**16.4**	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
cis-1,2-Dichloroethene	**166**	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Tetrachloroethene (PCE)	**250**	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Trichloroethene (TCE)	**74.8**	---	4.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	03/06/24 17:29	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:29	EPA 8260D	
Vinyl chloride	**10.4**	---	2.00	ug/L	10	03/06/24 17:29	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits:*	*80-120 %*	*1*	*03/06/24 17:29*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/06/24 17:29*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/06/24 17:29*	*EPA 8260D*	
NKW-2 (A4C0976-03)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-2 (A4C0976-03)				**Matrix: Water**		**Batch: 24C0163**		
Bromoform	ND	---	20.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	03/06/24 17:57	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1-Dichloroethane	**89.9**	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1-Dichloroethene	**33.5**	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
trans-1,2-Dichloroethene	**41.8**	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Tetrachloroethene (PCE)	**38.3**	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 17:57	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-2 (A4C0976-03)				**Matrix: Water**		**Batch: 24C0163**		
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Trichloroethene (TCE)	**80.9**	---	4.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	03/06/24 17:57	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	03/06/24 17:57	EPA 8260D	
Vinyl chloride	**12.1**	---	2.00	ug/L	10	03/06/24 17:57	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits: 80-120 %*	*1*	*03/06/24 17:57*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/06/24 17:57*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/06/24 17:57*	*EPA 8260D*	
NKW-2 (A4C0976-03RE1)				**Matrix: Water**		**Batch: 24C0229**		
cis-1,2-Dichloroethene	**4010**	---	10.0	ug/L	25	03/07/24 17:08	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits: 80-120 %*	*1*	*03/07/24 17:08*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/07/24 17:08*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/07/24 17:08*	*EPA 8260D*	
MW-22i (A4C0976-04RE1)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 13:38	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-22i (A4C0976-04RE1)				**Matrix: Water**		**Batch: 24C0229**		
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1-Dichloroethane	**0.550**	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
cis-1,2-Dichloroethene	**15.3**	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
Tetrachloroethene (PCE)	**2.64**	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
Trichloroethene (TCE)	**5.54**	---	0.400	ug/L	1	03/07/24 13:38	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 13:38	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 13:38	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 13:38	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*	*1*	*03/07/24 13:38*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/07/24 13:38*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*	*1*	*03/07/24 13:38*	*EPA 8260D*	
MW-10 (A4C0976-05RE1)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-10 (A4C0976-05RE1)				**Matrix: Water**		**Batch: 24C0229**		
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 16:14	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-10 (A4C0976-05RE1)				**Matrix: Water**		**Batch: 24C0229**		
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
Tetrachloroethene (PCE)	**2.06**	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
Trichloroethene (TCE)	**1.82**	---	0.400	ug/L	1	03/07/24 16:14	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 16:14	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:14	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 16:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*03/07/24 16:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/07/24 16:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*03/07/24 16:14*	*EPA 8260D*	
MW-17 (A4C0976-06RE1)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 16:41	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-17 (A4C0976-06RE1)				**Matrix: Water**		**Batch: 24C0229**		
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
cis-1,2-Dichloroethene	**6.04**	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
Tetrachloroethene (PCE)	**1.47**	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
Trichloroethene (TCE)	**2.96**	---	0.400	ug/L	1	03/07/24 16:41	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 16:41	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 16:41	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 16:41	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits:*	*80-120 %*	*1*	*03/07/24 16:41*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*03/07/24 16:41*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*	*1*	*03/07/24 16:41*	*EPA 8260D*	
MW-14 (A4C0976-07RE1)				**Matrix: Water**		**Batch: 24C0292**		
Bromobenzene	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
Bromochloromethane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Bromodichloromethane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	5	03/08/24 14:29	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-14 (A4C0976-07RE1)				**Matrix: Water**		**Batch: 24C0292**		
Bromomethane	ND	---	25.0	ug/L	5	03/08/24 14:29	EPA 8260D	
Carbon tetrachloride	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Chlorobenzene	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
Chloroethane	ND	---	25.0	ug/L	5	03/08/24 14:29	EPA 8260D	
Chloroform	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Chloromethane	ND	---	25.0	ug/L	5	03/08/24 14:29	EPA 8260D	
2-Chlorotoluene	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
4-Chlorotoluene	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Dibromochloromethane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	25.0	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
Dibromomethane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
1,3-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
1,4-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
Dichlorodifluoromethane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1-Dichloroethane	**4.30**	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1-Dichloroethene	**2.05**	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
cis-1,2-Dichloroethene	**42.0**	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2-Dichloropropane	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
1,3-Dichloropropane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
2,2-Dichloropropane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Hexachlorobutadiene	ND	---	25.0	ug/L	5	03/08/24 14:29	EPA 8260D	
Methylene chloride	ND	---	50.0	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
Tetrachloroethene (PCE)	**90.7**	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	10.0	ug/L	5	03/08/24 14:29	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-14 (A4C0976-07RE1)				**Matrix: Water**		**Batch: 24C0292**		
1,1,2-Trichloroethane	ND	---	2.50	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	10.0	ug/L	5	03/08/24 14:29	EPA 8260D	
1,1,1-Trichloroethane	ND	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Trichloroethene (TCE)	**262**	---	2.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Trichlorofluoromethane	ND	---	10.0	ug/L	5	03/08/24 14:29	EPA 8260D	
1,2,3-Trichloropropane	ND	---	5.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Vinyl chloride	ND	---	1.00	ug/L	5	03/08/24 14:29	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*122 %*	*Limits: 80-120 %*	*1*	*03/08/24 14:29*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/08/24 14:29*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*03/08/24 14:29*	*EPA 8260D*	
MW-12 (A4C0976-08)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Bromoform	ND	---	20.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	03/06/24 20:13	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1-Dichloroethane	**98.8**	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 (A4C0976-08)				**Matrix: Water**		**Batch: 24C0163**		
1,1-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
cis-1,2-Dichloroethene	**80.2**	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Trichloroethene (TCE)	**4.40**	---	4.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	03/06/24 20:13	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:13	EPA 8260D	
Vinyl chloride	**1360**	---	2.00	ug/L	10	03/06/24 20:13	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*	*1*	*03/06/24 20:13*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*03/06/24 20:13*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*1*	*03/06/24 20:13*	*EPA 8260D*	
MW-12 DUP (A4C0976-09)				**Matrix: Water**		**Batch: 24C0163**		
Bromobenzene	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Bromoform	ND	---	20.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 DUP (A4C0976-09)				**Matrix: Water**		**Batch: 24C0163**		
Chloroethane	ND	---	50.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	03/06/24 20:40	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1-Dichloroethane	**95.9**	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
cis-1,2-Dichloroethene	**79.5**	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 DUP (A4C0976-09)				**Matrix: Water**		**Batch: 24C0163**		
Trichloroethene (TCE)	ND	---	4.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	03/06/24 20:40	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	03/06/24 20:40	EPA 8260D	
Vinyl chloride	**1330**	---	2.00	ug/L	10	03/06/24 20:40	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*03/06/24 20:40*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/06/24 20:40*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/06/24 20:40*	*EPA 8260D*	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4C0976-01)				**Matrix: Water**		**Batch: 24C0346**		
Ammonia as N	**1.68**	---	0.0200	mg/L	1	03/11/24 13:05	SM 4500-NH3 G	
NKW-1 (A4C0976-02RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**16.7**	---	1.00	mg/L	50	03/15/24 12:05	SM 4500-NH3 G	
NKW-2 (A4C0976-03RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**19.6**	---	1.00	mg/L	50	03/15/24 12:06	SM 4500-NH3 G	
MW-22i (A4C0976-04RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**0.361**	---	0.0200	mg/L	1	03/15/24 11:59	SM 4500-NH3 G	
MW-10 (A4C0976-05RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**3.94**	---	0.0400	mg/L	2	03/15/24 12:11	SM 4500-NH3 G	
MW-17 (A4C0976-06)				**Matrix: Water**		**Batch: 24C0346**		
Ammonia as N	**0.723**	---	0.0200	mg/L	1	03/11/24 13:26	SM 4500-NH3 G	
MW-14 (A4C0976-07)				**Matrix: Water**		**Batch: 24C0346**		
Ammonia as N	**4.85**	---	0.0200	mg/L	1	03/11/24 13:27	SM 4500-NH3 G	
MW-12 (A4C0976-08RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**123**	---	2.00	mg/L	100	03/15/24 12:12	SM 4500-NH3 G	
MW-12 DUP (A4C0976-09RE1)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**128**	---	2.00	mg/L	100	03/15/24 12:14	SM 4500-NH3 G	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4C0976-01)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	**1.02**	---	0.250	mg/L	1	03/06/24 11:20	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 11:20	EPA 300.0	
NKW-1 (A4C0976-02)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	**13.7**	---	1.25	mg/L	5	03/06/24 12:25	EPA 300.0	
NKW-1 (A4C0976-02RE1)				**Matrix: Water**				
Batch: 24C0164								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 16:44	EPA 300.0	
NKW-2 (A4C0976-03)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	**19.9**	---	1.25	mg/L	5	03/06/24 12:47	EPA 300.0	
NKW-2 (A4C0976-03RE1)				**Matrix: Water**				
Batch: 24C0164								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 17:05	EPA 300.0	
MW-22i (A4C0976-04)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 13:08	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 13:08	EPA 300.0	
MW-10 (A4C0976-05RE1)				**Matrix: Water**				
Batch: 24C0164								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 17:27	EPA 300.0	
MW-10 (A4C0976-05RE3)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**294**	---	12.5	mg/L	50	03/07/24 10:23	EPA 300.0	
MW-17 (A4C0976-06)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	**14.8**	---	1.25	mg/L	5	03/06/24 15:17	EPA 300.0	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-17 (A4C0976-06RE1)				**Matrix: Water**				
Batch: 24C0164								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 17:48	EPA 300.0	
MW-14 (A4C0976-07RE1)				**Matrix: Water**				
Batch: 24C0164								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 19:36	EPA 300.0	
MW-14 (A4C0976-07RE3)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**226**	---	12.5	mg/L	50	03/07/24 10:45	EPA 300.0	
MW-12 (A4C0976-08)				**Matrix: Water**				
Batch: 24C0164								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 16:01	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 16:01	EPA 300.0	
MW-12 DUP (A4C0976-09)				**Matrix: Water**				
Batch: 24C0170								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 19:58	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/06/24 19:58	EPA 300.0	Q-42

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Blank (24C0163-BLK1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 13:52									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C									**Water**			
Blank (24C0163-BLK1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 13:52									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
LCS (24C0163-BS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 12:21									
EPA 8260D												
Bromobenzene	18.7	---	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromodichloromethane	19.8	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
Bromoform	17.1	---	2.00	ug/L	1	20.0	---	85	80-120%	---	---	
Bromomethane	29.5	---	5.00	ug/L	1	20.0	---	**148**	**80-120%**	---	---	Q-56
Carbon tetrachloride	18.3	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Chlorobenzene	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Chloroethane	46.9	---	5.00	ug/L	1	20.0	---	**234**	**80-120%**	---	---	Q-56, ICV-01
Chloroform	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	21.0	---	5.00	ug/L	1	20.0	---	105	80-120%	---	---	
2-Chlorotoluene	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
4-Chlorotoluene	18.8	---	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
Dibromochloromethane	17.4	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
1,2-Dibromo-3-chloropropane	14.8	---	5.00	ug/L	1	20.0	---	**74**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	19.3	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dibromomethane	21.5	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
1,2-Dichlorobenzene	19.5	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
LCS (24C0163-BS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 12:21									
1,3-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
1,4-Dichlorobenzene	19.1	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	22.8	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
1,1-Dichloroethane	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,1-Dichloroethene	20.7	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	18.5	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dichloropropane	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
2,2-Dichloropropane	17.9	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
1,1-Dichloropropene	19.7	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
cis-1,3-Dichloropropene	16.0	---	1.00	ug/L	1	20.0	---	80	80-120%	---	---	
trans-1,3-Dichloropropene	17.2	---	1.00	ug/L	1	20.0	---	86	80-120%	---	---	
Hexachlorobutadiene	15.4	---	5.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	18.6	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Tetrachloroethene (PCE)	18.8	---	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
1,2,3-Trichlorobenzene	18.5	---	2.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2-Trichloroethane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,4-Trichlorobenzene	15.9	---	2.00	ug/L	1	20.0	---	80	80-120%	---	---	
1,1,1-Trichloroethane	19.6	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Trichloroethene (TCE)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichlorofluoromethane	26.6	---	2.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.9	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Vinyl chloride	20.5	---	0.200	ug/L	1	20.0	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*97 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*				*"*			
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									

QC Source Sample: MW-21i-105 (A4C0976-01)

EPA 8260D

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									
QC Source Sample: MW-21i-105 (A4C0976-01)												
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	---	20.0	ug/L	10	---	ND	---	---	---	30%	
Bromomethane	ND	---	50.0	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%	
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	**13.6**	---	4.00	ug/L	10	---	14.6	---	---	7	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%	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
Methylene chloride	ND	---	100	ug/L	10	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Duplicate (24C0163-DUP1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 17:02									
QC Source Sample: MW-21i-105 (A4C0976-01)												
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%	
Tetrachloroethene (PCE)	**26.8**	---	4.00	ug/L	10	---	29.7	---	---	10	30%	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	5.00	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%	
Trichloroethene (TCE)	**13.3**	---	4.00	ug/L	10	---	14.4	---	---	8	30%	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	2.00	ug/L	10	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Matrix Spike (24C0163-MS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 21:07									
QC Source Sample: MW-12 DUP (A4C0976-09)												
Bromobenzene	185	---	5.00	ug/L	10	200	ND	92	80-120%	---	---	
Bromochloromethane	222	---	10.0	ug/L	10	200	ND	111	78-123%	---	---	
Bromodichloromethane	200	---	10.0	ug/L	10	200	ND	100	79-125%	---	---	
Bromoform	165	---	20.0	ug/L	10	200	ND	82	66-130%	---	---	
Bromomethane	299	---	50.0	ug/L	10	200	ND	**150**	**53-141%**	---	---	Q-54d
Carbon tetrachloride	209	---	10.0	ug/L	10	200	ND	104	72-136%	---	---	
Chlorobenzene	198	---	5.00	ug/L	10	200	ND	99	80-120%	---	---	
Chloroethane	313	---	50.0	ug/L	10	200	ND	**157**	**60-138%**	---	---	ICV-01, Q-54
Chloroform	222	---	10.0	ug/L	10	200	ND	111	79-124%	---	---	
Chloromethane	228	---	50.0	ug/L	10	200	ND	114	50-139%	---	---	
2-Chlorotoluene	188	---	10.0	ug/L	10	200	ND	94	79-122%	---	---	
4-Chlorotoluene	187	---	10.0	ug/L	10	200	ND	93	78-122%	---	---	
Dibromochloromethane	168	---	10.0	ug/L	10	200	ND	84	74-126%	---	---	
1,2-Dibromo-3-chloropropane	144	---	50.0	ug/L	10	200	ND	72	62-128%	---	---	Q-54k
1,2-Dibromoethane (EDB)	188	---	5.00	ug/L	10	200	ND	94	77-121%	---	---	
Dibromomethane	213	---	10.0	ug/L	10	200	ND	106	79-123%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0163 - EPA 5030C							**Water**					
Matrix Spike (24C0163-MS1)			Prepared: 03/06/24 10:12 Analyzed: 03/06/24 21:07									
QC Source Sample: MW-12 DUP (A4C0976-09)												
1,2-Dichlorobenzene	192	---	5.00	ug/L	10	200	ND	96	80-120%	---	---	
1,3-Dichlorobenzene	193	---	5.00	ug/L	10	200	ND	97	80-120%	---	---	
1,4-Dichlorobenzene	190	---	5.00	ug/L	10	200	ND	95	79-120%	---	---	
Dichlorodifluoromethane	272	---	10.0	ug/L	10	200	ND	136	32-152%	---	---	
1,1-Dichloroethane	320	---	4.00	ug/L	10	200	95.9	112	77-125%	---	---	
1,2-Dichloroethane (EDC)	210	---	4.00	ug/L	10	200	ND	105	73-128%	---	---	
1,1-Dichloroethene	224	---	4.00	ug/L	10	200	ND	112	71-131%	---	---	
cis-1,2-Dichloroethene	301	---	4.00	ug/L	10	200	79.5	111	78-123%	---	---	
trans-1,2-Dichloroethene	205	---	4.00	ug/L	10	200	ND	102	75-124%	---	---	
1,2-Dichloropropane	206	---	5.00	ug/L	10	200	ND	103	78-122%	---	---	
1,3-Dichloropropane	191	---	10.0	ug/L	10	200	ND	96	80-120%	---	---	
2,2-Dichloropropane	166	---	10.0	ug/L	10	200	ND	83	60-139%	---	---	
1,1-Dichloropropene	223	---	10.0	ug/L	10	200	ND	111	79-125%	---	---	
cis-1,3-Dichloropropene	133	---	10.0	ug/L	10	200	ND	**66**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	160	---	10.0	ug/L	10	200	ND	80	73-127%	---	---	
Hexachlorobutadiene	170	---	50.0	ug/L	10	200	ND	85	66-134%	---	---	Q-54h
Methylene chloride	213	---	100	ug/L	10	200	ND	106	74-124%	---	---	
1,1,1,2-Tetrachloroethane	183	---	4.00	ug/L	10	200	ND	92	78-124%	---	---	
1,1,2,2-Tetrachloroethane	208	---	5.00	ug/L	10	200	ND	104	71-121%	---	---	
Tetrachloroethene (PCE)	204	---	4.00	ug/L	10	200	2.80	101	74-129%	---	---	
1,2,3-Trichlorobenzene	182	---	20.0	ug/L	10	200	ND	91	69-129%	---	---	
1,1,2-Trichloroethane	196	---	5.00	ug/L	10	200	ND	98	80-120%	---	---	
1,2,4-Trichlorobenzene	155	---	20.0	ug/L	10	200	ND	78	69-130%	---	---	
1,1,1-Trichloroethane	219	---	4.00	ug/L	10	200	ND	109	74-131%	---	---	
Trichloroethene (TCE)	215	---	4.00	ug/L	10	200	3.20	106	79-123%	---	---	
Trichlorofluoromethane	326	---	20.0	ug/L	10	200	ND	**163**	**65-141%**	---	---	Q-54a
1,2,3-Trichloropropane	200	---	10.0	ug/L	10	200	ND	100	73-122%	---	---	
Vinyl chloride	1410	---	2.00	ug/L	10	200	1330	**39**	**58-137%**	---	---	Q-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*96 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Blank (24C0229-BLK1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 13:11									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Blank (24C0229-BLK1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 13:11									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
LCS (24C0229-BS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 12:32									
EPA 8260D												
Bromobenzene	18.6	---	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
Bromochloromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Bromodichloromethane	19.5	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
Bromoform	17.1	---	2.00	ug/L	1	20.0	---	86	80-120%	---	---	
Bromomethane	30.2	---	5.00	ug/L	1	20.0	---	**151**	**80-120%**	---	---	Q-56
Carbon tetrachloride	19.0	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Chlorobenzene	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Chloroethane	32.6	---	5.00	ug/L	1	20.0	---	**163**	**80-120%**	---	---	Q-56, ICV-01
Chloroform	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chloromethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
2-Chlorotoluene	18.7	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
4-Chlorotoluene	18.3	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Dibromochloromethane	17.5	---	1.00	ug/L	1	20.0	---	88	80-120%	---	---	
1,2-Dibromo-3-chloropropane	15.2	---	5.00	ug/L	1	20.0	---	**76**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Dibromomethane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichlorobenzene	19.0	---	0.500	ug/L	1	20.0	---	95	80-120%	---	---	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
LCS (24C0229-BS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 12:32									
1,3-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
1,4-Dichlorobenzene	18.8	---	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Dichlorodifluoromethane	23.6	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
1,1-Dichloroethane	20.9	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,1-Dichloroethene	20.8	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.4	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	19.1	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dichloropropane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,3-Dichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
2,2-Dichloropropane	19.9	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloropropene	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,3-Dichloropropene	16.3	---	1.00	ug/L	1	20.0	---	82	80-120%	---	---	
trans-1,3-Dichloropropene	17.3	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
Hexachlorobutadiene	16.3	---	5.00	ug/L	1	20.0	---	82	80-120%	---	---	
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	18.4	---	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.9	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
Tetrachloroethene (PCE)	19.5	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	18.6	---	2.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2-Trichloroethane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,4-Trichlorobenzene	16.3	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,1-Trichloroethane	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichloroethene (TCE)	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichlorofluoromethane	28.3	---	2.00	ug/L	1	20.0	---	**142**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Vinyl chloride	20.9	---	0.200	ug/L	1	20.0	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*97 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*				*"*			
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**
QC Source Sample: Non-SDG (A4C1027-10)												
Bromobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**
QC Source Sample: Non-SDG (A4C1027-10)												
Bromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromoform	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
Bromomethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Chloroethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Chloroform	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chloromethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dibromomethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethane	**2.75**	---	1.00	ug/L	2.5	---	2.65	---	---	4	30%	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	---	0.850	---	---	***	30%	
cis-1,2-Dichloroethene	**32.6**	---	1.00	ug/L	2.5	---	31.7	---	---	3	30%	
trans-1,2-Dichloroethene	**1.15**	---	1.00	ug/L	2.5	---	1.02	---	---	11	30%	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Methylene chloride	ND	---	25.0	ug/L	2.5	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**
QC Source Sample: Non-SDG (A4C1027-10)												
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**139**	---	1.00	ug/L	2.5	---	135	---	---	3	30%	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**1.35**	---	1.00	ug/L	2.5	---	1.28	---	---	6	30%	
Trichloroethene (TCE)	**231**	---	1.00	ug/L	2.5	---	221	---	---	4	30%	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.500	ug/L	2.5	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*124 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				*S-02*
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Matrix Spike (24C0229-MS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 19:24									
QC Source Sample: Non-SDG (A4C0991-01)												
EPA 8260D												
Bromobenzene	20.1	---	0.500	ug/L	1	20.0	ND	100	80-120%	---	---	
Bromochloromethane	24.2	---	1.00	ug/L	1	20.0	ND	121	78-123%	---	---	
Bromodichloromethane	21.8	---	1.00	ug/L	1	20.0	ND	109	79-125%	---	---	
Bromoform	18.1	---	2.00	ug/L	1	20.0	ND	91	66-130%	---	---	
Bromomethane	35.0	---	5.00	ug/L	1	20.0	ND	**175**	**53-141%**	---	---	Q-54e
Carbon tetrachloride	22.8	---	1.00	ug/L	1	20.0	ND	114	72-136%	---	---	
Chlorobenzene	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	---	---	
Chloroethane	53.5	---	5.00	ug/L	1	20.0	ND	**267**	**60-138%**	---	---	ICV-01, Q-54f
Chloroform	24.3	---	1.00	ug/L	1	20.0	ND	122	79-124%	---	---	
Chloromethane	24.6	---	5.00	ug/L	1	20.0	ND	123	50-139%	---	---	
2-Chlorotoluene	20.4	---	1.00	ug/L	1	20.0	ND	102	79-122%	---	---	
4-Chlorotoluene	20.2	---	1.00	ug/L	1	20.0	ND	101	78-122%	---	---	
Dibromochloromethane	18.6	---	1.00	ug/L	1	20.0	ND	93	74-126%	---	---	
1,2-Dibromo-3-chloropropane	16.1	---	5.00	ug/L	1	20.0	ND	80	62-128%	---	---	Q-54i
1,2-Dibromoethane (EDB)	20.5	---	0.500	ug/L	1	20.0	ND	102	77-121%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Matrix Spike (24C0229-MS1)			Prepared: 03/07/24 12:23		Analyzed: 03/07/24 19:24							
QC Source Sample: Non-SDG (A4C0991-01)												
Dibromomethane	23.2	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,3-Dichlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,4-Dichlorobenzene	20.3	---	0.500	ug/L	1	20.0	ND	101	79-120%	---	---	
Dichlorodifluoromethane	27.7	---	1.00	ug/L	1	20.0	ND	138	32-152%	---	---	
1,1-Dichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	77-125%	---	---	
1,2-Dichloroethane (EDC)	23.1	---	0.400	ug/L	1	20.0	ND	115	73-128%	---	---	
1,1-Dichloroethene	26.3	---	0.400	ug/L	1	20.0	ND	131	71-131%	---	---	
cis-1,2-Dichloroethene	22.2	---	0.400	ug/L	1	20.0	ND	111	78-123%	---	---	
trans-1,2-Dichloroethene	22.8	---	0.400	ug/L	1	20.0	ND	114	75-124%	---	---	
1,2-Dichloropropane	22.7	---	0.500	ug/L	1	20.0	ND	114	78-122%	---	---	
1,3-Dichloropropane	21.2	---	1.00	ug/L	1	20.0	ND	106	80-120%	---	---	
2,2-Dichloropropane	19.7	---	1.00	ug/L	1	20.0	ND	99	60-139%	---	---	
1,1-Dichloropropene	24.4	---	1.00	ug/L	1	20.0	ND	122	79-125%	---	---	
cis-1,3-Dichloropropene	15.1	---	1.00	ug/L	1	20.0	ND	76	75-124%	---	---	
trans-1,3-Dichloropropene	17.8	---	1.00	ug/L	1	20.0	ND	89	73-127%	---	---	
Hexachlorobutadiene	17.0	---	5.00	ug/L	1	20.0	ND	85	66-134%	---	---	
Methylene chloride	23.1	---	10.0	ug/L	1	20.0	ND	115	74-124%	---	---	
1,1,1,2-Tetrachloroethane	20.2	---	0.400	ug/L	1	20.0	ND	101	78-124%	---	---	
1,1,2,2-Tetrachloroethane	22.9	---	0.500	ug/L	1	20.0	ND	115	71-121%	---	---	
Tetrachloroethene (PCE)	22.1	---	0.400	ug/L	1	20.0	ND	110	74-129%	---	---	
1,2,3-Trichlorobenzene	19.6	---	2.00	ug/L	1	20.0	ND	98	69-129%	---	---	
1,1,2-Trichloroethane	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	---	---	
1,2,4-Trichlorobenzene	17.1	---	2.00	ug/L	1	20.0	ND	86	69-130%	---	---	
1,1,1-Trichloroethane	24.0	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	23.2	---	0.400	ug/L	1	20.0	ND	116	79-123%	---	---	
Trichlorofluoromethane	34.3	---	2.00	ug/L	1	20.0	ND	**172**	**65-141%**	---	---	Q-54c
1,2,3-Trichloropropane	21.8	---	1.00	ug/L	1	20.0	ND	109	73-122%	---	---	
Vinyl chloride	25.3	---	0.200	ug/L	1	20.0	ND	127	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*95 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Blank (24C0292-BLK1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:35									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C									**Water**			
Blank (24C0292-BLK1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:35									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 113 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*				*"*			
LCS (24C0292-BS1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:07									
EPA 8260D												
Bromobenzene	18.8	---	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Bromochloromethane	22.7	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Bromodichloromethane	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Bromoform	17.2	---	2.00	ug/L	1	20.0	---	86	80-120%	---	---	
Bromomethane	30.1	---	5.00	ug/L	1	20.0	---	**151**	**80-120%**	---	---	Q-56
Carbon tetrachloride	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Chlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Chloroethane	34.8	---	5.00	ug/L	1	20.0	---	**174**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	22.1	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chloromethane	21.8	---	5.00	ug/L	1	20.0	---	109	80-120%	---	---	
2-Chlorotoluene	18.9	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
4-Chlorotoluene	18.9	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Dibromochloromethane	17.8	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
1,2-Dibromo-3-chloropropane	14.9	---	5.00	ug/L	1	20.0	---	**75**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dibromomethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	

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Darrell Auvil, Client Services Manager

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503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
LCS (24C0292-BS1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:07									
1,3-Dichlorobenzene	19.5	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
1,4-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.5	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
1,1-Dichloroethene	20.1	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,2-Dichloroethene	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,2-Dichloroethene	19.7	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dichloropropane	21.0	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,3-Dichloropropane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
2,2-Dichloropropane	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloropropene	20.1	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
cis-1,3-Dichloropropene	16.8	---	1.00	ug/L	1	20.0	---	84	80-120%	---	---	
trans-1,3-Dichloropropene	17.8	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
Hexachlorobutadiene	16.0	---	5.00	ug/L	1	20.0	---	80	80-120%	---	---	
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,1,2-Tetrachloroethane	19.0	---	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
1,1,2,2-Tetrachloroethane	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Tetrachloroethene (PCE)	19.3	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,2,3-Trichlorobenzene	19.4	---	2.00	ug/L	1	20.0	---	97	80-120%	---	---	
1,1,2-Trichloroethane	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,4-Trichlorobenzene	16.5	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,1-Trichloroethane	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichloroethene (TCE)	20.0	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Trichlorofluoromethane	27.4	---	2.00	ug/L	1	20.0	---	**137**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Vinyl chloride	20.5	---	0.200	ug/L	1	20.0	---	103	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
Bromobenzene	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
Bromochloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromoform	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
Bromomethane	ND	---	50.0	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%	
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	**80.0**	---	4.00	ug/L	10	---	79.2	---	---	1	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%	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
Methylene chloride	ND	---	100	ug/L	10	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	---	ND	---	---	---	30%	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**286**	---	4.00	ug/L	10	---	285	---	---	0.5	30%	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	5.00	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%	
Trichloroethene (TCE)	**22.0**	---	4.00	ug/L	10	---	22.1	---	---	0.5	30%	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	**10.7**	---	2.00	ug/L	10	---	10.4	---	---	3	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike (24C0292-MS1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 16:46									
QC Source Sample: Non-SDG (A4C1027-14)												
EPA 8260D												
Bromobenzene	19.5	---	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
Bromochloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	78-123%	---	---	
Bromodichloromethane	21.7	---	1.00	ug/L	1	20.0	ND	108	79-125%	---	---	
Bromoform	18.0	---	2.00	ug/L	1	20.0	ND	90	66-130%	---	---	
Bromomethane	31.5	---	5.00	ug/L	1	20.0	ND	**158**	**53-141%**	---	---	Q-54e
Carbon tetrachloride	22.3	---	1.00	ug/L	1	20.0	ND	112	72-136%	---	---	
Chlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
Chloroethane	56.9	---	5.00	ug/L	1	20.0	ND	**285**	**60-138%**	---	---	ICV-01, Q-54g
Chloroform	23.9	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	24.6	---	5.00	ug/L	1	20.0	ND	123	50-139%	---	---	
2-Chlorotoluene	19.8	---	1.00	ug/L	1	20.0	ND	99	79-122%	---	---	
4-Chlorotoluene	19.6	---	1.00	ug/L	1	20.0	ND	98	78-122%	---	---	
Dibromochloromethane	18.7	---	1.00	ug/L	1	20.0	ND	93	74-126%	---	---	
1,2-Dibromo-3-chloropropane	15.6	---	5.00	ug/L	1	20.0	ND	78	62-128%	---	---	Q-54j
1,2-Dibromoethane (EDB)	20.3	---	0.500	ug/L	1	20.0	ND	101	77-121%	---	---	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Matrix Spike (24C0292-MS1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 16:46									
QC Source Sample: Non-SDG (A4C1027-14)												
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	80-120%	---	---	
1,3-Dichlorobenzene	20.5	---	0.500	ug/L	1	20.0	ND	103	80-120%	---	---	
1,4-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	ND	99	79-120%	---	---	
Dichlorodifluoromethane	26.4	---	1.00	ug/L	1	20.0	ND	132	32-152%	---	---	
1,1-Dichloroethane	23.7	---	0.400	ug/L	1	20.0	ND	118	77-125%	---	---	
1,2-Dichloroethane (EDC)	22.7	---	0.400	ug/L	1	20.0	ND	114	73-128%	---	---	
1,1-Dichloroethene	24.7	---	0.400	ug/L	1	20.0	ND	123	71-131%	---	---	
cis-1,2-Dichloroethene	21.8	---	0.400	ug/L	1	20.0	ND	109	78-123%	---	---	
trans-1,2-Dichloroethene	22.2	---	0.400	ug/L	1	20.0	ND	111	75-124%	---	---	
1,2-Dichloropropane	22.2	---	0.500	ug/L	1	20.0	ND	111	78-122%	---	---	
1,3-Dichloropropane	20.7	---	1.00	ug/L	1	20.0	ND	103	80-120%	---	---	
2,2-Dichloropropane	20.9	---	1.00	ug/L	1	20.0	ND	105	60-139%	---	---	
1,1-Dichloropropene	23.4	---	1.00	ug/L	1	20.0	ND	117	79-125%	---	---	
cis-1,3-Dichloropropene	14.8	---	1.00	ug/L	1	20.0	ND	**74**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	17.5	---	1.00	ug/L	1	20.0	ND	87	73-127%	---	---	
Hexachlorobutadiene	17.8	---	5.00	ug/L	1	20.0	ND	89	66-134%	---	---	
Methylene chloride	22.6	---	10.0	ug/L	1	20.0	ND	113	74-124%	---	---	
1,1,1,2-Tetrachloroethane	19.8	---	0.400	ug/L	1	20.0	ND	99	78-124%	---	---	
1,1,2,2-Tetrachloroethane	23.0	---	0.500	ug/L	1	20.0	ND	115	71-121%	---	---	
Tetrachloroethene (PCE)	22.0	---	0.400	ug/L	1	20.0	0.900	105	74-129%	---	---	
1,2,3-Trichlorobenzene	19.8	---	2.00	ug/L	1	20.0	ND	99	69-129%	---	---	
1,1,2-Trichloroethane	21.1	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,2,4-Trichlorobenzene	16.8	---	2.00	ug/L	1	20.0	ND	84	69-130%	---	---	
1,1,1-Trichloroethane	23.4	---	0.400	ug/L	1	20.0	ND	117	74-131%	---	---	
Trichloroethene (TCE)	21.8	---	0.400	ug/L	1	20.0	0.320	108	79-123%	---	---	
Trichlorofluoromethane	33.0	---	2.00	ug/L	1	20.0	ND	**165**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	20.9	---	1.00	ug/L	1	20.0	ND	104	73-122%	---	---	
Vinyl chloride	24.1	---	0.200	ug/L	1	20.0	ND	120	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*95 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0346 - Method Prep: Aq							**Water**					
Blank (24C0346-BLK1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 12:54							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0346-BS1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 12:56							
SM 4500-NH3 G												
Ammonia as N	2.03	---	0.0200	mg/L	1	2.00	---	102	90-111%	---	---	
Matrix Spike (24C0346-MS1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 13:00							
QC Source Sample: Non-SDG (A4C1055-02)												
SM 4500-NH3 G												
Ammonia as N	2.61	---	0.0250	mg/L	1	2.50	0.0400	103	90-111%	---	---	
Matrix Spike Dup (24C0346-MSD1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 13:02							
QC Source Sample: Non-SDG (A4C1055-02)												
Ammonia as N	2.65	---	0.0250	mg/L	1	2.50	0.0400	104	90-111%	1	13%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0550 - Method Prep: Aq							**Water**					
Blank (24C0550-BLK1)			Prepared: 03/15/24 09:29		Analyzed: 03/15/24 11:54							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0550-BS1)			Prepared: 03/15/24 09:29		Analyzed: 03/15/24 11:56							
SM 4500-NH3 G												
Ammonia as N	2.02	---	0.0200	mg/L	1	2.00	---	101	90-111%	---	---	
Matrix Spike (24C0550-MS1)			Prepared: 03/15/24 09:29		Analyzed: 03/15/24 12:00							
QC Source Sample: MW-22i (A4C0976-04RE1)												
SM 4500-NH3 G												
Ammonia as N	2.91	---	0.0250	mg/L	1	2.50	0.361	102	90-111%	---	---	
Matrix Spike Dup (24C0550-MSD1)			Prepared: 03/15/24 09:29		Analyzed: 03/15/24 12:02							
QC Source Sample: MW-22i (A4C0976-04RE1)												
SM 4500-NH3 G												
Ammonia as N	2.91	---	0.0250	mg/L	1	2.50	0.361	102	90-111%	0.04	13%	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0164 - Method Prep: Aq								**Water**				
Blank (24C0164-BLK1)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 10:16									
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0164-BS1)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 10:37									
EPA 300.0												
Nitrate-Nitrogen	1.92	---	0.250	mg/L	1	2.00	---	96	90-110%	---	---	
Nitrite-Nitrogen	1.92	---	0.250	mg/L	1	2.00	---	96	90-110%	---	---	
Duplicate (24C0164-DUP1)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 11:42									
QC Source Sample: MW-21i-105 (A4C0976-01)												
EPA 300.0												
Nitrate-Nitrogen	**1.01**	---	0.250	mg/L	1	---	1.02	---	---	0.1	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24C0164-DUP2)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 13:30									
QC Source Sample: MW-22i (A4C0976-04)												
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0164-MS1)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 12:03									
QC Source Sample: MW-21i-105 (A4C0976-01)												
EPA 300.0												
Nitrate-Nitrogen	3.48	---	0.312	mg/L	1	2.50	1.02	98	87-112%	---	---	
Nitrite-Nitrogen	2.46	---	0.312	mg/L	1	2.50	ND	99	90-114%	---	---	
Matrix Spike (24C0164-MS2)			Prepared: 03/06/24 07:39 Analyzed: 03/06/24 14:34									
QC Source Sample: MW-22i (A4C0976-04)												
EPA 300.0												
Nitrate-Nitrogen	2.43	---	0.312	mg/L	1	2.50	ND	97	87-112%	---	---	
Nitrite-Nitrogen	2.45	---	0.312	mg/L	1	2.50	ND	98	90-114%	---	---	

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Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C0976 - 03 21 24 1700

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0170 - Method Prep: Aq							Water					
Blank (24C0170-BLK1)			Prepared: 03/06/24 09:15		Analyzed: 03/06/24 18:53							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0170-BS1)			Prepared: 03/06/24 09:15		Analyzed: 03/06/24 19:15							
EPA 300.0												
Nitrate-Nitrogen	1.91	---	0.250	mg/L	1	2.00	---	95	90-110%	---	---	
Nitrite-Nitrogen	1.94	---	0.250	mg/L	1	2.00	---	97	90-110%	---	---	
Duplicate (24C0170-DUP1)			Prepared: 03/06/24 09:15		Analyzed: 03/06/24 20:19							
QC Source Sample: MW-12 DUP (A4C0976-09)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0170-MS1)			Prepared: 03/06/24 09:15		Analyzed: 03/06/24 20:41							
QC Source Sample: MW-12 DUP (A4C0976-09)												
Nitrate-Nitrogen	2.45	---	0.312	mg/L	1	2.50	ND	98	87-112%	---	---	
Nitrite-Nitrogen	1.90	---	0.312	mg/L	1	2.50	ND	**76**	**90-114%**	---	---	Q-01

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0227 - Method Prep: Aq							Water					
Blank (24C0227-BLK1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 09:40							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0227-BS1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 10:01							
EPA 300.0												
Nitrate-Nitrogen	2.04	---	0.250	mg/L	1	2.00	---	102	90-110%	---	---	
Duplicate (24C0227-DUP1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 14:20							
QC Source Sample: Non-SDG (A4C1027-02)												
Nitrate-Nitrogen	**1.93**	---	0.250	mg/L	1	---	1.92	---	---	0.4	3%	
Matrix Spike (24C0227-MS1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 14:42							
QC Source Sample: Non-SDG (A4C1027-02)												
EPA 300.0												
Nitrate-Nitrogen	4.54	---	0.312	mg/L	1	2.50	1.92	105	87-112%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0163							
A4C0976-02	Water	EPA 8260D	03/05/24 09:45	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
A4C0976-03	Water	EPA 8260D	03/05/24 10:30	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
A4C0976-08	Water	EPA 8260D	03/05/24 14:43	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
A4C0976-09	Water	EPA 8260D	03/05/24 14:43	03/06/24 10:12	5mL/5mL	5mL/5mL	1.00
Batch: 24C0229							
A4C0976-03RE1	Water	EPA 8260D	03/05/24 10:30	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C0976-04RE1	Water	EPA 8260D	03/05/24 09:45	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C0976-05RE1	Water	EPA 8260D	03/05/24 10:52	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C0976-06RE1	Water	EPA 8260D	03/05/24 11:59	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
Batch: 24C0292							
A4C0976-01RE1	Water	EPA 8260D	03/05/24 08:38	03/08/24 13:18	5mL/5mL	5mL/5mL	1.00
A4C0976-07RE1	Water	EPA 8260D	03/05/24 13:33	03/08/24 13:18	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0346							
A4C0976-01	Water	SM 4500-NH3 G	03/05/24 08:38	03/11/24 10:17	10mL/10mL	10mL/10mL	1.00
A4C0976-06	Water	SM 4500-NH3 G	03/05/24 11:59	03/11/24 10:17	10mL/10mL	10mL/10mL	1.00
A4C0976-07	Water	SM 4500-NH3 G	03/05/24 13:33	03/11/24 10:17	10mL/10mL	10mL/10mL	1.00
Batch: 24C0550							
A4C0976-02RE1	Water	SM 4500-NH3 G	03/05/24 09:45	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C0976-03RE1	Water	SM 4500-NH3 G	03/05/24 10:30	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C0976-04RE1	Water	SM 4500-NH3 G	03/05/24 09:45	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C0976-05RE1	Water	SM 4500-NH3 G	03/05/24 10:52	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C0976-08RE1	Water	SM 4500-NH3 G	03/05/24 14:43	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C0976-09RE1	Water	SM 4500-NH3 G	03/05/24 14:43	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0164							
A4C0976-01	Water	EPA 300.0	03/05/24 08:38	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

SAMPLE PREPARATION INFORMATION

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4C0976-02	Water	EPA 300.0	03/05/24 09:45	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-02RE1	Water	EPA 300.0	03/05/24 09:45	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-03	Water	EPA 300.0	03/05/24 10:30	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-03RE1	Water	EPA 300.0	03/05/24 10:30	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-04	Water	EPA 300.0	03/05/24 09:45	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-05RE1	Water	EPA 300.0	03/05/24 10:52	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-06	Water	EPA 300.0	03/05/24 11:59	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-06RE1	Water	EPA 300.0	03/05/24 11:59	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-07RE1	Water	EPA 300.0	03/05/24 13:33	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
A4C0976-08	Water	EPA 300.0	03/05/24 14:43	03/06/24 07:39	5mL/5mL	5mL/5mL	1.00
Batch: 24C0170							
A4C0976-09	Water	EPA 300.0	03/05/24 14:43	03/06/24 09:15	5mL/5mL	5mL/5mL	1.00
Batch: 24C0227							
A4C0976-05RE3	Water	EPA 300.0	03/05/24 10:52	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C0976-07RE3	Water	EPA 300.0	03/05/24 13:33	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

QUALIFIER DEFINITIONS

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

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ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
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 8260/8270 by +114%. 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 8260/8270 by +13%. 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 8260/8270 by +17%. 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 8260/8270 by +22%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +28%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +31%. The results are reported as Estimated Values.
Q-54f	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +43%. The results are reported as Estimated Values.
Q-54g	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +54%. The results are reported as Estimated Values.
Q-54h	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -3%. The results are reported as Estimated Values.
Q-54i	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -4%. The results are reported as Estimated Values.
Q-54j	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -5%. The results are reported as Estimated Values.
Q-54k	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -6%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project:	**NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number:	**19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager:	**Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

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

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

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

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories

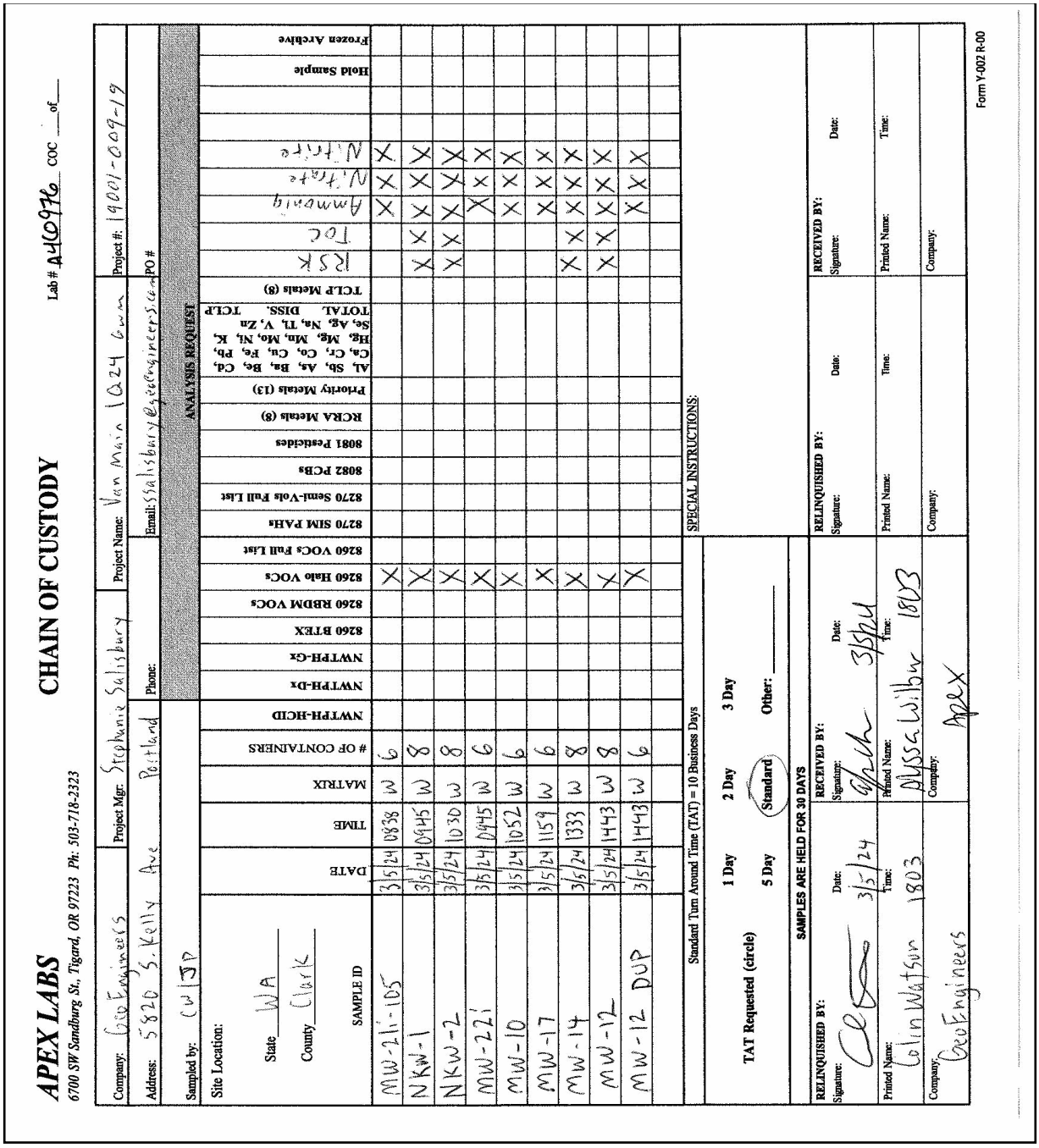
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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**



APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4C0976 COC ___ of ___

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 6 wells | Project #: 19001-009-19
Address: 5820 S. Kelly Ave Portland | Phone: | Email: SSalisbury@geoengineers.com | PO #
Sampled by: CW/BP

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	RSK	TOC	Ammonia	N. Nitrate	N. Nitrite			Hold Sample	Frozen Archive
MW-21-105	3/5/24	0838	W	6						X											X	X	X				
NKW-1	3/5/24	0945	W	8						X										X	X	X	X				
NKW-2	3/5/24	1030	W	8						X										X	X	X	X				
MW-22	3/5/24	0945	W	6						X											X	X	X				
MW-10	3/5/24	1052	W	6						X											X	X	X				
MW-17	3/5/24	1159	W	6						X											X	X	X				
MW-14	3/6/24	1333	W	8						X										X	X	X	X				
MW-12	3/5/24	1443	W	8						X										X	X	X	X				
MW-12 DUP	3/5/24	1443	W	6						X											X	X					

Standard Turn Around Time (TAT) = 10 Business Days
TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date: 3/5/24	Date: 3/5/24	Date:	Date:
Time:	Time: 1803	Time:	Time:
Printed Name: Colin Watson	Printed Name: Alyssa Wilbur	Printed Name:	Printed Name:
Company: GeoEngineers	Company: Apex	Company:	Company:

Form Y-002 R-00

Apex Laboratories

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C0976 - 03 21 24 1700**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4 C0976

Project/Project #: Van Main 1Q24 GWM 19001-009-19 acc for kam 3/5/24 acc for aaw 3/5/24

Delivery Info:

Date/time received: 3/5/24 @1803 By: AAW

Delivered by: Apex__Client_YESS___FedEx__UPS__Radio___Morgan ___SDS___Evergreen___Other ___

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 3/5/24 @ 1803 By: AAW

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.6						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 3.5.24 @ 18:27 By: MHM

All samples intact? Yes ✓ No ___ Comments: _____

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

COC/container discrepancies form initiated? Yes ___ No ✓

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

Do VOA vials have visible headspace? Yes ___ No ✓ NA X MHM 3.5

Comments _____

Water samples: pH checked: Yes ✓ No ___ NA ___ pH appropriate? Yes ✓ No ___ NA ___ pH ID: A231172

Comments: _____

Labeled by: KAM Witness: AJM Cooler Inspected by: MHM

Form Y-003 R-02

Apex Laboratories

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Darrell Auvil, Client Services Manager

March 19, 2024 Service Request No:K2402518

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

Laboratory Results for: A4C0976

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory March 07, 2024
For your reference, these analyses have been assigned our service request number **K2402518.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Client: Apex Laboratories
Project: A4C0976
Sample Matrix: Water

Service Request: K2402518
Date Received: 03/07/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Four water samples were received for analysis at ALS Environmental on 03/07/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 03/19/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: NKW-1			Lab ID: K2402518-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.20		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: NKW-2			Lab ID: K2402518-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.80		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-14			Lab ID: K2402518-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.30		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-12			Lab ID: K2402518-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	11.9		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Laboratories **Service Request:**K2402518

Project: A4C0976

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2402518-001	NKW-1	3/5/2024	0945
K2402518-002	NKW-2	3/5/2024	1030
K2402518-003	MW-14	3/5/2024	1333
K2402518-004	MW-12	3/5/2024	1443

SUBCONTRACT ORDER

Apex Laboratories

ARL 3/5/24 **A4C0976** 1624025B

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: NKW-1 **Sampled: 03/05/24 09:45** (A4C0976-02)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/02/24 09:45	ALS Kelso, no data package
Containers Supplied:			
(G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: NKW-2 **Sampled: 03/05/24 10:30** (A4C0976-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/02/24 10:30	ALS Kelso, no data package
Containers Supplied:			
(G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-14 **Sampled: 03/05/24 13:33** (A4C0976-07)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/02/24 13:33	ALS Kelso, no data package
Containers Supplied:			
(G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-12 **Sampled: 03/05/24 14:43** (A4C0976-08)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/02/24 14:43	ALS Kelso, no data package
Containers Supplied:			
(G)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By 3/6/24 956 Date — Received By 3/7/24 956 Date

Released By 3-7-24 1125 Date — Received By 3/7/24 1125 Date

PM HH

Cooler Receipt and Preservation Form

Client Apex Service Request K24 02518

Received: 3/7/24 Opened: 3/7/24 By: HS Unloaded: 3/7/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	1.7	IR01	1of2				
	3.3	↓	2of2				

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

G:\SMO\2024 Forms SOP: SMO-GEN Reviewed: NP 1/3/2024

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976/		

Sample Name:	NKW-1	**Date Collected:**	03/5/24
Lab Code:	K2402518-001	**Date Received:**	03/7/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	NKW-2	**Date Collected:**	03/5/24
Lab Code:	K2402518-002	**Date Received:**	03/7/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-14	**Date Collected:**	03/5/24
Lab Code:	K2402518-003	**Date Received:**	03/7/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-12	**Date Collected:**	03/5/24
Lab Code:	K2402518-004	**Date Received:**	03/7/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	03/05/24 09:45
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	NKW-1	**Basis:**	NA
Lab Code:	K2402518-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.20**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	03/05/24 10:30
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	NKW-2	**Basis:**	NA
Lab Code:	K2402518-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.80**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	03/05/24 13:33
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MW-14	**Basis:**	NA
Lab Code:	K2402518-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.30**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	03/05/24 14:43
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MW-12	**Basis:**	NA
Lab Code:	K2402518-004		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**11.9**	mg/L	0.50	0.08	1	03/14/24 15:11	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
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www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2402518-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	03/14/24 15:11	

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Collected:**	03/05/24
Sample Matrix:	Water	**Date Received:**	03/07/24
		Date Analyzed:	03/14/24
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	NKW-1	**Units:**	mg/L
Lab Code:	K2402518-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2402518-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.20	25.0	25.0	95	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

QA/QC Report

Client:	Apex Laboratories	**Service Request:**	K2402518
Project	A4C0976	**Date Collected:**	03/05/24
Sample Matrix:	Water	**Date Received:**	03/07/24
		Date Analyzed:	03/14/24

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	NKW-1	**Units:**	mg/L
Lab Code:	K2402518-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K2402518-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.08	1.20	1.30	1.25	8	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Apex Laboratories	**Service Request:**	K2402518
Project:	A4C0976	**Date Analyzed:**	03/14/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	834991

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2402518-LCS	24.1	25.0	96	83-117

AirTECHNOLOGY
Laboratories, Inc.

March 22, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4C0976
Lab Number: R031102-01/04

Enclosed are results for sample(s) received 3/11/24 by Air Technology Laboratories. Samples were received intact and chilled to 2° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

A4C0976

AK 3/5/24

R031102-01/04

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

2°C
to 3/11/24

Sample Name: NKW-1 **Water** **Sampled: 03/05/24 09:45** (A4C0976-02)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/19/24 09:45	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: NKW-2 **Water** **Sampled: 03/05/24 10:30** (A4C0976-03)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/19/24 10:30	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: MW-14 **Water** **Sampled: 03/05/24 13:33** (A4C0976-07)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/19/24 13:33	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: MW-12 **Water** **Sampled: 03/05/24 14:43** (A4C0976-08)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/19/24 14:43	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Standard TAT

UPS (Shipper)

Released By	Date	Received By	Date
UPS (Shipper)	3/4/24 10:45		3/4/24 10:45
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4C0976**
Date Received:	**03/11/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R031102-01		R031102-02		R031102-03		R031102-04	
Client Sample I.D.:	NKW-1 (A4C0976-02)		NKW-2 (A4C0976-03)		MW-14 (A4C0976-07)		MW-12 (A4C0976-08)	
Date/Time Sampled:	3/5/24 9:45		3/5/24 10:30		3/5/24 13:33		3/5/24 14:43	
Date/Time Analyzed:	3/12/24 10:05		3/12/24 10:22		3/12/24 10:39		3/12/24 10:55	
QC Batch No.:	240311GC8A2		240311GC8A2		240311GC8A2		240311GC8A2	
Analyst Initials:	RC		RC		RC		RC	
Dilution Factor:	1.0		1.0		1.0		1.0	
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**
Ethene	ND	1.0	ND	1.0	ND	1.0	120	1.0
Ethane	1.6	1.0	9.4	1.0	ND	1.0	180	1.0
Methane	46	1.0	680	1.0	ND	1.0	5,200	1.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 03-22-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240311GC8A2
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	3/11/24 15:28			3/12/24 8:13		3/12/24 8:31					
Analyst Initials:	RC			RC		RC					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,150	843	74	879	77	4.2	70	130	30
Ethane	ND	1.0	1,200	988	81	1,040	85	5.2	70	130	30
Methane	ND	1.0	650	553	84	587	90	6.1	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 03-22-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Friday, March 22, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4C1027 - NuStar Vancouver Main 1Q24 - 19001-009-19

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 A4C1027, which was received by the laboratory on 3/6/2024 at 4:46:00PM.

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

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

Cooler Receipt Information	
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.	
(See Cooler Receipt Form for details)	
Cooler #1 2.9 degC	Cooler #2 3.7 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MGMS1-3 (43)	A4C1027-01	Water	03/06/24 08:09	03/06/24 16:46
MW-25i	A4C1027-02	Water	03/06/24 08:26	03/06/24 16:46
MGMS1-2 (60)	A4C1027-03	Water	03/06/24 08:43	03/06/24 16:46
MW-32s	A4C1027-04	Water	03/06/24 09:22	03/06/24 16:46
S-2	A4C1027-05	Water	03/06/24 09:27	03/06/24 16:46
MW-8	A4C1027-06	Water	03/06/24 10:22	03/06/24 16:46
S-1	A4C1027-07	Water	03/06/24 10:25	03/06/24 16:46
EX	A4C1027-08	Water	03/06/24 10:59	03/06/24 16:46
EW-1	A4C1027-09	Water	03/06/24 11:30	03/06/24 16:46
MW-26	A4C1027-10	Water	03/06/24 11:31	03/06/24 16:46
MW-13	A4C1027-11	Water	03/06/24 12:59	03/06/24 16:46
MW-19	A4C1027-12	Water	03/06/24 13:52	03/06/24 16:46
MW-19 DUP	A4C1027-13	Water	03/06/24 13:52	03/06/24 16:46
MW-6	A4C1027-14	Water	03/06/24 14:55	03/06/24 16:46

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-3 (43) (A4C1027-01RE1)				**Matrix: Water**		**Batch: 24C0338**		
Bromobenzene	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Bromochloromethane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Bromodichloromethane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Bromoform	ND	---	40.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Bromomethane	ND	---	100	ug/L	20	03/11/24 19:36	EPA 8260D	
Carbon tetrachloride	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Chlorobenzene	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Chloroethane	ND	---	100	ug/L	20	03/11/24 19:36	EPA 8260D	
Chloroform	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Chloromethane	ND	---	100	ug/L	20	03/11/24 19:36	EPA 8260D	
2-Chlorotoluene	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
4-Chlorotoluene	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Dibromochloromethane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	100	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Dibromomethane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,3-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,4-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Dichlorodifluoromethane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1-Dichloroethane	**119**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1-Dichloroethene	**23.8**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
cis-1,2-Dichloroethene	**3090**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
trans-1,2-Dichloroethene	**44.6**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2-Dichloropropane	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,3-Dichloropropane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
2,2-Dichloropropane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Hexachlorobutadiene	ND	---	100	ug/L	20	03/11/24 19:36	EPA 8260D	
Methylene chloride	ND	---	200	ug/L	20	03/11/24 19:36	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-3 (43) (A4C1027-01RE1)				**Matrix: Water**		**Batch: 24C0338**		
1,1,1,2-Tetrachloroethane	ND	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Tetrachloroethene (PCE)	**170**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	40.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1,2-Trichloroethane	ND	---	10.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	40.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,1,1-Trichloroethane	ND	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
Trichloroethene (TCE)	**446**	---	8.00	ug/L	20	03/11/24 19:36	EPA 8260D	
Trichlorofluoromethane	ND	---	40.0	ug/L	20	03/11/24 19:36	EPA 8260D	
1,2,3-Trichloropropane	ND	---	20.0	ug/L	20	03/11/24 19:36	EPA 8260D	
Vinyl chloride	**78.8**	---	4.00	ug/L	20	03/11/24 19:36	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*	*1*	*03/11/24 19:36*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/11/24 19:36*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/11/24 19:36*	*EPA 8260D*	
MW-25i (A4C1027-02)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 21:13	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-25i (A4C1027-02)				**Matrix: Water**		**Batch: 24C0229**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
Tetrachloroethene (PCE)	**0.570**	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/07/24 21:13	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 21:13	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:13	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 21:13	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*	*1*	*03/07/24 21:13*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*03/07/24 21:13*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*1*	*03/07/24 21:13*	*EPA 8260D*	
MGMS1-2 (60) (A4C1027-03)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-2 (60) (A4C1027-03)				**Matrix: Water**		**Batch: 24C0229**		
Bromoform	ND	---	2.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 21:40	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1-Dichloroethane	**1.82**	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
cis-1,2-Dichloroethene	**14.8**	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
Tetrachloroethene (PCE)	**18.6**	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-2 (60) (A4C1027-03)				**Matrix: Water**		**Batch: 24C0229**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
Trichloroethene (TCE)	**11.0**	---	0.400	ug/L	1	03/07/24 21:40	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 21:40	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 21:40	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 21:40	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits: 80-120 %*	*1*	*03/07/24 21:40*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/07/24 21:40*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/07/24 21:40*	*EPA 8260D*	
MW-32s (A4C1027-04)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 22:07	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-32s (A4C1027-04)				**Matrix: Water**		**Batch: 24C0229**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/07/24 22:07	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 22:07	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:07	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 22:07	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*	*03/07/24 22:07*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*03/07/24 22:07*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*03/07/24 22:07*	*EPA 8260D*	
S-2 (A4C1027-05)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	

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Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-2 (A4C1027-05)				**Matrix: Water**		**Batch: 24C0229**		
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 22:35	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1-Dichloroethane	**8.24**	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
cis-1,2-Dichloroethene	**39.3**	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
trans-1,2-Dichloroethene	**0.510**	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 22:35	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-2 (A4C1027-05)				**Matrix: Water**		**Batch: 24C0229**		
1,1,1-Trichloroethane	**0.550**	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
Trichloroethene (TCE)	**1.12**	---	0.400	ug/L	1	03/07/24 22:35	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 22:35	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 22:35	EPA 8260D	
Vinyl chloride	**0.280**	---	0.200	ug/L	1	03/07/24 22:35	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*	*03/07/24 22:35*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*03/07/24 22:35*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*	*03/07/24 22:35*	*EPA 8260D*	
MW-8 (A4C1027-06)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 23:02	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-8 (A4C1027-06)				**Matrix: Water**		**Batch: 24C0229**		
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
Tetrachloroethene (PCE)	**2.42**	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/07/24 23:02	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 23:02	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:02	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 23:02	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:* *80-120 %*	*1*	*03/07/24 23:02*	*EPA 8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/07/24 23:02*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/07/24 23:02*	*EPA 8260D*	
S-1 (A4C1027-07)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-1 (A4C1027-07)				**Matrix: Water**		**Batch: 24C0229**		
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 23:29	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 23:29	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:29	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
Trichloroethene (TCE)	**0.420**	---	0.400	ug/L	1	03/07/24 23:29	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 23:29	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-1 (A4C1027-07)				**Matrix: Water**		**Batch: 24C0229**		
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:29	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 23:29	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*03/07/24 23:29*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/07/24 23:29*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/07/24 23:29*	*EPA 8260D*	
EX (A4C1027-08RE1)				**Matrix: Water**		**Batch: 24C0338**		
Bromobenzene	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Bromochloromethane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Bromodichloromethane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Bromoform	ND	---	40.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Bromomethane	ND	---	100	ug/L	20	03/11/24 20:30	EPA 8260D	
Carbon tetrachloride	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Chlorobenzene	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Chloroethane	ND	---	100	ug/L	20	03/11/24 20:30	EPA 8260D	
Chloroform	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Chloromethane	ND	---	100	ug/L	20	03/11/24 20:30	EPA 8260D	
2-Chlorotoluene	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
4-Chlorotoluene	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Dibromochloromethane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	100	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Dibromomethane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,3-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,4-Dichlorobenzene	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Dichlorodifluoromethane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1-Dichloroethane	ND	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1-Dichloroethene	ND	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
cis-1,2-Dichloroethene	**436**	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2-Dichloropropane	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,3-Dichloropropane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EX (A4C1027-08RE1)				**Matrix: Water**		**Batch: 24C0338**		
2,2-Dichloropropane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Hexachlorobutadiene	ND	---	100	ug/L	20	03/11/24 20:30	EPA 8260D	
Methylene chloride	ND	---	200	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Tetrachloroethene (PCE)	**2060**	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	40.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1,2-Trichloroethane	ND	---	10.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	40.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,1,1-Trichloroethane	**8.60**	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
Trichloroethene (TCE)	**214**	---	8.00	ug/L	20	03/11/24 20:30	EPA 8260D	
Trichlorofluoromethane	ND	---	40.0	ug/L	20	03/11/24 20:30	EPA 8260D	
1,2,3-Trichloropropane	ND	---	20.0	ug/L	20	03/11/24 20:30	EPA 8260D	
Vinyl chloride	**5.40**	---	4.00	ug/L	20	03/11/24 20:30	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits:*	*80-120 %*	*1*	*03/11/24 20:30*	*EPA 8260D*	
Toluene-d8 (Surr)			*99 %*		*80-120 %*	*1*	*03/11/24 20:30*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/11/24 20:30*	*EPA 8260D*	
EW-1 (A4C1027-09)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Chloroform	**1.05**	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/07/24 23:57	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EW-1 (A4C1027-09)				**Matrix: Water**		**Batch: 24C0229**		
Dibromochloromethane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
cis-1,2-Dichloroethene	**0.660**	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
Tetrachloroethene (PCE)	**20.3**	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,1,1-Trichloroethane	**0.510**	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
Trichloroethene (TCE)	**7.43**	---	0.400	ug/L	1	03/07/24 23:57	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/07/24 23:57	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/07/24 23:57	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/07/24 23:57	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 118 %*		*Limits: 80-120 %*	*1*	*03/07/24 23:57*	*EPA 8260D*	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1027 - 03 22 24 1458

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EW-1 (A4C1027-09)				**Matrix: Water**		**Batch: 24C0229**		
Surrogate: Toluene-d8 (Surr)			*Recovery: 101 %*	*Limits: 80-120 %*	*1*	*03/07/24 23:57*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/07/24 23:57*	*EPA 8260D*	
MW-26 (A4C1027-10RE1)				**Matrix: Water**		**Batch: 24C0338**		
Bromobenzene	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Bromochloromethane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Bromoform	ND	---	5.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Bromomethane	ND	---	12.5	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Chlorobenzene	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Chloroethane	ND	---	12.5	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Chloroform	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Chloromethane	ND	---	12.5	ug/L	2.5	03/11/24 19:08	EPA 8260D	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Dibromomethane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1-Dichloroethane	**2.60**	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
cis-1,2-Dichloroethene	**31.0**	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-26 (A4C1027-10RE1)				**Matrix: Water**		**Batch: 24C0338**		
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Methylene chloride	ND	---	25.0	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Tetrachloroethene (PCE)	**133**	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,1,1-Trichloroethane	**1.38**	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Trichloroethene (TCE)	**221**	---	1.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	03/11/24 19:08	EPA 8260D	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Vinyl chloride	ND	---	0.500	ug/L	2.5	03/11/24 19:08	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*127 %*	*Limits: 80-120 %*	*1*	*03/11/24 19:08*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*98 %*	*80-120 %*	*1*	*03/11/24 19:08*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/11/24 19:08*	*EPA 8260D*	
MW-13 (A4C1027-11)				**Matrix: Water**		**Batch: 24C0229**		
Bromobenzene	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
Bromochloromethane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Bromodichloromethane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	5	03/08/24 00:24	EPA 8260D	
Bromomethane	ND	---	25.0	ug/L	5	03/08/24 00:24	EPA 8260D	
Carbon tetrachloride	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Chlorobenzene	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
Chloroethane	ND	---	25.0	ug/L	5	03/08/24 00:24	EPA 8260D	
Chloroform	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Chloromethane	ND	---	25.0	ug/L	5	03/08/24 00:24	EPA 8260D	
2-Chlorotoluene	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
4-Chlorotoluene	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Dibromochloromethane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	25.0	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-19	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1027 - 03 22 24 1458

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-13 (A4C1027-11)				**Matrix: Water**		**Batch: 24C0229**		
Dibromomethane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
1,3-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
1,4-Dichlorobenzene	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
Dichlorodifluoromethane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1-Dichloroethane	**37.6**	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1-Dichloroethene	**48.9**	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
trans-1,2-Dichloroethene	**17.3**	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2-Dichloropropane	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
1,3-Dichloropropane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
2,2-Dichloropropane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Hexachlorobutadiene	ND	---	25.0	ug/L	5	03/08/24 00:24	EPA 8260D	
Methylene chloride	ND	---	50.0	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	10.0	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1,2-Trichloroethane	ND	---	2.50	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	10.0	ug/L	5	03/08/24 00:24	EPA 8260D	
1,1,1-Trichloroethane	ND	---	2.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Trichlorofluoromethane	ND	---	10.0	ug/L	5	03/08/24 00:24	EPA 8260D	
1,2,3-Trichloropropane	ND	---	5.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Vinyl chloride	**432**	---	1.00	ug/L	5	03/08/24 00:24	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*123 %*	*Limits:*	*80-120 %*	*03/08/24 00:24*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*98 %*		*80-120 %*	*03/08/24 00:24*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*03/08/24 00:24*	*EPA 8260D*	
MW-13 (A4C1027-11RE1)				**Matrix: Water**		**Batch: 24C0292**		
cis-1,2-Dichloroethene	**1400**	---	40.0	ug/L	100	03/08/24 19:29	EPA 8260D	
Tetrachloroethene (PCE)	**955**	---	40.0	ug/L	100	03/08/24 19:29	EPA 8260D	
Trichloroethene (TCE)	**986**	---	40.0	ug/L	100	03/08/24 19:29	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-13 (A4C1027-11RE1)				**Matrix: Water**		**Batch: 24C0292**		
Surrogate: 1,4-Difluorobenzene (Surr)			*Recovery: 117 %*	*Limits: 80-120 %*	*1*	*03/08/24 19:29*	*EPA 8260D*	
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/08/24 19:29*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/08/24 19:29*	*EPA 8260D*	
MW-19 (A4C1027-12)				**Matrix: Water**		**Batch: 24C0292**		
Bromobenzene	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Bromochloromethane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Bromodichloromethane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Bromoform	ND	---	40.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Bromomethane	ND	---	100	ug/L	20	03/08/24 14:56	EPA 8260D	
Carbon tetrachloride	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Chlorobenzene	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Chloroethane	ND	---	100	ug/L	20	03/08/24 14:56	EPA 8260D	
Chloroform	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Chloromethane	ND	---	100	ug/L	20	03/08/24 14:56	EPA 8260D	
2-Chlorotoluene	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
4-Chlorotoluene	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Dibromochloromethane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	100	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Dibromomethane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,3-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,4-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Dichlorodifluoromethane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1-Dichloroethane	**54.0**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1-Dichloroethene	**26.6**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
cis-1,2-Dichloroethene	**1010**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
trans-1,2-Dichloroethene	**15.4**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2-Dichloropropane	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,3-Dichloropropane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
2,2-Dichloropropane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 (A4C1027-12)				**Matrix: Water**		**Batch: 24C0292**		
cis-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Hexachlorobutadiene	ND	---	100	ug/L	20	03/08/24 14:56	EPA 8260D	
Methylene chloride	ND	---	200	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Tetrachloroethene (PCE)	**2420**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	40.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1,2-Trichloroethane	ND	---	10.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	40.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,1,1-Trichloroethane	**14.2**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
Trichloroethene (TCE)	**1270**	---	8.00	ug/L	20	03/08/24 14:56	EPA 8260D	
Trichlorofluoromethane	ND	---	40.0	ug/L	20	03/08/24 14:56	EPA 8260D	
1,2,3-Trichloropropane	ND	---	20.0	ug/L	20	03/08/24 14:56	EPA 8260D	
Vinyl chloride	**87.8**	---	4.00	ug/L	20	03/08/24 14:56	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits:*	*80-120 %*	*1*	*03/08/24 14:56*	*EPA 8260D*	
Toluene-d8 (Surr)			*98 %*		*80-120 %*	*1*	*03/08/24 14:56*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/08/24 14:56*	*EPA 8260D*	
MW-19 DUP (A4C1027-13)				**Matrix: Water**		**Batch: 24C0292**		
Bromobenzene	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Bromochloromethane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Bromodichloromethane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Bromoform	ND	---	40.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Bromomethane	ND	---	100	ug/L	20	03/08/24 15:24	EPA 8260D	
Carbon tetrachloride	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Chlorobenzene	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Chloroethane	ND	---	100	ug/L	20	03/08/24 15:24	EPA 8260D	
Chloroform	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Chloromethane	ND	---	100	ug/L	20	03/08/24 15:24	EPA 8260D	
2-Chlorotoluene	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
4-Chlorotoluene	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Dibromochloromethane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	100	ug/L	20	03/08/24 15:24	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 DUP (A4C1027-13)				**Matrix: Water**		**Batch: 24C0292**		
1,2-Dibromoethane (EDB)	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Dibromomethane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,3-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,4-Dichlorobenzene	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Dichlorodifluoromethane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1-Dichloroethane	**50.2**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1-Dichloroethene	**27.4**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
cis-1,2-Dichloroethene	**961**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
trans-1,2-Dichloroethene	**14.0**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2-Dichloropropane	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,3-Dichloropropane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
2,2-Dichloropropane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Hexachlorobutadiene	ND	---	100	ug/L	20	03/08/24 15:24	EPA 8260D	
Methylene chloride	ND	---	200	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Tetrachloroethene (PCE)	**2760**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	40.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1,2-Trichloroethane	ND	---	10.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	40.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,1,1-Trichloroethane	**14.4**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
Trichloroethene (TCE)	**1350**	---	8.00	ug/L	20	03/08/24 15:24	EPA 8260D	
Trichlorofluoromethane	ND	---	40.0	ug/L	20	03/08/24 15:24	EPA 8260D	
1,2,3-Trichloropropane	ND	---	20.0	ug/L	20	03/08/24 15:24	EPA 8260D	
Vinyl chloride	**89.2**	---	4.00	ug/L	20	03/08/24 15:24	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits:*	*80-120 %*	*1*	*03/08/24 15:24*	*EPA 8260D*	
Toluene-d8 (Surr)			*98 %*		*80-120 %*	*1*	*03/08/24 15:24*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/08/24 15:24*	*EPA 8260D*	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-6 (A4C1027-14RE1)				**Matrix: Water**		**Batch: 24C0338**		
Bromobenzene	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/11/24 18:14	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/11/24 18:14	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-6 (A4C1027-14RE1)				**Matrix: Water**		**Batch: 24C0338**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/11/24 18:14	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/11/24 18:14	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/11/24 18:14	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/11/24 18:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*03/11/24 18:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/11/24 18:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/11/24 18:14*	*EPA 8260D*	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-3 (43) (A4C1027-01RE2)				**Matrix: Water**		**Batch: 24C0346**		
Ammonia as N	**202**	---	1.00	mg/L	50	03/11/24 13:36	SM 4500-NH3 G	
MW-25i (A4C1027-02)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**0.0340**	---	0.0200	mg/L	1	03/08/24 14:43	SM 4500-NH3 G	
MGMS1-2 (60) (A4C1027-03)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	**1.10**	---	0.0200	mg/L	1	03/08/24 13:16	SM 4500-NH3 G	
MW-32s (A4C1027-04)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/08/24 13:17	SM 4500-NH3 G	
S-2 (A4C1027-05)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	**3.91**	---	0.0200	mg/L	1	03/08/24 13:22	SM 4500-NH3 G	
MW-8 (A4C1027-06)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/08/24 13:23	SM 4500-NH3 G	
S-1 (A4C1027-07)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/08/24 13:28	SM 4500-NH3 G	
EX (A4C1027-08RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**29.6**	---	1.00	mg/L	50	03/08/24 14:48	SM 4500-NH3 G	
EW-1 (A4C1027-09)				**Matrix: Water**		**Batch: 24C0296**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/08/24 13:34	SM 4500-NH3 G	
MW-26 (A4C1027-10RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**89.2**	---	1.00	mg/L	50	03/08/24 14:49	SM 4500-NH3 G	
MW-13 (A4C1027-11RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**50.4**	---	1.00	mg/L	50	03/08/24 15:00	SM 4500-NH3 G	
MW-19 (A4C1027-12RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**127**	---	1.00	mg/L	50	03/08/24 15:01	SM 4500-NH3 G	
MW-19 DUP (A4C1027-13RE1)				**Matrix: Water**		**Batch: 24C0311**		

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 DUP (A4C1027-13RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**121**	---	1.00	mg/L	50	03/08/24 15:06	SM 4500-NH3 G	
MW-6 (A4C1027-14RE1)				**Matrix: Water**		**Batch: 24C0311**		
Ammonia as N	**5.54**	---	0.0400	mg/L	2	03/08/24 15:07	SM 4500-NH3 G	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-3 (43) (A4C1027-01)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**10.4**	---	0.500	mg/L	2	03/07/24 12:32	EPA 300.0	**M-02**
MGMS1-3 (43) (A4C1027-01RE1)				**Matrix: Water**				
Batch: 24C0227								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 12:54	EPA 300.0	
MW-25i (A4C1027-02)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**1.92**	---	0.250	mg/L	1	03/07/24 13:59	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 13:59	EPA 300.0	
MGMS1-2 (60) (A4C1027-03)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**4.78**	---	0.500	mg/L	2	03/07/24 15:03	EPA 300.0	
MGMS1-2 (60) (A4C1027-03RE1)				**Matrix: Water**				
Batch: 24C0227								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 15:25	EPA 300.0	
MW-32s (A4C1027-04)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 15:46	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 15:46	EPA 300.0	
S-2 (A4C1027-05)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**0.793**	---	0.250	mg/L	1	03/07/24 16:08	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 16:08	EPA 300.0	
MW-8 (A4C1027-06)				**Matrix: Water**				
Batch: 24C0227								
Nitrate-Nitrogen	**246**	---	12.5	mg/L	50	03/07/24 16:51	EPA 300.0	
MW-8 (A4C1027-06RE1)				**Matrix: Water**				
Batch: 24C0227								

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-8 (A4C1027-06RE1)				**Matrix: Water**				
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 17:13	EPA 300.0	
S-1 (A4C1027-07)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**1.74**	---	0.250	mg/L	1	03/07/24 16:30	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 16:30	EPA 300.0	
EX (A4C1027-08)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**37.9**	---	5.00	mg/L	20	03/07/24 18:17	EPA 300.0	
EX (A4C1027-08RE1)				**Matrix: Water**				
Batch: 24C0256								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 18:39	EPA 300.0	
EW-1 (A4C1027-09)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**3.82**	---	0.250	mg/L	1	03/07/24 22:58	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 22:58	EPA 300.0	
MW-26 (A4C1027-10)				**Matrix: Water**				
Batch: 24C0256								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 20:27	EPA 300.0	
MW-26 (A4C1027-10RE1)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**384**	---	25.0	mg/L	100	03/08/24 00:02	EPA 300.0	
MW-13 (A4C1027-11)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 00:24	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 00:24	EPA 300.0	
MW-19 (A4C1027-12)				**Matrix: Water**				
Batch: 24C0256								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 20:48	EPA 300.0	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 (A4C1027-12RE1)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**63.7**	---	2.50	mg/L	10	03/08/24 00:45	EPA 300.0	
MW-19 DUP (A4C1027-13)				**Matrix: Water**				
Batch: 24C0256								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/07/24 21:10	EPA 300.0	
MW-19 DUP (A4C1027-13RE1)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	**66.7**	---	2.50	mg/L	10	03/08/24 01:07	EPA 300.0	
MW-6 (A4C1027-14)				**Matrix: Water**				
Batch: 24C0256								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 02:12	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 02:12	EPA 300.0	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Blank (24C0229-BLK1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 13:11									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C									**Water**			
Blank (24C0229-BLK1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 13:11									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*112 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
LCS (24C0229-BS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 12:32									
EPA 8260D												
Bromobenzene	18.6	---	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
Bromochloromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Bromodichloromethane	19.5	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
Bromoform	17.1	---	2.00	ug/L	1	20.0	---	86	80-120%	---	---	
Bromomethane	30.2	---	5.00	ug/L	1	20.0	---	**151**	**80-120%**	---	---	Q-56
Carbon tetrachloride	19.0	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Chlorobenzene	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Chloroethane	32.6	---	5.00	ug/L	1	20.0	---	**163**	**80-120%**	---	---	Q-56, ICV-01
Chloroform	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chloromethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
2-Chlorotoluene	18.7	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
4-Chlorotoluene	18.3	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Dibromochloromethane	17.5	---	1.00	ug/L	1	20.0	---	88	80-120%	---	---	
1,2-Dibromo-3-chloropropane	15.2	---	5.00	ug/L	1	20.0	---	**76**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	19.4	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Dibromomethane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichlorobenzene	19.0	---	0.500	ug/L	1	20.0	---	95	80-120%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C								**Water**				
LCS (24C0229-BS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 12:32									
1,3-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
1,4-Dichlorobenzene	18.8	---	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Dichlorodifluoromethane	23.6	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
1,1-Dichloroethane	20.9	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,1-Dichloroethene	20.8	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,2-Dichloroethene	19.4	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
trans-1,2-Dichloroethene	19.1	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dichloropropane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,3-Dichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
2,2-Dichloropropane	19.9	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloropropene	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,3-Dichloropropene	16.3	---	1.00	ug/L	1	20.0	---	82	80-120%	---	---	
trans-1,3-Dichloropropene	17.3	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
Hexachlorobutadiene	16.3	---	5.00	ug/L	1	20.0	---	82	80-120%	---	---	
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	18.4	---	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.9	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
Tetrachloroethene (PCE)	19.5	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	18.6	---	2.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,1,2-Trichloroethane	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,4-Trichlorobenzene	16.3	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,1-Trichloroethane	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichloroethene (TCE)	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
Trichlorofluoromethane	28.3	---	2.00	ug/L	1	20.0	---	**142**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Vinyl chloride	20.9	---	0.200	ug/L	1	20.0	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*			*"*				
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**

QC Source Sample: MW-26 (A4C1027-10)

EPA 8260D

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**
QC Source Sample: MW-26 (A4C1027-10)												
Bromobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromoform	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
Bromomethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Chloroethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Chloroform	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chloromethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dibromomethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethane	**2.75**	---	1.00	ug/L	2.5	---	2.65	---	---	4	30%	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	---	0.850	---	---	***	30%	
cis-1,2-Dichloroethene	**32.6**	---	1.00	ug/L	2.5	---	31.7	---	---	3	30%	
trans-1,2-Dichloroethene	**1.15**	---	1.00	ug/L	2.5	---	1.02	---	---	11	30%	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Methylene chloride	ND	---	25.0	ug/L	2.5	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Duplicate (24C0229-DUP1)			Prepared: 03/07/24 12:23 Analyzed: 03/08/24 02:13									**T-02**
QC Source Sample: MW-26 (A4C1027-10)												
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**139**	---	1.00	ug/L	2.5	---	135	---	---	3	30%	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**1.35**	---	1.00	ug/L	2.5	---	1.28	---	---	6	30%	
Trichloroethene (TCE)	**231**	---	1.00	ug/L	2.5	---	221	---	---	4	30%	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.500	ug/L	2.5	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*124 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				*S-02*
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Matrix Spike (24C0229-MS1)			Prepared: 03/07/24 12:23 Analyzed: 03/07/24 19:24									
QC Source Sample: Non-SDG (A4C0991-01)												
EPA 8260D												
Bromobenzene	20.1	---	0.500	ug/L	1	20.0	ND	100	80-120%	---	---	
Bromochloromethane	24.2	---	1.00	ug/L	1	20.0	ND	121	78-123%	---	---	
Bromodichloromethane	21.8	---	1.00	ug/L	1	20.0	ND	109	79-125%	---	---	
Bromoform	18.1	---	2.00	ug/L	1	20.0	ND	91	66-130%	---	---	
Bromomethane	35.0	---	5.00	ug/L	1	20.0	ND	**175**	**53-141%**	---	---	Q-54d
Carbon tetrachloride	22.8	---	1.00	ug/L	1	20.0	ND	114	72-136%	---	---	
Chlorobenzene	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	---	---	
Chloroethane	53.5	---	5.00	ug/L	1	20.0	ND	**267**	**60-138%**	---	---	ICV-01, Q-54e
Chloroform	24.3	---	1.00	ug/L	1	20.0	ND	122	79-124%	---	---	
Chloromethane	24.6	---	5.00	ug/L	1	20.0	ND	123	50-139%	---	---	
2-Chlorotoluene	20.4	---	1.00	ug/L	1	20.0	ND	102	79-122%	---	---	
4-Chlorotoluene	20.2	---	1.00	ug/L	1	20.0	ND	101	78-122%	---	---	
Dibromochloromethane	18.6	---	1.00	ug/L	1	20.0	ND	93	74-126%	---	---	
1,2-Dibromo-3-chloropropane	16.1	---	5.00	ug/L	1	20.0	ND	80	62-128%	---	---	Q-54j

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					
Matrix Spike (24C0229-MS1)			Prepared: 03/07/24 12:23		Analyzed: 03/07/24 19:24							
QC Source Sample: Non-SDG (A4C0991-01)												
1,2-Dibromoethane (EDB)	20.5	---	0.500	ug/L	1	20.0	ND	102	77-121%	---	---	
Dibromomethane	23.2	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,3-Dichlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,4-Dichlorobenzene	20.3	---	0.500	ug/L	1	20.0	ND	101	79-120%	---	---	
Dichlorodifluoromethane	27.7	---	1.00	ug/L	1	20.0	ND	138	32-152%	---	---	
1,1-Dichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	77-125%	---	---	
1,2-Dichloroethane (EDC)	23.1	---	0.400	ug/L	1	20.0	ND	115	73-128%	---	---	
1,1-Dichloroethene	26.3	---	0.400	ug/L	1	20.0	ND	131	71-131%	---	---	
cis-1,2-Dichloroethene	22.2	---	0.400	ug/L	1	20.0	ND	111	78-123%	---	---	
trans-1,2-Dichloroethene	22.8	---	0.400	ug/L	1	20.0	ND	114	75-124%	---	---	
1,2-Dichloropropane	22.7	---	0.500	ug/L	1	20.0	ND	114	78-122%	---	---	
1,3-Dichloropropane	21.2	---	1.00	ug/L	1	20.0	ND	106	80-120%	---	---	
2,2-Dichloropropane	19.7	---	1.00	ug/L	1	20.0	ND	99	60-139%	---	---	
1,1-Dichloropropene	24.4	---	1.00	ug/L	1	20.0	ND	122	79-125%	---	---	
cis-1,3-Dichloropropene	15.1	---	1.00	ug/L	1	20.0	ND	76	75-124%	---	---	
trans-1,3-Dichloropropene	17.8	---	1.00	ug/L	1	20.0	ND	89	73-127%	---	---	
Hexachlorobutadiene	17.0	---	5.00	ug/L	1	20.0	ND	85	66-134%	---	---	
Methylene chloride	23.1	---	10.0	ug/L	1	20.0	ND	115	74-124%	---	---	
1,1,1,2-Tetrachloroethane	20.2	---	0.400	ug/L	1	20.0	ND	101	78-124%	---	---	
1,1,2,2-Tetrachloroethane	22.9	---	0.500	ug/L	1	20.0	ND	115	71-121%	---	---	
Tetrachloroethene (PCE)	22.1	---	0.400	ug/L	1	20.0	ND	110	74-129%	---	---	
1,2,3-Trichlorobenzene	19.6	---	2.00	ug/L	1	20.0	ND	98	69-129%	---	---	
1,1,2-Trichloroethane	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	---	---	
1,2,4-Trichlorobenzene	17.1	---	2.00	ug/L	1	20.0	ND	86	69-130%	---	---	
1,1,1-Trichloroethane	24.0	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	23.2	---	0.400	ug/L	1	20.0	ND	116	79-123%	---	---	
Trichlorofluoromethane	34.3	---	2.00	ug/L	1	20.0	ND	**172**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	21.8	---	1.00	ug/L	1	20.0	ND	109	73-122%	---	---	
Vinyl chloride	25.3	---	0.200	ug/L	1	20.0	ND	127	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 107 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*95 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*94 %*	*80-120 %*	*"*	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0229 - EPA 5030C							**Water**					

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Blank (24C0292-BLK1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:35									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C									Water			
Blank (24C0292-BLK1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:35									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*113 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
LCS (24C0292-BS1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:07									
EPA 8260D												
Bromobenzene	18.8	---	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Bromochloromethane	22.7	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Bromodichloromethane	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Bromoform	17.2	---	2.00	ug/L	1	20.0	---	86	80-120%	---	---	
Bromomethane	30.1	---	5.00	ug/L	1	20.0	---	**151**	**80-120%**	---	---	Q-56
Carbon tetrachloride	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Chlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Chloroethane	34.8	---	5.00	ug/L	1	20.0	---	**174**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	22.1	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chloromethane	21.8	---	5.00	ug/L	1	20.0	---	109	80-120%	---	---	
2-Chlorotoluene	18.9	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
4-Chlorotoluene	18.9	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Dibromochloromethane	17.8	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
1,2-Dibromo-3-chloropropane	14.9	---	5.00	ug/L	1	20.0	---	**75**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dibromomethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
LCS (24C0292-BS1)			Prepared: 03/08/24 13:00 Analyzed: 03/08/24 13:07									
1,3-Dichlorobenzene	19.5	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
1,4-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.5	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
1,1-Dichloroethene	20.1	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,2-Dichloroethene	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,2-Dichloroethene	19.7	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dichloropropane	21.0	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,3-Dichloropropane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
2,2-Dichloropropane	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloropropene	20.1	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
cis-1,3-Dichloropropene	16.8	---	1.00	ug/L	1	20.0	---	84	80-120%	---	---	
trans-1,3-Dichloropropene	17.8	---	1.00	ug/L	1	20.0	---	89	80-120%	---	---	
Hexachlorobutadiene	16.0	---	5.00	ug/L	1	20.0	---	80	80-120%	---	---	
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,1,2-Tetrachloroethane	19.0	---	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
1,1,2,2-Tetrachloroethane	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Tetrachloroethene (PCE)	19.3	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,2,3-Trichlorobenzene	19.4	---	2.00	ug/L	1	20.0	---	97	80-120%	---	---	
1,1,2-Trichloroethane	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,4-Trichlorobenzene	16.5	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,1-Trichloroethane	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichloroethene (TCE)	20.0	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Trichlorofluoromethane	27.4	---	2.00	ug/L	1	20.0	---	**137**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Vinyl chloride	20.5	---	0.200	ug/L	1	20.0	---	103	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
Bromobenzene	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
Bromochloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Bromoform	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
Bromomethane	ND	---	50.0	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%	
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	**80.0**	---	4.00	ug/L	10	---	79.2	---	---	1	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%	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
Methylene chloride	ND	---	100	ug/L	10	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Duplicate (24C0292-DUP1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 19:02									
QC Source Sample: Non-SDG (A4C1063-02)												
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**286**	---	4.00	ug/L	10	---	285	---	---	0.5	30%	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	5.00	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%	
Trichloroethene (TCE)	**22.0**	---	4.00	ug/L	10	---	22.1	---	---	0.5	30%	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	---	ND	---	---	---	30%	
Vinyl chloride	**10.7**	---	2.00	ug/L	10	---	10.4	---	---	3	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike (24C0292-MS1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 16:46									
QC Source Sample: MW-6 (A4C1027-14)												
EPA 8260D												
Bromobenzene	19.5	---	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
Bromochloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	78-123%	---	---	
Bromodichloromethane	21.7	---	1.00	ug/L	1	20.0	ND	108	79-125%	---	---	
Bromoform	18.0	---	2.00	ug/L	1	20.0	ND	90	66-130%	---	---	
Bromomethane	31.5	---	5.00	ug/L	1	20.0	ND	**158**	**53-141%**	---	---	Q-54d
Carbon tetrachloride	22.3	---	1.00	ug/L	1	20.0	ND	112	72-136%	---	---	
Chlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
Chloroethane	56.9	---	5.00	ug/L	1	20.0	ND	**285**	**60-138%**	---	---	ICV-01, Q-54g
Chloroform	23.9	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	24.6	---	5.00	ug/L	1	20.0	ND	123	50-139%	---	---	
2-Chlorotoluene	19.8	---	1.00	ug/L	1	20.0	ND	99	79-122%	---	---	
4-Chlorotoluene	19.6	---	1.00	ug/L	1	20.0	ND	98	78-122%	---	---	
Dibromochloromethane	18.7	---	1.00	ug/L	1	20.0	ND	93	74-126%	---	---	
1,2-Dibromo-3-chloropropane	15.6	---	5.00	ug/L	1	20.0	ND	78	62-128%	---	---	Q-54k
1,2-Dibromoethane (EDB)	20.3	---	0.500	ug/L	1	20.0	ND	101	77-121%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0292 - EPA 5030C							**Water**					
Matrix Spike (24C0292-MS1)			Prepared: 03/08/24 13:18 Analyzed: 03/08/24 16:46									
QC Source Sample: MW-6 (A4C1027-14)												
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	80-120%	---	---	
1,3-Dichlorobenzene	20.5	---	0.500	ug/L	1	20.0	ND	103	80-120%	---	---	
1,4-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	ND	99	79-120%	---	---	
Dichlorodifluoromethane	26.4	---	1.00	ug/L	1	20.0	ND	132	32-152%	---	---	
1,1-Dichloroethane	23.7	---	0.400	ug/L	1	20.0	ND	118	77-125%	---	---	
1,2-Dichloroethane (EDC)	22.7	---	0.400	ug/L	1	20.0	ND	114	73-128%	---	---	
1,1-Dichloroethene	24.7	---	0.400	ug/L	1	20.0	ND	123	71-131%	---	---	
cis-1,2-Dichloroethene	21.8	---	0.400	ug/L	1	20.0	ND	109	78-123%	---	---	
trans-1,2-Dichloroethene	22.2	---	0.400	ug/L	1	20.0	ND	111	75-124%	---	---	
1,2-Dichloropropane	22.2	---	0.500	ug/L	1	20.0	ND	111	78-122%	---	---	
1,3-Dichloropropane	20.7	---	1.00	ug/L	1	20.0	ND	103	80-120%	---	---	
2,2-Dichloropropane	20.9	---	1.00	ug/L	1	20.0	ND	105	60-139%	---	---	
1,1-Dichloropropene	23.4	---	1.00	ug/L	1	20.0	ND	117	79-125%	---	---	
cis-1,3-Dichloropropene	14.8	---	1.00	ug/L	1	20.0	ND	**74**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	17.5	---	1.00	ug/L	1	20.0	ND	87	73-127%	---	---	
Hexachlorobutadiene	17.8	---	5.00	ug/L	1	20.0	ND	89	66-134%	---	---	
Methylene chloride	22.6	---	10.0	ug/L	1	20.0	ND	113	74-124%	---	---	
1,1,1,2-Tetrachloroethane	19.8	---	0.400	ug/L	1	20.0	ND	99	78-124%	---	---	
1,1,2,2-Tetrachloroethane	23.0	---	0.500	ug/L	1	20.0	ND	115	71-121%	---	---	
Tetrachloroethene (PCE)	22.0	---	0.400	ug/L	1	20.0	0.900	105	74-129%	---	---	
1,2,3-Trichlorobenzene	19.8	---	2.00	ug/L	1	20.0	ND	99	69-129%	---	---	
1,1,2-Trichloroethane	21.1	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,2,4-Trichlorobenzene	16.8	---	2.00	ug/L	1	20.0	ND	84	69-130%	---	---	
1,1,1-Trichloroethane	23.4	---	0.400	ug/L	1	20.0	ND	117	74-131%	---	---	
Trichloroethene (TCE)	21.8	---	0.400	ug/L	1	20.0	0.320	108	79-123%	---	---	
Trichlorofluoromethane	33.0	---	2.00	ug/L	1	20.0	ND	**165**	**65-141%**	---	---	Q-54a
1,2,3-Trichloropropane	20.9	---	1.00	ug/L	1	20.0	ND	104	73-122%	---	---	
Vinyl chloride	24.1	---	0.200	ug/L	1	20.0	ND	120	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 108 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*95 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*93 %*	*80-120 %*	*"*	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C							**Water**					
Blank (24C0338-BLK1)			Prepared: 03/11/24 10:00 Analyzed: 03/11/24 12:19									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C									**Water**			
Blank (24C0338-BLK1)			Prepared: 03/11/24 10:00 Analyzed: 03/11/24 12:19									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*115 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
LCS (24C0338-BS1)			Prepared: 03/11/24 09:30 Analyzed: 03/11/24 11:08									
EPA 8260D												
Bromobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Bromochloromethane	23.0	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
Bromodichloromethane	20.7	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Bromoform	17.8	---	2.00	ug/L	1	20.0	---	89	80-120%	---	---	
Bromomethane	33.0	---	5.00	ug/L	1	20.0	---	**165**	**80-120%**	---	---	Q-56
Carbon tetrachloride	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
Chlorobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Chloroethane	52.2	---	5.00	ug/L	1	20.0	---	**261**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	22.4	---	1.00	ug/L	1	20.0	---	112	80-120%	---	---	
Chloromethane	21.0	---	5.00	ug/L	1	20.0	---	105	80-120%	---	---	
2-Chlorotoluene	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
4-Chlorotoluene	19.1	---	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Dibromochloromethane	18.2	---	1.00	ug/L	1	20.0	---	91	80-120%	---	---	
1,2-Dibromo-3-chloropropane	14.4	---	5.00	ug/L	1	20.0	---	**72**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dibromomethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichlorobenzene	19.6	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C							**Water**					
LCS (24C0338-BS1)			Prepared: 03/11/24 09:30 Analyzed: 03/11/24 11:08									
1,3-Dichlorobenzene	19.7	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
1,4-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Dichlorodifluoromethane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,1-Dichloroethane	22.5	---	0.400	ug/L	1	20.0	---	113	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.8	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethene	22.3	---	0.400	ug/L	1	20.0	---	111	80-120%	---	---	
cis-1,2-Dichloroethene	20.5	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
trans-1,2-Dichloroethene	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
1,2-Dichloropropane	21.1	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,3-Dichloropropane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
2,2-Dichloropropane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,1-Dichloropropene	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
cis-1,3-Dichloropropene	17.0	---	1.00	ug/L	1	20.0	---	85	80-120%	---	---	
trans-1,3-Dichloropropene	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Hexachlorobutadiene	15.8	---	5.00	ug/L	1	20.0	---	**79**	**80-120%**	---	---	Q-55
Methylene chloride	22.0	---	10.0	ug/L	1	20.0	---	110	80-120%	---	---	
1,1,1,2-Tetrachloroethane	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
1,1,2,2-Tetrachloroethane	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Tetrachloroethene (PCE)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
1,2,3-Trichlorobenzene	18.1	---	2.00	ug/L	1	20.0	---	91	80-120%	---	---	
1,1,2-Trichloroethane	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	15.4	---	2.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	21.5	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
Trichloroethene (TCE)	21.1	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
Trichlorofluoromethane	28.8	---	2.00	ug/L	1	20.0	---	**144**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.7	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Vinyl chloride	21.0	---	0.200	ug/L	1	20.0	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				

Duplicate (24C0338-DUP1) Prepared: 03/11/24 14:00 Analyzed: 03/11/24 20:03

QC Source Sample: MGMS1-3 (43) (A4C1027-01RE1)

EPA 8260D

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C							**Water**					
Duplicate (24C0338-DUP1)			Prepared: 03/11/24 14:00 Analyzed: 03/11/24 20:03									
QC Source Sample: MGMS1-3 (43) (A4C1027-01RE1)												
Bromobenzene	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Bromoform	ND	---	40.0	ug/L	20	---	ND	---	---	---	30%	
Bromomethane	ND	---	100	ug/L	20	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
Chloroethane	ND	---	100	ug/L	20	---	ND	---	---	---	30%	
Chloroform	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Chloromethane	ND	---	100	ug/L	20	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	100	ug/L	20	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
Dibromomethane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
1,1-Dichloroethane	**125**	---	8.00	ug/L	20	---	119	---	---	4	30%	
1,2-Dichloroethane (EDC)	ND	---	8.00	ug/L	20	---	ND	---	---	---	30%	
1,1-Dichloroethene	**26.6**	---	8.00	ug/L	20	---	23.8	---	---	11	30%	
cis-1,2-Dichloroethene	**3270**	---	8.00	ug/L	20	---	3090	---	---	6	30%	
trans-1,2-Dichloroethene	**47.8**	---	8.00	ug/L	20	---	44.6	---	---	7	30%	
1,2-Dichloropropane	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	100	ug/L	20	---	ND	---	---	---	30%	
Methylene chloride	ND	---	200	ug/L	20	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C							**Water**					
Duplicate (24C0338-DUP1)			Prepared: 03/11/24 14:00 Analyzed: 03/11/24 20:03									
QC Source Sample: MGMS1-3 (43) (A4C1027-01RE1)												
1,1,1,2-Tetrachloroethane	ND	---	8.00	ug/L	20	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**171**	---	8.00	ug/L	20	---	170	---	---	0.5	30%	
1,2,3-Trichlorobenzene	ND	---	40.0	ug/L	20	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	10.0	ug/L	20	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	40.0	ug/L	20	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	8.00	ug/L	20	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**466**	---	8.00	ug/L	20	---	446	---	---	4	30%	
Trichlorofluoromethane	ND	---	40.0	ug/L	20	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	20.0	ug/L	20	---	ND	---	---	---	30%	
Vinyl chloride	**85.2**	---	4.00	ug/L	20	---	78.8	---	---	8	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 119 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*				*"*			
Matrix Spike (24C0338-MS1)			Prepared: 03/11/24 12:00 Analyzed: 03/11/24 21:52									
QC Source Sample: Non-SDG (A4B1637-02)												
EPA 8260D												
Bromobenzene	19.5	---	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
Bromochloromethane	24.7	---	1.00	ug/L	1	20.0	ND	123	78-123%	---	---	
Bromodichloromethane	22.0	---	1.00	ug/L	1	20.0	ND	110	79-125%	---	---	
Bromoform	18.3	---	2.00	ug/L	1	20.0	ND	92	66-130%	---	---	
Bromomethane	35.3	---	5.00	ug/L	1	20.0	ND	**176**	**53-141%**	---	---	Q-54f
Carbon tetrachloride	22.4	---	1.00	ug/L	1	20.0	ND	112	72-136%	---	---	
Chlorobenzene	21.1	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
Chloroethane	58.9	---	5.00	ug/L	1	20.0	ND	**294**	**60-138%**	---	---	ICV-01, Q-54
Chloroform	24.1	---	1.00	ug/L	1	20.0	ND	121	79-124%	---	---	
Chloromethane	23.1	---	5.00	ug/L	1	20.0	ND	115	50-139%	---	---	
2-Chlorotoluene	19.9	---	1.00	ug/L	1	20.0	ND	99	79-122%	---	---	
4-Chlorotoluene	19.7	---	1.00	ug/L	1	20.0	ND	98	78-122%	---	---	
Dibromochloromethane	18.4	---	1.00	ug/L	1	20.0	ND	92	74-126%	---	---	
1,2-Dibromo-3-chloropropane	15.6	---	5.00	ug/L	1	20.0	ND	78	62-128%	---	---	Q-54l
1,2-Dibromoethane (EDB)	20.7	---	0.500	ug/L	1	20.0	ND	104	77-121%	---	---	

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0338 - EPA 5030C							**Water**					
Matrix Spike (24C0338-MS1)			Prepared: 03/11/24 12:00		Analyzed: 03/11/24 21:52							
QC Source Sample: Non-SDG (A4B1637-02)												
Dibromomethane	23.4	---	1.00	ug/L	1	20.0	ND	117	79-123%	---	---	
1,2-Dichlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	80-120%	---	---	
1,3-Dichlorobenzene	20.5	---	0.500	ug/L	1	20.0	ND	103	80-120%	---	---	
1,4-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	ND	100	79-120%	---	---	
Dichlorodifluoromethane	24.5	---	1.00	ug/L	1	20.0	ND	123	32-152%	---	---	
1,1-Dichloroethane	24.0	---	0.400	ug/L	1	20.0	ND	120	77-125%	---	---	
1,2-Dichloroethane (EDC)	23.3	---	0.400	ug/L	1	20.0	ND	116	73-128%	---	---	
1,1-Dichloroethene	25.3	---	0.400	ug/L	1	20.0	ND	126	71-131%	---	---	
cis-1,2-Dichloroethene	21.9	---	0.400	ug/L	1	20.0	ND	110	78-123%	---	---	
trans-1,2-Dichloroethene	22.4	---	0.400	ug/L	1	20.0	ND	112	75-124%	---	---	
1,2-Dichloropropane	22.5	---	0.500	ug/L	1	20.0	ND	112	78-122%	---	---	
1,3-Dichloropropane	20.7	---	1.00	ug/L	1	20.0	ND	103	80-120%	---	---	
2,2-Dichloropropane	18.7	---	1.00	ug/L	1	20.0	ND	94	60-139%	---	---	
1,1-Dichloropropene	24.0	---	1.00	ug/L	1	20.0	ND	120	79-125%	---	---	
cis-1,3-Dichloropropene	14.5	---	1.00	ug/L	1	20.0	ND	**73**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	17.6	---	1.00	ug/L	1	20.0	ND	88	73-127%	---	---	
Hexachlorobutadiene	16.6	---	5.00	ug/L	1	20.0	ND	83	66-134%	---	---	Q-54h
Methylene chloride	22.7	---	10.0	ug/L	1	20.0	ND	114	74-124%	---	---	
1,1,1,2-Tetrachloroethane	20.2	---	0.400	ug/L	1	20.0	ND	101	78-124%	---	---	
1,1,2,2-Tetrachloroethane	22.8	---	0.500	ug/L	1	20.0	ND	114	71-121%	---	---	
Tetrachloroethene (PCE)	21.9	---	0.400	ug/L	1	20.0	ND	110	74-129%	---	---	
1,2,3-Trichlorobenzene	19.0	---	2.00	ug/L	1	20.0	ND	95	69-129%	---	---	
1,1,2-Trichloroethane	21.2	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
1,2,4-Trichlorobenzene	16.0	---	2.00	ug/L	1	20.0	ND	80	69-130%	---	---	Q-54i
1,1,1-Trichloroethane	23.5	---	0.400	ug/L	1	20.0	ND	118	74-131%	---	---	
Trichloroethene (TCE)	22.5	---	0.400	ug/L	1	20.0	ND	112	79-123%	---	---	
Trichlorofluoromethane	33.6	---	2.00	ug/L	1	20.0	ND	**168**	**65-141%**	---	---	Q-54c
1,2,3-Trichloropropane	21.3	---	1.00	ug/L	1	20.0	ND	106	73-122%	---	---	
Vinyl chloride	24.0	---	0.200	ug/L	1	20.0	ND	120	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 107 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*95 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0296 - Method Prep: Aq							**Water**					
Blank (24C0296-BLK1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:40							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0296-BS1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:41							
SM 4500-NH3 G												
Ammonia as N	2.05	---	0.0200	mg/L	1	2.00	---	102	90-111%	---	---	
Matrix Spike (24C0296-MS1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:46							
QC Source Sample: Non-SDG (A4C0948-02)												
SM 4500-NH3 G												
Ammonia as N	6.69	---	0.0400	mg/L	2	4.00	2.50	105	90-111%	---	---	
Matrix Spike Dup (24C0296-MSD1)			Prepared: 03/08/24 10:11		Analyzed: 03/08/24 12:47							
QC Source Sample: Non-SDG (A4C0948-02)												
Ammonia as N	6.65	---	0.0400	mg/L	2	4.00	2.50	104	90-111%	0.7	13%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0311 - Method Prep: Aq							**Water**					
Blank (24C0311-BLK1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:04									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0311-BS1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:06									
SM 4500-NH3 G												
Ammonia as N	2.01	---	0.0200	mg/L	1	2.00	---	100	90-111%	---	---	
Matrix Spike (24C0311-MS1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:10									
QC Source Sample: Non-SDG (A4C1007-01)												
SM 4500-NH3 G												
Ammonia as N	2.83	---	0.0250	mg/L	1	2.50	0.292	102	90-111%	---	---	
Matrix Spike Dup (24C0311-MSD1)			Prepared: 03/08/24 13:29 Analyzed: 03/08/24 14:12									
QC Source Sample: Non-SDG (A4C1007-01)												
Ammonia as N	2.94	---	0.0250	mg/L	1	2.50	0.292	106	90-111%	4	13%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0346 - Method Prep: Aq							**Water**					
Blank (24C0346-BLK1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 12:54							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0346-BS1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 12:56							
SM 4500-NH3 G												
Ammonia as N	2.03	---	0.0200	mg/L	1	2.00	---	102	90-111%	---	---	
Matrix Spike (24C0346-MS1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 13:00							
QC Source Sample: Non-SDG (A4C1055-02)												
SM 4500-NH3 G												
Ammonia as N	2.61	---	0.0250	mg/L	1	2.50	0.0400	103	90-111%	---	---	
Matrix Spike Dup (24C0346-MSD1)			Prepared: 03/11/24 10:17		Analyzed: 03/11/24 13:02							
QC Source Sample: Non-SDG (A4C1055-02)												
Ammonia as N	2.65	---	0.0250	mg/L	1	2.50	0.0400	104	90-111%	1	13%	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0227 - Method Prep: Aq									Water			
Blank (24C0227-BLK1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 09:40							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0227-BS1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 10:01							
EPA 300.0												
Nitrate-Nitrogen	2.04	---	0.250	mg/L	1	2.00	---	102	90-110%	---	---	
Nitrite-Nitrogen	1.97	---	0.250	mg/L	1	2.00	---	98	90-110%	---	---	
Duplicate (24C0227-DUP1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 14:20							
QC Source Sample: MW-25i (A4C1027-02)												
EPA 300.0												
Nitrate-Nitrogen	**1.93**	---	0.250	mg/L	1	---	1.92	---	---	0.4	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0227-MS1)			Prepared: 03/07/24 07:40		Analyzed: 03/07/24 14:42							
QC Source Sample: MW-25i (A4C1027-02)												
EPA 300.0												
Nitrate-Nitrogen	4.54	---	0.312	mg/L	1	2.50	1.92	105	87-112%	---	---	
Nitrite-Nitrogen	2.55	---	0.312	mg/L	1	2.50	ND	102	90-114%	---	---	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0256 - Method Prep: Aq									Water			
Blank (24C0256-BLK1)			Prepared: 03/07/24 12:43		Analyzed: 03/07/24 22:14							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0256-BS1)			Prepared: 03/07/24 12:43		Analyzed: 03/07/24 22:36							
EPA 300.0												
Nitrate-Nitrogen	2.01	---	0.250	mg/L	1	2.00	---	101	90-110%	---	---	
Nitrite-Nitrogen	1.96	---	0.250	mg/L	1	2.00	---	98	90-110%	---	---	
Duplicate (24C0256-DUP1)			Prepared: 03/07/24 12:43		Analyzed: 03/07/24 23:19							
QC Source Sample: EW-1 (A4C1027-09)												
EPA 300.0												
Nitrate-Nitrogen	**3.84**	---	0.250	mg/L	1	---	3.82	---	---	0.4	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24C0256-DUP2)			Prepared: 03/07/24 12:43		Analyzed: 03/08/24 02:33							
QC Source Sample: MW-6 (A4C1027-14)												
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0256-MS1)			Prepared: 03/07/24 12:43		Analyzed: 03/07/24 23:41							
QC Source Sample: EW-1 (A4C1027-09)												
EPA 300.0												
Nitrate-Nitrogen	6.38	---	0.312	mg/L	1	2.50	3.82	102	87-112%	---	---	
Nitrite-Nitrogen	2.45	---	0.312	mg/L	1	2.50	ND	98	90-114%	---	---	
Matrix Spike (24C0256-MS2)			Prepared: 03/07/24 12:43		Analyzed: 03/08/24 02:55							
QC Source Sample: MW-6 (A4C1027-14)												
EPA 300.0												
Nitrate-Nitrogen	2.54	---	0.312	mg/L	1	2.50	ND	101	87-112%	---	---	
Nitrite-Nitrogen	2.48	---	0.312	mg/L	1	2.50	ND	99	90-114%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0229							
A4C1027-02	Water	EPA 8260D	03/06/24 08:26	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-03	Water	EPA 8260D	03/06/24 08:43	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-04	Water	EPA 8260D	03/06/24 09:22	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-05	Water	EPA 8260D	03/06/24 09:27	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-06	Water	EPA 8260D	03/06/24 10:22	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-07	Water	EPA 8260D	03/06/24 10:25	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-09	Water	EPA 8260D	03/06/24 11:30	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
A4C1027-11	Water	EPA 8260D	03/06/24 12:59	03/07/24 12:23	5mL/5mL	5mL/5mL	1.00
Batch: 24C0292							
A4C1027-11RE1	Water	EPA 8260D	03/06/24 12:59	03/08/24 13:18	5mL/5mL	5mL/5mL	1.00
A4C1027-12	Water	EPA 8260D	03/06/24 13:52	03/08/24 13:18	5mL/5mL	5mL/5mL	1.00
A4C1027-13	Water	EPA 8260D	03/06/24 13:52	03/08/24 13:18	5mL/5mL	5mL/5mL	1.00
Batch: 24C0338							
A4C1027-01RE1	Water	EPA 8260D	03/06/24 08:09	03/11/24 14:00	5mL/5mL	5mL/5mL	1.00
A4C1027-08RE1	Water	EPA 8260D	03/06/24 10:59	03/11/24 14:00	5mL/5mL	5mL/5mL	1.00
A4C1027-10RE1	Water	EPA 8260D	03/06/24 11:31	03/11/24 14:00	5mL/5mL	5mL/5mL	1.00
A4C1027-14RE1	Water	EPA 8260D	03/06/24 14:55	03/11/24 14:00	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0296							
A4C1027-03	Water	SM 4500-NH3 G	03/06/24 08:43	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
A4C1027-04	Water	SM 4500-NH3 G	03/06/24 09:22	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
A4C1027-05	Water	SM 4500-NH3 G	03/06/24 09:27	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
A4C1027-06	Water	SM 4500-NH3 G	03/06/24 10:22	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
A4C1027-07	Water	SM 4500-NH3 G	03/06/24 10:25	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
A4C1027-09	Water	SM 4500-NH3 G	03/06/24 11:30	03/08/24 10:11	10mL/10mL	10mL/10mL	1.00
Batch: 24C0311							
A4C1027-02	Water	SM 4500-NH3 G	03/06/24 08:26	03/08/24 13:29	10mL/10mL	5mL/5mL	1.00
A4C1027-08RE1	Water	SM 4500-NH3 G	03/06/24 10:59	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00
A4C1027-10RE1	Water	SM 4500-NH3 G	03/06/24 11:31	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00
A4C1027-11RE1	Water	SM 4500-NH3 G	03/06/24 12:59	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00
A4C1027-12RE1	Water	SM 4500-NH3 G	03/06/24 13:52	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

SAMPLE PREPARATION INFORMATION

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4C1027-13RE1	Water	SM 4500-NH3 G	03/06/24 13:52	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00
A4C1027-14RE1	Water	SM 4500-NH3 G	03/06/24 14:55	03/08/24 10:11	10mL/10mL	5mL/5mL	1.00
Batch: 24C0346							
A4C1027-01RE2	Water	SM 4500-NH3 G	03/06/24 08:09	03/11/24 10:17	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0227							
A4C1027-01	Water	EPA 300.0	03/06/24 08:09	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-01RE1	Water	EPA 300.0	03/06/24 08:09	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-02	Water	EPA 300.0	03/06/24 08:26	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-03	Water	EPA 300.0	03/06/24 08:43	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-03RE1	Water	EPA 300.0	03/06/24 08:43	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-04	Water	EPA 300.0	03/06/24 09:22	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-05	Water	EPA 300.0	03/06/24 09:27	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-06	Water	EPA 300.0	03/06/24 10:22	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
A4C1027-06RE1	Water	EPA 300.0	03/06/24 10:22	03/07/24 07:40	5mL/5mL	5mL/5mL	1.00
Batch: 24C0256							
A4C1027-07	Water	EPA 300.0	03/06/24 10:25	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-08	Water	EPA 300.0	03/06/24 10:59	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-08RE1	Water	EPA 300.0	03/06/24 10:59	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-09	Water	EPA 300.0	03/06/24 11:30	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-10	Water	EPA 300.0	03/06/24 11:31	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-10RE1	Water	EPA 300.0	03/06/24 11:31	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-11	Water	EPA 300.0	03/06/24 12:59	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-12	Water	EPA 300.0	03/06/24 13:52	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-12RE1	Water	EPA 300.0	03/06/24 13:52	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-13	Water	EPA 300.0	03/06/24 13:52	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-13RE1	Water	EPA 300.0	03/06/24 13:52	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00
A4C1027-14	Water	EPA 300.0	03/06/24 14:55	03/07/24 12:43	5mL/5mL	5mL/5mL	1.00

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

QUALIFIER DEFINITIONS

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

Apex Laboratories

ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
M-02	Due to matrix interference, this analyte cannot be accurately quantified. The reported result is estimated.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +141%. 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 8260/8270 by +17%. 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 8260/8270 by +22%. 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 8260/8270 by +24%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +31%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +43%. The results are reported as Estimated Values.
Q-54f	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +45%. The results are reported as Estimated Values.
Q-54g	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +54%. The results are reported as Estimated Values.
Q-54h	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -1%. The results are reported as Estimated Values.
Q-54i	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -3%. The results are reported as Estimated Values.
Q-54j	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -4%. The results are reported as Estimated Values.
Q-54k	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -5%. The results are reported as Estimated Values.
Q-54l	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -8%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

Apex Laboratories



Darrell Auvil, Client Services Manager

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Apex Laboratories, LLC

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

GeoEngineers - Portland	Project:	**NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number:	**19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager:	**Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

T-02 This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

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

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

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

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



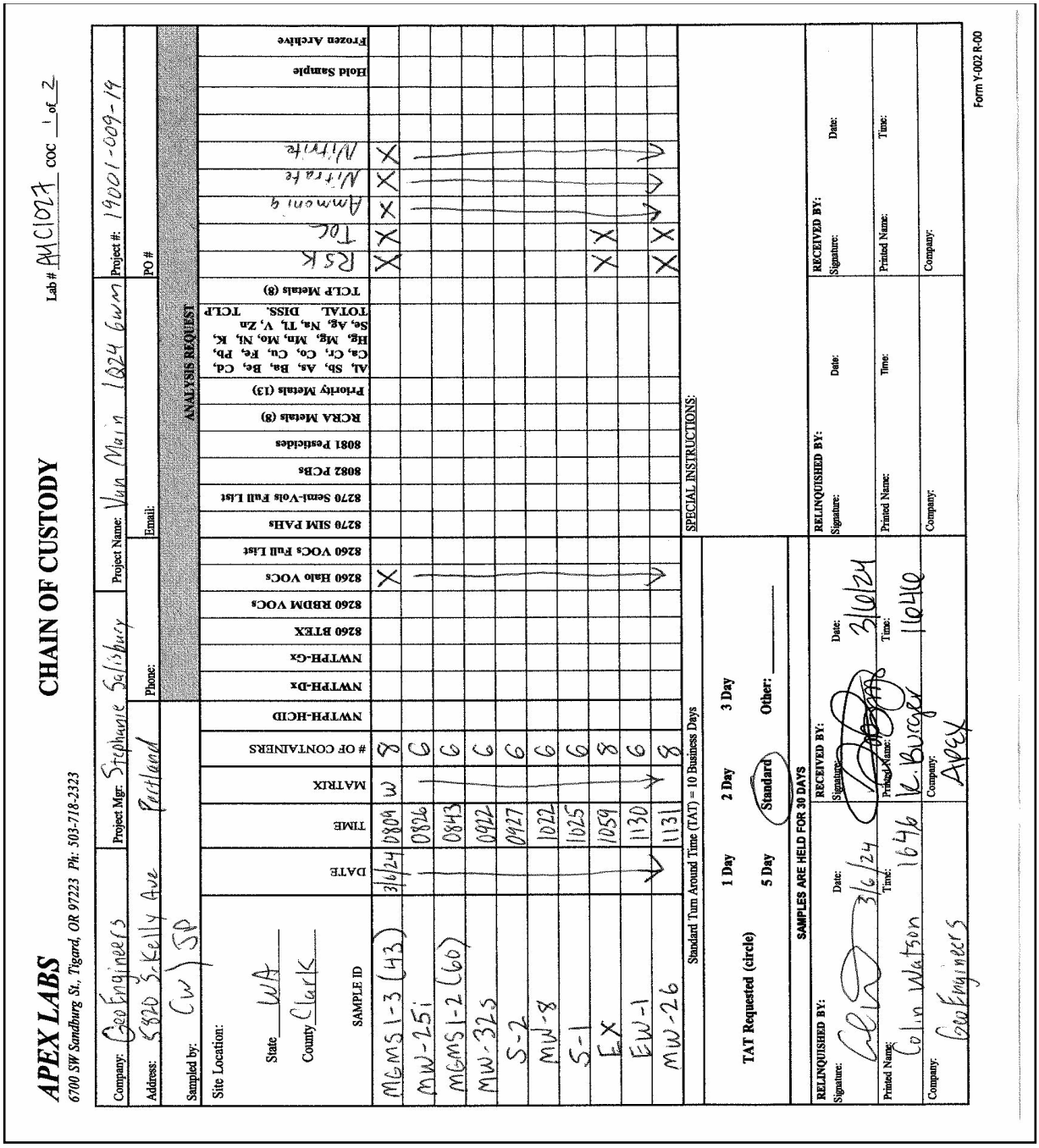
Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**



APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4C1027 COC 1 of 2

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 Gwm | Project #: 19001-009-19
Address: 5820 S. Kelly Ave Portland | Phone: | Email: | PO #
Sampled by: CW) SP

Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	RSK	TOC	Ammonia	Nitrate	Nitrite	Hold Sample	Frozen Archive
MGMS1-3 (43)	3/6/24	0809	W	8						X										X	X	X	X		
MW-25i		0826		6																					
MGMS1-2 (60)		0843		6																					
MW-32s		0922		6																					
S-2		0927		6																X	X	X	X		
MW-8		1022		6																					
S-1		1025		6																					
EX		1059		8																X	X	X	X		
EW-1		1130		6																					
MW-26	↓	1131	↓	8						↓										X	X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days

SPECIAL INSTRUCTIONS:

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Company:	Company:	Company:	Company:
Date: 3/6/24	Date: 3/6/24	Date:	Date:
Time: 1646	Time: 1646	Time:	Time:

Colin Watson — K. Burger — GeoEngineers — APEX

Form Y-002 R-00

Apex Laboratories

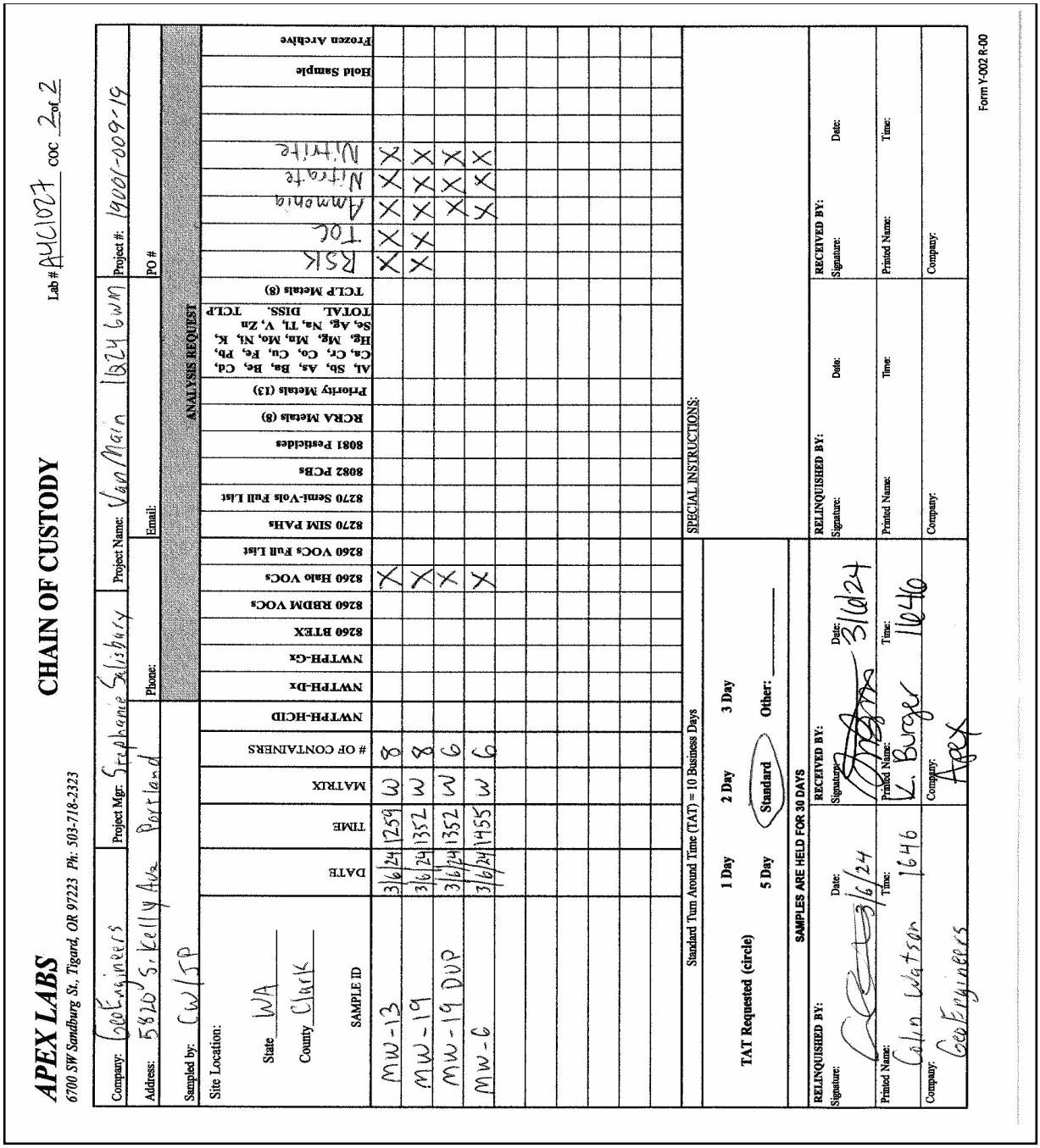
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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**



APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4C1027 COC 2 of 2

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 WM | Project #: 19001-009-19
Address: 5820 S. Kelly Ave Portland | Phone: | Email: | PO #
Sampled by: CW/SP

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	RSK	TOC	Ammonia	Nitrate	Nitrite	Hold Sample	Frozen Archive
MW-13	3/6/24	1259	W	8						X										X	X	X	X		
MW-19	3/6/24	1352	W	8						X										X	X	X	X		
MW-19 DUP	3/6/24	1352	W	6						X												X	X		
MW-6	3/6/24	1455	W	6						X												X	X		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: _____

SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature:	Date: 3/6/24	RECEIVED BY: Signature:	Date:	RELINQUISHED BY: Signature:	Date:	RECEIVED BY: Signature:	Date: 3/6/24
Printed Name: Colin Watson	Time: 1646	Printed Name:	Time:	Printed Name:	Time:	Printed Name: L. Burger	Time: 1646
Company: GeoEngineers		Company:		Company:		Company: Apex	

Form Y-002 R-00

Apex Laboratories

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-19**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1027 - 03 22 24 1458**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4C1027

Project/Project #: Van Main 1Q24 GWM

Delivery Info:

Date/time received: 3/16/24 @ 1646 By: KAB

Delivered by: Apex__ Client X ESS__ FedEx__ UPS__ Radio__ Morgan__ SDS__ Evergreen__ Other__

From USDA Regulated Origin? Yes____ No X

Cooler Inspection Date/time inspected: 3/16/24 @ 1646 By: KAB

Chain of Custody included? Yes X No____

Signed/dated by client? Yes X No____

Contains USDA Reg. Soils? Yes____ No X Unsure (inform QA) ____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	2.9	3.7					
Custody seals? (Y/N)	N	N					
Received on ice? (Y/N)	Y	Y					
Temp. blanks? (Y/N)	N	N					
Ice type: (Gel/Real/Other)	Real	Real					
Condition (In/Out):	IN	IN					

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

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

Out of temperature samples form initiated? Yes (No)

Sample Inspection: Date/time inspected: 3/16/24 @ 17:41 By: AAW

All samples intact? Yes X No___ Comments:

Bottle labels/COCs agree? Yes X No___ Comments: MW-19 'S WAS has no ID, bagged inset. ask for aaw sheet

COC/container discrepancies form initiated? Yes___ No X

Containers/volumes received appropriate for analysis? Yes X No___ Comments:

Do VOA vials have visible headspace? Yes___ No X NA___

Comments

Water samples: pH checked: Yes X No___ NA___ pH appropriate? Yes X No___ NA___ pH ID: A2SI172

Comments:

Labeled by: AAW Witness: KAB Cooler Inspected by: AAW

Form Y-003 R-01

Apex Laboratories

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Darrell Auvil, Client Services Manager

March 19, 2024 Service Request No:K2402524

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

Laboratory Results for: A4C1027

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory March 07, 2024
For your reference, these analyses have been assigned our service request number **K2402524.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories
Project: A4C1027
Sample Matrix: Water

Service Request: K2402524
Date Received: 03/07/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Five water samples were received for analysis at ALS Environmental on 03/07/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 03/19/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MGMS1-3 (43)			Lab ID: K2402524-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	4.20		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: EX			Lab ID: K2402524-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	6.10		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-26			Lab ID: K2402524-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.60		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-13			Lab ID: K2402524-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	3.00		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-19			Lab ID: K2402524-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	4.00		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2402524
Project: A4C1027

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2402524-001	MGMS1-3 (43)	3/6/2024	0809
K2402524-002	EX	3/6/2024	1059
K2402524-003	MW-26	3/6/2024	1131
K2402524-004	MW-13	3/6/2024	1259
K2402524-005	MW-19	3/6/2024	1352

SUBCONTRACT ORDER

Apex Laboratories

AAL 3/6/24 **A4C1027** KJ 03524

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MGMS1-3 (43) **Sampled: 03/06/24 08:09** (A4C1027-01)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/03/24 08:09	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: EX **Sampled: 03/06/24 10:59** (A4C1027-08)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/03/24 10:59	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-26 **Sampled: 03/06/24 11:31** (A4C1027-10)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/03/24 11:31	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-13 **Sampled: 03/06/24 12:59** (A4C1027-11)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/19/24 17:00	04/03/24 12:59	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date	Received By	Date
[signature]	3/6/24 956	[signature]	3/7/24 956
[signature]	3-7-24 1125	[signature]	3/7/24 1125

SUBCONTRACT ORDER

Apex Laboratories

A4C1027

K2402524

Sample Name: MW-19 **Sampled: 03/06/24 13:52** (A4C1027-12)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C) *Containers Supplied:* (F)250 mL Poly - Sulfuric (H2SO4)	03/19/24 17:00	04/03/24 13:52	ALS Kelso, no data package

Standard TAT

Released By	Date	Received By	Date
[signature]	3/6/24 956	[signature]	3/6/24 956
[signature]	3-7-24 1125	Hayleigh Smith	3/7/24 1125

PM HH

Cooler Receipt and Preservation Form

Client Apex Service Request K24 02524

Received: 3/7/24 Opened: 3/7/24 By: HS Unloaded: 3/7/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	1.7	IR01	1of2				
	3.3	↓	2of2				

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: Apex Laboratories **Service Request:** K2402524
Project: A4C1027/

Sample Name: MGMS1-3 (43) **Date Collected:** 03/6/24
Lab Code: K2402524-001 **Date Received:** 03/7/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name: EX **Date Collected:** 03/6/24
Lab Code: K2402524-002 **Date Received:** 03/7/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name: MW-26 **Date Collected:** 03/6/24
Lab Code: K2402524-003 **Date Received:** 03/7/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name: MW-13 **Date Collected:** 03/6/24
Lab Code: K2402524-004 **Date Received:** 03/7/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name: MW-19 **Date Collected:** 03/6/24
Lab Code: K2402524-005 **Date Received:** 03/7/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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General Chemistry

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	03/06/24 08:09
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MGMS1-3 (43)	**Basis:**	NA
Lab Code:	K2402524-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**4.20**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	03/06/24 10:59
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	EX	**Basis:**	NA
Lab Code:	K2402524-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**6.10**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	03/06/24 11:31
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MW-26	**Basis:**	NA
Lab Code:	K2402524-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.60**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	03/06/24 12:59
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MW-13	**Basis:**	NA
Lab Code:	K2402524-004		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**3.00**	mg/L	0.50	0.08	1	03/14/24 15:11	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	03/06/24 13:52
Sample Matrix:	Water	**Date Received:**	03/07/24 11:25
Sample Name:	MW-19	**Basis:**	NA
Lab Code:	K2402524-005		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**4.00**	mg/L	0.50	0.08	1	03/14/24 15:11	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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General Chemistry

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www.alsglobal.com

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2402524-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	03/14/24 15:11	

Client:	Apex Laboratories	**Service Request:**	K2402524
Project:	A4C1027	**Date Analyzed:**	03/14/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	834990

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2402524-LCS	23.7	25.0	95	83-117

AirTECHNOLOGY
Laboratories, Inc.

March 22, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4C1027
Lab Number: R031202-01/05

Enclosed are results for sample(s) received 3/12/24 by Air Technology Laboratories. Samples were received intact and chilled to 4° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER E50

Apex Laboratories

A4C1027 R031202-01/05

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

Sample Name: MGMS1-3 (43) **Water** **Sampled: 03/06/24 08:09** (A4C1027-01)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/20/24 08:09	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: EX **Water** **Sampled: 03/06/24 10:59** (A4C1027-08)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/20/24 10:59	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: MW-26 **Water** **Sampled: 03/06/24 11:31** (A4C1027-10)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/20/24 11:31	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: MW-13 **Water** **Sampled: 03/06/24 12:59** (A4C1027-11)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/19/24 17:00	03/20/24 12:59	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

4°C HO 3/12/24

Standard TAT

Released By	Date	Received By	Date
	3/11/24	UPS (Shipper)	
UPS (Shipper)	3/12/24 10:04		3/12/24 10:04
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Apex Laboratories

A4C1027

R031202-01/05

Sample Name: MW-19 **Water** **Sampled: 03/06/24 13:52** (A4C1027-12)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub) *Containers Supplied:* (D)40 mL VOA - HCL (E)40 mL VOA - HCL	03/19/24 17:00	03/20/24 13:52	air tech lab

Standard TAT

4°C
HO 3/12/24

3/11/24
Released By Date

UPS (Shipper)
Received By Date

UPS (Shipper)
3/12/24 10:04
Released By Date

3/12/24 10:04
Received By Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4C1027**
Date Received:	**03/12/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R031202-01		R031202-02		R031202-03		R031202-04	
Client Sample I.D.:	MGMS1-3(43) (A4C1027-01)		EX (A4C1027-08)		MW-26 (A4C1027-10)		MW-13 (A4C1027-11)	
Date/Time Sampled:	3/6/24 8:09		3/6/24 10:59		3/6/24 11:31		3/6/24 12:59	
Date/Time Analyzed:	3/18/24 11:56		3/18/24 12:26		3/18/24 12:39		3/18/24 12:52	
QC Batch No.:	240318GC8A1		240318GC8A1		240318GC8A1		240318GC8A1	
Analyst Initials:	RC		RC		RC		RC	
Dilution Factor:	1.0		1.0		1.0		1.0	
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**
Ethene	ND	1.0	ND	1.0	ND	1.0	11	1.0
Ethane	2.6	1.0	4.2	1.0	ND	1.0	19	1.0
Methane	10	1.0	170	1.0	87	1.0	1,600	1.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: Annika Sethi-Sanchez

Mark Johnson
Operations Manager

Date 03-21-24

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4C1027**
Date Received:	**03/12/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	**R031202-05**							
Client Sample I.D.:	**MW-19 (A4C1027-12)**							
Date/Time Sampled:	**3/6/24 13:52**							
Date/Time Analyzed:	**3/18/24 13:03**							
QC Batch No.:	**240318GC8A1**							
Analyst Initials:	**RC**							
Dilution Factor:	**1.0**							
ANALYTE	**Result ug/L**	**RL ug/L**						
Ethene	ND	1.0						
Ethane	13	1.0						
Methane	1,100	1.0						

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 03-21-24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240318GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	3/18/24 11:11			3/18/24 10:00		3/18/24 10:39					
Analyst Initials:	RC			RC		RC					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,150	1,470	128	1,410	124	3.5	70	130	30
Ethane	ND	1.0	1,200	1,390	114	1,370	112	1.8	70	130	30
Methane	ND	1.0	650	714	109	705	108	1.3	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 03-21-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

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

ANALYTICAL REPORT

Tuesday, April 2, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4C1074 - NuStar Vancouver Main 1Q24 - 19001-009-09

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 A4C1074, which was received by the laboratory on 3/7/2024 at 5:35:00PM.

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

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

Cooler Receipt Information	
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.	
(See Cooler Receipt Form for details)	
Cooler #1 4.1 degC	Cooler #2 2.6 degC

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

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-9	A4C1074-01	Water	03/07/24 08:45	03/07/24 17:35
MW-7	A4C1074-02	Water	03/07/24 10:09	03/07/24 17:35
MW-7 DUP	A4C1074-03	Water	03/07/24 10:09	03/07/24 17:35
MW-3	A4C1074-04	Water	03/07/24 11:21	03/07/24 17:35
MW-1	A4C1074-05	Water	03/07/24 12:10	03/07/24 17:35
MP-1	A4C1074-06	Water	03/07/24 13:09	03/07/24 17:35
MW-2	A4C1074-07	Water	03/07/24 14:12	03/07/24 17:35
MW-24d	A4C1074-08	Water	03/07/24 15:19	03/07/24 17:35
MW-5	A4C1074-09	Water	03/07/24 08:48	03/07/24 17:35
MW-20i	A4C1074-10	Water	03/07/24 09:31	03/07/24 17:35
MW-18i	A4C1074-11	Water	03/07/24 10:19	03/07/24 17:35
MW-19i	A4C1074-12	Water	03/07/24 11:38	03/07/24 17:35
MW-21i-40	A4C1074-13	Water	03/07/24 12:26	03/07/24 17:35
MW-23i	A4C1074-14	Water	03/07/24 13:19	03/07/24 17:35
MW-24i	A4C1074-15	Water	03/07/24 14:15	03/07/24 17:35

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4C1074-01RE1)				**Matrix: Water**		**Batch: 24C0448**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 16:30	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 16:30	EPA 8260D	

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-09	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1074 - 04 02 24 1259

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4C1074-01RE1)				**Matrix: Water**		**Batch: 24C0448**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
Tetrachloroethene (PCE)	**39.8**	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,1,1-Trichloroethane	**0.570**	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
Trichloroethene (TCE)	**11.4**	---	0.400	ug/L	1	03/13/24 16:30	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 16:30	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:30	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/13/24 16:30	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*121 %*	*Limits: 80-120 %*	*1*	*03/13/24 16:30*	*EPA 8260D*	*S-03*
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*03/13/24 16:30*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/13/24 16:30*	*EPA 8260D*	
MW-7 (A4C1074-02)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 00:02	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 (A4C1074-02)				**Matrix: Water**		**Batch: 24C0407**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1-Dichloroethane	**1.92**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1-Dichloroethene	**0.570**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
cis-1,2-Dichloroethene	**22.2**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
trans-1,2-Dichloroethene	**0.430**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
Tetrachloroethene (PCE)	**70.0**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
Trichloroethene (TCE)	**36.3**	---	0.400	ug/L	1	03/13/24 00:02	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 00:02	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:02	EPA 8260D	
Vinyl chloride	**0.320**	---	0.200	ug/L	1	03/13/24 00:02	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*123 %*	*Limits:*	*80-120 %*	*03/13/24 00:02*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*99 %*		*80-120 %*	*03/13/24 00:02*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*03/13/24 00:02*	*EPA 8260D*	
MW-7 DUP (A4C1074-03)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 DUP (A4C1074-03)				**Matrix: Water**		**Batch: 24C0407**		
Bromoform	ND	---	2.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 00:29	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1-Dichloroethane	**1.69**	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1-Dichloroethene	**0.540**	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
cis-1,2-Dichloroethene	**20.8**	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
Tetrachloroethene (PCE)	**76.8**	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	

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Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 DUP (A4C1074-03)				**Matrix: Water**		**Batch: 24C0407**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
Trichloroethene (TCE)	**34.5**	---	0.400	ug/L	1	03/13/24 00:29	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 00:29	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:29	EPA 8260D	
Vinyl chloride	**0.280**	---	0.200	ug/L	1	03/13/24 00:29	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*123 %*	*Limits: 80-120 %*	*1*	*03/13/24 00:29*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/13/24 00:29*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*03/13/24 00:29*	*EPA 8260D*	
MW-3 (A4C1074-04)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 00:57	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1-Dichloroethane	**0.990**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-3 (A4C1074-04)				**Matrix: Water**		**Batch: 24C0407**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
cis-1,2-Dichloroethene	**37.0**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
trans-1,2-Dichloroethene	**1.31**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2-Dichloropropane	**1.10**	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
Tetrachloroethene (PCE)	**160**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,1,1-Trichloroethane	**1.78**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
Trichloroethene (TCE)	**32.9**	---	0.400	ug/L	1	03/13/24 00:57	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 00:57	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 00:57	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/13/24 00:57	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*122 %*	*Limits:*	*80-120 %*	*03/13/24 00:57*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*97 %*		*80-120 %*	*03/13/24 00:57*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*03/13/24 00:57*	*EPA 8260D*	
MW-1 (A4C1074-05)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-1 (A4C1074-05)				**Matrix: Water**		**Batch: 24C0407**		
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 19:57	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1-Dichloroethane	**3.00**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1-Dichloroethene	**0.430**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
cis-1,2-Dichloroethene	**41.8**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
trans-1,2-Dichloroethene	**0.750**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
Tetrachloroethene (PCE)	**9.22**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:57	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-1 (A4C1074-05)				**Matrix: Water**		**Batch: 24C0407**		
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
Trichloroethene (TCE)	**9.90**	---	0.400	ug/L	1	03/12/24 19:57	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 19:57	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:57	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 19:57	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*117 %*	*Limits: 80-120 %*	*1*	*03/12/24 19:57*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/12/24 19:57*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/12/24 19:57*	*EPA 8260D*	
MP-1 (A4C1074-06)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Bromochloromethane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Bromoform	ND	---	5.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Bromomethane	ND	---	12.5	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Chlorobenzene	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Chloroethane	ND	---	12.5	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Chloroform	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Chloromethane	ND	---	12.5	ug/L	2.5	03/12/24 22:13	EPA 8260D	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Dibromomethane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1-Dichloroethane	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
cis-1,2-Dichloroethene	**9.85**	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MP-1 (A4C1074-06)				**Matrix: Water**		**Batch: 24C0407**		
trans-1,2-Dichloroethene	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Methylene chloride	ND	---	25.0	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Tetrachloroethene (PCE)	**224**	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,1,1-Trichloroethane	ND	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Trichloroethene (TCE)	**35.0**	---	1.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	03/12/24 22:13	EPA 8260D	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Vinyl chloride	ND	---	0.500	ug/L	2.5	03/12/24 22:13	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*123 %*	*Limits:*	*80-120 %*	*1*	*03/12/24 22:13*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*98 %*		*80-120 %*	*1*	*03/12/24 22:13*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/12/24 22:13*	*EPA 8260D*	
MW-2 (A4C1074-07)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4C1074-07)				**Matrix: Water**		**Batch: 24C0407**		
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 21:19	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 21:19	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 21:19	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/12/24 21:19	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 21:19	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4C1074-07)				**Matrix: Water**		**Batch: 24C0407**		
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:19	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 21:19	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 121 %*		*Limits: 80-120 %*	*1*	*03/12/24 21:19*	*EPA 8260D*	*S-06*
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*03/12/24 21:19*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*03/12/24 21:19*	*EPA 8260D*	
MW-24d (A4C1074-08)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 21:46	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-24d (A4C1074-08)				**Matrix: Water**		**Batch: 24C0407**		
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/12/24 21:46	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 21:46	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 21:46	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 21:46	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*03/12/24 21:46*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/12/24 21:46*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*03/12/24 21:46*	*EPA 8260D*	
MW-5 (A4C1074-09)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 23:35	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-09	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1074 - 04 02 24 1259

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-5 (A4C1074-09)				**Matrix: Water**		**Batch: 24C0407**		
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1-Dichloroethane	**0.680**	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
cis-1,2-Dichloroethene	**19.9**	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
Tetrachloroethene (PCE)	**4.28**	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
Trichloroethene (TCE)	**4.49**	---	0.400	ug/L	1	03/12/24 23:35	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 23:35	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 23:35	EPA 8260D	
Vinyl chloride	**5.03**	---	0.200	ug/L	1	03/12/24 23:35	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 118 %*		*Limits: 80-120 %*	*1*	*03/12/24 23:35*	*EPA 8260D*	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-5 (A4C1074-09)				**Matrix: Water**		**Batch: 24C0407**		
Surrogate: Toluene-d8 (Surr)			*Recovery: 100 %*	*Limits: 80-120 %*	*1*	*03/12/24 23:35*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/12/24 23:35*	*EPA 8260D*	
MW-20i (A4C1074-10)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 19:03	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
cis-1,2-Dichloroethene	**6.48**	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	

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Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-20i (A4C1074-10)				**Matrix: Water**		**Batch: 24C0407**		
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
Tetrachloroethene (PCE)	**1.66**	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
Trichloroethene (TCE)	**1.14**	---	0.400	ug/L	1	03/12/24 19:03	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 19:03	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:03	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 19:03	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*03/12/24 19:03*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*03/12/24 19:03*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*03/12/24 19:03*	*EPA 8260D*	
MW-18i (A4C1074-11)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 18:35	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-18i (A4C1074-11)				**Matrix: Water**		**Batch: 24C0407**		
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
Tetrachloroethene (PCE)	**0.900**	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
Trichloroethene (TCE)	**0.410**	---	0.400	ug/L	1	03/12/24 18:35	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 18:35	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:35	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 18:35	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits:*	*80-120 %*	*1*	*03/12/24 18:35*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/12/24 18:35*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*03/12/24 18:35*	*EPA 8260D*	
MW-19i (A4C1074-12)				**Matrix: Water**		**Batch: 24C0407**		

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19i (A4C1074-12)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 18:08	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
cis-1,2-Dichloroethene	**0.610**	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 18:08	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19i (A4C1074-12)				**Matrix: Water**		**Batch: 24C0407**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/12/24 18:08	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 18:08	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 18:08	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 18:08	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*03/12/24 18:08*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*03/12/24 18:08*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*	*1*	*03/12/24 18:08*	*EPA 8260D*	
MW-21i-40 (A4C1074-13)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 20:24	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-40 (A4C1074-13)				**Matrix: Water**		**Batch: 24C0407**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1-Dichloroethane	**1.46**	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
cis-1,2-Dichloroethene	**26.5**	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
Tetrachloroethene (PCE)	**18.6**	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
Trichloroethene (TCE)	**11.3**	---	0.400	ug/L	1	03/12/24 20:24	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 20:24	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 20:24	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 20:24	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*	*1*	*03/12/24 20:24*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*03/12/24 20:24*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*1*	*03/12/24 20:24*	*EPA 8260D*	
MW-23i (A4C1074-14RE1)				**Matrix: Water**		**Batch: 24C0448**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-23i (A4C1074-14RE1)				**Matrix: Water**		**Batch: 24C0448**		
Bromoform	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 16:55	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-23i (A4C1074-14RE1)				**Matrix: Water**		**Batch: 24C0448**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	03/13/24 16:55	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 16:55	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 16:55	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/13/24 16:55	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*114 %*	*Limits: 80-120 %*	*1*	*03/13/24 16:55*	*EPA 8260D*	
Toluene-d8 (Surr)			*106 %*	*80-120 %*	*1*	*03/13/24 16:55*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*03/13/24 16:55*	*EPA 8260D*	
MW-24i (A4C1074-15)				**Matrix: Water**		**Batch: 24C0407**		
Bromobenzene	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Bromoform	ND	---	2.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/12/24 19:30	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1-Dichloroethane	**1.59**	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-24i (A4C1074-15)				**Matrix: Water**		**Batch: 24C0407**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
cis-1,2-Dichloroethene	**16.3**	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
Tetrachloroethene (PCE)	**16.1**	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
Trichloroethene (TCE)	**9.70**	---	0.400	ug/L	1	03/12/24 19:30	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/12/24 19:30	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/12/24 19:30	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/12/24 19:30	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits:*	*80-120 %*	*1*	*03/12/24 19:30*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*03/12/24 19:30*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*	*1*	*03/12/24 19:30*	*EPA 8260D*	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4C1074-01)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 12:26	SM 4500-NH3 G	
MW-7 (A4C1074-02)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**8.13**	---	0.200	mg/L	10	03/15/24 12:29	SM 4500-NH3 G	
MW-7 DUP (A4C1074-03)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**7.61**	---	0.200	mg/L	10	03/15/24 12:30	SM 4500-NH3 G	
MW-3 (A4C1074-04)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 12:35	SM 4500-NH3 G	
MW-1 (A4C1074-05)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**84.9**	---	1.00	mg/L	50	03/15/24 12:36	SM 4500-NH3 G	
MP-1 (A4C1074-06)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**3.63**	---	0.0200	mg/L	1	03/15/24 12:41	SM 4500-NH3 G	
MW-2 (A4C1074-07)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**9.12**	---	0.100	mg/L	5	03/15/24 12:42	SM 4500-NH3 G	
MW-24d (A4C1074-08)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**0.0990**	---	0.0200	mg/L	1	03/15/24 12:47	SM 4500-NH3 G	
MW-5 (A4C1074-09)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**0.176**	---	0.0200	mg/L	1	03/15/24 12:48	SM 4500-NH3 G	
MW-20i (A4C1074-10)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 12:59	SM 4500-NH3 G	
MW-18i (A4C1074-11)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 13:00	SM 4500-NH3 G	
MW-19i (A4C1074-12)				**Matrix: Water**		**Batch: 24C0550**		
Ammonia as N	**0.268**	---	0.0200	mg/L	1	03/15/24 13:05	SM 4500-NH3 G	
MW-21i-40 (A4C1074-13)				**Matrix: Water**		**Batch: 24C0550**		

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-40 (A4C1074-13)				**Matrix: Water**			**Batch: 24C0550**	
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 13:06	SM 4500-NH3 G	
MW-23i (A4C1074-14)				**Matrix: Water**			**Batch: 24C0551**	
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 13:36	SM 4500-NH3 G	
MW-24i (A4C1074-15)				**Matrix: Water**			**Batch: 24C0551**	
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 13:38	SM 4500-NH3 G	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4C1074-01)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**89.7**	---	12.5	mg/L	50	03/08/24 11:40	EPA 300.0	
MW-9 (A4C1074-01RE1)				**Matrix: Water**				
Batch: 24C0284								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 18:29	EPA 300.0	
MW-7 (A4C1074-02)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**24.4**	---	5.00	mg/L	20	03/08/24 12:01	EPA 300.0	
MW-7 (A4C1074-02RE1)				**Matrix: Water**				
Batch: 24C0284								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 18:51	EPA 300.0	
MW-7 DUP (A4C1074-03)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**21.4**	---	5.00	mg/L	20	03/08/24 12:23	EPA 300.0	
MW-7 DUP (A4C1074-03RE1)				**Matrix: Water**				
Batch: 24C0284								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 19:12	EPA 300.0	
MW-3 (A4C1074-04)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**4.88**	---	0.250	mg/L	1	03/08/24 12:45	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 12:45	EPA 300.0	
MW-1 (A4C1074-05)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**23.7**	---	5.00	mg/L	20	03/08/24 13:06	EPA 300.0	
MW-1 (A4C1074-05RE1)				**Matrix: Water**				
Batch: 24C0284								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 19:34	EPA 300.0	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MP-1 (A4C1074-06)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**30.5**	---	5.00	mg/L	20	03/08/24 13:28	EPA 300.0	
MP-1 (A4C1074-06RE1)				**Matrix: Water**				
Batch: 24C0284								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 19:56	EPA 300.0	
MW-2 (A4C1074-07)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 14:32	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 14:32	EPA 300.0	
MW-24d (A4C1074-08)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 15:37	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 15:37	EPA 300.0	
MW-5 (A4C1074-09)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 15:59	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 15:59	EPA 300.0	
MW-20i (A4C1074-10)				**Matrix: Water**				
Batch: 24C0284								
Nitrate-Nitrogen	**0.265**	---	0.250	mg/L	1	03/08/24 16:20	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 16:20	EPA 300.0	
MW-18i (A4C1074-11)				**Matrix: Water**				
Batch: 24C0285								
Nitrate-Nitrogen	**0.822**	---	0.250	mg/L	1	03/08/24 22:05	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 22:05	EPA 300.0	
MW-19i (A4C1074-12)				**Matrix: Water**				
Batch: 24C0285								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 22:27	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 22:27	EPA 300.0	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-09	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1074 - 04 02 24 1259

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-40 (A4C1074-13)				**Matrix: Water**				
Batch: 24C0285								
Nitrate-Nitrogen	**2.29**	---	0.250	mg/L	1	03/08/24 23:31	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 23:31	EPA 300.0	
MW-23i (A4C1074-14)				**Matrix: Water**				
Batch: 24C0285								
Nitrate-Nitrogen	**1.83**	---	0.250	mg/L	1	03/08/24 23:53	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 23:53	EPA 300.0	
MW-24i (A4C1074-15)				**Matrix: Water**				
Batch: 24C0285								
Nitrate-Nitrogen	**7.12**	---	1.25	mg/L	5	03/09/24 00:14	EPA 300.0	
MW-24i (A4C1074-15RE1)				**Matrix: Water**				
Batch: 24C0285								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/08/24 20:17	EPA 300.0	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					
Blank (24C0407-BLK1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 15:24									
EPA 8260D												
Bromobenzene	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	---	5.00	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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C									Water			
Blank (24C0407-BLK1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 15:24									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
LCS (24C0407-BS1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 14:20									
EPA 8260D												
Bromobenzene	19.5	---	0.500	ug/L	1	20.0	---	97	80-120%	---	---	
Bromochloromethane	23.9	---	1.00	ug/L	1	20.0	---	120	80-120%	---	---	
Bromodichloromethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromoform	18.2	---	2.00	ug/L	1	20.0	---	91	80-120%	---	---	
Bromomethane	33.2	---	5.00	ug/L	1	20.0	---	**166**	**80-120%**	---	---	Q-56
Carbon tetrachloride	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Chloroethane	37.4	---	5.00	ug/L	1	20.0	---	**187**	**80-120%**	---	---	Q-56, ICV-01
Chloroform	23.4	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Chloromethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
2-Chlorotoluene	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
4-Chlorotoluene	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Dibromochloromethane	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dibromo-3-chloropropane	15.4	---	5.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
1,2-Dibromoethane (EDB)	20.1	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Dibromomethane	23.0	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
1,2-Dichlorobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					
LCS (24C0407-BS1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 14:20									
1,3-Dichlorobenzene	20.1	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,4-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dichlorodifluoromethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethane	23.1	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
1,2-Dichloroethane (EDC)	22.7	---	0.400	ug/L	1	20.0	---	114	80-120%	---	---	
1,1-Dichloroethene	22.2	---	0.400	ug/L	1	20.0	---	111	80-120%	---	---	
cis-1,2-Dichloroethene	21.1	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloropropane	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,3-Dichloropropane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
2,2-Dichloropropane	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloropropene	21.9	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
cis-1,3-Dichloropropene	16.7	---	1.00	ug/L	1	20.0	---	83	80-120%	---	---	
trans-1,3-Dichloropropene	18.0	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
Hexachlorobutadiene	16.1	---	5.00	ug/L	1	20.0	---	80	80-120%	---	---	
Methylene chloride	22.3	---	10.0	ug/L	1	20.0	---	112	80-120%	---	---	
1,1,1,2-Tetrachloroethane	19.7	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,1,2,2-Tetrachloroethane	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
Tetrachloroethene (PCE)	20.5	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	18.8	---	2.00	ug/L	1	20.0	---	94	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	15.8	---	2.00	ug/L	1	20.0	---	**79**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	22.0	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
Trichloroethene (TCE)	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
Trichlorofluoromethane	32.4	---	2.00	ug/L	1	20.0	---	**162**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	21.1	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Vinyl chloride	21.6	---	0.200	ug/L	1	20.0	---	108	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*			*Limits: 80-120 %*			*Dilution: 1x*			
Toluene-d8 (Surr)			*96 %*			*80-120 %*			*"*			
4-Bromofluorobenzene (Surr)			*94 %*			*80-120 %*			*"*			
Duplicate (24C0407-DUP1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 22:40									

QC Source Sample: MP-1 (A4C1074-06)

EPA 8260D

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					
Duplicate (24C0407-DUP1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 22:40									
QC Source Sample: MP-1 (A4C1074-06)												
Bromobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Bromoform	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
Bromomethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Chloroethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Chloroform	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Chloromethane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dibromomethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	1.00	ug/L	2.5	---	0.500	---	---	***	30%	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	---	0.600	---	---	***	30%	
cis-1,2-Dichloroethene	**9.30**	---	1.00	ug/L	2.5	---	9.85	---	---	6	30%	
trans-1,2-Dichloroethene	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	---	ND	---	---	---	30%	
Methylene chloride	ND	---	25.0	ug/L	2.5	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					
Duplicate (24C0407-DUP1)			Prepared: 03/12/24 14:07 Analyzed: 03/12/24 22:40									
QC Source Sample: MP-1 (A4C1074-06)												
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**219**	---	1.00	ug/L	2.5	---	224	---	---	2	30%	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	1.00	ug/L	2.5	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**34.0**	---	1.00	ug/L	2.5	---	35.0	---	---	3	30%	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.500	ug/L	2.5	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 123 %*		*Limits: 80-120 %*			*Dilution: 1x*				*S-02*
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike (24C0407-MS1)			Prepared: 03/12/24 14:07 Analyzed: 03/13/24 02:45									**T-02**
QC Source Sample: Non-SDG (A4C1120-06)												
EPA 8260D												
Bromobenzene	198	---	5.00	ug/L	10	200	ND	99	80-120%	---	---	
Bromochloromethane	242	---	10.0	ug/L	10	200	ND	121	78-123%	---	---	
Bromodichloromethane	218	---	10.0	ug/L	10	200	ND	109	79-125%	---	---	
Bromoform	184	---	20.0	ug/L	10	200	ND	92	66-130%	---	---	
Bromomethane	365	---	50.0	ug/L	10	200	ND	**182**	**53-141%**	---	---	Q-54c
Carbon tetrachloride	227	---	10.0	ug/L	10	200	ND	114	72-136%	---	---	
Chlorobenzene	212	---	5.00	ug/L	10	200	ND	106	80-120%	---	---	
Chloroethane	596	---	50.0	ug/L	10	200	ND	**298**	**60-138%**	---	---	Q-54d, ICV-01
Chloroform	242	---	10.0	ug/L	10	200	ND	121	79-124%	---	---	
Chloromethane	231	---	50.0	ug/L	10	200	ND	116	50-139%	---	---	
2-Chlorotoluene	213	---	10.0	ug/L	10	200	ND	107	79-122%	---	---	
4-Chlorotoluene	196	---	10.0	ug/L	10	200	ND	98	78-122%	---	---	
Dibromochloromethane	186	---	10.0	ug/L	10	200	ND	93	74-126%	---	---	
1,2-Dibromo-3-chloropropane	151	---	50.0	ug/L	10	200	ND	76	62-128%	---	---	Q-54g

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					
Matrix Spike (24C0407-MS1)			Prepared: 03/12/24 14:07		Analyzed: 03/13/24 02:45							**T-02**
QC Source Sample: Non-SDG (A4C1120-06)												
1,2-Dibromoethane (EDB)	203	---	5.00	ug/L	10	200	ND	101	77-121%	---	---	
Dibromomethane	232	---	10.0	ug/L	10	200	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	212	---	5.00	ug/L	10	200	6.20	103	80-120%	---	---	
1,3-Dichlorobenzene	207	---	5.00	ug/L	10	200	ND	103	80-120%	---	---	
1,4-Dichlorobenzene	202	---	5.00	ug/L	10	200	ND	101	79-120%	---	---	
Dichlorodifluoromethane	240	---	10.0	ug/L	10	200	ND	120	32-152%	---	---	
1,1-Dichloroethane	240	---	4.00	ug/L	10	200	ND	120	77-125%	---	---	
1,2-Dichloroethane (EDC)	230	---	4.00	ug/L	10	200	ND	115	73-128%	---	---	
1,1-Dichloroethene	253	---	4.00	ug/L	10	200	ND	127	71-131%	---	---	
cis-1,2-Dichloroethene	220	---	4.00	ug/L	10	200	ND	110	78-123%	---	---	
trans-1,2-Dichloroethene	219	---	4.00	ug/L	10	200	ND	109	75-124%	---	---	
1,2-Dichloropropane	224	---	5.00	ug/L	10	200	ND	112	78-122%	---	---	
1,3-Dichloropropane	206	---	10.0	ug/L	10	200	ND	103	80-120%	---	---	
2,2-Dichloropropane	180	---	10.0	ug/L	10	200	ND	90	60-139%	---	---	
1,1-Dichloropropene	238	---	10.0	ug/L	10	200	ND	119	79-125%	---	---	
cis-1,3-Dichloropropene	142	---	10.0	ug/L	10	200	ND	**71**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	173	---	10.0	ug/L	10	200	ND	86	73-127%	---	---	
Hexachlorobutadiene	173	---	50.0	ug/L	10	200	ND	86	66-134%	---	---	
Methylene chloride	228	---	100	ug/L	10	200	ND	114	74-124%	---	---	
1,1,1,2-Tetrachloroethane	202	---	4.00	ug/L	10	200	ND	101	78-124%	---	---	
1,1,2,2-Tetrachloroethane	225	---	5.00	ug/L	10	200	ND	112	71-121%	---	---	
Tetrachloroethene (PCE)	227	---	4.00	ug/L	10	200	7.10	110	74-129%	---	---	
1,2,3-Trichlorobenzene	193	---	20.0	ug/L	10	200	ND	97	69-129%	---	---	
1,1,2-Trichloroethane	209	---	5.00	ug/L	10	200	ND	104	80-120%	---	---	
1,2,4-Trichlorobenzene	164	---	20.0	ug/L	10	200	ND	82	69-130%	---	---	Q-54f
1,1,1-Trichloroethane	238	---	4.00	ug/L	10	200	ND	119	74-131%	---	---	
Trichloroethene (TCE)	229	---	4.00	ug/L	10	200	ND	115	79-123%	---	---	
Trichlorofluoromethane	333	---	20.0	ug/L	10	200	ND	**167**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	214	---	10.0	ug/L	10	200	ND	107	73-122%	---	---	
Vinyl chloride	238	---	2.00	ug/L	10	200	ND	119	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 108 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*95 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*94 %*	*80-120 %*	*"*

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0407 - EPA 5030C							**Water**					

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Blank (24C0448-BLK1)			Prepared: 03/13/24 09:00		Analyzed: 03/13/24 11:55							
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C									Water			
Blank (24C0448-BLK1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 11:55									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*104 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*				*"*			
LCS (24C0448-BS1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 10:47									
EPA 8260D												
Bromobenzene	18.4	---	0.500	ug/L	1	20.0	---	92	80-120%	---	---	
Bromochloromethane	23.5	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Bromodichloromethane	24.5	---	1.00	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
Bromoform	23.0	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
Bromomethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
Carbon tetrachloride	25.4	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
Chlorobenzene	20.9	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroethane	20.9	---	5.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroform	23.5	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	18.1	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
4-Chlorotoluene	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Dibromochloromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.1	---	5.00	ug/L	1	20.0	---	95	80-120%	---	---	
1,2-Dibromoethane (EDB)	19.7	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dibromomethane	23.8	---	1.00	ug/L	1	20.0	---	119	80-120%	---	---	
1,2-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
LCS (24C0448-BS1)			Prepared: 03/13/24 09:00		Analyzed: 03/13/24 10:47							
1,3-Dichlorobenzene	20.1	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
1,4-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethane	21.2	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,1-Dichloroethene	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,2-Dichloroethene	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
trans-1,2-Dichloroethene	20.9	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichloropropane	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,3-Dichloropropane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
2,2-Dichloropropane	22.5	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,1-Dichloropropene	19.9	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,3-Dichloropropene	22.5	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Hexachlorobutadiene	18.4	---	5.00	ug/L	1	20.0	---	92	80-120%	---	---	
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.9	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.3	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	20.0	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2,3-Trichlorobenzene	16.3	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,2-Trichloroethane	21.9	---	0.500	ug/L	1	20.0	---	110	80-120%	---	---	
1,2,4-Trichlorobenzene	14.9	---	2.00	ug/L	1	20.0	---	**75**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
Trichloroethene (TCE)	21.2	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
Trichlorofluoromethane	27.2	---	2.00	ug/L	1	20.0	---	**136**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	19.4	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
Vinyl chloride	21.1	---	0.200	ug/L	1	20.0	---	106	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*88 %*		*80-120 %*			*"*				
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57		Analyzed: 03/13/24 21:05							
QC Source Sample: Non-SDG (A4C1121-01)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:05									
QC Source Sample: Non-SDG (A4C1121-01)												
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**23.1**	---	0.400	ug/L	1	---	25.3	---	---	9	30%	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	---	0.230	---	---	***	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:05									
QC Source Sample: Non-SDG (A4C1121-01)												
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**73.0**	---	0.400	ug/L	1	---	80.7	---	---	10	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**0.460**	---	0.400	ug/L	1	---	0.540	---	---	16	30%	
Trichloroethene (TCE)	**8.37**	---	0.400	ug/L	1	---	8.94	---	---	7	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*104 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike (24C0448-MS1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:30									
QC Source Sample: Non-SDG (A4C1162-03)												
EPA 8260D												
Bromobenzene	17.6	---	0.500	ug/L	1	20.0	ND	88	80-120%	---	---	
Bromochloromethane	23.1	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	24.1	---	1.00	ug/L	1	20.0	ND	120	79-125%	---	---	Q-54a
Bromoform	21.8	---	1.00	ug/L	1	20.0	ND	109	66-130%	---	---	
Bromomethane	24.6	---	5.00	ug/L	1	20.0	ND	123	53-141%	---	---	
Carbon tetrachloride	26.5	---	1.00	ug/L	1	20.0	ND	133	72-136%	---	---	Q-54e
Chlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	80-120%	---	---	
Chloroethane	23.3	---	5.00	ug/L	1	20.0	ND	117	60-138%	---	---	
Chloroform	24.0	---	1.00	ug/L	1	20.0	ND	120	79-124%	---	---	
Chloromethane	20.7	---	5.00	ug/L	1	20.0	ND	103	50-139%	---	---	
2-Chlorotoluene	17.6	---	1.00	ug/L	1	20.0	ND	88	79-122%	---	---	
4-Chlorotoluene	17.7	---	1.00	ug/L	1	20.0	ND	88	78-122%	---	---	
Dibromochloromethane	20.6	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	17.6	---	5.00	ug/L	1	20.0	ND	88	62-128%	---	---	
1,2-Dibromoethane (EDB)	18.8	---	0.500	ug/L	1	20.0	ND	94	77-121%	---	---	
Dibromomethane	23.7	---	1.00	ug/L	1	20.0	ND	118	79-123%	---	---	

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Matrix Spike (24C0448-MS1)			Prepared: 03/13/24 11:57		Analyzed: 03/13/24 21:30							
QC Source Sample: Non-SDG (A4C1162-03)												
1,2-Dichlorobenzene	18.4	---	0.500	ug/L	1	20.0	ND	92	80-120%	---	---	
1,3-Dichlorobenzene	19.4	---	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
1,4-Dichlorobenzene	18.9	---	0.500	ug/L	1	20.0	ND	94	79-120%	---	---	
Dichlorodifluoromethane	22.2	---	1.00	ug/L	1	20.0	ND	111	32-152%	---	---	
1,1-Dichloroethane	20.8	---	0.400	ug/L	1	20.0	ND	104	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.4	---	0.400	ug/L	1	20.0	ND	107	73-128%	---	---	
1,1-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	ND	117	71-131%	---	---	
cis-1,2-Dichloroethene	20.3	---	0.400	ug/L	1	20.0	ND	101	78-123%	---	---	
trans-1,2-Dichloroethene	21.8	---	0.400	ug/L	1	20.0	ND	109	75-124%	---	---	
1,2-Dichloropropane	21.3	---	0.500	ug/L	1	20.0	ND	107	78-122%	---	---	
1,3-Dichloropropane	18.2	---	1.00	ug/L	1	20.0	ND	91	80-120%	---	---	
2,2-Dichloropropane	19.9	---	1.00	ug/L	1	20.0	ND	100	60-139%	---	---	
1,1-Dichloropropene	20.1	---	1.00	ug/L	1	20.0	ND	101	79-125%	---	---	
cis-1,3-Dichloropropene	14.7	---	1.00	ug/L	1	20.0	ND	**74**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	20.4	---	1.00	ug/L	1	20.0	ND	102	73-127%	---	---	
Hexachlorobutadiene	17.0	---	5.00	ug/L	1	20.0	ND	85	66-134%	---	---	
Methylene chloride	22.0	---	10.0	ug/L	1	20.0	ND	110	74-124%	---	---	
1,1,1,2-Tetrachloroethane	20.9	---	0.400	ug/L	1	20.0	ND	104	78-124%	---	---	
1,1,2,2-Tetrachloroethane	19.7	---	0.500	ug/L	1	20.0	ND	98	71-121%	---	---	
Tetrachloroethene (PCE)	20.0	---	0.400	ug/L	1	20.0	ND	100	74-129%	---	---	
1,2,3-Trichlorobenzene	14.8	---	2.00	ug/L	1	20.0	ND	74	69-129%	---	---	
1,1,2-Trichloroethane	21.3	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
1,2,4-Trichlorobenzene	13.4	---	2.00	ug/L	1	20.0	ND	**67**	**69-130%**	---	---	Q-54h
1,1,1-Trichloroethane	23.8	---	0.400	ug/L	1	20.0	ND	119	74-131%	---	---	
Trichloroethene (TCE)	21.3	---	0.400	ug/L	1	20.0	ND	107	79-123%	---	---	
Trichlorofluoromethane	29.9	---	2.00	ug/L	1	20.0	ND	**150**	**65-141%**	---	---	Q-54
1,2,3-Trichloropropane	19.2	---	1.00	ug/L	1	20.0	ND	96	73-122%	---	---	
Vinyl chloride	22.3	---	0.200	ug/L	1	20.0	ND	112	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 115 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*98 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*87 %*	*80-120 %*	*"*

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0550 - Method Prep: Aq							**Water**					
Blank (24C0550-BLK1)			Prepared: 03/15/24 09:29 Analyzed: 03/15/24 11:54									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0550-BS1)			Prepared: 03/15/24 09:29 Analyzed: 03/15/24 11:56									
SM 4500-NH3 G												
Ammonia as N	2.02	---	0.0200	mg/L	1	2.00	---	101	90-111%	---	---	
Matrix Spike (24C0550-MS1)			Prepared: 03/15/24 09:29 Analyzed: 03/15/24 12:00									
QC Source Sample: Non-SDG (A4C0976-04RE1)												
SM 4500-NH3 G												
Ammonia as N	2.91	---	0.0250	mg/L	1	2.50	0.361	102	90-111%	---	---	
Matrix Spike Dup (24C0550-MSD1)			Prepared: 03/15/24 09:29 Analyzed: 03/15/24 12:02									
QC Source Sample: Non-SDG (A4C0976-04RE1)												
Ammonia as N	2.91	---	0.0250	mg/L	1	2.50	0.361	102	90-111%	0.04	13%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0551 - Method Prep: Aq							**Water**					
Blank (24C0551-BLK1)			Prepared: 03/15/24 09:33 Analyzed: 03/15/24 13:11									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0551-BS1)			Prepared: 03/15/24 09:33 Analyzed: 03/15/24 13:12									
SM 4500-NH3 G												
Ammonia as N	1.94	---	0.0200	mg/L	1	2.00	---	97	90-111%	---	---	
Matrix Spike (24C0551-MS1)			Prepared: 03/15/24 09:33 Analyzed: 03/15/24 13:17									
QC Source Sample: Non-SDG (A4C1121-01)												
SM 4500-NH3 G												
Ammonia as N	2.54	---	0.0250	mg/L	1	2.50	ND	102	90-111%	---	---	
Matrix Spike Dup (24C0551-MSD1)			Prepared: 03/15/24 09:33 Analyzed: 03/15/24 13:18									
QC Source Sample: Non-SDG (A4C1121-01)												
Ammonia as N	2.53	---	0.0250	mg/L	1	2.50	ND	101	90-111%	0.2	13%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0284 - Method Prep: Aq							Water					
Blank (24C0284-BLK1)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 10:35							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0284-BS1)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 10:57							
EPA 300.0												
Nitrate-Nitrogen	2.01	---	0.250	mg/L	1	2.00	---	100	90-110%	---	---	
Nitrite-Nitrogen	1.99	---	0.250	mg/L	1	2.00	---	99	90-110%	---	---	
Duplicate (24C0284-DUP1)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 14:54							
QC Source Sample: MW-2 (A4C1074-07)												
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24C0284-DUP2)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 16:42							
QC Source Sample: MW-20i (A4C1074-10)												
EPA 300.0												
Nitrate-Nitrogen	**0.260**	---	0.250	mg/L	1	---	0.265	---	---	2	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0284-MS1)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 15:15							
QC Source Sample: MW-2 (A4C1074-07)												
EPA 300.0												
Nitrate-Nitrogen	2.53	---	0.312	mg/L	1	2.50	ND	101	87-112%	---	---	
Nitrite-Nitrogen	2.52	---	0.312	mg/L	1	2.50	ND	101	90-114%	---	---	
Matrix Spike (24C0284-MS2)			Prepared: 03/08/24 09:01		Analyzed: 03/08/24 17:03							
QC Source Sample: MW-20i (A4C1074-10)												
EPA 300.0												
Nitrate-Nitrogen	2.78	---	0.312	mg/L	1	2.50	0.265	101	87-112%	---	---	
Nitrite-Nitrogen	2.49	---	0.312	mg/L	1	2.50	ND	100	90-114%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0285 - Method Prep: Aq									Water			
Blank (24C0285-BLK1)			Prepared: 03/08/24 09:03		Analyzed: 03/08/24 21:22							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0285-BS1)			Prepared: 03/08/24 09:03		Analyzed: 03/08/24 21:43							
EPA 300.0												
Nitrate-Nitrogen	2.00	---	0.250	mg/L	1	2.00	---	100	90-110%	---	---	
Nitrite-Nitrogen	1.98	---	0.250	mg/L	1	2.00	---	99	90-110%	---	---	
Duplicate (24C0285-DUP1)			Prepared: 03/08/24 09:03		Analyzed: 03/08/24 22:48							
QC Source Sample: MW-19i (A4C1074-12)												
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24C0285-MS1)			Prepared: 03/08/24 09:03		Analyzed: 03/08/24 23:10							
QC Source Sample: MW-19i (A4C1074-12)												
EPA 300.0												
Nitrate-Nitrogen	2.55	---	0.312	mg/L	1	2.50	ND	102	87-112%	---	---	
Nitrite-Nitrogen	2.53	---	0.312	mg/L	1	2.50	ND	101	90-114%	---	---	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0407							
A4C1074-02	Water	EPA 8260D	03/07/24 10:09	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-03	Water	EPA 8260D	03/07/24 10:09	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-04	Water	EPA 8260D	03/07/24 11:21	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-05	Water	EPA 8260D	03/07/24 12:10	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-06	Water	EPA 8260D	03/07/24 13:09	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-07	Water	EPA 8260D	03/07/24 14:12	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-08	Water	EPA 8260D	03/07/24 15:19	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-09	Water	EPA 8260D	03/07/24 08:48	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-10	Water	EPA 8260D	03/07/24 09:31	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-11	Water	EPA 8260D	03/07/24 10:19	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-12	Water	EPA 8260D	03/07/24 11:38	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-13	Water	EPA 8260D	03/07/24 12:26	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
A4C1074-15	Water	EPA 8260D	03/07/24 14:15	03/12/24 14:07	5mL/5mL	5mL/5mL	1.00
Batch: 24C0448							
A4C1074-01RE1	Water	EPA 8260D	03/07/24 08:45	03/13/24 11:57	5mL/5mL	5mL/5mL	1.00
A4C1074-14RE1	Water	EPA 8260D	03/07/24 13:19	03/13/24 11:57	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0550							
A4C1074-01	Water	SM 4500-NH3 G	03/07/24 08:45	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-02	Water	SM 4500-NH3 G	03/07/24 10:09	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-03	Water	SM 4500-NH3 G	03/07/24 10:09	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-04	Water	SM 4500-NH3 G	03/07/24 11:21	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-05	Water	SM 4500-NH3 G	03/07/24 12:10	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-06	Water	SM 4500-NH3 G	03/07/24 13:09	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-07	Water	SM 4500-NH3 G	03/07/24 14:12	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-08	Water	SM 4500-NH3 G	03/07/24 15:19	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-09	Water	SM 4500-NH3 G	03/07/24 08:48	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-10	Water	SM 4500-NH3 G	03/07/24 09:31	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-11	Water	SM 4500-NH3 G	03/07/24 10:19	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-12	Water	SM 4500-NH3 G	03/07/24 11:38	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00
A4C1074-13	Water	SM 4500-NH3 G	03/07/24 12:26	03/15/24 09:29	10mL/10mL	10mL/10mL	1.00

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

SAMPLE PREPARATION INFORMATION

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0551							
A4C1074-14	Water	SM 4500-NH3 G	03/07/24 13:19	03/15/24 09:33	10mL/10mL	10mL/10mL	1.00
A4C1074-15	Water	SM 4500-NH3 G	03/07/24 14:15	03/15/24 09:33	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0284							
A4C1074-01	Water	EPA 300.0	03/07/24 08:45	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-01RE1	Water	EPA 300.0	03/07/24 08:45	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-02	Water	EPA 300.0	03/07/24 10:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-02RE1	Water	EPA 300.0	03/07/24 10:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-03	Water	EPA 300.0	03/07/24 10:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-03RE1	Water	EPA 300.0	03/07/24 10:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-04	Water	EPA 300.0	03/07/24 11:21	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-05	Water	EPA 300.0	03/07/24 12:10	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-05RE1	Water	EPA 300.0	03/07/24 12:10	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-06	Water	EPA 300.0	03/07/24 13:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-06RE1	Water	EPA 300.0	03/07/24 13:09	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-07	Water	EPA 300.0	03/07/24 14:12	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-08	Water	EPA 300.0	03/07/24 15:19	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-09	Water	EPA 300.0	03/07/24 08:48	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
A4C1074-10	Water	EPA 300.0	03/07/24 09:31	03/08/24 09:01	5mL/5mL	5mL/5mL	1.00
Batch: 24C0285							
A4C1074-11	Water	EPA 300.0	03/07/24 10:19	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00
A4C1074-12	Water	EPA 300.0	03/07/24 11:38	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00
A4C1074-13	Water	EPA 300.0	03/07/24 12:26	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00
A4C1074-14	Water	EPA 300.0	03/07/24 13:19	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00
A4C1074-15	Water	EPA 300.0	03/07/24 14:15	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00
A4C1074-15RE1	Water	EPA 300.0	03/07/24 14:15	03/08/24 09:03	5mL/5mL	5mL/5mL	1.00

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5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

QUALIFIER DEFINITIONS

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

Apex Laboratories

ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +16%. 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 8260/8270 by +2%. 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 8260/8270 by +42%. 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 8260/8270 by +46%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +67%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +7%. The results are reported as Estimated Values.
Q-54f	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -1%. The results are reported as Estimated Values.
Q-54g	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -3%. The results are reported as Estimated Values.
Q-54h	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -5%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
S-03	Sample re-extract, or the analysis of an associated Batch QC sample, confirms surrogate failure due to sample matrix effect.
S-06	Surrogate recovery is outside of established control limits.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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ANALYTICAL REPORT

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

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

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

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

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

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LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

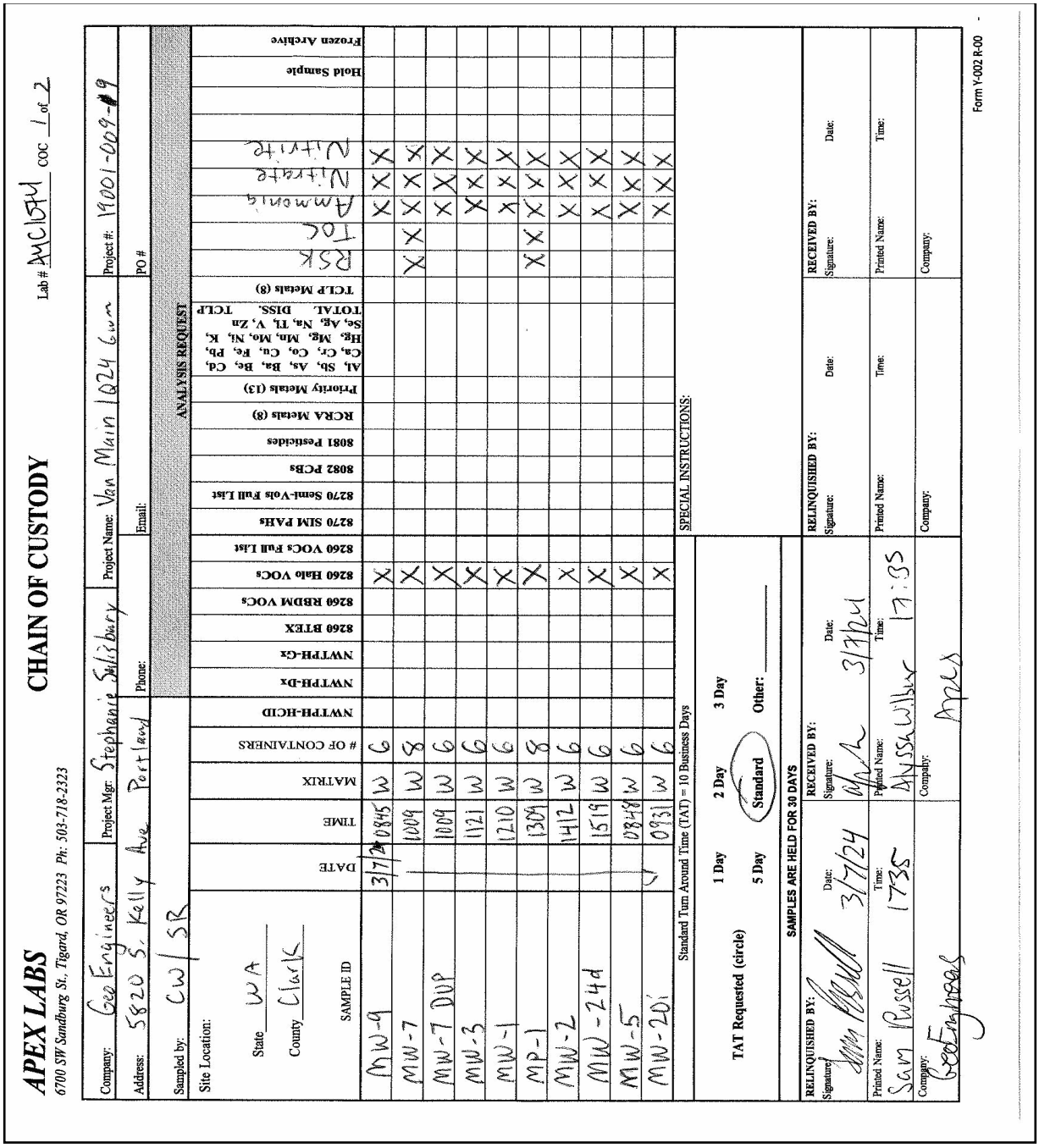
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APEX LABS — 6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY — Lab # AYC1074 COC 1 of 2

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 6wks | Project #: 19001-009-09

Address: 5820 S. Kelly Ave Portland | Phone: | Email: | PO #

Sampled by: CWJ SR

Site Location: State WA County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Se, Ag, Na, Tl, V, Zn Hg, Mg, Mn, Mo, Ni, K, TOTAL DISS. TCLP	TCLP Metals (8)	RSK TOC	Ammonia	Nitrate	Nitrite	Hold Sample	Frozen Archive
MW-9	3/7/24	0845	W	6						X										X	X	X			
MW-7		1009	W	8						X										X	X	X			
MW-7 DUP		1009	W	6						X										X	X	X			
MW-3		1121	W	6						X										X	X	X			
MW-1		1210	W	6						X										X	X	X			
MP-1		1309	W	8						X										X	X	X			
MW-2		1412	W	6						X										X	X	X			
MW-24d		1519	W	6						X										X	X	X			
MW-5		0848	W	6						X										X	X	X			
MW-20		0931	W	6						X										X	X	X			

SPECIAL INSTRUCTIONS:

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | **Standard** | Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	3/7/24		Signature:	3/7/24	
Printed Name: Sam Russell		1735	Printed Name: Alyssa Wilbur		17:35
Company: GeoEngineers			Company: Apex		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

Apex Laboratories

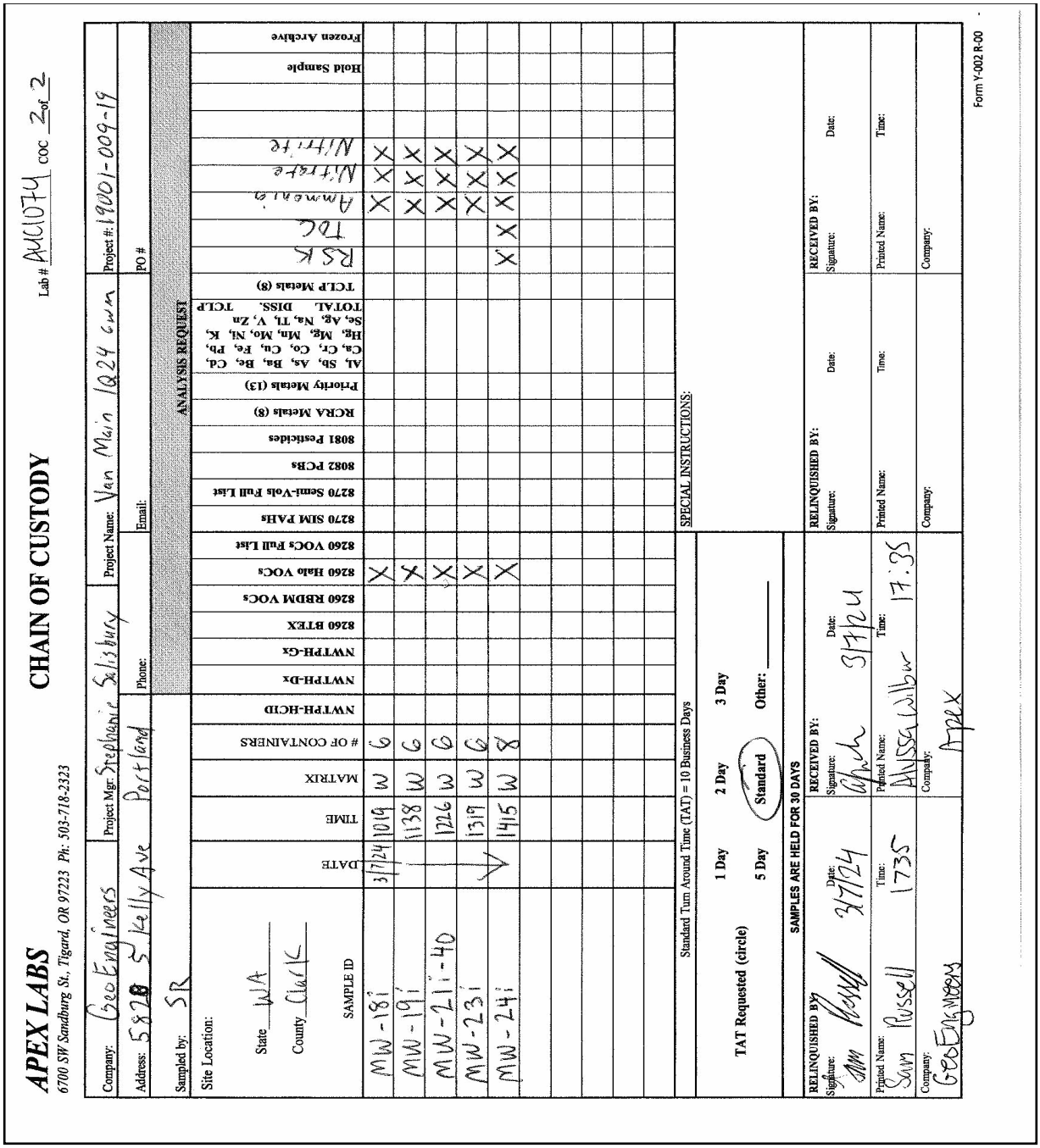
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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**



APEX LABS — CHAIN OF CUSTODY
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323
Lab # AUC1074 COC 2 of 2

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 cwm | Project #: 19001-009-19
Address: 5820 S Kelly Ave Portland | Phone: | Email: | PO #
Sampled by: SR
Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	RSK	TOC	Ammonia	Nitrate	Nitrite	Hold Sample	Frozen Archive
MW-18'	3/7/24	1019	W	6						X												X	X		
MW-19'		1138	W	6						X												X	X		
MW-21'-40		1226	W	6						X												X	X		
MW-23'		1319	W	6						X												X	X		
MW-24'	↓	1415	W	8						X										X	X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days
TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | **Standard** | Other: _____
SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: Sam Russell | Date: 3/7/24 | Time: 1735 | Printed Name: Sam Russell | Company: GeoEngineers
RECEIVED BY: Signature: [illegible] | Date: 3/7/24 | Time: 17:35 | Printed Name: Alyssa Wilbur | Company: Apex
RELINQUISHED BY: Signature: | Date: | Time: | Printed Name: | Company:
RECEIVED BY: Signature: | Date: | Time: | Printed Name: | Company:

Form Y-002 R-00

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-09**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1074 - 04 02 24 1259**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4C1074

Project/Project #: VanMain 1Q24 GWM 19001-009-19

Delivery Info:

Date/time received: 3/7/24 @ 17:35 By: AAW

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes ____ No X

Cooler Inspection Date/time inspected: 3/7/24 @ 17:35 By: AAW

Chain of Custody included? Yes X No ____

Signed/dated by client? Yes X No ____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.1 2.6						
Custody seals? (Y/N)	N	N					
Received on ice? (Y/N)	Y	Y					
Temp. blanks? (Y/N)	Y	Y					
Ice type: (Gel/Real/Other)	Real	Real					
Condition (In/Out):	In	In					

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

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

Out of temperature samples form initiated? Yes/(No)

Sample Inspection: Date/time inspected: 3/7/24 @ 1800 By: AAW

All samples intact? Yes X No ___ Comments: ____

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

COC/container discrepancies form initiated? Yes ___ No X

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

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 ___ pH ID: A23172

Comments: ____

Labeled by: AAW Witness: MAM Cooler Inspected by: AAW

Form Y-003 R-02

Apex Laboratories

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

Darrell Auvil, Client Services Manager

March 22, 2024 Service Request No:K2402868

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

Laboratory Results for: A4C1074

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory March 15, 2024
For your reference, these analyses have been assigned our service request number **K2402868.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Client: Apex Laboratories
Project: A4C1074
Sample Matrix: Water

Service Request: K2402868
Date Received: 03/15/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 03/15/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 03/22/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MW-7			Lab ID: K2402868-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	5.70		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MP-1			Lab ID: K2402868-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	0.80		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MP-24i			Lab ID: K2402868-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	0.17	J	0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2402868

Project: A4C1074

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2402868-001	MW-7	3/7/2024	1009
K2402868-002	MP-1	3/7/2024	1309
K2402868-003	MP-24i	3/7/2024	1415

V24028668

SUBCONTRACT ORDER

Apex Laboratories

DKK 3/7/24

A4C1074

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MW-7 **Sampled: 03/07/24 10:09** (A4C1074-02)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/20/24 17:00	04/04/24 10:09	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MP-1 **Sampled: 03/07/24 13:09** (A4C1074-06)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/20/24 17:00	04/04/24 13:09	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MP-24i **Sampled: 03/07/24 14:15** (A4C1074-15)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	03/20/24 17:00	04/04/24 14:15	ALS Kelso, no data package
Containers Supplied: (F)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date	Received By	Date
	3/5/23 1023		3/5/24 1023
	3/5/24 1135		3/5/24 1135

PM HH

Cooler Receipt and Preservation Form

Client APEX Service Request K24 028668

Received: 3/15/24 Opened: 3/15/24 By: HS Unloaded: 3/15/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	3.8	TR06					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
14. Was C12/Res negative? NA Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM NA Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

G:\SMO\2024 Forms SOP: SMO-GEN Reviewed: NP 1/3/2024

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074/		

Sample Name:	MW-7	**Date Collected:**	03/7/24
Lab Code:	K2402868-001	**Date Received:**	03/15/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MP-1	**Date Collected:**	03/7/24
Lab Code:	K2402868-002	**Date Received:**	03/15/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MP-24i	**Date Collected:**	03/7/24
Lab Code:	K2402868-003	**Date Received:**	03/15/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Collected:**	03/07/24 10:09
Sample Matrix:	Water	**Date Received:**	03/15/24 11:35
Sample Name:	MW-7	**Basis:**	NA
Lab Code:	K2402868-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**5.70**	mg/L	0.50	0.08	1	03/18/24 18:32	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Collected:**	03/07/24 13:09
Sample Matrix:	Water	**Date Received:**	03/15/24 11:35
Sample Name:	MP-1	**Basis:**	NA
Lab Code:	K2402868-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**0.80**	mg/L	0.50	0.08	1	03/18/24 18:32	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Collected:**	03/07/24 14:15
Sample Matrix:	Water	**Date Received:**	03/15/24 11:35
Sample Name:	MP-24i	**Basis:**	NA
Lab Code:	K2402868-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**0.17 J**	mg/L	0.50	0.08	1	03/18/24 18:32	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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General Chemistry

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2402868-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	03/18/24 18:32	

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Collected:**	03/07/24
Sample Matrix:	Water	**Date Received:**	03/15/24
		Date Analyzed:	03/18/24
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	MW-7	**Units:**	mg/L
Lab Code:	K2402868-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2402868-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	5.70	30.3	25.0	98	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Client:	Apex Laboratories	**Service Request:**	K2402868
Project	A4C1074	**Date Collected:**	03/07/24
Sample Matrix:	Water	**Date Received:**	03/15/24
		Date Analyzed:	03/18/24

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	MW-7	**Units:**	mg/L
Lab Code:	K2402868-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K2402868-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.08	5.70	5.80	5.75	2	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Apex Laboratories	**Service Request:**	K2402868
Project:	A4C1074	**Date Analyzed:**	03/18/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	835261

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2402868-LCS	24.4	25.0	98	83-117

AirTECHNOLOGY
Laboratories, Inc.

March 22, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4C1074
Lab Number: R031204-01/03

Enclosed are results for sample(s) received 3/12/24 by Air Technology Laboratories. Samples were received intact and chilled to 4° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER ESI

Apex Laboratories

A4C1074

AWL 3/7/24

R031204-01/03

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

Sample Name: MW-7 **Water** **Sampled: 03/07/24 10:09** (A4C1074-02)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/20/24 17:00	03/21/24 10:09	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: MP-1 **Water** **Sampled: 03/07/24 13:09** (A4C1074-06)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/20/24 17:00	03/21/24 13:09	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Sample Name: ~~MP~~-24i MW GD 3/18/24*

Water **Sampled: 03/07/24 14:15** (A4C1074-15)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	03/20/24 17:00	03/21/24 14:15	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			

Standard TAT

* ID CORRECTION CONF'D VIA EMAIL FROM D. AUVIL 3/11/24 GD

4°C HO 3/12/24

Released By: 3/11/24	Date	UPS (Shipper) Received By	Date
UPS (Shipper) Released By	Date 3/12/24 10:04	Received By	Date 3/12/24 10:04

Client: Apex Laboratories
Attn: Darrell Auvil
Project Name: NA
Project No.: A4C1074
Date Received: 03/12/24
Matrix: Water
Reporting Units: ug/L

RSK175

Lab No.:	R031204-01		R031204-02		R031204-03			
Client Sample I.D.:	MW-7 (A4C1074-02)		MP-1 (A4C1074-06)		MW-24i (A4C1074-015)			
Date/Time Sampled:	3/7/24 10:09		3/7/24 13:09		3/7/24 14:15			
Date/Time Analyzed:	3/18/24 13:57		3/18/24 14:08		3/18/24 14:19			
QC Batch No.:	240318GC8A1		240318GC8A1		240318GC8A1			
Analyst Initials:	RC		RC		RC			
Dilution Factor:	1.0		1.0		1.0			
ANALYTE	Result ug/L	RL ug/L	Result ug/L	RL ug/L	Result ug/L	RL ug/L		
Ethene	ND	1.0	ND	1.0	ND	1.0		
Ethane	ND	1.0	ND	1.0	ND	1.0		
Methane	720	1.0	ND	1.0	ND	1.0		

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 03-21-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 240318GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	3/18/24 11:11			3/18/24 10:00		3/18/24 10:39					
Analyst Initials:	RC			RC		RC					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,150	1,470	128	1,410	124	3.5	70	130	30
Ethane	ND	1.0	1,200	1,390	114	1,370	112	1.8	70	130	30
Methane	ND	1.0	650	714	109	705	108	1.3	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 03-21-24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

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

ANALYTICAL REPORT

Monday, March 25, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4C1121 - NuStar Vancouver Main 1Q24 - 19001-008-09/20

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 A4C1121, which was received by the laboratory on 3/11/2024 at 12:55:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 2.8 degC

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-16	**A4C1121-01**	**Water**	**03/11/24 11:01**	**03/11/24 12:55**

Apex Laboratories



Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4C1121-01)				**Matrix: Water**		**Batch: 24C0448**		
Bromobenzene	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	03/13/24 17:20	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
cis-1,2-Dichloroethene	**25.3**	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	03/13/24 17:20	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4C1121-01)				**Matrix: Water**		**Batch: 24C0448**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
Tetrachloroethene (PCE)	**80.7**	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,1,1-Trichloroethane	**0.540**	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
Trichloroethene (TCE)	**8.94**	---	0.400	ug/L	1	03/13/24 17:20	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	03/13/24 17:20	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	03/13/24 17:20	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	03/13/24 17:20	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*	*1*	*03/13/24 17:20*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*		*80-120 %*	*1*	*03/13/24 17:20*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*	*1*	*03/13/24 17:20*	*EPA 8260D*	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4C1121-01)				**Matrix: Water**		**Batch: 24C0551**		
Ammonia as N	ND	---	0.0200	mg/L	1	03/15/24 13:15	SM 4500-NH3 G	

Apex Laboratories



Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4C1121-01)				**Matrix: Water**				
Batch: 24C0393								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	03/12/24 12:49	EPA 300.0	Q-42
MW-16 (A4C1121-01RE1)				**Matrix: Water**				
Batch: 24C0393								
Nitrate-Nitrogen	**21.0**	---	6.25	mg/L	25	03/12/24 11:44	EPA 300.0	**Q-42**

Apex Laboratories



Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							Water					
Blank (24C0448-BLK1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 11:55									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

Apex Laboratories



Darrell Auvil, Client Services Manager

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C									Water			
Blank (24C0448-BLK1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 11:55									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*			*Limits: 80-120 %*			*Dilution: 1x*			
Toluene-d8 (Surr)			*104 %*			*80-120 %*			*"*			
4-Bromofluorobenzene (Surr)			*97 %*			*80-120 %*			*"*			
LCS (24C0448-BS1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 10:47									
EPA 8260D												
Bromobenzene	18.4	---	0.500	ug/L	1	20.0	---	92	80-120%	---	---	
Bromochloromethane	23.5	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Bromodichloromethane	24.5	---	1.00	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
Bromoform	23.0	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
Bromomethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
Carbon tetrachloride	25.4	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
Chlorobenzene	20.9	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroethane	20.9	---	5.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroform	23.5	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	18.1	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
4-Chlorotoluene	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Dibromochloromethane	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.1	---	5.00	ug/L	1	20.0	---	95	80-120%	---	---	
1,2-Dibromoethane (EDB)	19.7	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dibromomethane	23.8	---	1.00	ug/L	1	20.0	---	119	80-120%	---	---	
1,2-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C								**Water**				
LCS (24C0448-BS1)			Prepared: 03/13/24 09:00 Analyzed: 03/13/24 10:47									
1,3-Dichlorobenzene	20.1	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
1,4-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethane	21.2	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,1-Dichloroethene	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,2-Dichloroethene	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
trans-1,2-Dichloroethene	20.9	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichloropropane	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,3-Dichloropropane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
2,2-Dichloropropane	22.5	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,1-Dichloropropene	19.9	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
cis-1,3-Dichloropropene	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
trans-1,3-Dichloropropene	22.5	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Hexachlorobutadiene	18.4	---	5.00	ug/L	1	20.0	---	92	80-120%	---	---	
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.9	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.3	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Tetrachloroethene (PCE)	20.0	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2,3-Trichlorobenzene	16.3	---	2.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,1,2-Trichloroethane	21.9	---	0.500	ug/L	1	20.0	---	110	80-120%	---	---	
1,2,4-Trichlorobenzene	14.9	---	2.00	ug/L	1	20.0	---	**75**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
Trichloroethene (TCE)	21.2	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
Trichlorofluoromethane	27.2	---	2.00	ug/L	1	20.0	---	**136**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	19.4	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
Vinyl chloride	21.1	---	0.200	ug/L	1	20.0	---	106	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*			*Limits: 80-120 %*			*Dilution: 1x*			
Toluene-d8 (Surr)			*99 %*			*80-120 %*			*"*			
4-Bromofluorobenzene (Surr)			*88 %*			*80-120 %*			*"*			
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:05									

QC Source Sample: MW-16 (A4C1121-01)

EPA 8260D

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:05									
QC Source Sample: MW-16 (A4C1121-01)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**23.1**	---	0.400	ug/L	1	---	25.3	---	---	9	30%	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	---	0.230	---	---	***	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Duplicate (24C0448-DUP1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:05									
QC Source Sample: MW-16 (A4C1121-01)												
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**73.0**	---	0.400	ug/L	1	---	80.7	---	---	10	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**0.460**	---	0.400	ug/L	1	---	0.540	---	---	16	30%	
Trichloroethene (TCE)	**8.37**	---	0.400	ug/L	1	---	8.94	---	---	7	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 119 %*			*Limits: 80-120 %*			*Dilution: 1x*			
Toluene-d8 (Surr)			*104 %*			*80-120 %*			*"*			
4-Bromofluorobenzene (Surr)			*97 %*			*80-120 %*			*"*			
Matrix Spike (24C0448-MS1)			Prepared: 03/13/24 11:57 Analyzed: 03/13/24 21:30									
QC Source Sample: Non-SDG (A4C1162-03)												
EPA 8260D												
Bromobenzene	17.6	---	0.500	ug/L	1	20.0	ND	88	80-120%	---	---	
Bromochloromethane	23.1	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	24.1	---	1.00	ug/L	1	20.0	ND	120	79-125%	---	---	Q-54a
Bromoform	21.8	---	1.00	ug/L	1	20.0	ND	109	66-130%	---	---	
Bromomethane	24.6	---	5.00	ug/L	1	20.0	ND	123	53-141%	---	---	
Carbon tetrachloride	26.5	---	1.00	ug/L	1	20.0	ND	133	72-136%	---	---	Q-54b
Chlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	80-120%	---	---	
Chloroethane	23.3	---	5.00	ug/L	1	20.0	ND	117	60-138%	---	---	
Chloroform	24.0	---	1.00	ug/L	1	20.0	ND	120	79-124%	---	---	
Chloromethane	20.7	---	5.00	ug/L	1	20.0	ND	103	50-139%	---	---	
2-Chlorotoluene	17.6	---	1.00	ug/L	1	20.0	ND	88	79-122%	---	---	
4-Chlorotoluene	17.7	---	1.00	ug/L	1	20.0	ND	88	78-122%	---	---	
Dibromochloromethane	20.6	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	17.6	---	5.00	ug/L	1	20.0	ND	88	62-128%	---	---	
1,2-Dibromoethane (EDB)	18.8	---	0.500	ug/L	1	20.0	ND	94	77-121%	---	---	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0448 - EPA 5030C							**Water**					
Matrix Spike (24C0448-MS1)			Prepared: 03/13/24 11:57		Analyzed: 03/13/24 21:30							
QC Source Sample: Non-SDG (A4C1162-03)												
Dibromomethane	23.7	---	1.00	ug/L	1	20.0	ND	118	79-123%	---	---	
1,2-Dichlorobenzene	18.4	---	0.500	ug/L	1	20.0	ND	92	80-120%	---	---	
1,3-Dichlorobenzene	19.4	---	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
1,4-Dichlorobenzene	18.9	---	0.500	ug/L	1	20.0	ND	94	79-120%	---	---	
Dichlorodifluoromethane	22.2	---	1.00	ug/L	1	20.0	ND	111	32-152%	---	---	
1,1-Dichloroethane	20.8	---	0.400	ug/L	1	20.0	ND	104	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.4	---	0.400	ug/L	1	20.0	ND	107	73-128%	---	---	
1,1-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	ND	117	71-131%	---	---	
cis-1,2-Dichloroethene	20.3	---	0.400	ug/L	1	20.0	ND	101	78-123%	---	---	
trans-1,2-Dichloroethene	21.8	---	0.400	ug/L	1	20.0	ND	109	75-124%	---	---	
1,2-Dichloropropane	21.3	---	0.500	ug/L	1	20.0	ND	107	78-122%	---	---	
1,3-Dichloropropane	18.2	---	1.00	ug/L	1	20.0	ND	91	80-120%	---	---	
2,2-Dichloropropane	19.9	---	1.00	ug/L	1	20.0	ND	100	60-139%	---	---	
1,1-Dichloropropene	20.1	---	1.00	ug/L	1	20.0	ND	101	79-125%	---	---	
cis-1,3-Dichloropropene	14.7	---	1.00	ug/L	1	20.0	ND	**74**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	20.4	---	1.00	ug/L	1	20.0	ND	102	73-127%	---	---	
Hexachlorobutadiene	17.0	---	5.00	ug/L	1	20.0	ND	85	66-134%	---	---	
Methylene chloride	22.0	---	10.0	ug/L	1	20.0	ND	110	74-124%	---	---	
1,1,1,2-Tetrachloroethane	20.9	---	0.400	ug/L	1	20.0	ND	104	78-124%	---	---	
1,1,2,2-Tetrachloroethane	19.7	---	0.500	ug/L	1	20.0	ND	98	71-121%	---	---	
Tetrachloroethene (PCE)	20.0	---	0.400	ug/L	1	20.0	ND	100	74-129%	---	---	
1,2,3-Trichlorobenzene	14.8	---	2.00	ug/L	1	20.0	ND	74	69-129%	---	---	
1,1,2-Trichloroethane	21.3	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
1,2,4-Trichlorobenzene	13.4	---	2.00	ug/L	1	20.0	ND	**67**	**69-130%**	---	---	Q-54c
1,1,1-Trichloroethane	23.8	---	0.400	ug/L	1	20.0	ND	119	74-131%	---	---	
Trichloroethene (TCE)	21.3	---	0.400	ug/L	1	20.0	ND	107	79-123%	---	---	
Trichlorofluoromethane	29.9	---	2.00	ug/L	1	20.0	ND	**150**	**65-141%**	---	---	Q-54
1,2,3-Trichloropropane	19.2	---	1.00	ug/L	1	20.0	ND	96	73-122%	---	---	
Vinyl chloride	22.3	---	0.200	ug/L	1	20.0	ND	112	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 115 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*87 %*		*80-120 %*			*"*				

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0551 - Method Prep: Aq							**Water**					
Blank (24C0551-BLK1)			Prepared: 03/15/24 09:33		Analyzed: 03/15/24 13:11							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24C0551-BS1)			Prepared: 03/15/24 09:33		Analyzed: 03/15/24 13:12							
SM 4500-NH3 G												
Ammonia as N	1.94	---	0.0200	mg/L	1	2.00	---	97	90-111%	---	---	
Matrix Spike (24C0551-MS1)			Prepared: 03/15/24 09:33		Analyzed: 03/15/24 13:17							
QC Source Sample: MW-16 (A4C1121-01)												
SM 4500-NH3 G												
Ammonia as N	2.54	---	0.0250	mg/L	1	2.50	ND	102	90-111%	---	---	
Matrix Spike Dup (24C0551-MSD1)			Prepared: 03/15/24 09:33		Analyzed: 03/15/24 13:18							
QC Source Sample: MW-16 (A4C1121-01)												
SM 4500-NH3 G												
Ammonia as N	2.53	---	0.0250	mg/L	1	2.50	ND	101	90-111%	0.2	13%	

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: NuStar Vancouver Main 1Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-008-09/20	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4C1121 - 03 25 24 1702

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24C0393 - Method Prep: Aq							Water					
Blank (24C0393-BLK1)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 11:01							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24C0393-BS1)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 11:23							
EPA 300.0												
Nitrate-Nitrogen	2.05	---	0.250	mg/L	1	2.00	---	102	90-110%	---	---	
Nitrite-Nitrogen	2.03	---	0.250	mg/L	1	2.00	---	102	90-110%	---	---	
Duplicate (24C0393-DUP1)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 13:10							
QC Source Sample: MW-16 (A4C1121-01)												
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24C0393-DUP2)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 12:06							
QC Source Sample: MW-16 (A4C1121-01RE1)												
EPA 300.0												
Nitrate-Nitrogen	**19.2**	---	6.25	mg/L	25	---	21.0	---	---	**9**	**3%**	Q-01, Q-16
Matrix Spike (24C0393-MS1)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 13:32							
QC Source Sample: MW-16 (A4C1121-01)												
EPA 300.0												
Nitrite-Nitrogen	0.858	---	0.312	mg/L	1	2.50	ND	**34**	**90-114%**	---	---	Q-01
Matrix Spike (24C0393-MS2)			Prepared: 03/12/24 09:38		Analyzed: 03/12/24 12:27							
QC Source Sample: MW-16 (A4C1121-01RE1)												
EPA 300.0												
Nitrate-Nitrogen	78.5	---	6.25	mg/L	25	50.0	21.0	**115**	**87-112%**	---	---	Q-01, Q-16

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GeoEngineers - Portland	Project: **NuStar Vancouver Main 1Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-008-09/20**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0448							
A4C1121-01	Water	EPA 8260D	03/11/24 11:01	03/13/24 11:57	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0551							
A4C1121-01	Water	SM 4500-NH3 G	03/11/24 11:01	03/15/24 09:33	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24C0393							
A4C1121-01	Water	EPA 300.0	03/11/24 11:01	03/12/24 09:38	5mL/5mL	5mL/5mL	1.00
A4C1121-01RE1	Water	EPA 300.0	03/11/24 11:01	03/12/24 09:38	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

Apex Laboratories

Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-16	Reanalysis of an original Batch QC sample.
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 8260/8270 by +16%. 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 8260/8270 by +2%. 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 8260/8270 by +7%. 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 8260/8270 by -5%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

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

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

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

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



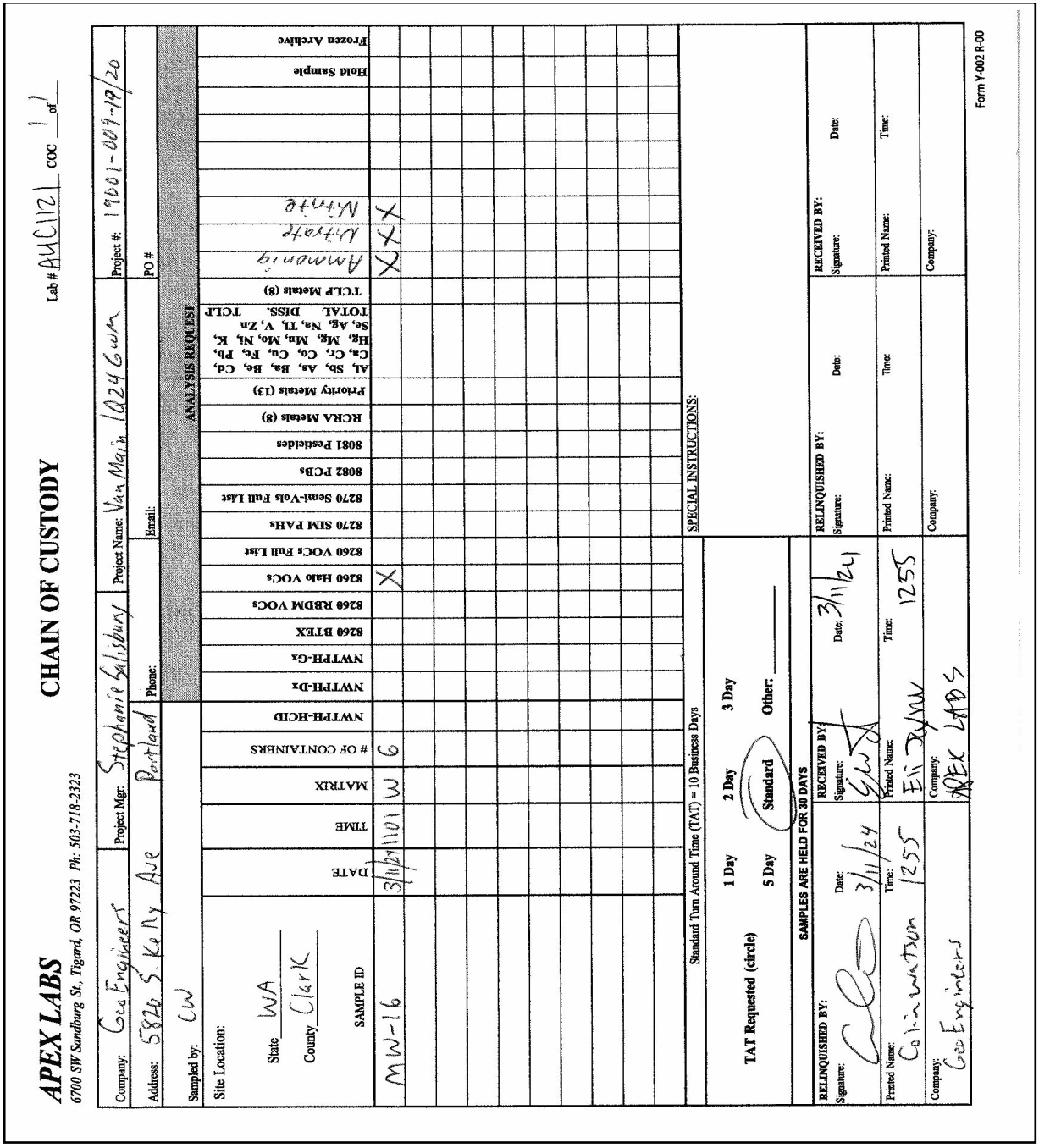
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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4C1121 - 03 25 24 1702**



APEX LABS — **CHAIN OF CUSTODY** — Lab # APC1121 COC 1 of 1
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Van Main 1Q24 GWM | Project #: 19001-008-09/20
Address: 5820 S Kelly Ave Portland | Email: | Phone: | PO #
Sampled by: CW

Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	Ammonia	Nitrate	Nitrite	Hold Sample	Frozen Archive
MW-16	3/11/2024	1101	W	6						X										X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days
TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____
SPECIAL INSTRUCTIONS:

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature:	Date: 3/11/24	RECEIVED BY: Signature:	Date: 3/11/24	RELINQUISHED BY: Signature:	Date:	RECEIVED BY: Signature:	Date:
Printed Name: Colin Watson	Time: 1255	Printed Name: Eli Taylor	Time: 1255	Printed Name:	Time:	Printed Name:	Time:
Company: GeoEngineers		Company: APEX LABS		Company:		Company:	

Form Y-002 R-00

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APEX LABS COOLER RECEIPT FORM

Client: Geo Engineers Element WO#: A4C1121

Project/Project #: Van Main 1Q24 6uM ~~19001-0019/20~~ 19001-009-19120 aka for ESS 3/11/24

Delivery Info:

Date/time received: 3/11/24 @ 1255 By: EST

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes__ No X

Cooler Inspection Date/time inspected: 3/11/24 @ 1255 By: EST

Chain of Custody included? Yes X No__

Signed/dated by client? Yes X No__

Contains USDA Reg. Soils? Yes__ No X Unsure (email RegSoils)__

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	2.8						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	Y						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 3/11/24 @ 13:25 By: AAW

All samples intact? Yes X No__ Comments:

Bottle labels/COCs agree? Yes X No__ Comments:

COC/container discrepancies form initiated? Yes__ No X

Containers/volumes received appropriate for analysis? Yes X No__ Comments:

Do VOA vials have visible headspace? Yes__ No X NA ~~X~~ AAW 3/11

Comments 3/3 VOAs have Sed

Water samples: pH checked: Yes X No__ NA__ pH appropriate? Yes__ No X NA__ pH ID: A23I172

Comments: ½ sulfuric poly ph = 7

Labeled by: AAW Witness: LJ Cooler Inspected by:

Form Y-003 R-02

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ANALYTICAL REPORT

Wednesday, June 26, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1045 - Sunoco Vancouver Main 2Q24 - 19001-009-34

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 A4F1045, which was received by the laboratory on 6/10/2024 at 5:08:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 4.7 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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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MGMS3-1(132)	A4F1045-01	Water	06/10/24 14:15	06/10/24 17:08
MGMS3-2(101)	A4F1045-02	Water	06/10/24 13:41	06/10/24 17:08
MGMS3-3(60)	A4F1045-03	Water	06/10/24 13:00	06/10/24 17:08
MGMS3-4(40)	A4F1045-04	Water	06/10/24 12:15	06/10/24 17:08
MGMS3-4(40)DUP	A4F1045-05	Water	06/10/24 12:15	06/10/24 17:08
MGMS2-4(40)	A4F1045-06	Water	06/10/24 12:54	06/10/24 17:08
MGMS2-3(60)	A4F1045-07	Water	06/10/24 13:28	06/10/24 17:08
MGMS2-2(110)	A4F1045-08	Water	06/10/24 13:59	06/10/24 17:08
KMW-5	A4F1045-09	Water	06/10/24 14:55	06/10/24 17:08
KMW-4	A4F1045-10	Water	06/10/24 16:10	06/10/24 17:08

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Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-1(132) (A4F1045-01)				**Matrix: Water**		**Batch: 24F0459**		
Bromobenzene	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/13/24 21:25	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
cis-1,2-Dichloroethene	**2.40**	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/13/24 21:25	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-1(132) (A4F1045-01)				**Matrix: Water**		**Batch: 24F0459**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
Tetrachloroethene (PCE)	**3.35**	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
Trichloroethene (TCE)	**2.69**	---	0.400	ug/L	1	06/13/24 21:25	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/13/24 21:25	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/13/24 21:25	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/13/24 21:25	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits: 80-120 %*	*1*	*06/13/24 21:25*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*06/13/24 21:25*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*106 %*	*80-120 %*	*1*	*06/13/24 21:25*	*EPA 8260D*	
MGMS3-2(101) (A4F1045-02)				**Matrix: Water**		**Batch: 24F0459**		
Bromobenzene	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/13/24 22:20	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-2(101) (A4F1045-02)				**Matrix: Water**		**Batch: 24F0459**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
cis-1,2-Dichloroethene	**0.400**	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
Tetrachloroethene (PCE)	**1.47**	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
Trichloroethene (TCE)	**0.790**	---	0.400	ug/L	1	06/13/24 22:20	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/13/24 22:20	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/13/24 22:20	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/13/24 22:20	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits:*	*80-120 %*	*1*	*06/13/24 22:20*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/13/24 22:20*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*106 %*		*80-120 %*	*1*	*06/13/24 22:20*	*EPA 8260D*	
MGMS3-3(60) (A4F1045-03)				**Matrix: Water**		**Batch: 24F0534**		
Bromobenzene	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-3(60) (A4F1045-03)				**Matrix: Water**		**Batch: 24F0534**		
Bromoform	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/15/24 15:19	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
cis-1,2-Dichloroethene	**2.68**	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
Tetrachloroethene (PCE)	**1.43**	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-3(60) (A4F1045-03)				**Matrix: Water**		**Batch: 24F0534**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
Trichloroethene (TCE)	**0.780**	---	0.400	ug/L	1	06/15/24 15:19	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/15/24 15:19	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/15/24 15:19	EPA 8260D	
Vinyl chloride	**0.350**	---	0.200	ug/L	1	06/15/24 15:19	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits: 80-120 %*	*1*	*06/15/24 15:19*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*06/15/24 15:19*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*	*80-120 %*	*1*	*06/15/24 15:19*	*EPA 8260D*	
MGMS3-4(40) (A4F1045-04RE1)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 16:54	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1-Dichloroethane	**3.74**	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-4(40) (A4F1045-04RE1)				**Matrix: Water**		**Batch: 24F0741**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
cis-1,2-Dichloroethene	**1.95**	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/21/24 16:54	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 16:54	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:54	EPA 8260D	
Vinyl chloride	**53.4**	---	0.200	ug/L	1	06/21/24 16:54	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*	*1*	*06/21/24 16:54*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/21/24 16:54*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*	*1*	*06/21/24 16:54*	*EPA 8260D*	
MGMS3-4(40)DUP (A4F1045-05RE1)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-4(40)DUP (A4F1045-05RE1)				**Matrix: Water**		**Batch: 24F0741**		
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 17:21	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1-Dichloroethane	**3.82**	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
cis-1,2-Dichloroethene	**2.06**	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
Tetrachloroethene (PCE)	**0.450**	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 17:21	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-4(40)DUP (A4F1045-05RE1)				**Matrix: Water**		**Batch: 24F0741**		
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/21/24 17:21	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 17:21	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 17:21	EPA 8260D	
Vinyl chloride	**54.5**	---	0.200	ug/L	1	06/21/24 17:21	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*	*1*	*06/21/24 17:21*	*EPA 8260D*
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/21/24 17:21*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*	*1*	*06/21/24 17:21*	*EPA 8260D*
MGMS2-4(40) (A4F1045-06)				**Matrix: Water**		**Batch: 24F0534**		
Bromobenzene	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
Bromochloromethane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Bromodichloromethane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Bromoform	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Bromomethane	ND	---	25.0	ug/L	5	06/15/24 20:19	EPA 8260D	
Carbon tetrachloride	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Chlorobenzene	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
Chloroethane	ND	---	25.0	ug/L	5	06/15/24 20:19	EPA 8260D	
Chloroform	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Chloromethane	ND	---	25.0	ug/L	5	06/15/24 20:19	EPA 8260D	
2-Chlorotoluene	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
4-Chlorotoluene	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Dibromochloromethane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	25.0	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
Dibromomethane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2-Dichlorobenzene	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
1,3-Dichlorobenzene	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
1,4-Dichlorobenzene	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
Dichlorodifluoromethane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1-Dichloroethane	**25.8**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1-Dichloroethene	**13.0**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
cis-1,2-Dichloroethene	**403**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-4(40) (A4F1045-06)				**Matrix: Water**		**Batch: 24F0534**		
trans-1,2-Dichloroethene	**3.55**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2-Dichloropropane	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
1,3-Dichloropropane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
2,2-Dichloropropane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1-Dichloropropene	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Hexachlorobutadiene	ND	---	25.0	ug/L	5	06/15/24 20:19	EPA 8260D	
Methylene chloride	ND	---	50.0	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
Tetrachloroethene (PCE)	**315**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	10.0	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1,2-Trichloroethane	ND	---	2.50	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	10.0	ug/L	5	06/15/24 20:19	EPA 8260D	
1,1,1-Trichloroethane	**3.10**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Trichloroethene (TCE)	**232**	---	2.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Trichlorofluoromethane	ND	---	10.0	ug/L	5	06/15/24 20:19	EPA 8260D	
1,2,3-Trichloropropane	ND	---	5.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Vinyl chloride	ND	---	1.00	ug/L	5	06/15/24 20:19	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*130 %*	*Limits:*	*80-120 %*	*1*	*06/15/24 20:19*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*100 %*		*80-120 %*	*1*	*06/15/24 20:19*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*	*1*	*06/15/24 20:19*	*EPA 8260D*	
MGMS2-3(60) (A4F1045-07RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-3(60) (A4F1045-07RE1)				**Matrix: Water**		**Batch: 24F0693**		
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 17:37	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1-Dichloroethane	**0.630**	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
cis-1,2-Dichloroethene	**15.2**	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
Tetrachloroethene (PCE)	**21.0**	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 17:37	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 17:37	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
Trichloroethene (TCE)	**9.83**	---	0.400	ug/L	1	06/20/24 17:37	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 17:37	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-3(60) (A4F1045-07RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:37	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 99 %*		*Limits: 80-120 %*	*1*	*06/20/24 17:37*	*EPA 8260D*	
Toluene-d8 (Surr)		*102 %*		*80-120 %*	*1*	*06/20/24 17:37*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*96 %*		*80-120 %*	*1*	*06/20/24 17:37*	*EPA 8260D*	
MGMS2-3(60) (A4F1045-07RE2)				**Matrix: Water**		**Batch: 24F0741**		
Vinyl chloride	**0.230**	---	0.200	ug/L	1	06/21/24 13:54	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 103 %*		*Limits: 80-120 %*	*1*	*06/21/24 13:54*	*EPA 8260D*	
Toluene-d8 (Surr)		*102 %*		*80-120 %*	*1*	*06/21/24 13:54*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)		*103 %*		*80-120 %*	*1*	*06/21/24 13:54*	*EPA 8260D*	
MGMS2-2(110) (A4F1045-08)				**Matrix: Water**		**Batch: 24F0534**		
Bromobenzene	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/15/24 16:14	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-2(110) (A4F1045-08)				**Matrix: Water**		**Batch: 24F0534**		
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
cis-1,2-Dichloroethene	**3.94**	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
Tetrachloroethene (PCE)	**3.05**	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
Trichloroethene (TCE)	**1.94**	---	0.400	ug/L	1	06/15/24 16:14	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/15/24 16:14	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/15/24 16:14	EPA 8260D	
Vinyl chloride	**0.630**	---	0.200	ug/L	1	06/15/24 16:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits: 80-120 %*	*1*	*06/15/24 16:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/15/24 16:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/15/24 16:14*	*EPA 8260D*	
KMW-5 (A4F1045-09RE1)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
KMW-5 (A4F1045-09RE1)				**Matrix: Water**		**Batch: 24F0741**		
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 16:27	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1-Dichloroethane	**0.410**	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
cis-1,2-Dichloroethene	**4.81**	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
KMW-5 (A4F1045-09RE1)				**Matrix: Water**		**Batch: 24F0741**		
Trichloroethene (TCE)	**0.400**	---	0.400	ug/L	1	06/21/24 16:27	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 16:27	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:27	EPA 8260D	
Vinyl chloride	**2.29**	---	0.200	ug/L	1	06/21/24 16:27	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits: 80-120 %*	*1*	*06/21/24 16:27*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/21/24 16:27*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/21/24 16:27*	*EPA 8260D*	
KMW-4 (A4F1045-10)				**Matrix: Water**		**Batch: 24F0534**		
Bromobenzene	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/15/24 17:09	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1-Dichloroethane	**0.940**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1-Dichloroethene	**0.600**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
cis-1,2-Dichloroethene	**3.12**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
KMW-4 (A4F1045-10)				**Matrix: Water**		**Batch: 24F0534**		
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
Tetrachloroethene (PCE)	**27.4**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,1,1-Trichloroethane	**1.28**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
Trichloroethene (TCE)	**84.7**	---	0.400	ug/L	1	06/15/24 17:09	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/15/24 17:09	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/15/24 17:09	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/15/24 17:09	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*136 %*	*Limits: 80-120 %*	*1*	*06/15/24 17:09*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/15/24 17:09*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/15/24 17:09*	*EPA 8260D*	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-1(132) (A4F1045-01)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 15:13	SM 4500-NH3 G	
MGMS3-2(101) (A4F1045-02)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 15:19	SM 4500-NH3 G	
MGMS3-3(60) (A4F1045-03)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 15:30	SM 4500-NH3 G	
MGMS3-4(40) (A4F1045-04)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	**3.41**	---	0.0200	mg/L	1	06/13/24 15:31	SM 4500-NH3 G	
MGMS3-4(40)DUP (A4F1045-05)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	**3.43**	---	0.0200	mg/L	1	06/13/24 15:33	SM 4500-NH3 G	
MGMS2-4(40) (A4F1045-06)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	**65.5**	---	0.400	mg/L	20	06/13/24 15:34	SM 4500-NH3 G	
MGMS2-3(60) (A4F1045-07)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 15:37	SM 4500-NH3 G	
MGMS2-2(110) (A4F1045-08)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 15:39	SM 4500-NH3 G	
KMW-5 (A4F1045-09)				**Matrix: Water**		**Batch: 24F0456**		
Ammonia as N	**1.19**	---	0.0200	mg/L	1	06/13/24 15:40	SM 4500-NH3 G	
KMW-4 (A4F1045-10RE1)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 17:38	SM 4500-NH3 G	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS3-1(132) (A4F1045-01)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**0.588**	---	0.250	mg/L	1	06/11/24 17:39	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 17:39	EPA 300.0	
MGMS3-2(101) (A4F1045-02)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**0.685**	---	0.250	mg/L	1	06/11/24 18:43	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 18:43	EPA 300.0	
MGMS3-3(60) (A4F1045-03)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**0.529**	---	0.250	mg/L	1	06/11/24 19:05	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 19:05	EPA 300.0	
MGMS3-4(40) (A4F1045-04)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 19:26	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 19:26	EPA 300.0	
MGMS3-4(40)DUP (A4F1045-05)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 20:31	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 20:31	EPA 300.0	
MGMS2-4(40) (A4F1045-06)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**120**	---	5.00	mg/L	20	06/11/24 20:53	EPA 300.0	
MGMS2-4(40) (A4F1045-06RE1)				**Matrix: Water**				
Batch: 24F0371								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 23:45	EPA 300.0	
MGMS2-3(60) (A4F1045-07)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**0.886**	---	0.250	mg/L	1	06/11/24 21:14	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 21:14	EPA 300.0	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-2(110) (A4F1045-08)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	**1.38**	---	0.250	mg/L	1	06/11/24 21:36	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 21:36	EPA 300.0	
KMW-5 (A4F1045-09)				**Matrix: Water**				
Batch: 24F0371								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 21:57	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 21:57	EPA 300.0	
KMW-4 (A4F1045-10)				**Matrix: Water**				
Batch: 24F0371								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/11/24 22:19	EPA 300.0	
KMW-4 (A4F1045-10RE1)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**31.5**	---	1.25	mg/L	5	06/12/24 11:47	EPA 300.0	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C							**Water**					
Blank (24F0459-BLK1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 12:46									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C									Water			
Blank (24F0459-BLK1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 12:46									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*116 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*107 %*		*80-120 %*			*"*				
LCS (24F0459-BS1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 11:30									
EPA 8260D												
Bromobenzene	18.4	---	0.500	ug/L	1	20.0	---	92	80-120%	---	---	
Bromochloromethane	23.4	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Bromodichloromethane	22.9	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
Bromoform	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Bromomethane	29.9	---	5.00	ug/L	1	20.0	---	**150**	**80-120%**	---	---	Q-56
Carbon tetrachloride	22.4	---	1.00	ug/L	1	20.0	---	112	80-120%	---	---	
Chlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Chloroethane	38.3	---	5.00	ug/L	1	20.0	---	**192**	**80-120%**	---	---	Q-56
Chloroform	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	26.7	---	5.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
2-Chlorotoluene	17.4	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
4-Chlorotoluene	18.2	---	1.00	ug/L	1	20.0	---	91	80-120%	---	---	
Dibromochloromethane	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
1,2-Dibromo-3-chloropropane	16.4	---	5.00	ug/L	1	20.0	---	82	80-120%	---	---	
1,2-Dibromoethane (EDB)	19.9	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	---	115	80-120%	---	---	
1,2-Dichlorobenzene	20.1	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C								**Water**				
LCS (24F0459-BS1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 11:30									
1,3-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,4-Dichlorobenzene	19.3	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	24.7	---	1.00	ug/L	1	20.0	---	**124**	**80-120%**	---	---	Q-56
1,1-Dichloroethane	21.8	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.2	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloroethene	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,2-Dichloroethene	18.6	---	0.400	ug/L	1	20.0	---	93	80-120%	---	---	
trans-1,2-Dichloroethene	18.2	---	0.400	ug/L	1	20.0	---	91	80-120%	---	---	
1,2-Dichloropropane	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,3-Dichloropropane	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
2,2-Dichloropropane	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
1,1-Dichloropropene	20.5	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
cis-1,3-Dichloropropene	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
trans-1,3-Dichloropropene	18.2	---	1.00	ug/L	1	20.0	---	91	80-120%	---	---	
Hexachlorobutadiene	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
Methylene chloride	22.5	---	10.0	ug/L	1	20.0	---	112	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.3	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Tetrachloroethene (PCE)	19.9	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2,3-Trichlorobenzene	18.2	---	2.00	ug/L	1	20.0	---	91	80-120%	---	---	
1,1,2-Trichloroethane	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	15.6	---	2.00	ug/L	1	20.0	---	**78**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	21.9	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
Trichloroethene (TCE)	19.1	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
Trichlorofluoromethane	36.0	---	2.00	ug/L	1	20.0	---	**180**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	20.1	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Vinyl chloride	20.4	---	0.200	ug/L	1	20.0	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*95 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				
Duplicate (24F0459-DUP1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 21:52									

QC Source Sample: MGMS3-1(132) (A4F1045-01)

EPA 8260D

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C							**Water**					
Duplicate (24F0459-DUP1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 21:52									
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	---	0.270	---	---	***	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**2.30**	---	0.400	ug/L	1	---	2.40	---	---	4	30%	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C							**Water**					
Duplicate (24F0459-DUP1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 21:52									
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**3.62**	---	0.400	ug/L	1	---	3.35	---	---	8	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**2.75**	---	0.400	ug/L	1	---	2.69	---	---	2	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*107 %*		*80-120 %*			*"*				
Matrix Spike (24F0459-MS1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 23:14									
QC Source Sample: Non-SDG (A4F1121-01)												
EPA 8260D												
Bromobenzene	192	---	5.00	ug/L	10	200	ND	96	80-120%	---	---	
Bromochloromethane	220	---	10.0	ug/L	10	200	ND	110	78-123%	---	---	
Bromodichloromethane	234	---	10.0	ug/L	10	200	ND	117	79-125%	---	---	
Bromoform	201	---	10.0	ug/L	10	200	ND	101	66-130%	---	---	
Bromomethane	371	---	50.0	ug/L	10	200	ND	**185**	**53-141%**	---	---	Q-54c
Carbon tetrachloride	245	---	10.0	ug/L	10	200	ND	123	72-136%	---	---	
Chlorobenzene	207	---	5.00	ug/L	10	200	ND	104	80-120%	---	---	
Chloroethane	584	---	50.0	ug/L	10	200	ND	**292**	**60-138%**	---	---	ICV-01, Q-54i
Chloroform	223	---	10.0	ug/L	10	200	ND	112	79-124%	---	---	
Chloromethane	246	---	50.0	ug/L	10	200	ND	123	50-139%	---	---	Q-54a
2-Chlorotoluene	191	---	10.0	ug/L	10	200	ND	96	79-122%	---	---	
4-Chlorotoluene	192	---	10.0	ug/L	10	200	ND	96	78-122%	---	---	
Dibromochloromethane	215	---	10.0	ug/L	10	200	ND	107	74-126%	---	---	
1,2-Dibromo-3-chloropropane	214	---	50.0	ug/L	10	200	ND	107	62-128%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C							**Water**					
Matrix Spike (24F0459-MS1)			Prepared: 06/13/24 10:05 Analyzed: 06/13/24 23:14									
QC Source Sample: Non-SDG (A4F1121-01)												
1,2-Dibromoethane (EDB)	199	---	5.00	ug/L	10	200	ND	99	77-121%	---	---	
Dibromomethane	247	---	10.0	ug/L	10	200	ND	**124**	**79-123%**	---	---	Q-01
1,2-Dichlorobenzene	220	---	5.00	ug/L	10	200	ND	110	80-120%	---	---	
1,3-Dichlorobenzene	209	---	5.00	ug/L	10	200	ND	104	80-120%	---	---	
1,4-Dichlorobenzene	198	---	5.00	ug/L	10	200	ND	99	79-120%	---	---	
Dichlorodifluoromethane	265	---	10.0	ug/L	10	200	ND	132	32-152%	---	---	Q-54d
1,1-Dichloroethane	225	---	4.00	ug/L	10	200	ND	113	77-125%	---	---	
1,2-Dichloroethane (EDC)	206	---	4.00	ug/L	10	200	ND	103	73-128%	---	---	
1,1-Dichloroethene	250	---	4.00	ug/L	10	200	ND	125	71-131%	---	---	
cis-1,2-Dichloroethene	199	---	4.00	ug/L	10	200	ND	100	78-123%	---	---	
trans-1,2-Dichloroethene	218	---	4.00	ug/L	10	200	ND	109	75-124%	---	---	
1,2-Dichloropropane	232	---	5.00	ug/L	10	200	ND	116	78-122%	---	---	
1,3-Dichloropropane	184	---	10.0	ug/L	10	200	ND	92	80-120%	---	---	
2,2-Dichloropropane	189	---	10.0	ug/L	10	200	ND	95	60-139%	---	---	
1,1-Dichloropropene	228	---	10.0	ug/L	10	200	ND	114	79-125%	---	---	
cis-1,3-Dichloropropene	212	---	10.0	ug/L	10	200	ND	106	75-124%	---	---	
trans-1,3-Dichloropropene	179	---	10.0	ug/L	10	200	ND	89	73-127%	---	---	
Hexachlorobutadiene	309	---	50.0	ug/L	10	200	ND	**154**	**66-134%**	---	---	Q-01
Methylene chloride	226	---	100	ug/L	10	200	ND	113	74-124%	---	---	
1,1,1,2-Tetrachloroethane	223	---	4.00	ug/L	10	200	ND	112	78-124%	---	---	
1,1,2,2-Tetrachloroethane	196	---	5.00	ug/L	10	200	ND	98	71-121%	---	---	
Tetrachloroethene (PCE)	222	---	4.00	ug/L	10	200	ND	111	74-129%	---	---	
1,2,3-Trichlorobenzene	239	---	20.0	ug/L	10	200	ND	120	69-129%	---	---	
1,1,2-Trichloroethane	201	---	5.00	ug/L	10	200	ND	100	80-120%	---	---	
1,2,4-Trichlorobenzene	235	---	20.0	ug/L	10	200	ND	118	69-130%	---	---	Q-54j
1,1,1-Trichloroethane	238	---	4.00	ug/L	10	200	ND	119	74-131%	---	---	
Trichloroethene (TCE)	205	---	4.00	ug/L	10	200	ND	102	79-123%	---	---	
Trichlorofluoromethane	353	---	20.0	ug/L	10	200	ND	**176**	**65-141%**	---	---	Q-54f
1,2,3-Trichloropropane	186	---	10.0	ug/L	10	200	ND	93	73-122%	---	---	
Vinyl chloride	247	---	2.00	ug/L	10	200	ND	124	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 107 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*96 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*95 %*	*80-120 %*	*"*

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0459 - EPA 5030C								**Water**				

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
Blank (24F0534-BLK1)			Prepared: 06/15/24 09:00		Analyzed: 06/15/24 13:03							
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C									Water			
Blank (24F0534-BLK1)			Prepared: 06/15/24 09:00 Analyzed: 06/15/24 13:03									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 116 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*				*"*			
LCS (24F0534-BS1)			Prepared: 06/15/24 09:00 Analyzed: 06/15/24 11:05									
EPA 8260D												
Bromobenzene	18.4	---	0.500	ug/L	1	20.0	---	92	80-120%	---	---	
Bromochloromethane	24.4	---	1.00	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
Bromodichloromethane	24.4	---	1.00	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
Bromoform	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromomethane	21.1	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Carbon tetrachloride	24.4	---	1.00	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
Chlorobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroethane	36.7	---	5.00	ug/L	1	20.0	---	**184**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	22.9	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
Chloromethane	23.2	---	5.00	ug/L	1	20.0	---	116	80-120%	---	---	
2-Chlorotoluene	17.4	---	1.00	ug/L	1	20.0	---	87	80-120%	---	---	
4-Chlorotoluene	18.6	---	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
Dibromochloromethane	23.1	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.6	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromomethane	24.1	---	1.00	ug/L	1	20.0	---	**121**	**80-120%**	---	---	Q-56
1,2-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
LCS (24F0534-BS1)			Prepared: 06/15/24 09:00		Analyzed: 06/15/24 11:05							
1,3-Dichlorobenzene	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,4-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dichlorodifluoromethane	23.9	---	1.00	ug/L	1	20.0	---	119	80-120%	---	---	
1,1-Dichloroethane	22.7	---	0.400	ug/L	1	20.0	---	114	80-120%	---	---	
1,2-Dichloroethane (EDC)	22.2	---	0.400	ug/L	1	20.0	---	111	80-120%	---	---	
1,1-Dichloroethene	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,2-Dichloroethene	19.2	---	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
trans-1,2-Dichloroethene	19.0	---	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
1,2-Dichloropropane	21.9	---	0.500	ug/L	1	20.0	---	110	80-120%	---	---	
1,3-Dichloropropane	19.4	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
2,2-Dichloropropane	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
1,1-Dichloropropene	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
cis-1,3-Dichloropropene	23.2	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
trans-1,3-Dichloropropene	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Hexachlorobutadiene	19.7	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
Methylene chloride	23.8	---	10.0	ug/L	1	20.0	---	119	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.3	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
1,1,2,2-Tetrachloroethane	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Tetrachloroethene (PCE)	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,3-Trichlorobenzene	17.1	---	2.00	ug/L	1	20.0	---	86	80-120%	---	---	
1,1,2-Trichloroethane	21.9	---	0.500	ug/L	1	20.0	---	110	80-120%	---	---	
1,2,4-Trichlorobenzene	14.7	---	2.00	ug/L	1	20.0	---	**73**	**80-120%**	---	---	Q-55
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
Trichloroethene (TCE)	19.4	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
Trichlorofluoromethane	35.7	---	2.00	ug/L	1	20.0	---	**179**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	19.8	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
Vinyl chloride	20.7	---	0.200	ug/L	1	20.0	---	103	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 108 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*96 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*91 %*		*80-120 %*			*"*				
Duplicate (24F0534-DUP1)			Prepared: 06/15/24 09:00		Analyzed: 06/15/24 23:03							

QC Source Sample: MGMS2-4(40) (A4F1045-06)

EPA 8260D

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
Duplicate (24F0534-DUP1)			Prepared: 06/15/24 09:00 Analyzed: 06/15/24 23:03									
QC Source Sample: MGMS2-4(40) (A4F1045-06)												
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%	
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%	
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	**25.4**	---	2.00	ug/L	5	---	25.8	---	---	1	30%	
1,2-Dichloroethane (EDC)	ND	---	2.00	ug/L	5	---	ND	---	---	---	30%	
1,1-Dichloroethene	**14.0**	---	2.00	ug/L	5	---	13.0	---	---	7	30%	
cis-1,2-Dichloroethene	**416**	---	2.00	ug/L	5	---	403	---	---	3	30%	
trans-1,2-Dichloroethene	**3.45**	---	2.00	ug/L	5	---	3.55	---	---	3	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%	
Hexachlorobutadiene	ND	---	25.0	ug/L	5	---	ND	---	---	---	30%	
Methylene chloride	ND	---	50.0	ug/L	5	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
Duplicate (24F0534-DUP1)			Prepared: 06/15/24 09:00 Analyzed: 06/15/24 23:03									
QC Source Sample: MGMS2-4(40) (A4F1045-06)												
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)	**320**	---	2.00	ug/L	5	---	315	---	---	2	30%	
1,2,3-Trichlorobenzene	ND	---	10.0	ug/L	5	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	2.50	ug/L	5	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	10.0	ug/L	5	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	**3.05**	---	2.00	ug/L	5	---	3.10	---	---	2	30%	
Trichloroethene (TCE)	**230**	---	2.00	ug/L	5	---	232	---	---	0.7	30%	
Trichlorofluoromethane	ND	---	10.0	ug/L	5	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	5.00	ug/L	5	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	1.00	ug/L	5	---	0.950	---	---	***	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*125 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				*S-02*
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*			*"*				
Matrix Spike (24F0534-MS1)			Prepared: 06/15/24 09:00 Analyzed: 06/15/24 23:58									**T-02**
QC Source Sample: Non-SDG (A4F1075-01)												
EPA 8260D												
Bromobenzene	18.7	---	0.500	ug/L	1	20.0	ND	94	80-120%	---	---	
Bromochloromethane	24.5	---	1.00	ug/L	1	20.0	ND	123	78-123%	---	---	Q-54b
Bromodichloromethane	24.7	---	1.00	ug/L	1	20.0	ND	124	79-125%	---	---	Q-54b
Bromoform	21.2	---	1.00	ug/L	1	20.0	ND	106	66-130%	---	---	
Bromomethane	23.2	---	5.00	ug/L	1	20.0	ND	116	53-141%	---	---	
Carbon tetrachloride	26.5	---	1.00	ug/L	1	20.0	ND	133	72-136%	---	---	Q-54b
Chlorobenzene	21.2	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
Chloroethane	37.8	---	5.00	ug/L	1	20.0	ND	**189**	**60-138%**	---	---	ICV-01, Q-54g
Chloroform	23.6	---	1.00	ug/L	1	20.0	ND	118	79-124%	---	---	
Chloromethane	30.1	---	5.00	ug/L	1	20.0	ND	**151**	**50-139%**	---	---	Q-01
2-Chlorotoluene	18.2	---	1.00	ug/L	1	20.0	ND	91	79-122%	---	---	
4-Chlorotoluene	19.3	---	1.00	ug/L	1	20.0	ND	96	78-122%	---	---	
Dibromochloromethane	23.2	---	1.00	ug/L	1	20.0	ND	116	74-126%	---	---	
1,2-Dibromo-3-chloropropane	17.6	---	5.00	ug/L	1	20.0	ND	88	62-128%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
Matrix Spike (24F0534-MS1)			Prepared: 06/15/24 09:00		Analyzed: 06/15/24 23:58							**T-02**
QC Source Sample: Non-SDG (A4F1075-01)												
1,2-Dibromoethane (EDB)	21.2	---	0.500	ug/L	1	20.0	ND	106	77-121%	---	---	
Dibromomethane	23.9	---	1.00	ug/L	1	20.0	ND	119	79-123%	---	---	Q-54
1,2-Dichlorobenzene	20.3	---	0.500	ug/L	1	20.0	ND	101	80-120%	---	---	
1,3-Dichlorobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
1,4-Dichlorobenzene	20.4	---	0.500	ug/L	1	20.0	ND	102	79-120%	---	---	
Dichlorodifluoromethane	25.7	---	1.00	ug/L	1	20.0	ND	129	32-152%	---	---	
1,1-Dichloroethane	34.4	---	0.400	ug/L	1	20.0	10.6	119	77-125%	---	---	
1,2-Dichloroethane (EDC)	28.1	---	0.400	ug/L	1	20.0	6.59	108	73-128%	---	---	
1,1-Dichloroethene	23.7	---	0.400	ug/L	1	20.0	0.520	116	71-131%	---	---	
cis-1,2-Dichloroethene	60.5	---	0.400	ug/L	1	20.0	36.0	122	78-123%	---	---	
trans-1,2-Dichloroethene	21.2	---	0.400	ug/L	1	20.0	ND	106	75-124%	---	---	
1,2-Dichloropropane	22.6	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	19.4	---	1.00	ug/L	1	20.0	ND	97	80-120%	---	---	
2,2-Dichloropropane	18.5	---	1.00	ug/L	1	20.0	ND	93	60-139%	---	---	
1,1-Dichloropropene	22.6	---	1.00	ug/L	1	20.0	ND	113	79-125%	---	---	
cis-1,3-Dichloropropene	17.0	---	1.00	ug/L	1	20.0	ND	85	75-124%	---	---	
trans-1,3-Dichloropropene	19.4	---	1.00	ug/L	1	20.0	ND	97	73-127%	---	---	
Hexachlorobutadiene	19.9	---	5.00	ug/L	1	20.0	ND	100	66-134%	---	---	
Methylene chloride	24.1	---	10.0	ug/L	1	20.0	ND	120	74-124%	---	---	
1,1,1,2-Tetrachloroethane	23.4	---	0.400	ug/L	1	20.0	ND	117	78-124%	---	---	
1,1,2,2-Tetrachloroethane	20.8	---	0.500	ug/L	1	20.0	ND	104	71-121%	---	---	
Tetrachloroethene (PCE)	24.4	---	0.400	ug/L	1	20.0	2.01	112	74-129%	---	---	
1,2,3-Trichlorobenzene	17.1	---	2.00	ug/L	1	20.0	ND	86	69-129%	---	---	
1,1,2-Trichloroethane	27.1	---	0.500	ug/L	1	20.0	4.94	111	80-120%	---	---	
1,2,4-Trichlorobenzene	14.5	---	2.00	ug/L	1	20.0	ND	72	69-130%	---	---	Q-54k
1,1,1-Trichloroethane	24.7	---	0.400	ug/L	1	20.0	ND	124	74-131%	---	---	
Trichloroethene (TCE)	25.2	---	0.400	ug/L	1	20.0	4.21	105	79-123%	---	---	
Trichlorofluoromethane	39.2	---	2.00	ug/L	1	20.0	ND	**196**	**65-141%**	---	---	Q-54e
1,2,3-Trichloropropane	20.0	---	1.00	ug/L	1	20.0	ND	100	73-122%	---	---	
Vinyl chloride	23.0	---	0.200	ug/L	1	20.0	ND	115	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 109 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*93 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*91 %*	*80-120 %*	*"*	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Batch 24F0534 - EPA 5030C — **Water**

Matrix Spike Dup (24F0534-MSD1) Prepared: 06/15/24 09:00 Analyzed: 06/16/24 00:25 **T-02**

QC Source Sample: Non-SDG (A4F1075-01)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Bromobenzene	19.3	---	0.500	ug/L	1	20.0	ND	96	80-120%	3	30%	
Bromochloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	78-123%	1	30%	Q-54b
Bromodichloromethane	24.5	---	1.00	ug/L	1	20.0	ND	123	79-125%	0.8	30%	Q-54b
Bromoform	21.2	---	1.00	ug/L	1	20.0	ND	106	66-130%	0.3	30%	
Bromomethane	23.8	---	5.00	ug/L	1	20.0	ND	119	53-141%	3	30%	
Carbon tetrachloride	26.7	---	1.00	ug/L	1	20.0	ND	133	72-136%	0.6	30%	Q-54b
Chlorobenzene	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	0.9	30%	
Chloroethane	36.8	---	5.00	ug/L	1	20.0	ND	**184**	**60-138%**	3	30%	ICV-01, Q-54g
Chloroform	23.3	---	1.00	ug/L	1	20.0	ND	117	79-124%	0.9	30%	
Chloromethane	30.4	---	5.00	ug/L	1	20.0	ND	**152**	**50-139%**	0.9	30%	Q-01
2-Chlorotoluene	18.6	---	1.00	ug/L	1	20.0	ND	93	79-122%	2	30%	
4-Chlorotoluene	19.7	---	1.00	ug/L	1	20.0	ND	99	78-122%	2	30%	
Dibromochloromethane	23.4	---	1.00	ug/L	1	20.0	ND	117	74-126%	1	30%	
1,2-Dibromo-3-chloropropane	18.0	---	5.00	ug/L	1	20.0	ND	90	62-128%	3	30%	
1,2-Dibromoethane (EDB)	21.6	---	0.500	ug/L	1	20.0	ND	108	77-121%	2	30%	
Dibromomethane	23.5	---	1.00	ug/L	1	20.0	ND	118	79-123%	2	30%	Q-54
1,2-Dichlorobenzene	20.7	---	0.500	ug/L	1	20.0	ND	103	80-120%	2	30%	
1,3-Dichlorobenzene	21.4	---	0.500	ug/L	1	20.0	ND	107	80-120%	2	30%	
1,4-Dichlorobenzene	20.6	---	0.500	ug/L	1	20.0	ND	103	79-120%	1	30%	
Dichlorodifluoromethane	26.8	---	1.00	ug/L	1	20.0	ND	134	32-152%	4	30%	
1,1-Dichloroethane	33.6	---	0.400	ug/L	1	20.0	10.6	115	77-125%	2	30%	
1,2-Dichloroethane (EDC)	27.8	---	0.400	ug/L	1	20.0	6.59	106	73-128%	1	30%	
1,1-Dichloroethene	24.9	---	0.400	ug/L	1	20.0	0.520	122	71-131%	5	30%	
cis-1,2-Dichloroethene	59.8	---	0.400	ug/L	1	20.0	36.0	119	78-123%	1	30%	
trans-1,2-Dichloroethene	21.4	---	0.400	ug/L	1	20.0	ND	107	75-124%	0.9	30%	
1,2-Dichloropropane	22.2	---	0.500	ug/L	1	20.0	ND	111	78-122%	2	30%	
1,3-Dichloropropane	19.7	---	1.00	ug/L	1	20.0	ND	98	80-120%	2	30%	
2,2-Dichloropropane	18.7	---	1.00	ug/L	1	20.0	ND	93	60-139%	0.8	30%	
1,1-Dichloropropene	23.4	---	1.00	ug/L	1	20.0	ND	117	79-125%	4	30%	
cis-1,3-Dichloropropene	17.2	---	1.00	ug/L	1	20.0	ND	86	75-124%	1	30%	
trans-1,3-Dichloropropene	19.6	---	1.00	ug/L	1	20.0	ND	98	73-127%	1	30%	
Hexachlorobutadiene	21.0	---	5.00	ug/L	1	20.0	ND	105	66-134%	5	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0534 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0534-MSD1)			Prepared: 06/15/24 09:00		Analyzed: 06/16/24 00:25							**T-02**
QC Source Sample: Non-SDG (A4F1075-01)												
Methylene chloride	24.0	---	10.0	ug/L	1	20.0	ND	120	74-124%	0.5	30%	
1,1,1,2-Tetrachloroethane	23.5	---	0.400	ug/L	1	20.0	ND	117	78-124%	0.4	30%	
1,1,2,2-Tetrachloroethane	21.0	---	0.500	ug/L	1	20.0	ND	105	71-121%	0.9	30%	
Tetrachloroethene (PCE)	25.0	---	0.400	ug/L	1	20.0	2.01	115	74-129%	2	30%	
1,2,3-Trichlorobenzene	18.1	---	2.00	ug/L	1	20.0	ND	91	69-129%	6	30%	
1,1,2-Trichloroethane	26.8	---	0.500	ug/L	1	20.0	4.94	109	80-120%	1	30%	
1,2,4-Trichlorobenzene	15.6	---	2.00	ug/L	1	20.0	ND	78	69-130%	8	30%	Q-54k
1,1,1-Trichloroethane	24.6	---	0.400	ug/L	1	20.0	ND	123	74-131%	0.4	30%	
Trichloroethene (TCE)	25.7	---	0.400	ug/L	1	20.0	4.21	107	79-123%	2	30%	
Trichlorofluoromethane	38.6	---	2.00	ug/L	1	20.0	ND	**193**	**65-141%**	2	30%	Q-54e
1,2,3-Trichloropropane	20.2	---	1.00	ug/L	1	20.0	ND	101	73-122%	1	30%	
Vinyl chloride	24.5	---	0.200	ug/L	1	20.0	ND	122	58-137%	6	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 109 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*93 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Blank (24F0693-BLK1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 14:16									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Blank (24F0693-BLK1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 14:16									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
LCS (24F0693-BS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 13:21									
EPA 8260D												
Bromobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Bromochloromethane	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Bromoform	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Bromomethane	21.3	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Carbon tetrachloride	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Chlorobenzene	21.5	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
Chloroethane	20.8	---	5.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroform	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloromethane	18.9	---	5.00	ug/L	1	20.0	---	94	80-120%	---	---	ICV-01
2-Chlorotoluene	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
4-Chlorotoluene	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Dibromochloromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dibromo-3-chloropropane	16.6	---	5.00	ug/L	1	20.0	---	83	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Dibromomethane	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichlorobenzene	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
LCS (24F0693-BS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 13:21									
1,3-Dichlorobenzene	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,4-Dichlorobenzene	20.9	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Dichlorodifluoromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	ICV-01
1,1-Dichloroethane	21.8	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloroethene	23.2	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
cis-1,2-Dichloroethene	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
trans-1,2-Dichloroethene	22.5	---	0.400	ug/L	1	20.0	---	112	80-120%	---	---	
1,2-Dichloropropane	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
2,2-Dichloropropane	25.4	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,1-Dichloropropene	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
cis-1,3-Dichloropropene	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
trans-1,3-Dichloropropene	21.1	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Hexachlorobutadiene	20.2	---	5.00	ug/L	1	20.0	---	101	80-120%	---	---	
Methylene chloride	20.4	---	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.8	---	0.500	ug/L	1	20.0	---	114	80-120%	---	---	
Tetrachloroethene (PCE)	22.5	---	0.400	ug/L	1	20.0	---	113	80-120%	---	---	
1,2,3-Trichlorobenzene	20.3	---	2.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,1,2-Trichloroethane	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	21.0	---	2.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1-Trichloroethane	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
Trichloroethene (TCE)	19.6	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Trichlorofluoromethane	22.5	---	2.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,2,3-Trichloropropane	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
Vinyl chloride	22.1	---	0.200	ug/L	1	20.0	---	111	80-120%	---	---	ICV-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
Bromobenzene	ND	---	25.0	ug/L	50	---	ND	---	---	---	30%	

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Darrell Auvil, Client Services Manager

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
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%	
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%	
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%	
Hexachlorobutadiene	ND	---	250	ug/L	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	500	ug/L	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
1,1,2,2-Tetrachloroethane	ND	---	25.0	ug/L	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	100	ug/L	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	25.0	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%	
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%	
Vinyl chloride	ND	---	10.0	ug/L	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Matrix Spike (24F0693-MS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 20:10									
QC Source Sample: Non-SDG (A4F1063-02)												
EPA 8260D												
Bromobenzene	22.0	---	0.500	ug/L	1	20.0	0.380	108	80-120%	---	---	
Bromochloromethane	23.0	---	1.00	ug/L	1	20.0	ND	115	78-123%	---	---	
Bromodichloromethane	23.1	---	1.00	ug/L	1	20.0	1.08	110	79-125%	---	---	
Bromoform	22.7	---	1.00	ug/L	1	20.0	1.54	106	66-130%	---	---	
Bromomethane	22.1	---	5.00	ug/L	1	20.0	ND	110	53-141%	---	---	
Carbon tetrachloride	23.8	---	1.00	ug/L	1	20.0	ND	119	72-136%	---	---	
Chlorobenzene	23.1	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
Chloroethane	25.6	---	5.00	ug/L	1	20.0	ND	128	60-138%	---	---	
Chloroform	23.8	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	25.7	---	5.00	ug/L	1	20.0	ND	129	50-139%	---	---	ICV-01
2-Chlorotoluene	25.1	---	1.00	ug/L	1	20.0	1.52	118	79-122%	---	---	
4-Chlorotoluene	25.2	---	1.00	ug/L	1	20.0	1.04	121	78-122%	---	---	
Dibromochloromethane	24.4	---	1.00	ug/L	1	20.0	1.76	113	74-126%	---	---	
1,2-Dibromo-3-chloropropane	16.5	---	5.00	ug/L	1	20.0	ND	83	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	---	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	
Dibromomethane	22.9	---	1.00	ug/L	1	20.0	ND	115	79-123%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Matrix Spike (24F0693-MS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 20:10									
QC Source Sample: Non-SDG (A4F1063-02)												
1,2-Dichlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	---	---	
1,3-Dichlorobenzene	23.0	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	22.2	---	0.500	ug/L	1	20.0	ND	111	79-120%	---	---	
Dichlorodifluoromethane	25.7	---	1.00	ug/L	1	20.0	ND	128	32-152%	---	---	ICV-01
1,1-Dichloroethane	23.8	---	0.400	ug/L	1	20.0	ND	119	77-125%	---	---	
1,2-Dichloroethane (EDC)	23.6	---	0.400	ug/L	1	20.0	ND	118	73-128%	---	---	
1,1-Dichloroethene	27.8	---	0.400	ug/L	1	20.0	ND	**139**	**71-131%**	---	---	Q-01
cis-1,2-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	ND	116	78-123%	---	---	
trans-1,2-Dichloroethene	26.7	---	0.400	ug/L	1	20.0	ND	**134**	**75-124%**	---	---	Q-01
1,2-Dichloropropane	22.7	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	22.1	---	1.00	ug/L	1	20.0	ND	111	80-120%	---	---	
2,2-Dichloropropane	25.9	---	1.00	ug/L	1	20.0	ND	130	60-139%	---	---	Q-54h
1,1-Dichloropropene	24.6	---	1.00	ug/L	1	20.0	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	75-124%	---	---	
trans-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	73-127%	---	---	
Hexachlorobutadiene	21.2	---	5.00	ug/L	1	20.0	ND	106	66-134%	---	---	
Methylene chloride	23.2	---	10.0	ug/L	1	20.0	ND	116	74-124%	---	---	
1,1,1,2-Tetrachloroethane	22.6	---	0.400	ug/L	1	20.0	ND	113	78-124%	---	---	
1,1,2,2-Tetrachloroethane	25.2	---	0.500	ug/L	1	20.0	ND	**126**	**71-121%**	---	---	Q-01
Tetrachloroethene (PCE)	24.0	---	0.400	ug/L	1	20.0	ND	120	74-129%	---	---	
1,2,3-Trichlorobenzene	20.9	---	2.00	ug/L	1	20.0	ND	105	69-129%	---	---	
1,1,2-Trichloroethane	22.3	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	21.7	---	2.00	ug/L	1	20.0	ND	108	69-130%	---	---	
1,1,1-Trichloroethane	24.2	---	0.400	ug/L	1	20.0	ND	121	74-131%	---	---	
Trichloroethene (TCE)	21.3	---	0.400	ug/L	1	20.0	ND	106	79-123%	---	---	
Trichlorofluoromethane	28.3	---	2.00	ug/L	1	20.0	ND	**142**	**65-141%**	---	---	Q-01
1,2,3-Trichloropropane	21.6	---	1.00	ug/L	1	20.0	ND	108	73-122%	---	---	
Vinyl chloride	14.4	---	0.200	ug/L	1	20.0	ND	72	58-137%	---	---	ICV-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*105 %*		*80-120 %*			*"*				
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
EPA 8260D												
Bromobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Bromochloromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	21.3	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Bromoform	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Bromomethane	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Carbon tetrachloride	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chlorobenzene	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	19.2	---	5.00	ug/L	1	20.0	---	96	80-120%	---	---	
Chloroform	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.4	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.5	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromomethane	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							Water					
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
1,3-Dichlorobenzene	21.1	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,4-Dichlorobenzene	19.7	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dichlorodifluoromethane	19.3	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,1-Dichloroethane	20.3	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
1,1-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	19.9	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2-Dichloropropane	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,3-Dichloropropane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
2,2-Dichloropropane	23.5	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
1,1-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Hexachlorobutadiene	22.7	---	5.00	ug/L	1	20.0	---	114	80-120%	---	---	
Methylene chloride	19.1	---	10.0	ug/L	1	20.0	---	96	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.6	---	0.400	ug/L	1	20.0	---	118	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.1	---	0.500	ug/L	1	20.0	---	111	80-120%	---	---	
Tetrachloroethene (PCE)	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2-Trichloroethane	20.7	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,1-Trichloroethane	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
Trichloroethene (TCE)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	20.3	---	2.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichloropropane	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Vinyl chloride	19.8	---	0.200	ug/L	1	20.0	---	99	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	**6.14**	---	0.400	ug/L	1	---	5.70	---	---	7	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**33.3**	---	0.400	ug/L	1	---	30.5	---	---	9	30%	
trans-1,2-Dichloroethene	**0.680**	---	0.400	ug/L	1	---	0.760	---	---	11	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	0.240	---	---	***	30%	
Trichloroethene (TCE)	**0.640**	---	0.400	ug/L	1	---	0.570	---	---	12	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	**0.200**	---	0.200	ug/L	1	---	0.180	---	---	11	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*			*"*				
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
EPA 8260D												
Bromobenzene	2180	---	50.0	ug/L	100	2000	ND	109	80-120%	---	---	
Bromochloromethane	2240	---	100	ug/L	100	2000	ND	112	78-123%	---	---	
Bromodichloromethane	2330	---	100	ug/L	100	2000	ND	116	79-125%	---	---	
Bromoform	2190	---	100	ug/L	100	2000	ND	109	66-130%	---	---	
Bromomethane	2370	---	500	ug/L	100	2000	ND	119	53-141%	---	---	
Carbon tetrachloride	2390	---	100	ug/L	100	2000	ND	119	72-136%	---	---	
Chlorobenzene	2220	---	50.0	ug/L	100	2000	ND	111	80-120%	---	---	
Chloroethane	2360	---	500	ug/L	100	2000	ND	118	60-138%	---	---	
Chloroform	2230	---	100	ug/L	100	2000	ND	112	79-124%	---	---	
Chloromethane	2060	---	500	ug/L	100	2000	ND	103	50-139%	---	---	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	---	---	
4-Chlorotoluene	2340	---	100	ug/L	100	2000	ND	117	78-122%	---	---	
Dibromochloromethane	2040	---	100	ug/L	100	2000	ND	102	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1940	---	500	ug/L	100	2000	ND	97	62-128%	---	---	
1,2-Dibromoethane (EDB)	2230	---	50.0	ug/L	100	2000	ND	112	77-121%	---	---	
Dibromomethane	2270	---	100	ug/L	100	2000	ND	114	79-123%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	2290	---	50.0	ug/L	100	2000	ND	114	80-120%	---	---	
1,4-Dichlorobenzene	2100	---	50.0	ug/L	100	2000	ND	105	79-120%	---	---	
Dichlorodifluoromethane	2230	---	100	ug/L	100	2000	ND	112	32-152%	---	---	
1,1-Dichloroethane	2260	---	40.0	ug/L	100	2000	ND	113	77-125%	---	---	
1,2-Dichloroethane (EDC)	2140	---	40.0	ug/L	100	2000	ND	107	73-128%	---	---	
1,1-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	2280	---	40.0	ug/L	100	2000	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	2230	---	40.0	ug/L	100	2000	ND	111	75-124%	---	---	
1,2-Dichloropropane	2240	---	50.0	ug/L	100	2000	ND	112	78-122%	---	---	
1,3-Dichloropropane	2300	---	100	ug/L	100	2000	ND	115	80-120%	---	---	
2,2-Dichloropropane	2140	---	100	ug/L	100	2000	ND	107	60-139%	---	---	
1,1-Dichloropropene	2460	---	100	ug/L	100	2000	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	2040	---	100	ug/L	100	2000	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	2210	---	100	ug/L	100	2000	ND	110	73-127%	---	---	
Hexachlorobutadiene	2340	---	500	ug/L	100	2000	ND	117	66-134%	---	---	
Methylene chloride	2100	---	1000	ug/L	100	2000	ND	105	74-124%	---	---	
1,1,1,2-Tetrachloroethane	2560	---	40.0	ug/L	100	2000	ND	**128**	**78-124%**	---	---	Q-01
1,1,2,2-Tetrachloroethane	2350	---	50.0	ug/L	100	2000	ND	118	71-121%	---	---	
Tetrachloroethene (PCE)	2260	---	40.0	ug/L	100	2000	ND	113	74-129%	---	---	
1,2,3-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	116	69-129%	---	---	
1,1,2-Trichloroethane	2170	---	50.0	ug/L	100	2000	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	2320	---	40.0	ug/L	100	2000	ND	116	74-131%	---	---	
Trichloroethene (TCE)	2160	---	40.0	ug/L	100	2000	ND	108	79-123%	---	---	
Trichlorofluoromethane	2480	---	200	ug/L	100	2000	ND	124	65-141%	---	---	
1,2,3-Trichloropropane	2280	---	100	ug/L	100	2000	ND	114	73-122%	---	---	
Vinyl chloride	2280	---	20.0	ug/L	100	2000	ND	114	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
Bromobenzene	2210	---	50.0	ug/L	100	2000	ND	110	80-120%	1	30%	
Bromochloromethane	2180	---	100	ug/L	100	2000	ND	109	78-123%	3	30%	
Bromodichloromethane	2300	---	100	ug/L	100	2000	ND	115	79-125%	1	30%	
Bromoform	2190	---	100	ug/L	100	2000	ND	110	66-130%	0.3	30%	
Bromomethane	2330	---	500	ug/L	100	2000	ND	117	53-141%	2	30%	
Carbon tetrachloride	2420	---	100	ug/L	100	2000	ND	121	72-136%	1	30%	
Chlorobenzene	2200	---	50.0	ug/L	100	2000	ND	110	80-120%	0.6	30%	
Chloroethane	2240	---	500	ug/L	100	2000	ND	112	60-138%	5	30%	
Chloroform	2190	---	100	ug/L	100	2000	ND	110	79-124%	2	30%	
Chloromethane	2100	---	500	ug/L	100	2000	ND	105	50-139%	2	30%	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	0.09	30%	
4-Chlorotoluene	2330	---	100	ug/L	100	2000	ND	116	78-122%	0.4	30%	
Dibromochloromethane	2020	---	100	ug/L	100	2000	ND	101	74-126%	0.6	30%	
1,2-Dibromo-3-chloropropane	1880	---	500	ug/L	100	2000	ND	94	62-128%	3	30%	
1,2-Dibromoethane (EDB)	2240	---	50.0	ug/L	100	2000	ND	112	77-121%	0.5	30%	
Dibromomethane	2220	---	100	ug/L	100	2000	ND	111	79-123%	2	30%	
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	0.1	30%	
1,3-Dichlorobenzene	2280	---	50.0	ug/L	100	2000	ND	114	80-120%	0.4	30%	
1,4-Dichlorobenzene	2090	---	50.0	ug/L	100	2000	ND	104	79-120%	0.9	30%	
Dichlorodifluoromethane	2250	---	100	ug/L	100	2000	ND	112	32-152%	0.7	30%	
1,1-Dichloroethane	2220	---	40.0	ug/L	100	2000	ND	111	77-125%	2	30%	
1,2-Dichloroethane (EDC)	2120	---	40.0	ug/L	100	2000	ND	106	73-128%	0.6	30%	
1,1-Dichloroethene	2200	---	40.0	ug/L	100	2000	ND	110	71-131%	3	30%	
cis-1,2-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	78-123%	1	30%	
trans-1,2-Dichloroethene	2210	---	40.0	ug/L	100	2000	ND	110	75-124%	1	30%	
1,2-Dichloropropane	2190	---	50.0	ug/L	100	2000	ND	110	78-122%	2	30%	
1,3-Dichloropropane	2270	---	100	ug/L	100	2000	ND	114	80-120%	1	30%	
2,2-Dichloropropane	2110	---	100	ug/L	100	2000	ND	106	60-139%	1	30%	
1,1-Dichloropropene	2420	---	100	ug/L	100	2000	ND	121	79-125%	1	30%	
cis-1,3-Dichloropropene	2080	---	100	ug/L	100	2000	ND	104	75-124%	2	30%	
trans-1,3-Dichloropropene	2200	---	100	ug/L	100	2000	ND	110	73-127%	0.2	30%	
Hexachlorobutadiene	2380	---	500	ug/L	100	2000	ND	119	66-134%	2	30%	
Methylene chloride	2090	---	1000	ug/L	100	2000	ND	105	74-124%	0.2	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
1,1,1,2-Tetrachloroethane	2500	---	40.0	ug/L	100	2000	ND	**125**	**78-124%**	3	30%	Q-01
1,1,2,2-Tetrachloroethane	2330	---	50.0	ug/L	100	2000	ND	116	71-121%	1	30%	
Tetrachloroethene (PCE)	2280	---	40.0	ug/L	100	2000	ND	114	74-129%	0.8	30%	
1,2,3-Trichlorobenzene	2380	---	200	ug/L	100	2000	ND	119	69-129%	2	30%	
1,1,2-Trichloroethane	2210	---	50.0	ug/L	100	2000	ND	111	80-120%	2	30%	
1,2,4-Trichlorobenzene	2310	---	200	ug/L	100	2000	ND	116	69-130%	0.9	30%	
1,1,1-Trichloroethane	2310	---	40.0	ug/L	100	2000	ND	115	74-131%	0.7	30%	
Trichloroethene (TCE)	2200	---	40.0	ug/L	100	2000	ND	110	79-123%	2	30%	
Trichlorofluoromethane	2440	---	200	ug/L	100	2000	ND	122	65-141%	1	30%	
1,2,3-Trichloropropane	2200	---	100	ug/L	100	2000	ND	110	73-122%	4	30%	
Vinyl chloride	2300	---	20.0	ug/L	100	2000	ND	115	58-137%	0.7	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*98 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*				*"*			

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0456 - Method Prep: Aq							**Water**					
Blank (24F0456-BLK1)			Prepared: 06/13/24 09:26 Analyzed: 06/13/24 14:58									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0456-BS1)			Prepared: 06/13/24 09:26 Analyzed: 06/13/24 14:59									
SM 4500-NH3 G												
Ammonia as N	1.95	---	0.0200	mg/L	1	2.00	---	97	90-111%	---	---	
Matrix Spike (24F0456-MS1)			Prepared: 06/13/24 09:26 Analyzed: 06/13/24 15:15									
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
SM 4500-NH3 G												
Ammonia as N	2.43	---	0.0250	mg/L	1	2.50	ND	97	90-111%	---	---	
Matrix Spike Dup (24F0456-MSD1)			Prepared: 06/13/24 09:26 Analyzed: 06/13/24 15:16									
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
SM 4500-NH3 G												
Ammonia as N	2.52	---	0.0250	mg/L	1	2.50	ND	101	90-111%	4	13%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0484 - Method Prep: Aq							**Water**					
Blank (24F0484-BLK1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:25									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0484-BS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:26									
SM 4500-NH3 G												
Ammonia as N	1.98	---	0.0200	mg/L	1	2.00	---	99	90-111%	---	---	
Matrix Spike (24F0484-MS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:34									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
SM 4500-NH3 G												
Ammonia as N	2.45	---	0.0250	mg/L	1	2.50	0.0490	96	90-111%	---	---	
Matrix Spike Dup (24F0484-MSD1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:35									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
Ammonia as N	2.50	---	0.0250	mg/L	1	2.50	0.0490	98	90-111%	2	13%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0371 - Method Prep: Aq							**Water**					
Blank (24F0371-BLK1)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 16:12							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0371-BS1)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 16:34							
EPA 300.0												
Nitrate-Nitrogen	2.10	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Nitrite-Nitrogen	2.04	---	0.250	mg/L	1	2.00	---	102	90-110%	---	---	
Duplicate (24F0371-DUP1)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 18:00							
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
EPA 300.0												
Nitrate-Nitrogen	**0.590**	---	0.250	mg/L	1	---	0.588	---	---	0.3	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0371-DUP2)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 23:02							
QC Source Sample: Non-SDG (A4F1060-01)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0371-MS1)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 18:22							
QC Source Sample: MGMS3-1(132) (A4F1045-01)												
EPA 300.0												
Nitrate-Nitrogen	3.16	---	0.312	mg/L	1	2.50	0.588	103	87-112%	---	---	
Nitrite-Nitrogen	2.51	---	0.312	mg/L	1	2.50	ND	100	90-114%	---	---	
Matrix Spike (24F0371-MS2)			Prepared: 06/11/24 14:31		Analyzed: 06/11/24 23:24							
QC Source Sample: Non-SDG (A4F1060-01)												
EPA 300.0												
Nitrate-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	87-112%	---	---	
Nitrite-Nitrogen	2.55	---	0.312	mg/L	1	2.50	ND	102	90-114%	---	---	

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1045 - 06 26 24 1622

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0398 - Method Prep: Aq							Water					
Blank (24F0398-BLK1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 11:04							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0398-BS1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 11:26							
EPA 300.0												
Nitrate-Nitrogen	2.08	---	0.250	mg/L	1	2.00	---	104	90-110%	---	---	
Duplicate (24F0398-DUP1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 12:30							
QC Source Sample: Non-SDG (A4F1085-01)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Duplicate (24F0398-DUP2)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 13:35							
QC Source Sample: Non-SDG (A4F1085-02)												
Nitrate-Nitrogen	**1.63**	---	0.250	mg/L	1	---	1.62	---	---	0.3	3%	
Matrix Spike (24F0398-MS1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 12:52							
QC Source Sample: Non-SDG (A4F1085-01)												
EPA 300.0												
Nitrate-Nitrogen	2.68	---	0.312	mg/L	1	2.50	ND	107	87-112%	---	---	
Matrix Spike (24F0398-MS2)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 13:56							
QC Source Sample: Non-SDG (A4F1085-02)												
EPA 300.0												
Nitrate-Nitrogen	4.25	---	0.312	mg/L	1	2.50	1.62	105	87-112%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0459							
A4F1045-01	Water	EPA 8260D	06/10/24 14:15	06/13/24 12:16	5mL/5mL	5mL/5mL	1.00
A4F1045-02	Water	EPA 8260D	06/10/24 13:41	06/13/24 12:16	5mL/5mL	5mL/5mL	1.00
Batch: 24F0534							
A4F1045-03	Water	EPA 8260D	06/10/24 13:00	06/15/24 09:06	5mL/5mL	5mL/5mL	1.00
A4F1045-06	Water	EPA 8260D	06/10/24 12:54	06/15/24 09:06	5mL/5mL	5mL/5mL	1.00
A4F1045-08	Water	EPA 8260D	06/10/24 13:59	06/15/24 09:06	5mL/5mL	5mL/5mL	1.00
A4F1045-10	Water	EPA 8260D	06/10/24 16:10	06/15/24 09:06	5mL/5mL	5mL/5mL	1.00
Batch: 24F0693							
A4F1045-07RE1	Water	EPA 8260D	06/10/24 13:28	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
Batch: 24F0741							
A4F1045-04RE1	Water	EPA 8260D	06/10/24 12:15	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1045-05RE1	Water	EPA 8260D	06/10/24 12:15	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1045-07RE2	Water	EPA 8260D	06/10/24 13:28	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1045-09RE1	Water	EPA 8260D	06/10/24 14:55	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0456							
A4F1045-01	Water	SM 4500-NH3 G	06/10/24 14:15	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-02	Water	SM 4500-NH3 G	06/10/24 13:41	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-03	Water	SM 4500-NH3 G	06/10/24 13:00	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-04	Water	SM 4500-NH3 G	06/10/24 12:15	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-05	Water	SM 4500-NH3 G	06/10/24 12:15	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-06	Water	SM 4500-NH3 G	06/10/24 12:54	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-07	Water	SM 4500-NH3 G	06/10/24 13:28	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-08	Water	SM 4500-NH3 G	06/10/24 13:59	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
A4F1045-09	Water	SM 4500-NH3 G	06/10/24 14:55	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00
Batch: 24F0484							
A4F1045-10RE1	Water	SM 4500-NH3 G	06/10/24 16:10	06/13/24 09:26	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

SAMPLE PREPARATION INFORMATION

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0371							
A4F1045-01	Water	EPA 300.0	06/10/24 14:15	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-02	Water	EPA 300.0	06/10/24 13:41	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-03	Water	EPA 300.0	06/10/24 13:00	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-04	Water	EPA 300.0	06/10/24 12:15	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-05	Water	EPA 300.0	06/10/24 12:15	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-06	Water	EPA 300.0	06/10/24 12:54	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-06RE1	Water	EPA 300.0	06/10/24 12:54	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-07	Water	EPA 300.0	06/10/24 13:28	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-08	Water	EPA 300.0	06/10/24 13:59	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-09	Water	EPA 300.0	06/10/24 14:55	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
A4F1045-10	Water	EPA 300.0	06/10/24 16:10	06/11/24 14:31	5mL/5mL	5mL/5mL	1.00
Batch: 24F0398							
A4F1045-10RE1	Water	EPA 300.0	06/10/24 16:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

Apex Laboratories

ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +1%. 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 8260/8270 by +13%. 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 8260/8270 by +2%. 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 8260/8270 by +30%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +4%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +59%. The results are reported as Estimated Values.
Q-54f	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +60%. The results are reported as Estimated Values.
Q-54g	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +64%. The results are reported as Estimated Values.
Q-54h	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +7%. The results are reported as Estimated Values.
Q-54i	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +72%. The results are reported as Estimated Values.
Q-54j	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -2%. The results are reported as Estimated Values.
Q-54k	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -7%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

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LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



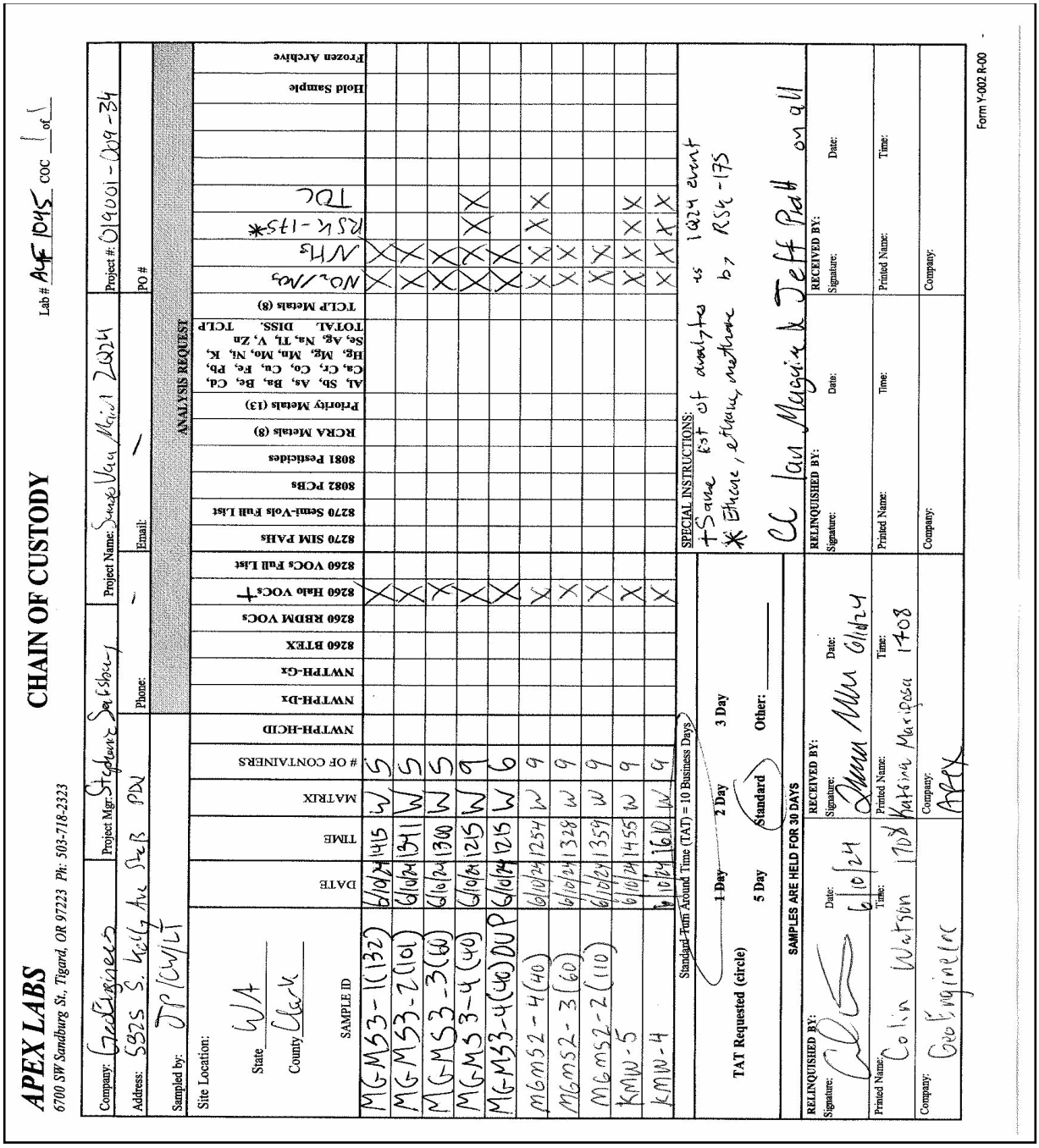
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APEX LABS — CHAIN OF CUSTODY
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323
Lab # A4F1045 COC 1 of 1

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Sunoco Vancouver Main 2Q24 | Project #: 19001-009-34
Address: 5820 S. Kelly Ave Ste B PDX | Phone: / | Email: / | PO #
Sampled by: DP/CW/LT
Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs+	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO2/NO3	NH3	RSK-175*	TOC	Hold Sample	Frozen Archive
MGMS3-1(132)	6/10/24	1445	W	5						X										X				
MGMS3-2(101)	6/10/24	1311	W	5						X										X				
MGMS3-3(60)	6/10/24	1300	W	5						X										X				
MGMS3-4(40)	6/10/24	1215	W	9						X										X	X	X		
MGMS3-4(40)DUP	6/10/24	1215	W	6						X										X				
MGMS2-4(40)	6/10/24	1254	W	9						X										X	X	X		
MGMS2-3(60)	6/10/24	1328	W	9						X										X	X			
MGMS2-2(110)	6/10/24	1359	W	9						X										X				
KMW-5	6/10/24	1455	W	9						X										X	X	X		
KMW-4	6/10/24	1610	W	9						X										X	X	X		

Standard Turn Around Time (TAT) = 10 Business Days
TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: _____

SPECIAL INSTRUCTIONS:
TSAVE est of analytes as 1Q24 event
* Ethene, ethane, methane by RSK-175
CC Ian Meggitt & Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/10/24		Signature:	6/11/24	
Printed Name: Colin Watson		1700	Printed Name: Katrina Maripoga		1708
Company: GeoEngineers			Company: APEX		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1045 - 06 26 24 1622**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4F1045

Project/Project #: Sunoco Van Main 2Q24 / 19001-009-34

Delivery Info:

Date/time received: 6/10/24 @ 1708 By: RKM

Delivered by: Apex__Client X ESS___FedEx__UPS__Radio___Morgan ___SDS___Evergreen___Other ___

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 6/10/24 @ 17:08 By: RKM

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	4.7 6/10/24 RKM						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	Y						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes (No)

Sample Inspection: Date/time inspected: 6/10/24 @ 17:32 By: LN

All samples intact? Yes ✓ No ___ Comments: _____

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

COC/container discrepancies form initiated? Yes ___ No ✓

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

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

Comments 1/6 VOAs on KMW-5 has headspace

Water samples: pH checked: Yes ✓ No ___ NA ___ pH appropriate? Yes ✓ No ___ NA ____ pH ID: A231172

Comments: _____

Labeled by: RKM Witness: RKM Cooler Inspected by: LN

Form Y-003 R-02

Apex Laboratories

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

Darrell Auvil, Client Services Manager

June 25, 2024 Service Request No:K2406175

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

Laboratory Results for: A4F1045

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 13, 2024
For your reference, these analyses have been assigned our service request number **K2406175.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Client: Apex Laboratories
Project: A4F1045
Sample Matrix: Water

Service Request: K2406175
Date Received: 06/13/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Four water samples were received for analysis at ALS Environmental on 06/13/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/25/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MGMS3-4(40)			Lab ID: K2406175-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	2.10		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MGMS2-4(40)			Lab ID: K2406175-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	3.30		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2406175

Project: A4F1045

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406175-001	MGMS3-4(40)	6/10/2024	1215
K2406175-002	MGMS2-4(40)	6/10/2024	1254

SUBCONTRACT ORDER

Apex Laboratories

Accelerator **A4F1045** UAB 6/13/24

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

K2406175

Sample Name: MGMS3-4(40) **Water** **Sampled: 06/10/24 12:15** (A4F1045-04)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/21/24 17:00	07/08/24 12:15	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MGMS2-4(40) **Water** **Sampled: 06/10/24 12:54** (A4F1045-06)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/21/24 17:00	07/08/24 12:54	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: KMW-5 **Water** **Sampled: 06/10/24 14:55** (A4F1045-09)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/21/24 17:00	07/08/24 14:55	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: KMW-4 **Water** **Sampled: 06/10/24 16:10** (A4F1045-10)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/21/24 17:00	07/08/24 16:10	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date	Received By	Date
	6/13/24 1138	UPS (Shipper)	6/13/24 1138
UPS (Shipper)	6/13/24 1610		6/13/24 1410
Released By	Date	Received By	Date

PM HH

Cooler Receipt and Preservation Form

Client APEX Service Request K24 06175

Received: 6/13/24 Opened: 6/13/24 By: HS Unloaded: 6/13/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	4.5	IR06					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. NA Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
13. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
14. Was C12/Res negative? NA Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM NA Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client:	Apex Laboratories	**Service Request:**	K2406175
Project:	A4F1045/		

Sample Name:	MGMS3-4(40)	**Date Collected:**	06/10/24
Lab Code:	K2406175-001	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MGMS2-4(40)	**Date Collected:**	06/10/24
Lab Code:	K2406175-002	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
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General Chemistry

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406175
Project:	A4F1045	**Date Collected:**	06/10/24 12:15
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MGMS3-4(40)	**Basis:**	NA
Lab Code:	K2406175-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**2.10**	mg/L	0.50	0.08	1	06/21/24 15:38	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406175
Project:	A4F1045	**Date Collected:**	06/10/24 12:54
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MGMS2-4(40)	**Basis:**	NA
Lab Code:	K2406175-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**3.30**	mg/L	0.50	0.08	1	06/21/24 15:38	

QC Summary Forms

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

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General Chemistry

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406175
Project:	A4F1045	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406175-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/21/24 15:38	

Client:	Apex Laboratories	**Service Request:**	K2406175
Project:	A4F1045	**Date Analyzed:**	06/21/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845085

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406175-LCS	23.4	25.0	94	83-117

AirTECHNOLOGY
Laboratories, Inc.

July 2, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1045
Lab Number: R061407-01/04

Enclosed are results for sample(s) received 6/14/24 by Air Technology Laboratories. Samples were received intact and chilled to 3° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

A4F1045

R061407-01/04

Alkalinity

WSB 6/12/24

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

01 **Sample Name: MGMS3-4(40)** **Water** **Sampled: 06/10/24 12:15** (A4F1045-04)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/21/24 17:00	06/24/24 12:15	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

02 **Sample Name: MGMS2-4(40)** **Water** **Sampled: 06/10/24 12:54** (A4F1045-06)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/21/24 17:00	06/24/24 12:54	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

03 **Sample Name: KMW-5** **Water** **Sampled: 06/10/24 14:55** (A4F1045-09)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/21/24 17:00	06/24/24 14:55	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

- Hold per D. Auvil 6/14 9D

Standard TAT

3°C
HO

Released By	Date	Received By	Date
	6/12/24	UPS (Shipper)	
UPS (Shipper)	6/14/24 10:20		6/14/24 10:20
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Apex Laboratories

A4F1045

R0614076-01/04
7 HO

MAB 6/12/24

04 **Sample Name: KMW-4** **Water** **Sampled: 06/10/24 16:10** (A4F1045-10)

Analysis	Due	Expires	Comments	
RSK 175 Preserved (Meth, Eth, Eth) (Sub) *Containers Supplied:* (D)40 mL VOA - HCL (E)40 mL VOA - HCL (F)40 mL VOA - HCL	06/21/24 17:00	06/24/24 16:10	air tech lab	- Hold per D. Acril 6/14/24 gd

Standard TAT

3° C
HO

Released By	Date	Received By	Date
	6/12/24	UPS (Shipper)	
UPS (Shipper)	6/14/24 10:20		6/14/24 10:20
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1045**
Date Received:	**06/14/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R061407-01		R061407-02					
Client Sample I.D.:	MGMS3-4(40) (A4F1045-04)		MGMS2-4(40) (A4F1045-06)					
Date/Time Sampled:	6/10/24 12:15		6/10/24 12:54					
Date/Time Analyzed:	6/19/24 14:48		6/19/24 15:08					
QC Batch No.:	240619GC8A1		240619GC8A1					
Analyst Initials:	AS		AS					
Dilution Factor:	1.0		1.0					
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**				
Ethene	2.7	1.0	ND	1.0				
Ethane	29	1.0	3.6	1.0				
Methane	1,600	1.0	3.0	1.0				

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 7/1/24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 240619GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/19/24 9:20			6/19/24 9:09		6/19/24 9:44					
Analyst Initials:	AS			AS		AS					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	871	85	841	82	3.5	70	130	30
Ethane	ND	1.0	1,100	969	88	933	84	3.8	70	130	30
Methane	ND	1.0	590	521	88	501	85	3.9	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/1/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Wednesday, June 26, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1085 - Sunoco Vancouver Main 2Q24 - 19001-009-34

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 A4F1085, which was received by the laboratory on 6/11/2024 at 5:00:00PM.

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

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

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

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

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MGMS2-1 (132)	A4F1085-01	Water	06/11/24 08:20	06/11/24 17:00
KMW-6	A4F1085-02	Water	06/11/24 09:30	06/11/24 17:00
NKW-1	A4F1085-03	Water	06/11/24 10:40	06/11/24 17:00
NKW-2	A4F1085-04	Water	06/11/24 11:15	06/11/24 17:00
MW-7	A4F1085-05	Water	06/11/24 12:10	06/11/24 17:00
MW-7 DUP	A4F1085-06	Water	06/11/24 12:10	06/11/24 17:00
MW-9	A4F1085-07	Water	06/11/24 13:06	06/11/24 17:00
MW-10	A4F1085-08	Water	06/11/24 14:11	06/11/24 17:00
MW-15	A4F1085-09	Water	06/11/24 10:43	06/11/24 17:00
MW-16	A4F1085-10	Water	06/11/24 09:57	06/11/24 17:00
MW-8	A4F1085-11	Water	06/11/24 09:21	06/11/24 17:00
MW-5	A4F1085-12	Water	06/11/24 08:10	06/11/24 17:00

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-1 (132) (A4F1085-01RE1)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 16:00	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
cis-1,2-Dichloroethene	**8.78**	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 16:00	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-1 (132) (A4F1085-01RE1)				**Matrix: Water**		**Batch: 24F0741**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
Tetrachloroethene (PCE)	**2.43**	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
Trichloroethene (TCE)	**2.43**	---	0.400	ug/L	1	06/21/24 16:00	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 16:00	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 16:00	EPA 8260D	
Vinyl chloride	**1.17**	---	0.200	ug/L	1	06/21/24 16:00	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits: 80-120 %*	*1*	*06/21/24 16:00*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/21/24 16:00*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/21/24 16:00*	*EPA 8260D*	
KMW-6 (A4F1085-02)				**Matrix: Water**		**Batch: 24F0538**		
Bromobenzene	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/16/24 06:47	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
KMW-6 (A4F1085-02)				**Matrix: Water**		**Batch: 24F0538**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 06:47	EPA 8260D	Q-54d
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/16/24 06:47	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/16/24 06:47	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/16/24 06:47	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/16/24 06:47	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*123 %*	*Limits:*	*80-120 %*	*06/16/24 06:47*	*EPA 8260D*	*S-06*
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*06/16/24 06:47*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*06/16/24 06:47*	*EPA 8260D*	
NKW-1 (A4F1085-03RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-1 (A4F1085-03RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromoform	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 18:21	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1-Dichloroethane	**3.05**	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1-Dichloroethene	**0.640**	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
cis-1,2-Dichloroethene	**47.2**	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
Tetrachloroethene (PCE)	**84.3**	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-1 (A4F1085-03RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
Trichloroethene (TCE)	**27.0**	---	0.400	ug/L	1	06/20/24 18:21	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 18:21	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 18:21	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits: 80-120 %*	*1*	*06/20/24 18:21*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/20/24 18:21*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*	*80-120 %*	*1*	*06/20/24 18:21*	*EPA 8260D*	
NKW-1 (A4F1085-03RE2)				**Matrix: Water**		**Batch: 24F0741**		
Vinyl chloride	**0.290**	---	0.200	ug/L	1	06/21/24 13:27	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits: 80-120 %*	*1*	*06/21/24 13:27*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/21/24 13:27*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*06/21/24 13:27*	*EPA 8260D*	
NKW-2 (A4F1085-04)				**Matrix: Water**		**Batch: 24F0538**		
Bromobenzene	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Bromochloromethane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Bromodichloromethane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Bromoform	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Bromomethane	ND	---	250	ug/L	50	06/16/24 14:58	EPA 8260D	
Carbon tetrachloride	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Chlorobenzene	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Chloroethane	ND	---	250	ug/L	50	06/16/24 14:58	EPA 8260D	
Chloroform	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Chloromethane	ND	---	250	ug/L	50	06/16/24 14:58	EPA 8260D	
2-Chlorotoluene	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
4-Chlorotoluene	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Dibromochloromethane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	250	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Dibromomethane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1085 - 06 26 24 1114

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
NKW-2 (A4F1085-04)				**Matrix: Water**		**Batch: 24F0538**		
1,2-Dichlorobenzene	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,3-Dichlorobenzene	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,4-Dichlorobenzene	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Dichlorodifluoromethane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1-Dichloroethane	**66.0**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1-Dichloroethene	**29.5**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
cis-1,2-Dichloroethene	**2140**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
trans-1,2-Dichloroethene	**27.0**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2-Dichloropropane	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,3-Dichloropropane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
2,2-Dichloropropane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1-Dichloropropene	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Hexachlorobutadiene	ND	---	250	ug/L	50	06/16/24 14:58	EPA 8260D	
Methylene chloride	ND	---	500	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Tetrachloroethene (PCE)	**55.0**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	100	ug/L	50	06/16/24 14:58	EPA 8260D	
1,1,2-Trichloroethane	ND	---	25.0	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	100	ug/L	50	06/16/24 14:58	EPA 8260D	Q-54d
1,1,1-Trichloroethane	ND	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Trichloroethene (TCE)	**107**	---	20.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Trichlorofluoromethane	ND	---	100	ug/L	50	06/16/24 14:58	EPA 8260D	
1,2,3-Trichloropropane	ND	---	50.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Vinyl chloride	ND	---	10.0	ug/L	50	06/16/24 14:58	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*118 %*	*Limits:*	*80-120 %*	*1*	*06/16/24 14:58*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/16/24 14:58*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*1*	*06/16/24 14:58*	*EPA 8260D*	
MW-7 (A4F1085-05)				**Matrix: Water**		**Batch: 24F0538**		
Bromobenzene	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 (A4F1085-05)				**Matrix: Water**		**Batch: 24F0538**		
Bromochloromethane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/16/24 07:14	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,1-Dichloroethane	**6.74**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
1,1-Dichloroethene	**1.63**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
cis-1,2-Dichloroethene	**58.7**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
trans-1,2-Dichloroethene	**0.720**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/16/24 07:14	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 (A4F1085-05)				**Matrix: Water**		**Batch: 24F0538**		
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 07:14	EPA 8260D	Q-54d
1,1,1-Trichloroethane	**1.50**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
Trichloroethene (TCE)	**87.9**	---	0.400	ug/L	1	06/16/24 07:14	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/16/24 07:14	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:14	EPA 8260D	
Vinyl chloride	**0.660**	---	0.200	ug/L	1	06/16/24 07:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*134 %*	*Limits: 80-120 %*	*1*	*06/16/24 07:14*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*99 %*	*80-120 %*	*1*	*06/16/24 07:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*	*80-120 %*	*1*	*06/16/24 07:14*	*EPA 8260D*	
MW-7 (A4F1085-05RE1)				**Matrix: Water**		**Batch: 24F0693**		
Tetrachloroethene (PCE)	**152**	---	4.00	ug/L	10	06/20/24 21:16	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*06/20/24 21:16*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/20/24 21:16*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*06/20/24 21:16*	*EPA 8260D*	
MW-7 DUP (A4F1085-06)				**Matrix: Water**		**Batch: 24F0538**		
Bromobenzene	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/16/24 07:41	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/16/24 07:41	EPA 8260D	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-7 DUP (A4F1085-06)				**Matrix: Water**		**Batch: 24F0538**		
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1-Dichloroethane	**6.34**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1-Dichloroethene	**1.42**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
cis-1,2-Dichloroethene	**53.8**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
trans-1,2-Dichloroethene	**0.720**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
Tetrachloroethene (PCE)	**179**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 07:41	EPA 8260D	Q-54d
1,1,1-Trichloroethane	**1.40**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
Trichloroethene (TCE)	**80.5**	---	0.400	ug/L	1	06/16/24 07:41	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/16/24 07:41	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/16/24 07:41	EPA 8260D	
Vinyl chloride	**0.560**	---	0.200	ug/L	1	06/16/24 07:41	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*134 %*	*Limits:*	*80-120 %*	*06/16/24 07:41*	*EPA 8260D*	*S-02*
Toluene-d8 (Surr)			*99 %*		*80-120 %*	*06/16/24 07:41*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*06/16/24 07:41*	*EPA 8260D*	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4F1085-07RE1)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 18:16	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 18:16	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4F1085-07RE1)				**Matrix: Water**		**Batch: 24F0741**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
Tetrachloroethene (PCE)	**53.4**	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,1,1-Trichloroethane	**0.580**	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
Trichloroethene (TCE)	**13.7**	---	0.400	ug/L	1	06/21/24 18:16	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 18:16	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 18:16	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/21/24 18:16	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits: 80-120 %*	*1*	*06/21/24 18:16*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/21/24 18:16*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*	*80-120 %*	*1*	*06/21/24 18:16*	*EPA 8260D*	
MW-10 (A4F1085-08RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 15:47	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-10 (A4F1085-08RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
Tetrachloroethene (PCE)	**3.21**	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
Trichloroethene (TCE)	**1.99**	---	0.400	ug/L	1	06/20/24 15:47	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 15:47	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 15:47	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/20/24 15:47	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*98 %*	*Limits:*	*80-120 %*	*1*	*06/20/24 15:47*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/20/24 15:47*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*	*1*	*06/20/24 15:47*	*EPA 8260D*	
MW-15 (A4F1085-09RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-15 (A4F1085-09RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromoform	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 16:09	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
Tetrachloroethene (PCE)	**0.470**	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	

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Darrell Auvil, Client Services Manager

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-15 (A4F1085-09RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/20/24 16:09	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 16:09	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:09	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/20/24 16:09	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*98 %*	*Limits: 80-120 %*	*1*	*06/20/24 16:09*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/20/24 16:09*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*06/20/24 16:09*	*EPA 8260D*	
MW-16 (A4F1085-10RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 17:59	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-16 (A4F1085-10RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
cis-1,2-Dichloroethene	**15.0**	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
Tetrachloroethene (PCE)	**35.3**	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
Trichloroethene (TCE)	**4.02**	---	0.400	ug/L	1	06/20/24 17:59	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 17:59	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 17:59	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/20/24 17:59	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*98 %*	*Limits:*	*80-120 %*	*1*	*06/20/24 17:59*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/20/24 17:59*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*	*1*	*06/20/24 17:59*	*EPA 8260D*	
MW-8 (A4F1085-11RE1)				**Matrix: Water**		**Batch: 24F0693**		
Bromobenzene	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-8 (A4F1085-11RE1)				**Matrix: Water**		**Batch: 24F0693**		
Chlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/20/24 16:31	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
cis-1,2-Dichloroethene	**6.42**	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
trans-1,2-Dichloroethene	**0.470**	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
Tetrachloroethene (PCE)	**1.64**	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/20/24 16:31	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1085 - 06 26 24 1114

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-8 (A4F1085-11RE1)				**Matrix: Water**		**Batch: 24F0693**		
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/20/24 16:31	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/20/24 16:31	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/20/24 16:31	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/20/24 16:31	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*97 %*	*Limits:*	*80-120 %*	*1*	*06/20/24 16:31*	*EPA 8260D*
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/20/24 16:31*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*	*1*	*06/20/24 16:31*	*EPA 8260D*
MW-5 (A4F1085-12)				**Matrix: Water**		**Batch: 24F0538**		
Bromobenzene	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/16/24 10:25	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1-Dichloroethane	**0.920**	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
cis-1,2-Dichloroethene	**36.3**	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-5 (A4F1085-12)				**Matrix: Water**		**Batch: 24F0538**		
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/16/24 10:25	EPA 8260D	Q-54d
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
Trichloroethene (TCE)	**0.800**	---	0.400	ug/L	1	06/16/24 10:25	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/16/24 10:25	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/16/24 10:25	EPA 8260D	
Vinyl chloride	**14.0**	---	0.200	ug/L	1	06/16/24 10:25	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*120 %*	*Limits:*	*80-120 %*	*1*	*06/16/24 10:25*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/16/24 10:25*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*	*1*	*06/16/24 10:25*	*EPA 8260D*	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-1 (132) (A4F1085-01)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:10	SM 4500-NH3 G	
KMW-6 (A4F1085-02)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:24	SM 4500-NH3 G	
NKW-1 (A4F1085-03)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**4.60**	---	0.200	mg/L	10	06/13/24 16:25	SM 4500-NH3 G	
NKW-2 (A4F1085-04)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**19.9**	---	0.200	mg/L	10	06/13/24 16:27	SM 4500-NH3 G	
MW-7 (A4F1085-05RE1)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**25.0**	---	0.200	mg/L	10	06/13/24 17:40	SM 4500-NH3 G	
MW-7 DUP (A4F1085-06)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**23.5**	---	0.100	mg/L	5	06/13/24 16:31	SM 4500-NH3 G	
MW-9 (A4F1085-07)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:34	SM 4500-NH3 G	
MW-10 (A4F1085-08)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**5.03**	---	0.200	mg/L	10	06/13/24 16:36	SM 4500-NH3 G	
MW-15 (A4F1085-09)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:39	SM 4500-NH3 G	
MW-16 (A4F1085-10)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:40	SM 4500-NH3 G	
MW-8 (A4F1085-11)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 16:42	SM 4500-NH3 G	
MW-5 (A4F1085-12)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**0.660**	---	0.0200	mg/L	1	06/13/24 16:52	SM 4500-NH3 G	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS2-1 (132) (A4F1085-01)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 12:09	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 12:09	EPA 300.0	
KMW-6 (A4F1085-02)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**1.62**	---	0.250	mg/L	1	06/12/24 13:13	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 13:13	EPA 300.0	
NKW-1 (A4F1085-03)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**24.6**	---	1.25	mg/L	5	06/12/24 14:18	EPA 300.0	
NKW-1 (A4F1085-03RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 20:03	EPA 300.0	
NKW-2 (A4F1085-04)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**47.2**	---	1.25	mg/L	5	06/12/24 15:23	EPA 300.0	
NKW-2 (A4F1085-04RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 21:08	EPA 300.0	
MW-7 (A4F1085-05RE1)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**167**	---	12.5	mg/L	50	06/13/24 01:48	EPA 300.0	
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 21:29	EPA 300.0	
MW-7 DUP (A4F1085-06RE1)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**156**	---	12.5	mg/L	50	06/13/24 02:09	EPA 300.0	
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 21:51	EPA 300.0	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-9 (A4F1085-07)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**79.4**	---	5.00	mg/L	20	06/12/24 16:27	EPA 300.0	
MW-9 (A4F1085-07RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 23:39	EPA 300.0	
MW-10 (A4F1085-08)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**321**	---	12.5	mg/L	50	06/12/24 16:49	EPA 300.0	
MW-10 (A4F1085-08RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 00:00	EPA 300.0	
MW-15 (A4F1085-09)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**5.49**	---	0.250	mg/L	1	06/12/24 17:11	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 17:11	EPA 300.0	
MW-16 (A4F1085-10)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**24.6**	---	1.25	mg/L	5	06/12/24 17:32	EPA 300.0	
MW-16 (A4F1085-10RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 00:43	EPA 300.0	
MW-8 (A4F1085-11)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	**65.9**	---	12.5	mg/L	50	06/12/24 17:54	EPA 300.0	
MW-8 (A4F1085-11RE1)				**Matrix: Water**				
Batch: 24F0405								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 00:22	EPA 300.0	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-5 (A4F1085-12)				**Matrix: Water**				
Batch: 24F0398								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 18:15	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/12/24 18:15	EPA 300.0	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
Blank (24F0538-BLK1)			Prepared: 06/15/24 14:16		Analyzed: 06/16/24 04:30							
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
Blank (24F0538-BLK1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 04:30									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	Q-54d
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*119 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
LCS (24F0538-BS1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 03:36									
EPA 8260D												
Bromobenzene	17.8	---	0.500	ug/L	1	20.0	---	89	80-120%	---	---	
Bromochloromethane	23.2	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
Bromodichloromethane	23.4	---	1.00	ug/L	1	20.0	---	117	80-120%	---	---	
Bromoform	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Bromomethane	21.4	---	5.00	ug/L	1	20.0	---	107	80-120%	---	---	
Carbon tetrachloride	23.5	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
Chlorobenzene	19.9	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Chloroethane	36.5	---	5.00	ug/L	1	20.0	---	**182**	**80-120%**	---	---	ICV-01, Q-56
Chloroform	22.1	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Chloromethane	28.4	---	5.00	ug/L	1	20.0	---	**142**	**80-120%**	---	---	Q-56
2-Chlorotoluene	16.8	---	1.00	ug/L	1	20.0	---	84	80-120%	---	---	
4-Chlorotoluene	17.5	---	1.00	ug/L	1	20.0	---	88	80-120%	---	---	
Dibromochloromethane	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,2-Dibromo-3-chloropropane	16.8	---	5.00	ug/L	1	20.0	---	84	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.3	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Dibromomethane	22.8	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
1,2-Dichlorobenzene	19.2	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
LCS (24F0538-BS1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 03:36									
1,3-Dichlorobenzene	19.5	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
1,4-Dichlorobenzene	19.1	---	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
Dichlorodifluoromethane	22.9	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.7	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,1-Dichloroethene	20.5	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
cis-1,2-Dichloroethene	18.2	---	0.400	ug/L	1	20.0	---	91	80-120%	---	---	
trans-1,2-Dichloroethene	17.8	---	0.400	ug/L	1	20.0	---	89	80-120%	---	---	
1,2-Dichloropropane	21.2	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
1,3-Dichloropropane	18.8	---	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
2,2-Dichloropropane	15.5	---	1.00	ug/L	1	20.0	---	**77**	**80-120%**	---	---	Q-55
1,1-Dichloropropene	19.8	---	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
cis-1,3-Dichloropropene	20.7	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
trans-1,3-Dichloropropene	18.4	---	1.00	ug/L	1	20.0	---	92	80-120%	---	---	
Hexachlorobutadiene	17.7	---	5.00	ug/L	1	20.0	---	88	80-120%	---	---	
Methylene chloride	23.6	---	10.0	ug/L	1	20.0	---	118	80-120%	---	---	
1,1,1,2-Tetrachloroethane	22.3	---	0.400	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2,2-Tetrachloroethane	18.8	---	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Tetrachloroethene (PCE)	19.7	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2,3-Trichlorobenzene	16.0	---	2.00	ug/L	1	20.0	---	80	80-120%	---	---	
1,1,2-Trichloroethane	21.1	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
1,2,4-Trichlorobenzene	13.3	---	2.00	ug/L	1	20.0	---	**66**	**80-120%**	---	---	Q-54d
1,1,1-Trichloroethane	22.0	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
Trichloroethene (TCE)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	34.3	---	2.00	ug/L	1	20.0	---	**172**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
Vinyl chloride	19.9	---	0.200	ug/L	1	20.0	---	100	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 110 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*96 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*90 %*		*80-120 %*				*"*			
Duplicate (24F0538-DUP1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 15:25									

QC Source Sample: NKW-2 (A4F1085-04)

EPA 8260D

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
Duplicate (24F0538-DUP1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 15:25									
QC Source Sample: NKW-2 (A4F1085-04)												
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%	
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%	
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	**63.0**	---	20.0	ug/L	50	---	66.0	---	---	5	30%	
1,2-Dichloroethane (EDC)	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	**29.5**	---	20.0	ug/L	50	---	29.5	---	---	0	30%	
cis-1,2-Dichloroethene	**2150**	---	20.0	ug/L	50	---	2140	---	---	0.7	30%	
trans-1,2-Dichloroethene	**28.0**	---	20.0	ug/L	50	---	27.0	---	---	4	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%	
Hexachlorobutadiene	ND	---	250	ug/L	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	500	ug/L	50	---	ND	---	---	---	30%	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
Duplicate (24F0538-DUP1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 15:25									
QC Source Sample: NKW-2 (A4F1085-04)												
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)	**64.5**	---	20.0	ug/L	50	---	55.0	---	---	16	30%	
1,2,3-Trichlorobenzene	ND	---	100	ug/L	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	25.0	ug/L	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	100	ug/L	50	---	ND	---	---	---	30%	Q-54d
1,1,1-Trichloroethane	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**114**	---	20.0	ug/L	50	---	107	---	---	7	30%	
Trichlorofluoromethane	ND	---	100	ug/L	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	50.0	ug/L	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	10.0	ug/L	50	---	8.50	---	---	***	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 119 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*				*"*			
Matrix Spike (24F0538-MS1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 11:47									
QC Source Sample: Non-SDG (A4F1108-03)												
EPA 8260D												
Bromobenzene	16.7	---	0.500	ug/L	1	20.0	ND	84	80-120%	---	---	
Bromochloromethane	23.0	---	1.00	ug/L	1	20.0	ND	115	78-123%	---	---	
Bromodichloromethane	23.5	---	1.00	ug/L	1	20.0	ND	118	79-125%	---	---	
Bromoform	21.2	---	1.00	ug/L	1	20.0	ND	106	66-130%	---	---	
Bromomethane	25.0	---	5.00	ug/L	1	20.0	ND	125	53-141%	---	---	
Carbon tetrachloride	22.4	---	1.00	ug/L	1	20.0	ND	112	72-136%	---	---	
Chlorobenzene	18.9	---	0.500	ug/L	1	20.0	ND	94	80-120%	---	---	
Chloroethane	38.9	---	5.00	ug/L	1	20.0	ND	**195**	**60-138%**	---	---	ICV-01, Q-54b
Chloroform	22.2	---	1.00	ug/L	1	20.0	ND	111	79-124%	---	---	
Chloromethane	26.6	---	5.00	ug/L	1	20.0	ND	133	50-139%	---	---	Q-54
2-Chlorotoluene	15.1	---	1.00	ug/L	1	20.0	ND	**76**	**79-122%**	---	---	Q-01
4-Chlorotoluene	15.7	---	1.00	ug/L	1	20.0	ND	78	78-122%	---	---	
Dibromochloromethane	22.5	---	1.00	ug/L	1	20.0	ND	112	74-126%	---	---	
1,2-Dibromo-3-chloropropane	17.2	---	5.00	ug/L	1	20.0	ND	86	62-128%	---	---	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					
Matrix Spike (24F0538-MS1)			Prepared: 06/15/24 14:16 Analyzed: 06/16/24 11:47									
QC Source Sample: Non-SDG (A4F1108-03)												
1,2-Dibromoethane (EDB)	20.6	---	0.500	ug/L	1	20.0	ND	103	77-121%	---	---	
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	18.3	---	0.500	ug/L	1	20.0	ND	92	80-120%	---	---	
1,3-Dichlorobenzene	18.2	---	0.500	ug/L	1	20.0	ND	91	80-120%	---	---	
1,4-Dichlorobenzene	17.8	---	0.500	ug/L	1	20.0	ND	89	79-120%	---	---	
Dichlorodifluoromethane	22.7	---	1.00	ug/L	1	20.0	ND	113	32-152%	---	---	
1,1-Dichloroethane	22.4	---	0.400	ug/L	1	20.0	ND	112	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.4	---	0.400	ug/L	1	20.0	ND	107	73-128%	---	---	
1,1-Dichloroethene	20.5	---	0.400	ug/L	1	20.0	ND	102	71-131%	---	---	
cis-1,2-Dichloroethene	17.9	---	0.400	ug/L	1	20.0	ND	90	78-123%	---	---	
trans-1,2-Dichloroethene	18.5	---	0.400	ug/L	1	20.0	ND	92	75-124%	---	---	
1,2-Dichloropropane	21.0	---	0.500	ug/L	1	20.0	ND	105	78-122%	---	---	
1,3-Dichloropropane	18.6	---	1.00	ug/L	1	20.0	ND	93	80-120%	---	---	
2,2-Dichloropropane	12.8	---	1.00	ug/L	1	20.0	ND	64	60-139%	---	---	Q-54e
1,1-Dichloropropene	18.8	---	1.00	ug/L	1	20.0	ND	94	79-125%	---	---	
cis-1,3-Dichloropropene	14.4	---	1.00	ug/L	1	20.0	ND	**72**	**75-124%**	---	---	Q-01
trans-1,3-Dichloropropene	17.2	---	1.00	ug/L	1	20.0	ND	86	73-127%	---	---	
Hexachlorobutadiene	16.6	---	5.00	ug/L	1	20.0	ND	83	66-134%	---	---	
Methylene chloride	23.0	---	10.0	ug/L	1	20.0	ND	115	74-124%	---	---	
1,1,1,2-Tetrachloroethane	21.2	---	0.400	ug/L	1	20.0	ND	106	78-124%	---	---	
1,1,2,2-Tetrachloroethane	19.8	---	0.500	ug/L	1	20.0	ND	99	71-121%	---	---	
Tetrachloroethene (PCE)	18.1	---	0.400	ug/L	1	20.0	ND	90	74-129%	---	---	
1,2,3-Trichlorobenzene	16.1	---	2.00	ug/L	1	20.0	ND	80	69-129%	---	---	
1,1,2-Trichloroethane	21.2	---	0.500	ug/L	1	20.0	ND	106	80-120%	---	---	
1,2,4-Trichlorobenzene	12.9	---	2.00	ug/L	1	20.0	ND	**64**	**69-130%**	---	---	Q-54d
1,1,1-Trichloroethane	21.7	---	0.400	ug/L	1	20.0	ND	109	74-131%	---	---	
Trichloroethene (TCE)	18.5	---	0.400	ug/L	1	20.0	ND	93	79-123%	---	---	
Trichlorofluoromethane	34.6	---	2.00	ug/L	1	20.0	ND	**173**	**65-141%**	---	---	Q-54a
1,2,3-Trichloropropane	18.9	---	1.00	ug/L	1	20.0	ND	94	73-122%	---	---	
Vinyl chloride	21.6	---	0.200	ug/L	1	20.0	ND	108	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 110 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*93 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*92 %*	*80-120 %*	*"*	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0538 - EPA 5030C							**Water**					

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Blank (24F0693-BLK1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 14:16									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C									Water			
Blank (24F0693-BLK1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 14:16									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*101 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
LCS (24F0693-BS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 13:21									
EPA 8260D												
Bromobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Bromochloromethane	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	20.2	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Bromoform	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Bromomethane	21.3	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Carbon tetrachloride	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Chlorobenzene	21.5	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
Chloroethane	20.8	---	5.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroform	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
Chloromethane	18.9	---	5.00	ug/L	1	20.0	---	94	80-120%	---	---	ICV-01
2-Chlorotoluene	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
4-Chlorotoluene	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Dibromochloromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dibromo-3-chloropropane	16.6	---	5.00	ug/L	1	20.0	---	83	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Dibromomethane	20.5	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichlorobenzene	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
LCS (24F0693-BS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 13:21									
1,3-Dichlorobenzene	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,4-Dichlorobenzene	20.9	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Dichlorodifluoromethane	21.5	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	ICV-01
1,1-Dichloroethane	21.8	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloroethene	23.2	---	0.400	ug/L	1	20.0	---	116	80-120%	---	---	
cis-1,2-Dichloroethene	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
trans-1,2-Dichloroethene	22.5	---	0.400	ug/L	1	20.0	---	112	80-120%	---	---	
1,2-Dichloropropane	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
2,2-Dichloropropane	25.4	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,1-Dichloropropene	21.9	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
cis-1,3-Dichloropropene	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
trans-1,3-Dichloropropene	21.1	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Hexachlorobutadiene	20.2	---	5.00	ug/L	1	20.0	---	101	80-120%	---	---	
Methylene chloride	20.4	---	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
1,1,1,2-Tetrachloroethane	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.8	---	0.500	ug/L	1	20.0	---	114	80-120%	---	---	
Tetrachloroethene (PCE)	22.5	---	0.400	ug/L	1	20.0	---	113	80-120%	---	---	
1,2,3-Trichlorobenzene	20.3	---	2.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,1,2-Trichloroethane	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	21.0	---	2.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1-Trichloroethane	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
Trichloroethene (TCE)	19.6	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
Trichlorofluoromethane	22.5	---	2.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,2,3-Trichloropropane	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
Vinyl chloride	22.1	---	0.200	ug/L	1	20.0	---	111	80-120%	---	---	ICV-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 98 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
Bromobenzene	ND	---	25.0	ug/L	50	---	ND	---	---	---	30%	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
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%	
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%	
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%	
Hexachlorobutadiene	ND	---	250	ug/L	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	500	ug/L	50	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Duplicate (24F0693-DUP1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 23:06									
QC Source Sample: Non-SDG (A4F1076-03RE1)												
1,1,2,2-Tetrachloroethane	ND	---	25.0	ug/L	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	20.0	ug/L	50	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	100	ug/L	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	25.0	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%	
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%	
Vinyl chloride	ND	---	10.0	ug/L	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Matrix Spike (24F0693-MS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 20:10									
QC Source Sample: Non-SDG (A4F1063-02)												
EPA 8260D												
Bromobenzene	22.0	---	0.500	ug/L	1	20.0	0.380	108	80-120%	---	---	
Bromochloromethane	23.0	---	1.00	ug/L	1	20.0	ND	115	78-123%	---	---	
Bromodichloromethane	23.1	---	1.00	ug/L	1	20.0	1.08	110	79-125%	---	---	
Bromoform	22.7	---	1.00	ug/L	1	20.0	1.54	106	66-130%	---	---	
Bromomethane	22.1	---	5.00	ug/L	1	20.0	ND	110	53-141%	---	---	
Carbon tetrachloride	23.8	---	1.00	ug/L	1	20.0	ND	119	72-136%	---	---	
Chlorobenzene	23.1	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
Chloroethane	25.6	---	5.00	ug/L	1	20.0	ND	128	60-138%	---	---	
Chloroform	23.8	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	25.7	---	5.00	ug/L	1	20.0	ND	129	50-139%	---	---	ICV-01
2-Chlorotoluene	25.1	---	1.00	ug/L	1	20.0	1.52	118	79-122%	---	---	
4-Chlorotoluene	25.2	---	1.00	ug/L	1	20.0	1.04	121	78-122%	---	---	
Dibromochloromethane	24.4	---	1.00	ug/L	1	20.0	1.76	113	74-126%	---	---	
1,2-Dibromo-3-chloropropane	16.5	---	5.00	ug/L	1	20.0	ND	83	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	---	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	
Dibromomethane	22.9	---	1.00	ug/L	1	20.0	ND	115	79-123%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0693 - EPA 5030C							**Water**					
Matrix Spike (24F0693-MS1)			Prepared: 06/20/24 10:56 Analyzed: 06/20/24 20:10									
QC Source Sample: Non-SDG (A4F1063-02)												
1,2-Dichlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	---	---	
1,3-Dichlorobenzene	23.0	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	22.2	---	0.500	ug/L	1	20.0	ND	111	79-120%	---	---	
Dichlorodifluoromethane	25.7	---	1.00	ug/L	1	20.0	ND	128	32-152%	---	---	ICV-01
1,1-Dichloroethane	23.8	---	0.400	ug/L	1	20.0	ND	119	77-125%	---	---	
1,2-Dichloroethane (EDC)	23.6	---	0.400	ug/L	1	20.0	ND	118	73-128%	---	---	
1,1-Dichloroethene	27.8	---	0.400	ug/L	1	20.0	ND	**139**	**71-131%**	---	---	Q-01
cis-1,2-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	ND	116	78-123%	---	---	
trans-1,2-Dichloroethene	26.7	---	0.400	ug/L	1	20.0	ND	**134**	**75-124%**	---	---	Q-01
1,2-Dichloropropane	22.7	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	22.1	---	1.00	ug/L	1	20.0	ND	111	80-120%	---	---	
2,2-Dichloropropane	25.9	---	1.00	ug/L	1	20.0	ND	130	60-139%	---	---	Q-54c
1,1-Dichloropropene	24.6	---	1.00	ug/L	1	20.0	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	75-124%	---	---	
trans-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	73-127%	---	---	
Hexachlorobutadiene	21.2	---	5.00	ug/L	1	20.0	ND	106	66-134%	---	---	
Methylene chloride	23.2	---	10.0	ug/L	1	20.0	ND	116	74-124%	---	---	
1,1,1,2-Tetrachloroethane	22.6	---	0.400	ug/L	1	20.0	ND	113	78-124%	---	---	
1,1,2,2-Tetrachloroethane	25.2	---	0.500	ug/L	1	20.0	ND	**126**	**71-121%**	---	---	Q-01
Tetrachloroethene (PCE)	24.0	---	0.400	ug/L	1	20.0	ND	120	74-129%	---	---	
1,2,3-Trichlorobenzene	20.9	---	2.00	ug/L	1	20.0	ND	105	69-129%	---	---	
1,1,2-Trichloroethane	22.3	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	21.7	---	2.00	ug/L	1	20.0	ND	108	69-130%	---	---	
1,1,1-Trichloroethane	24.2	---	0.400	ug/L	1	20.0	ND	121	74-131%	---	---	
Trichloroethene (TCE)	21.3	---	0.400	ug/L	1	20.0	ND	106	79-123%	---	---	
Trichlorofluoromethane	28.3	---	2.00	ug/L	1	20.0	ND	**142**	**65-141%**	---	---	Q-01
1,2,3-Trichloropropane	21.6	---	1.00	ug/L	1	20.0	ND	108	73-122%	---	---	
Vinyl chloride	14.4	---	0.200	ug/L	1	20.0	ND	72	58-137%	---	---	ICV-01
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C									Water			
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*105 %*		*80-120 %*			*"*				
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
EPA 8260D												
Bromobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Bromochloromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	21.3	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Bromoform	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Bromomethane	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Carbon tetrachloride	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chlorobenzene	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	19.2	---	5.00	ug/L	1	20.0	---	96	80-120%	---	---	
Chloroform	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.4	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.5	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromomethane	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
1,3-Dichlorobenzene	21.1	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,4-Dichlorobenzene	19.7	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dichlorodifluoromethane	19.3	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,1-Dichloroethane	20.3	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
1,1-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	19.9	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2-Dichloropropane	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,3-Dichloropropane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
2,2-Dichloropropane	23.5	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
1,1-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Hexachlorobutadiene	22.7	---	5.00	ug/L	1	20.0	---	114	80-120%	---	---	
Methylene chloride	19.1	---	10.0	ug/L	1	20.0	---	96	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.6	---	0.400	ug/L	1	20.0	---	118	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.1	---	0.500	ug/L	1	20.0	---	111	80-120%	---	---	
Tetrachloroethene (PCE)	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2-Trichloroethane	20.7	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,1-Trichloroethane	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
Trichloroethene (TCE)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	20.3	---	2.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichloropropane	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Vinyl chloride	19.8	---	0.200	ug/L	1	20.0	---	99	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*100 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	**6.14**	---	0.400	ug/L	1	---	5.70	---	---	7	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**33.3**	---	0.400	ug/L	1	---	30.5	---	---	9	30%	
trans-1,2-Dichloroethene	**0.680**	---	0.400	ug/L	1	---	0.760	---	---	11	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: Non-SDG (A4F1140-05)												
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	0.240	---	---	***	30%	
Trichloroethene (TCE)	**0.640**	---	0.400	ug/L	1	---	0.570	---	---	12	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	**0.200**	---	0.200	ug/L	1	---	0.180	---	---	11	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*			*"*				
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
EPA 8260D												
Bromobenzene	2180	---	50.0	ug/L	100	2000	ND	109	80-120%	---	---	
Bromochloromethane	2240	---	100	ug/L	100	2000	ND	112	78-123%	---	---	
Bromodichloromethane	2330	---	100	ug/L	100	2000	ND	116	79-125%	---	---	
Bromoform	2190	---	100	ug/L	100	2000	ND	109	66-130%	---	---	
Bromomethane	2370	---	500	ug/L	100	2000	ND	119	53-141%	---	---	
Carbon tetrachloride	2390	---	100	ug/L	100	2000	ND	119	72-136%	---	---	
Chlorobenzene	2220	---	50.0	ug/L	100	2000	ND	111	80-120%	---	---	
Chloroethane	2360	---	500	ug/L	100	2000	ND	118	60-138%	---	---	
Chloroform	2230	---	100	ug/L	100	2000	ND	112	79-124%	---	---	
Chloromethane	2060	---	500	ug/L	100	2000	ND	103	50-139%	---	---	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	---	---	
4-Chlorotoluene	2340	---	100	ug/L	100	2000	ND	117	78-122%	---	---	
Dibromochloromethane	2040	---	100	ug/L	100	2000	ND	102	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1940	---	500	ug/L	100	2000	ND	97	62-128%	---	---	
1,2-Dibromoethane (EDB)	2230	---	50.0	ug/L	100	2000	ND	112	77-121%	---	---	
Dibromomethane	2270	---	100	ug/L	100	2000	ND	114	79-123%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	2290	---	50.0	ug/L	100	2000	ND	114	80-120%	---	---	
1,4-Dichlorobenzene	2100	---	50.0	ug/L	100	2000	ND	105	79-120%	---	---	
Dichlorodifluoromethane	2230	---	100	ug/L	100	2000	ND	112	32-152%	---	---	
1,1-Dichloroethane	2260	---	40.0	ug/L	100	2000	ND	113	77-125%	---	---	
1,2-Dichloroethane (EDC)	2140	---	40.0	ug/L	100	2000	ND	107	73-128%	---	---	
1,1-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	2280	---	40.0	ug/L	100	2000	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	2230	---	40.0	ug/L	100	2000	ND	111	75-124%	---	---	
1,2-Dichloropropane	2240	---	50.0	ug/L	100	2000	ND	112	78-122%	---	---	
1,3-Dichloropropane	2300	---	100	ug/L	100	2000	ND	115	80-120%	---	---	
2,2-Dichloropropane	2140	---	100	ug/L	100	2000	ND	107	60-139%	---	---	
1,1-Dichloropropene	2460	---	100	ug/L	100	2000	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	2040	---	100	ug/L	100	2000	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	2210	---	100	ug/L	100	2000	ND	110	73-127%	---	---	
Hexachlorobutadiene	2340	---	500	ug/L	100	2000	ND	117	66-134%	---	---	
Methylene chloride	2100	---	1000	ug/L	100	2000	ND	105	74-124%	---	---	
1,1,1,2-Tetrachloroethane	2560	---	40.0	ug/L	100	2000	ND	**128**	**78-124%**	---	---	Q-01
1,1,2,2-Tetrachloroethane	2350	---	50.0	ug/L	100	2000	ND	118	71-121%	---	---	
Tetrachloroethene (PCE)	2260	---	40.0	ug/L	100	2000	ND	113	74-129%	---	---	
1,2,3-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	116	69-129%	---	---	
1,1,2-Trichloroethane	2170	---	50.0	ug/L	100	2000	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	2320	---	40.0	ug/L	100	2000	ND	116	74-131%	---	---	
Trichloroethene (TCE)	2160	---	40.0	ug/L	100	2000	ND	108	79-123%	---	---	
Trichlorofluoromethane	2480	---	200	ug/L	100	2000	ND	124	65-141%	---	---	
1,2,3-Trichloropropane	2280	---	100	ug/L	100	2000	ND	114	73-122%	---	---	
Vinyl chloride	2280	---	20.0	ug/L	100	2000	ND	114	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
Bromobenzene	2210	---	50.0	ug/L	100	2000	ND	110	80-120%	1	30%	
Bromochloromethane	2180	---	100	ug/L	100	2000	ND	109	78-123%	3	30%	
Bromodichloromethane	2300	---	100	ug/L	100	2000	ND	115	79-125%	1	30%	
Bromoform	2190	---	100	ug/L	100	2000	ND	110	66-130%	0.3	30%	
Bromomethane	2330	---	500	ug/L	100	2000	ND	117	53-141%	2	30%	
Carbon tetrachloride	2420	---	100	ug/L	100	2000	ND	121	72-136%	1	30%	
Chlorobenzene	2200	---	50.0	ug/L	100	2000	ND	110	80-120%	0.6	30%	
Chloroethane	2240	---	500	ug/L	100	2000	ND	112	60-138%	5	30%	
Chloroform	2190	---	100	ug/L	100	2000	ND	110	79-124%	2	30%	
Chloromethane	2100	---	500	ug/L	100	2000	ND	105	50-139%	2	30%	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	0.09	30%	
4-Chlorotoluene	2330	---	100	ug/L	100	2000	ND	116	78-122%	0.4	30%	
Dibromochloromethane	2020	---	100	ug/L	100	2000	ND	101	74-126%	0.6	30%	
1,2-Dibromo-3-chloropropane	1880	---	500	ug/L	100	2000	ND	94	62-128%	3	30%	
1,2-Dibromoethane (EDB)	2240	---	50.0	ug/L	100	2000	ND	112	77-121%	0.5	30%	
Dibromomethane	2220	---	100	ug/L	100	2000	ND	111	79-123%	2	30%	
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	0.1	30%	
1,3-Dichlorobenzene	2280	---	50.0	ug/L	100	2000	ND	114	80-120%	0.4	30%	
1,4-Dichlorobenzene	2090	---	50.0	ug/L	100	2000	ND	104	79-120%	0.9	30%	
Dichlorodifluoromethane	2250	---	100	ug/L	100	2000	ND	112	32-152%	0.7	30%	
1,1-Dichloroethane	2220	---	40.0	ug/L	100	2000	ND	111	77-125%	2	30%	
1,2-Dichloroethane (EDC)	2120	---	40.0	ug/L	100	2000	ND	106	73-128%	0.6	30%	
1,1-Dichloroethene	2200	---	40.0	ug/L	100	2000	ND	110	71-131%	3	30%	
cis-1,2-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	78-123%	1	30%	
trans-1,2-Dichloroethene	2210	---	40.0	ug/L	100	2000	ND	110	75-124%	1	30%	
1,2-Dichloropropane	2190	---	50.0	ug/L	100	2000	ND	110	78-122%	2	30%	
1,3-Dichloropropane	2270	---	100	ug/L	100	2000	ND	114	80-120%	1	30%	
2,2-Dichloropropane	2110	---	100	ug/L	100	2000	ND	106	60-139%	1	30%	
1,1-Dichloropropene	2420	---	100	ug/L	100	2000	ND	121	79-125%	1	30%	
cis-1,3-Dichloropropene	2080	---	100	ug/L	100	2000	ND	104	75-124%	2	30%	
trans-1,3-Dichloropropene	2200	---	100	ug/L	100	2000	ND	110	73-127%	0.2	30%	
Hexachlorobutadiene	2380	---	500	ug/L	100	2000	ND	119	66-134%	2	30%	
Methylene chloride	2090	---	1000	ug/L	100	2000	ND	105	74-124%	0.2	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
1,1,1,2-Tetrachloroethane	2500	---	40.0	ug/L	100	2000	ND	**125**	**78-124%**	3	30%	Q-01
1,1,2,2-Tetrachloroethane	2330	---	50.0	ug/L	100	2000	ND	116	71-121%	1	30%	
Tetrachloroethene (PCE)	2280	---	40.0	ug/L	100	2000	ND	114	74-129%	0.8	30%	
1,2,3-Trichlorobenzene	2380	---	200	ug/L	100	2000	ND	119	69-129%	2	30%	
1,1,2-Trichloroethane	2210	---	50.0	ug/L	100	2000	ND	111	80-120%	2	30%	
1,2,4-Trichlorobenzene	2310	---	200	ug/L	100	2000	ND	116	69-130%	0.9	30%	
1,1,1-Trichloroethane	2310	---	40.0	ug/L	100	2000	ND	115	74-131%	0.7	30%	
Trichloroethene (TCE)	2200	---	40.0	ug/L	100	2000	ND	110	79-123%	2	30%	
Trichlorofluoromethane	2440	---	200	ug/L	100	2000	ND	122	65-141%	1	30%	
1,2,3-Trichloropropane	2200	---	100	ug/L	100	2000	ND	110	73-122%	4	30%	
Vinyl chloride	2300	---	20.0	ug/L	100	2000	ND	115	58-137%	0.7	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0457 - Method Prep: Aq							**Water**					
Blank (24F0457-BLK1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 15:57									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0457-BS1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 15:58									
SM 4500-NH3 G												
Ammonia as N	1.96	---	0.0200	mg/L	1	2.00	---	98	90-111%	---	---	
Matrix Spike (24F0457-MS1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 16:12									
QC Source Sample: MGMS2-1 (132) (A4F1085-01)												
SM 4500-NH3 G												
Ammonia as N	2.45	---	0.0250	mg/L	1	2.50	0.0130	98	90-111%	---	---	
Matrix Spike Dup (24F0457-MSD1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 16:13									
QC Source Sample: MGMS2-1 (132) (A4F1085-01)												
SM 4500-NH3 G												
Ammonia as N	2.46	---	0.0250	mg/L	1	2.50	0.0130	98	90-111%	0.5	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0484 - Method Prep: Aq							**Water**					
Blank (24F0484-BLK1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:25									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0484-BS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:26									
SM 4500-NH3 G												
Ammonia as N	1.98	---	0.0200	mg/L	1	2.00	---	99	90-111%	---	---	
Matrix Spike (24F0484-MS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:34									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
SM 4500-NH3 G												
Ammonia as N	2.45	---	0.0250	mg/L	1	2.50	0.0490	96	90-111%	---	---	
Matrix Spike Dup (24F0484-MSD1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:35									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
Ammonia as N	2.50	---	0.0250	mg/L	1	2.50	0.0490	98	90-111%	2	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0398 - Method Prep: Aq							Water					
Blank (24F0398-BLK1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 11:04							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0398-BS1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 11:26							
EPA 300.0												
Nitrate-Nitrogen	2.08	---	0.250	mg/L	1	2.00	---	104	90-110%	---	---	
Nitrite-Nitrogen	2.07	---	0.250	mg/L	1	2.00	---	104	90-110%	---	---	
Duplicate (24F0398-DUP1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 12:30							
QC Source Sample: MGMS2-1 (132) (A4F1085-01)												
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0398-DUP2)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 13:35							
QC Source Sample: KMW-6 (A4F1085-02)												
EPA 300.0												
Nitrate-Nitrogen	**1.63**	---	0.250	mg/L	1	---	1.62	---	---	0.3	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0398-MS1)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 12:52							
QC Source Sample: MGMS2-1 (132) (A4F1085-01)												
EPA 300.0												
Nitrate-Nitrogen	2.68	---	0.312	mg/L	1	2.50	ND	107	87-112%	---	---	
Nitrite-Nitrogen	2.69	---	0.312	mg/L	1	2.50	ND	107	90-114%	---	---	
Matrix Spike (24F0398-MS2)			Prepared: 06/12/24 08:28		Analyzed: 06/12/24 13:56							
QC Source Sample: KMW-6 (A4F1085-02)												
EPA 300.0												
Nitrate-Nitrogen	4.25	---	0.312	mg/L	1	2.50	1.62	105	87-112%	---	---	
Nitrite-Nitrogen	2.63	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0405 - Method Prep: Aq							**Water**					
Blank (24F0405-BLK1)			Prepared: 06/12/24 09:35 Analyzed: 06/12/24 19:20									
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0405-BS1)			Prepared: 06/12/24 09:35 Analyzed: 06/12/24 19:41									
EPA 300.0												
Nitrite-Nitrogen	2.06	---	0.250	mg/L	1	2.00	---	103	90-110%	---	---	
Duplicate (24F0405-DUP1)			Prepared: 06/12/24 09:35 Analyzed: 06/12/24 20:25									
QC Source Sample: NKW-1 (A4F1085-03RE1)												
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0405-MS1)			Prepared: 06/12/24 09:35 Analyzed: 06/12/24 20:46									
QC Source Sample: NKW-1 (A4F1085-03RE1)												
EPA 300.0												
Nitrite-Nitrogen	2.67	---	0.312	mg/L	1	2.50	ND	107	90-114%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0538							
A4F1085-02	Water	EPA 8260D	06/11/24 09:30	06/15/24 14:16	5mL/5mL	5mL/5mL	1.00
A4F1085-04	Water	EPA 8260D	06/11/24 11:15	06/15/24 14:16	5mL/5mL	5mL/5mL	1.00
A4F1085-05	Water	EPA 8260D	06/11/24 12:10	06/15/24 14:16	5mL/5mL	5mL/5mL	1.00
A4F1085-06	Water	EPA 8260D	06/11/24 12:10	06/15/24 14:16	5mL/5mL	5mL/5mL	1.00
A4F1085-12	Water	EPA 8260D	06/11/24 08:10	06/15/24 14:16	5mL/5mL	5mL/5mL	1.00
Batch: 24F0693							
A4F1085-03RE1	Water	EPA 8260D	06/11/24 10:40	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
A4F1085-05RE1	Water	EPA 8260D	06/11/24 12:10	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
A4F1085-08RE1	Water	EPA 8260D	06/11/24 14:11	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
A4F1085-09RE1	Water	EPA 8260D	06/11/24 10:43	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
A4F1085-10RE1	Water	EPA 8260D	06/11/24 09:57	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
A4F1085-11RE1	Water	EPA 8260D	06/11/24 09:21	06/20/24 10:56	5mL/5mL	5mL/5mL	1.00
Batch: 24F0741							
A4F1085-01RE1	Water	EPA 8260D	06/11/24 08:20	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1085-03RE2	Water	EPA 8260D	06/11/24 10:40	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1085-07RE1	Water	EPA 8260D	06/11/24 13:06	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0457							
A4F1085-01	Water	SM 4500-NH3 G	06/11/24 08:20	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-02	Water	SM 4500-NH3 G	06/11/24 09:30	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-03	Water	SM 4500-NH3 G	06/11/24 10:40	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-04	Water	SM 4500-NH3 G	06/11/24 11:15	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-06	Water	SM 4500-NH3 G	06/11/24 12:10	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-07	Water	SM 4500-NH3 G	06/11/24 13:06	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-08	Water	SM 4500-NH3 G	06/11/24 14:11	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-09	Water	SM 4500-NH3 G	06/11/24 10:43	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-10	Water	SM 4500-NH3 G	06/11/24 09:57	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-11	Water	SM 4500-NH3 G	06/11/24 09:21	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1085-12	Water	SM 4500-NH3 G	06/11/24 08:10	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
Batch: 24F0484							
A4F1085-05RE1	Water	SM 4500-NH3 G	06/11/24 12:10	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00

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SAMPLE PREPARATION INFORMATION

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0398							
A4F1085-01	Water	EPA 300.0	06/11/24 08:20	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-02	Water	EPA 300.0	06/11/24 09:30	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-03	Water	EPA 300.0	06/11/24 10:40	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-04	Water	EPA 300.0	06/11/24 11:15	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-05RE1	Water	EPA 300.0	06/11/24 12:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-06RE1	Water	EPA 300.0	06/11/24 12:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-07	Water	EPA 300.0	06/11/24 13:06	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-08	Water	EPA 300.0	06/11/24 14:11	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-09	Water	EPA 300.0	06/11/24 10:43	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-10	Water	EPA 300.0	06/11/24 09:57	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-11	Water	EPA 300.0	06/11/24 09:21	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-12	Water	EPA 300.0	06/11/24 08:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
Batch: 24F0405							
A4F1085-03RE1	Water	EPA 300.0	06/11/24 10:40	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-04RE1	Water	EPA 300.0	06/11/24 11:15	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-05RE1	Water	EPA 300.0	06/11/24 12:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-06RE1	Water	EPA 300.0	06/11/24 12:10	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-07RE1	Water	EPA 300.0	06/11/24 13:06	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-08RE1	Water	EPA 300.0	06/11/24 14:11	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-10RE1	Water	EPA 300.0	06/11/24 09:57	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00
A4F1085-11RE1	Water	EPA 300.0	06/11/24 09:21	06/12/24 08:28	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

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ICV-01	Estimated Result. Initial Calibration Verification (ICV) failed high. There is no effect on non-detect results.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +22%. 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 8260/8270 by +52%. 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 8260/8270 by +62%. 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 8260/8270 by +7%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -14%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -3%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.
S-02	Surrogate recovery cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
S-06	Surrogate recovery is outside of established control limits.

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



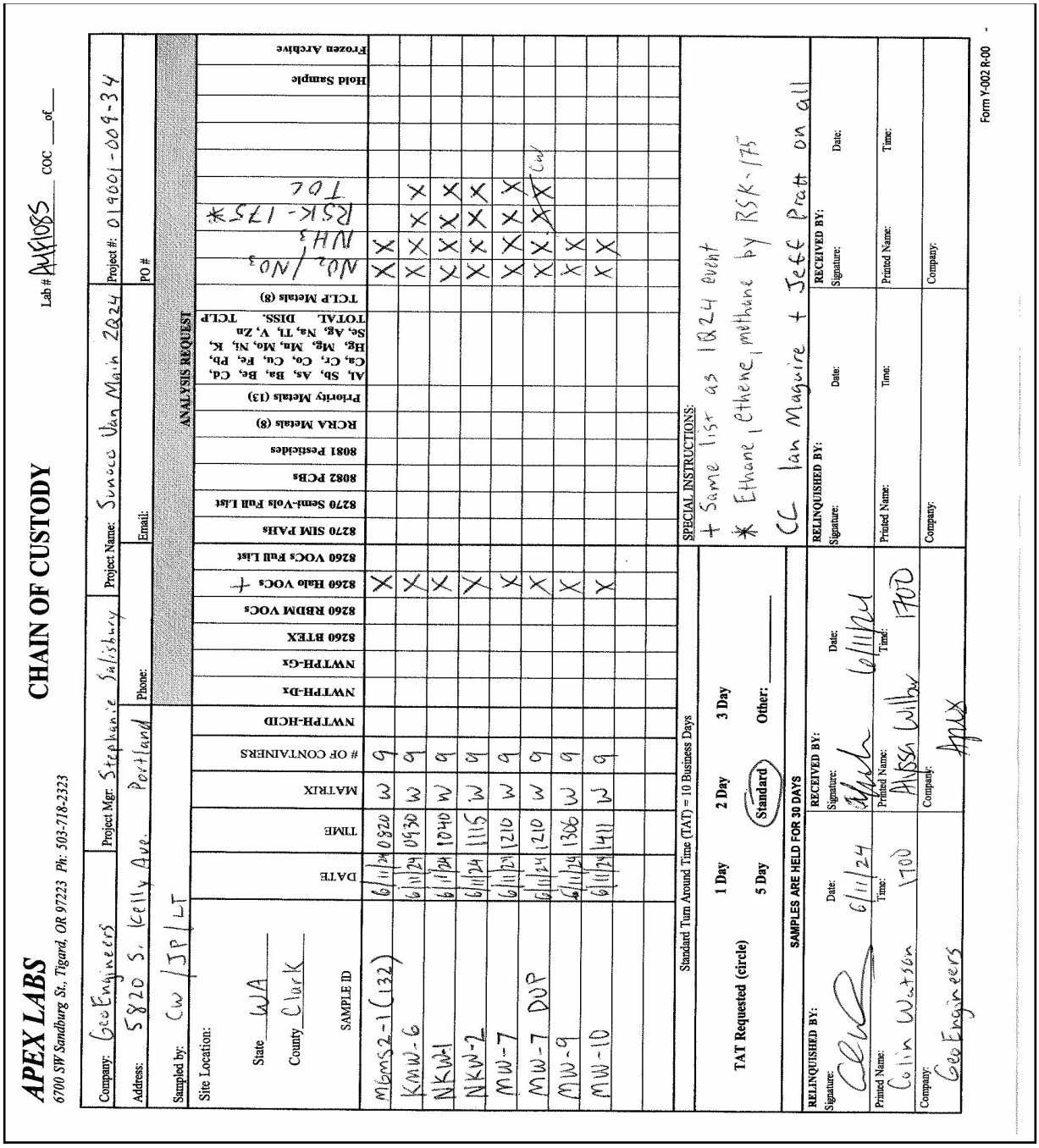
Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**



APEX LABS — CHAIN OF CUSTODY

6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # A4F1085 COC ___ of ___

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Sunoco Van Main 2Q24 | Project #: 19001-009-34

Address: 5820 S. Kelly Ave. Portland | Phone: | Email: | PO #

Sampled by: CW / JP / LT

Site Location: State WA County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2/NO_3 NH3 RSK-175* TOC	Hold Sample	Frozen Archive
MGMS2-1(132)	6/11/24	0820	W	9						X									X		
KMW-6	6/11/24	0930	W	9						X									X		
NKW-1	6/11/24	1040	W	9						X									X		
NKW-2	6/11/24	1115	W	9						X									X		
MW-7	6/11/24	1210	W	9						X									X		
MW-7 DUP	6/11/24	1210	W	9						X									X		
MW-9	6/11/24	1306	W	9						X									X		
MW-10	6/11/24	1411	W	9						X									X		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day **Standard** Other: ___

SPECIAL INSTRUCTIONS:
+ Same list as 1824 event
* Ethane, ethene, methane by RSK-175
CC Ian Maguire + Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/11/24	1700	Signature:	6/11/24	1700
Printed Name: Colin Watson			Printed Name: Alyssa Wilbur		
Company: GeoEngineers			Company: APEX		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

Apex Laboratories

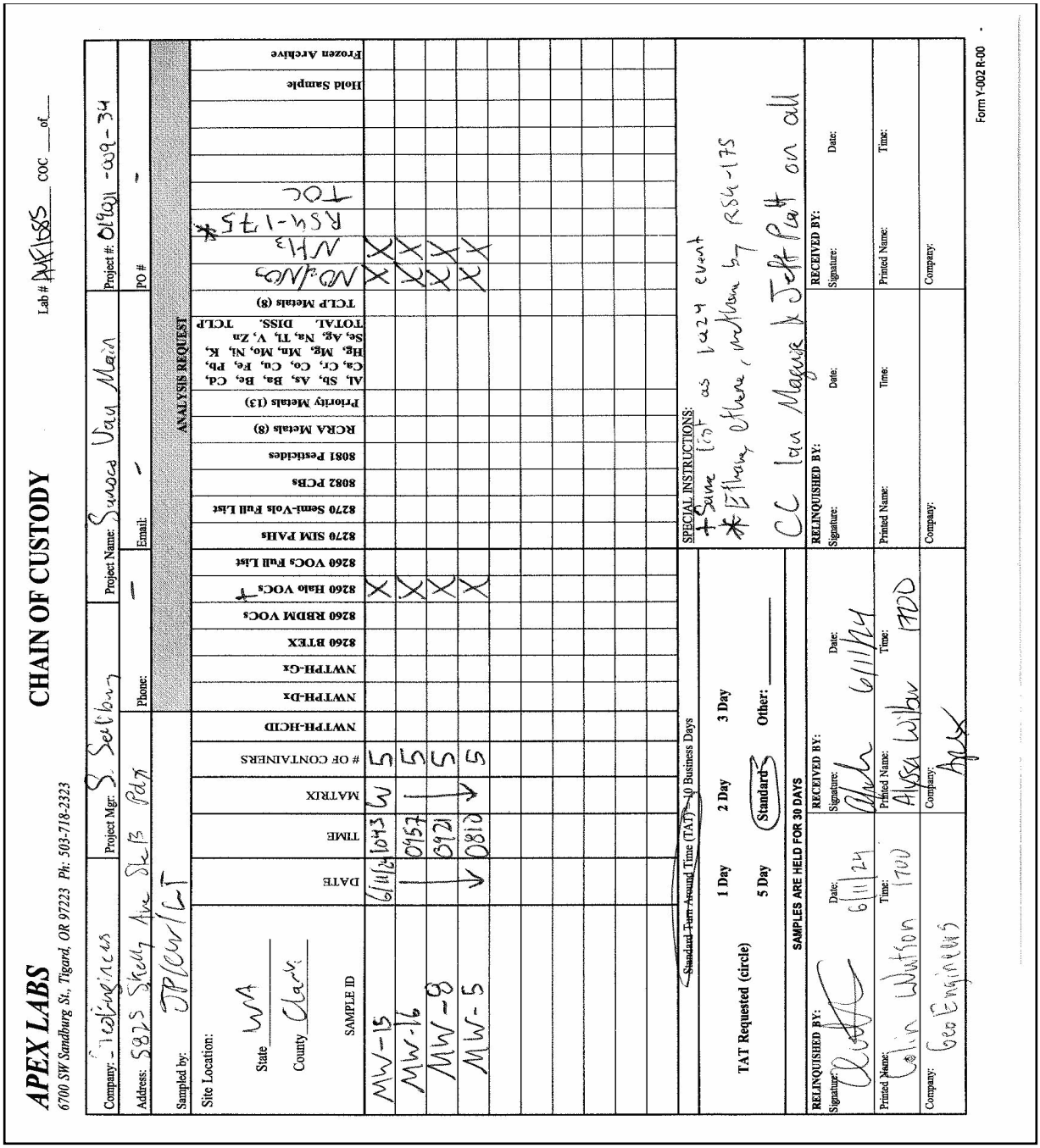
The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**



APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4F1085 COC __ of __

Company: GeoEngineers | Project Mgr: S. Salisbury | Project Name: Sunoco Van Main | Project #: 0190l -009-34
Address: 5820 S Kelly Ave Ste B Pdx | Phone: | Email: - | PO # -
Sampled by: JP/CW/CT

Site Location: State WA County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO2/NO3	NH3	RSK-175*	TOC	Hold Sample	Frozen Archive
MW-15	6/11/24	1043	W	5						X										X				
MW-16	1	0957	1	5						X										X				
MW-8	1	0921	1	5						X										X				
MW-5	↓	0810	↓	5						X										X				

Standard Turn Around Time (TAT) - 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: _____

SPECIAL INSTRUCTIONS:
+ Same list as 1424 event
* Ethane, methane by RSK-175
CC Ian Maguire & Jeff Pal on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/11/24		Signature:	6/11/24	
Printed Name: Colin Hutton		1700	Printed Name: Alyssa Wilbur		1700
Company: GeoEngineers			Company: APEX		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1085 - 06 26 24 1114**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4F1085

Project/Project #: Sunoco Van Main 2Q24 019001-009-34

Delivery Info:

Date/time received: 6/11/24 @ 1700 By: AAW

Delivered by: Apex__ Client X ESS__ FedEx__ UPS__ Radio__ Morgan__ SDS__ Evergreen__ Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 6/11/24 @ 1700 By: AAW

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

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

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

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

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 6/11/24 @ 1700 By: AAW

All samples intact? Yes ✓ No ___ Comments: _____

Bottle labels/COCs agree? Yes ✓ No ___ Comments: 1L4 VOAs for MW-9 NO TIME

COC/container discrepancies form initiated? Yes ___ No ✓

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

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

Comments _____

Water samples: pH checked: Yes ✓ No ___ NA ___ pH appropriate? Yes X No ___ NA ___ pH ID: 423-172

Comments: _____

Labeled by: AAW Witness: [signature] Cooler Inspected by: AAW

Form Y-003 R-02

Apex Laboratories



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Darrell Auvil, Client Services Manager

June 25, 2024 Service Request No:K2406176

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

Laboratory Results for: A4F1085

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 13, 2024
For your reference, these analyses have been assigned our service request number **K2406176.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Laboratories
Project: A4F1085
Sample Matrix: Water

Service Request: K2406176
Date Received: 06/13/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Four water samples were received for analysis at ALS Environmental on 06/13/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/25/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MW-7			Lab ID: K2406176-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	4.70		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Laboratories **Service Request:**K2406176

Project: A4F1085

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406176-004	MW-7	6/11/2024	1210

VN24060176

SUBCONTRACT ORDER

Apex Laboratories

ABS 6/11/24 **A4F1085** KMB 6/13/24

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: KMW-6 **Sampled: 06/11/24 09:30** (A4F1085-02)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/24/24 17:00	07/09/24 09:30	ALS Kelso, no data package
Containers Supplied: (G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: NKW-1 **Sampled: 06/11/24 10:40** (A4F1085-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/24/24 17:00	07/09/24 10:40	ALS Kelso, no data package
Containers Supplied: (G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: NKW-2 **Sampled: 06/11/24 11:15** (A4F1085-04)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/24/24 17:00	07/09/24 11:15	ALS Kelso, no data package
Containers Supplied: (G)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-7 **Sampled: 06/11/24 12:10** (A4F1085-05)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/24/24 17:00	07/09/24 12:10	ALS Kelso, no data package
Containers Supplied: (G)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date	Received By	Date
	6/13/24 1135		6/13/24 1130
	6/10/24 1410		6/13/24 1410

PM HH

Cooler Receipt and Preservation Form

Client Apex Service Request K24 061776

Received: 6/13/24 Opened: 6/13/24 By: HS Unloaded: 6/13/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	4.5	IR06					

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Apex Laboratories	**Service Request:**	K2406176
Project:	A4F1085/		

Sample Name:	MW-7	**Date Collected:**	06/11/24
Lab Code:	K2406176-004	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406176
Project:	A4F1085	**Date Collected:**	06/11/24 12:10
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MW-7	**Basis:**	NA
Lab Code:	K2406176-004		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**4.70**	mg/L	0.50	0.08	1	06/21/24 15:38	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406176
Project:	A4F1085	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406176-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/21/24 15:38	

Client:	Apex Laboratories	**Service Request:**	K2406176
Project:	A4F1085	**Date Analyzed:**	06/21/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845085

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406176-LCS	23.4	25.0	94	83-117

AirTECHNOLOGY
Laboratories, Inc.

July 2, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1085
Lab Number: R061406-01-04

Enclosed are results for sample(s) received 6/14/24 by Air Technology Laboratories. Samples were received intact and chilled to 3° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

R0614406-01/04

AB 6/11/24 **A4F1085** KAB 6/12/24

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

01 **Sample Name: KMW-6** **Water** **Sampled: 06/11/24 09:30** (A4F1085-02)

Analysis	Due	Expires	Comments	
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/24/24 17:00	06/25/24 09:30	air tech lab	Hold per DAuvil 6/14/24 DD
Containers Supplied:				
(D)40 mL VOA - HCL				
(E)40 mL VOA - HCL				
(F)40 mL VOA - HCL				

02 **Sample Name: NKW-1** **Water** **Sampled: 06/11/24 10:40** (A4F1085-03)

Analysis	Due	Expires	Comments	
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/24/24 17:00	06/25/24 10:40	air tech lab	Hold per DAuvil 6/14/24 DD
Containers Supplied:				
(D)40 mL VOA - HCL				
(E)40 mL VOA - HCL				
(F)40 mL VOA - HCL				

03 **Sample Name: NKW-2** **Water** **Sampled: 06/11/24 11:15** (A4F1085-04)

Analysis	Due	Expires	Comments	
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/24/24 17:00	06/25/24 11:15	air tech lab	Hold per DAuvil 6/14/24 DD
Containers Supplied:				
(D)40 mL VOA - HCL				
(E)40 mL VOA - HCL				
(F)40 mL VOA - HCL				

Standard TAT

3°C
HO

Released By	Date	Received By	Date
	6/12/24	UPS (Shipper)	
UPS (Shipper)	6/14/24 10:20		6/14/24 10:20
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Apex Laboratories

6 HO

R0614O7-01/04

GB 6/11/24 **A4F1085** MAB 6/12/24

04 **Sample Name: MW-7** **Water** **Sampled: 06/11/24 12:10** (A4F1085-05)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/24/24 17:00	06/25/24 12:10	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

Standard TAT

3°C
HO

Released By	Date	Received By	Date
UPS (Shipper)	6/12/24	UPS (Shipper)	
Released By	Date	Received By	Date
	06/14/24 10:20		6/14/24 10:20

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1085**
Date Received:	**06/14/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R061406-04							
Client Sample I.D.:	MW-7 (A4F1085-05)							
Date/Time Sampled:	6/11/24 12:10							
Date/Time Analyzed:	6/19/24 14:27							
QC Batch No.:	240619GC8A1							
Analyst Initials:	AS							
Dilution Factor:	1.0							
ANALYTE	**Result ug/L**	**RL ug/L**						
Ethene	ND	1.0						
Ethane	ND	1.0						
Methane	210	1.0						

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 7/1/24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240619GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/19/24 9:20			6/19/24 9:09		6/19/24 9:44					
Analyst Initials:	AS			AS		AS					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	871	85	841	82	3.5	70	130	30
Ethane	ND	1.0	1,100	969	88	933	84	3.8	70	130	30
Methane	ND	1.0	590	521	88	501	85	3.9	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/1/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Thursday, June 27, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1140 - Sunoco Vancouver Main 2Q24 - 19001-009-34

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 A4F1140, which was received by the laboratory on 6/12/2024 at 5:46:00PM.

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

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

Cooler Receipt Information	
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.	
(See Cooler Receipt Form for details)	
Cooler #1 5.3 degC	Cooler #2 4.6 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-25i	A4F1140-01	Water	06/12/24 08:23	06/12/24 17:46
MW-17	A4F1140-02	Water	06/12/24 09:29	06/12/24 17:46
MW-14	A4F1140-03	Water	06/12/24 10:20	06/12/24 17:46
S-1	A4F1140-04	Water	06/12/24 11:43	06/12/24 17:46
S-2	A4F1140-05	Water	06/12/24 12:37	06/12/24 17:46
MW-19	A4F1140-06	Water	06/12/24 14:22	06/12/24 17:46
MW-19 DUP	A4F1140-07	Water	06/12/24 14:22	06/12/24 17:46
MW-3	A4F1140-08	Water	06/12/24 15:15	06/12/24 17:46
MW-6	A4F1140-09	Water	06/12/24 16:00	06/12/24 17:46
MW-24d	A4F1140-10	Water	06/12/24 14:11	06/12/24 17:46
MW-19i	A4F1140-11	Water	06/12/24 13:13	06/12/24 17:46
MW-20i	A4F1140-12	Water	06/12/24 11:37	06/12/24 17:46
MW-18i	A4F1140-13	Water	06/12/24 10:52	06/12/24 17:46
EW-1	A4F1140-14	Water	06/12/24 09:56	06/12/24 17:46
MGMS1-1(110)	A4F1140-15	Water	06/12/24 09:04	06/12/24 17:46
MGMS1-2(60)	A4F1140-16	Water	06/12/24 08:34	06/12/24 17:46
MGMS1-1(43)	A4F1140-17	Water	06/12/24 08:00	06/12/24 17:46

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-25i (A4F1140-01)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 20:59	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 20:59	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-25i (A4F1140-01)				**Matrix: Water**		**Batch: 24F0741**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/21/24 20:59	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 20:59	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 20:59	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/21/24 20:59	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*06/21/24 20:59*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/21/24 20:59*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*104 %*	*80-120 %*	*1*	*06/21/24 20:59*	*EPA 8260D*	
MW-17 (A4F1140-02)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 21:26	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-17 (A4F1140-02)				**Matrix: Water**		**Batch: 24F0741**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
cis-1,2-Dichloroethene	**0.690**	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
Tetrachloroethene (PCE)	**0.850**	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
Trichloroethene (TCE)	**0.660**	---	0.400	ug/L	1	06/21/24 21:26	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 21:26	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:26	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/21/24 21:26	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*	*1*	*06/21/24 21:26*	*EPA 8260D*
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/21/24 21:26*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*	*1*	*06/21/24 21:26*	*EPA 8260D*
MW-14 (A4F1140-03RE1)				**Matrix: Water**		**Batch: 24F0773**		
Bromobenzene	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-14 (A4F1140-03RE1)				**Matrix: Water**		**Batch: 24F0773**		
Bromoform	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/23/24 22:25	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1-Dichloroethane	**0.410**	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
cis-1,2-Dichloroethene	**5.75**	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
Tetrachloroethene (PCE)	**20.6**	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-14 (A4F1140-03RE1)				**Matrix: Water**		**Batch: 24F0773**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
Trichloroethene (TCE)	**39.8**	---	0.400	ug/L	1	06/23/24 22:25	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/23/24 22:25	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/23/24 22:25	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/23/24 22:25	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*108 %*	*Limits: 80-120 %*	*1*	*06/23/24 22:25*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*06/23/24 22:25*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/23/24 22:25*	*EPA 8260D*	
S-1 (A4F1140-04)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 02:54	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-1 (A4F1140-04)				**Matrix: Water**		**Batch: 24F0754**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
Tetrachloroethene (PCE)	**0.470**	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/22/24 02:54	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 02:54	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 02:54	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 02:54	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 02:54*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/22/24 02:54*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*1*	*06/22/24 02:54*	*EPA 8260D*	
S-2 (A4F1140-05)				**Matrix: Water**		**Batch: 24F0741**		
Bromobenzene	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-2 (A4F1140-05)				**Matrix: Water**		**Batch: 24F0741**		
Chlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/21/24 21:54	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1-Dichloroethane	**5.70**	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
cis-1,2-Dichloroethene	**30.5**	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
trans-1,2-Dichloroethene	**0.760**	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/21/24 21:54	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
S-2 (A4F1140-05)				**Matrix: Water**		**Batch: 24F0741**		
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
Trichloroethene (TCE)	**0.570**	---	0.400	ug/L	1	06/21/24 21:54	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/21/24 21:54	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/21/24 21:54	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/21/24 21:54	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits: 80-120 %*	*1*	*06/21/24 21:54*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*	*80-120 %*	*1*	*06/21/24 21:54*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/21/24 21:54*	*EPA 8260D*	
MW-19 (A4F1140-06)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	06/22/24 04:15	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1-Dichloroethane	**66.3**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1-Dichloroethene	**19.9**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
cis-1,2-Dichloroethene	**1150**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 (A4F1140-06)				**Matrix: Water**		**Batch: 24F0754**		
trans-1,2-Dichloroethene	**10.9**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,1,1-Trichloroethane	**12.6**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Trichloroethene (TCE)	**894**	---	4.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	06/22/24 04:15	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:15	EPA 8260D	
Vinyl chloride	**39.8**	---	2.00	ug/L	10	06/22/24 04:15	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 04:15*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 04:15*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*1*	*06/22/24 04:15*	*EPA 8260D*	
MW-19 (A4F1140-06RE1)				**Matrix: Water**		**Batch: 24F0773**		
Tetrachloroethene (PCE)	**2600**	---	40.0	ug/L	100	06/24/24 00:14	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits:*	*80-120 %*	*1*	*06/24/24 00:14*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/24/24 00:14*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*06/24/24 00:14*	*EPA 8260D*	
MW-19 DUP (A4F1140-07)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 DUP (A4F1140-07)				**Matrix: Water**		**Batch: 24F0754**		
Bromomethane	ND	---	50.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	06/22/24 04:43	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1-Dichloroethane	**62.0**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1-Dichloroethene	**18.8**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
cis-1,2-Dichloroethene	**1100**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
trans-1,2-Dichloroethene	**9.40**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	06/22/24 04:43	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 DUP (A4F1140-07)				**Matrix: Water**		**Batch: 24F0754**		
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,1,1-Trichloroethane	**12.8**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Trichloroethene (TCE)	**896**	---	4.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	06/22/24 04:43	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	06/22/24 04:43	EPA 8260D	
Vinyl chloride	**36.2**	---	2.00	ug/L	10	06/22/24 04:43	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*06/22/24 04:43*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/22/24 04:43*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*06/22/24 04:43*	*EPA 8260D*	
MW-19 DUP (A4F1140-07RE1)				**Matrix: Water**		**Batch: 24F0773**		
Tetrachloroethene (PCE)	**2440**	---	40.0	ug/L	100	06/24/24 00:41	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*06/24/24 00:41*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/24/24 00:41*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/24/24 00:41*	*EPA 8260D*	
MW-3 (A4F1140-08)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 03:21	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-3 (A4F1140-08)				**Matrix: Water**		**Batch: 24F0754**		
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1-Dichloroethane	**0.740**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
cis-1,2-Dichloroethene	**26.9**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
trans-1,2-Dichloroethene	**1.15**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2-Dichloropropane	**0.630**	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
Tetrachloroethene (PCE)	**137**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,1,1-Trichloroethane	**1.51**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
Trichloroethene (TCE)	**27.5**	---	0.400	ug/L	1	06/22/24 03:21	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 03:21	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 03:21	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 03:21	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 03:21*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 03:21*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 03:21*	*EPA 8260D*	
MW-6 (A4F1140-09)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-6 (A4F1140-09)				**Matrix: Water**		**Batch: 24F0754**		
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 09:15	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-6 (A4F1140-09)				**Matrix: Water**		**Batch: 24F0754**		
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/22/24 09:15	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 09:15	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:15	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 09:15	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:* *80-120 %*	*1*	*06/22/24 09:15*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 09:15*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*06/22/24 09:15*	*EPA 8260D*	
MW-24d (A4F1140-10)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 09:43	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-24d (A4F1140-10)				**Matrix: Water**		**Batch: 24F0754**		
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/22/24 09:43	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 09:43	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 09:43	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 09:43	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:* *80-120 %*	*1*	*06/22/24 09:43*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/22/24 09:43*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 09:43*	*EPA 8260D*	
MW-19i (A4F1140-11)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 10:10	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19i (A4F1140-11)				**Matrix: Water**		**Batch: 24F0754**		
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 10:10	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
cis-1,2-Dichloroethene	**0.430**	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 10:10	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19i (A4F1140-11)				**Matrix: Water**		**Batch: 24F0754**		
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/22/24 10:10	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 10:10	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:10	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 10:10	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits: 80-120 %*	*1*	*06/22/24 10:10*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*06/22/24 10:10*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 10:10*	*EPA 8260D*	
MW-20i (A4F1140-12)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 10:37	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-20i (A4F1140-12)				**Matrix: Water**		**Batch: 24F0754**		
cis-1,2-Dichloroethene	**6.68**	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
Tetrachloroethene (PCE)	**1.55**	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
Trichloroethene (TCE)	**0.990**	---	0.400	ug/L	1	06/22/24 10:37	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 10:37	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 10:37	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 10:37	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 10:37*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 10:37*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*	*1*	*06/22/24 10:37*	*EPA 8260D*	
MW-18i (A4F1140-13)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 11:04	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-18i (A4F1140-13)				**Matrix: Water**		**Batch: 24F0754**		
Chloroform	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 11:04	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
Tetrachloroethene (PCE)	**0.960**	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	
Trichloroethene (TCE)	**0.420**	---	0.400	ug/L	1	06/22/24 11:04	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-18i (A4F1140-13)				**Matrix: Water**		**Batch: 24F0754**		
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 11:04	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:04	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 11:04	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*06/22/24 11:04*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/22/24 11:04*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 11:04*	*EPA 8260D*	
EW-1 (A4F1140-14)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Chloroform	**1.18**	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 11:59	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
cis-1,2-Dichloroethene	**0.780**	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EW-1 (A4F1140-14)				**Matrix: Water**		**Batch: 24F0754**		
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
Tetrachloroethene (PCE)	**21.1**	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,1,1-Trichloroethane	**0.420**	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
Trichloroethene (TCE)	**6.29**	---	0.400	ug/L	1	06/22/24 11:59	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 11:59	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:59	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 11:59	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 11:59*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 11:59*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*	*1*	*06/22/24 11:59*	*EPA 8260D*	
MGMS1-1(110) (A4F1140-15)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 12:26	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-1(110) (A4F1140-15)				**Matrix: Water**		**Batch: 24F0754**		
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1-Dichloroethane	**2.91**	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
cis-1,2-Dichloroethene	**101**	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
trans-1,2-Dichloroethene	**0.460**	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
Tetrachloroethene (PCE)	**13.7**	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
Trichloroethene (TCE)	**19.4**	---	0.400	ug/L	1	06/22/24 12:26	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 12:26	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 12:26	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 12:26	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 19001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1140 - 06 27 24 1740

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-1(110) (A4F1140-15)				**Matrix: Water**		**Batch: 24F0754**		
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits: 80-120 %*	*1*	*06/22/24 12:26*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 12:26*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 12:26*	*EPA 8260D*	
MGMS1-2(60) (A4F1140-16)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/22/24 11:32	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1-Dichloroethane	**0.620**	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
cis-1,2-Dichloroethene	**10.8**	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-2(60) (A4F1140-16)				**Matrix: Water**		**Batch: 24F0754**		
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
Tetrachloroethene (PCE)	**14.6**	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
Trichloroethene (TCE)	**9.52**	---	0.400	ug/L	1	06/22/24 11:32	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/22/24 11:32	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/22/24 11:32	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/22/24 11:32	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:* *80-120 %*	*1*	*06/22/24 11:32*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/22/24 11:32*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*101 %*	*80-120 %*	*1*	*06/22/24 11:32*	*EPA 8260D*	
MGMS1-1(43) (A4F1140-17)				**Matrix: Water**		**Batch: 24F0754**		
Bromobenzene	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	06/22/24 12:53	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	06/22/24 12:53	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-1(43) (A4F1140-17)				**Matrix: Water**		**Batch: 24F0754**		
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1-Dichloroethane	**103**	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1-Dichloroethene	**18.5**	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
trans-1,2-Dichloroethene	**40.7**	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Tetrachloroethene (PCE)	**98.3**	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Trichloroethene (TCE)	**306**	---	4.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	06/22/24 12:53	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	06/22/24 12:53	EPA 8260D	
Vinyl chloride	**36.6**	---	2.00	ug/L	10	06/22/24 12:53	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*1*	*06/22/24 12:53*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/22/24 12:53*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*	*1*	*06/22/24 12:53*	*EPA 8260D*	
MGMS1-1(43) (A4F1140-17RE1)				**Matrix: Water**		**Batch: 24F0773**		

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MGMS1-1(43) (A4F1140-17RE1)				**Matrix: Water**		**Batch: 24F0773**		
cis-1,2-Dichloroethene	**2150**	---	40.0	ug/L	100	06/24/24 01:09	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*1*	*06/24/24 01:09*	*EPA 8260D*
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/24/24 01:09*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*	*1*	*06/24/24 01:09*	*EPA 8260D*

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-25i (A4F1140-01)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 17:01	SM 4500-NH3 G	
MW-17 (A4F1140-02)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**0.103**	---	0.0200	mg/L	1	06/13/24 17:03	SM 4500-NH3 G	
MW-14 (A4F1140-03)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**1.55**	---	0.0400	mg/L	2	06/13/24 17:04	SM 4500-NH3 G	
S-1 (A4F1140-04)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 17:07	SM 4500-NH3 G	
S-2 (A4F1140-05)				**Matrix: Water**		**Batch: 24F0457**		
Ammonia as N	**3.72**	---	0.0400	mg/L	2	06/13/24 17:09	SM 4500-NH3 G	
MW-19 (A4F1140-06)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**108**	---	4.00	mg/L	200	06/13/24 17:43	SM 4500-NH3 G	
MW-19 DUP (A4F1140-07)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**108**	---	4.00	mg/L	200	06/13/24 17:44	SM 4500-NH3 G	
MW-3 (A4F1140-08)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 17:55	SM 4500-NH3 G	
MW-6 (A4F1140-09)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**2.08**	---	0.100	mg/L	5	06/13/24 17:56	SM 4500-NH3 G	
MW-24d (A4F1140-10)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**0.0970**	---	0.0200	mg/L	1	06/13/24 17:59	SM 4500-NH3 G	
MW-19i (A4F1140-11)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**0.237**	---	0.0200	mg/L	1	06/13/24 18:01	SM 4500-NH3 G	
MW-20i (A4F1140-12)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 18:02	SM 4500-NH3 G	
MW-18i (A4F1140-13)				**Matrix: Water**		**Batch: 24F0484**		

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Tigard, OR 97223
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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-18i (A4F1140-13)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 18:05	SM 4500-NH3 G	
EW-1 (A4F1140-14)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 18:07	SM 4500-NH3 G	
MGMS1-1(110) (A4F1140-15)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/13/24 18:10	SM 4500-NH3 G	
MGMS1-2(60) (A4F1140-16)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**0.139**	---	0.0200	mg/L	1	06/13/24 18:11	SM 4500-NH3 G	
MGMS1-1(43) (A4F1140-17)				**Matrix: Water**		**Batch: 24F0484**		
Ammonia as N	**198**	---	4.00	mg/L	200	06/13/24 18:14	SM 4500-NH3 G	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-25i (A4F1140-01)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**1.71**	---	0.250	mg/L	1	06/13/24 13:33	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 13:33	EPA 300.0	
MW-17 (A4F1140-02)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**13.4**	---	1.25	mg/L	5	06/13/24 14:37	EPA 300.0	
MW-17 (A4F1140-02RE1)				**Matrix: Water**				
Batch: 24F0450								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 00:19	EPA 300.0	
MW-14 (A4F1140-03)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**66.9**	---	12.5	mg/L	50	06/13/24 15:42	EPA 300.0	
MW-14 (A4F1140-03RE1)				**Matrix: Water**				
Batch: 24F0450								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 23:15	EPA 300.0	
S-1 (A4F1140-04)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**2.72**	---	0.250	mg/L	1	06/13/24 16:04	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 16:04	EPA 300.0	
S-2 (A4F1140-05)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 16:25	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 16:25	EPA 300.0	
MW-19 (A4F1140-06)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**77.8**	---	5.00	mg/L	20	06/13/24 16:47	EPA 300.0	
MW-19 (A4F1140-06RE1)				**Matrix: Water**				
Batch: 24F0450								

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-19 (A4F1140-06RE1)				**Matrix: Water**				
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 23:36	EPA 300.0	
MW-19 DUP (A4F1140-07)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**85.5**	---	5.00	mg/L	20	06/13/24 17:08	EPA 300.0	
MW-19 DUP (A4F1140-07RE1)				**Matrix: Water**				
Batch: 24F0450								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 23:58	EPA 300.0	
MW-3 (A4F1140-08)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**3.90**	---	0.250	mg/L	1	06/13/24 17:30	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 17:30	EPA 300.0	
MW-6 (A4F1140-09)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 17:51	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 17:51	EPA 300.0	
MW-24d (A4F1140-10)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 18:13	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 18:13	EPA 300.0	
MW-19i (A4F1140-11)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 18:34	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 18:34	EPA 300.0	
MW-20i (A4F1140-12)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**0.279**	---	0.250	mg/L	1	06/13/24 18:56	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 18:56	EPA 300.0	
MW-18i (A4F1140-13)				**Matrix: Water**				

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-18i (A4F1140-13)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**1.38**	---	0.250	mg/L	1	06/13/24 20:01	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 20:01	EPA 300.0	
EW-1 (A4F1140-14)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**3.54**	---	0.250	mg/L	1	06/13/24 20:22	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 20:22	EPA 300.0	
MGMS1-1(110) (A4F1140-15)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 20:44	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 20:44	EPA 300.0	
MGMS1-2(60) (A4F1140-16)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**2.23**	---	0.250	mg/L	1	06/13/24 21:05	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 21:05	EPA 300.0	
MGMS1-1(43) (A4F1140-17)				**Matrix: Water**				
Batch: 24F0449								
Nitrate-Nitrogen	**2.64**	---	0.250	mg/L	1	06/13/24 21:27	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/13/24 21:27	EPA 300.0	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Blank (24F0741-BLK1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 13:00									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*105 %*		*80-120 %*			*"*				
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
EPA 8260D												
Bromobenzene	20.7	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Bromochloromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	21.3	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Bromoform	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Bromomethane	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Carbon tetrachloride	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chlorobenzene	20.6	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	19.2	---	5.00	ug/L	1	20.0	---	96	80-120%	---	---	
Chloroform	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.4	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.5	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromomethane	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
LCS (24F0741-BS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 12:05									
1,3-Dichlorobenzene	21.1	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,4-Dichlorobenzene	19.7	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dichlorodifluoromethane	19.3	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,1-Dichloroethane	20.3	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.2	---	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
1,1-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	19.9	---	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,2-Dichloropropane	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
1,3-Dichloropropane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
2,2-Dichloropropane	23.5	---	1.00	ug/L	1	20.0	---	118	80-120%	---	---	
1,1-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
cis-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Hexachlorobutadiene	22.7	---	5.00	ug/L	1	20.0	---	114	80-120%	---	---	
Methylene chloride	19.1	---	10.0	ug/L	1	20.0	---	96	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.6	---	0.400	ug/L	1	20.0	---	118	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.1	---	0.500	ug/L	1	20.0	---	111	80-120%	---	---	
Tetrachloroethene (PCE)	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2-Trichloroethane	20.7	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,4-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,1-Trichloroethane	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
Trichloroethene (TCE)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	20.3	---	2.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,2,3-Trichloropropane	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Vinyl chloride	19.8	---	0.200	ug/L	1	20.0	---	99	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*			*Limits: 80-120 %*			*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*			*80-120 %*			*"*			
4-Bromofluorobenzene (Surr)			*97 %*			*80-120 %*			*"*			
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									

QC Source Sample: S-2 (A4F1140-05)

EPA 8260D

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: S-2 (A4F1140-05)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	**6.14**	---	0.400	ug/L	1	---	5.70	---	---	7	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**33.3**	---	0.400	ug/L	1	---	30.5	---	---	9	30%	
trans-1,2-Dichloroethene	**0.680**	---	0.400	ug/L	1	---	0.760	---	---	11	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Duplicate (24F0741-DUP1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 22:21									
QC Source Sample: S-2 (A4F1140-05)												
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	0.240	---	---	***	30%	
Trichloroethene (TCE)	**0.640**	---	0.400	ug/L	1	---	0.570	---	---	12	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	**0.200**	---	0.200	ug/L	1	---	0.180	---	---	11	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*104 %*		*80-120 %*			*"*				
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
EPA 8260D												
Bromobenzene	2180	---	50.0	ug/L	100	2000	ND	109	80-120%	---	---	
Bromochloromethane	2240	---	100	ug/L	100	2000	ND	112	78-123%	---	---	
Bromodichloromethane	2330	---	100	ug/L	100	2000	ND	116	79-125%	---	---	
Bromoform	2190	---	100	ug/L	100	2000	ND	109	66-130%	---	---	
Bromomethane	2370	---	500	ug/L	100	2000	ND	119	53-141%	---	---	
Carbon tetrachloride	2390	---	100	ug/L	100	2000	ND	119	72-136%	---	---	
Chlorobenzene	2220	---	50.0	ug/L	100	2000	ND	111	80-120%	---	---	
Chloroethane	2360	---	500	ug/L	100	2000	ND	118	60-138%	---	---	
Chloroform	2230	---	100	ug/L	100	2000	ND	112	79-124%	---	---	
Chloromethane	2060	---	500	ug/L	100	2000	ND	103	50-139%	---	---	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	---	---	
4-Chlorotoluene	2340	---	100	ug/L	100	2000	ND	117	78-122%	---	---	
Dibromochloromethane	2040	---	100	ug/L	100	2000	ND	102	74-126%	---	---	
1,2-Dibromo-3-chloropropane	1940	---	500	ug/L	100	2000	ND	97	62-128%	---	---	
1,2-Dibromoethane (EDB)	2230	---	50.0	ug/L	100	2000	ND	112	77-121%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike (24F0741-MS1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:16									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
Dibromomethane	2270	---	100	ug/L	100	2000	ND	114	79-123%	---	---	
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	2290	---	50.0	ug/L	100	2000	ND	114	80-120%	---	---	
1,4-Dichlorobenzene	2100	---	50.0	ug/L	100	2000	ND	105	79-120%	---	---	
Dichlorodifluoromethane	2230	---	100	ug/L	100	2000	ND	112	32-152%	---	---	
1,1-Dichloroethane	2260	---	40.0	ug/L	100	2000	ND	113	77-125%	---	---	
1,2-Dichloroethane (EDC)	2140	---	40.0	ug/L	100	2000	ND	107	73-128%	---	---	
1,1-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	2280	---	40.0	ug/L	100	2000	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	2230	---	40.0	ug/L	100	2000	ND	111	75-124%	---	---	
1,2-Dichloropropane	2240	---	50.0	ug/L	100	2000	ND	112	78-122%	---	---	
1,3-Dichloropropane	2300	---	100	ug/L	100	2000	ND	115	80-120%	---	---	
2,2-Dichloropropane	2140	---	100	ug/L	100	2000	ND	107	60-139%	---	---	
1,1-Dichloropropene	2460	---	100	ug/L	100	2000	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	2040	---	100	ug/L	100	2000	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	2210	---	100	ug/L	100	2000	ND	110	73-127%	---	---	
Hexachlorobutadiene	2340	---	500	ug/L	100	2000	ND	117	66-134%	---	---	
Methylene chloride	2100	---	1000	ug/L	100	2000	ND	105	74-124%	---	---	
1,1,1,2-Tetrachloroethane	2560	---	40.0	ug/L	100	2000	ND	**128**	**78-124%**	---	---	Q-01
1,1,2,2-Tetrachloroethane	2350	---	50.0	ug/L	100	2000	ND	118	71-121%	---	---	
Tetrachloroethene (PCE)	2260	---	40.0	ug/L	100	2000	ND	113	74-129%	---	---	
1,2,3-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	116	69-129%	---	---	
1,1,2-Trichloroethane	2170	---	50.0	ug/L	100	2000	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	2330	---	200	ug/L	100	2000	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	2320	---	40.0	ug/L	100	2000	ND	116	74-131%	---	---	
Trichloroethene (TCE)	2160	---	40.0	ug/L	100	2000	ND	108	79-123%	---	---	
Trichlorofluoromethane	2480	---	200	ug/L	100	2000	ND	124	65-141%	---	---	
1,2,3-Trichloropropane	2280	---	100	ug/L	100	2000	ND	114	73-122%	---	---	
Vinyl chloride	2280	---	20.0	ug/L	100	2000	ND	114	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
Bromobenzene	2210	---	50.0	ug/L	100	2000	ND	110	80-120%	1	30%	
Bromochloromethane	2180	---	100	ug/L	100	2000	ND	109	78-123%	3	30%	
Bromodichloromethane	2300	---	100	ug/L	100	2000	ND	115	79-125%	1	30%	
Bromoform	2190	---	100	ug/L	100	2000	ND	110	66-130%	0.3	30%	
Bromomethane	2330	---	500	ug/L	100	2000	ND	117	53-141%	2	30%	
Carbon tetrachloride	2420	---	100	ug/L	100	2000	ND	121	72-136%	1	30%	
Chlorobenzene	2200	---	50.0	ug/L	100	2000	ND	110	80-120%	0.6	30%	
Chloroethane	2240	---	500	ug/L	100	2000	ND	112	60-138%	5	30%	
Chloroform	2190	---	100	ug/L	100	2000	ND	110	79-124%	2	30%	
Chloromethane	2100	---	500	ug/L	100	2000	ND	105	50-139%	2	30%	
2-Chlorotoluene	2220	---	100	ug/L	100	2000	ND	111	79-122%	0.09	30%	
4-Chlorotoluene	2330	---	100	ug/L	100	2000	ND	116	78-122%	0.4	30%	
Dibromochloromethane	2020	---	100	ug/L	100	2000	ND	101	74-126%	0.6	30%	
1,2-Dibromo-3-chloropropane	1880	---	500	ug/L	100	2000	ND	94	62-128%	3	30%	
1,2-Dibromoethane (EDB)	2240	---	50.0	ug/L	100	2000	ND	112	77-121%	0.5	30%	
Dibromomethane	2220	---	100	ug/L	100	2000	ND	111	79-123%	2	30%	
1,2-Dichlorobenzene	2310	---	50.0	ug/L	100	2000	ND	115	80-120%	0.1	30%	
1,3-Dichlorobenzene	2280	---	50.0	ug/L	100	2000	ND	114	80-120%	0.4	30%	
1,4-Dichlorobenzene	2090	---	50.0	ug/L	100	2000	ND	104	79-120%	0.9	30%	
Dichlorodifluoromethane	2250	---	100	ug/L	100	2000	ND	112	32-152%	0.7	30%	
1,1-Dichloroethane	2220	---	40.0	ug/L	100	2000	ND	111	77-125%	2	30%	
1,2-Dichloroethane (EDC)	2120	---	40.0	ug/L	100	2000	ND	106	73-128%	0.6	30%	
1,1-Dichloroethene	2200	---	40.0	ug/L	100	2000	ND	110	71-131%	3	30%	
cis-1,2-Dichloroethene	2260	---	40.0	ug/L	100	2000	ND	113	78-123%	1	30%	
trans-1,2-Dichloroethene	2210	---	40.0	ug/L	100	2000	ND	110	75-124%	1	30%	
1,2-Dichloropropane	2190	---	50.0	ug/L	100	2000	ND	110	78-122%	2	30%	
1,3-Dichloropropane	2270	---	100	ug/L	100	2000	ND	114	80-120%	1	30%	
2,2-Dichloropropane	2110	---	100	ug/L	100	2000	ND	106	60-139%	1	30%	
1,1-Dichloropropene	2420	---	100	ug/L	100	2000	ND	121	79-125%	1	30%	
cis-1,3-Dichloropropene	2080	---	100	ug/L	100	2000	ND	104	75-124%	2	30%	
trans-1,3-Dichloropropene	2200	---	100	ug/L	100	2000	ND	110	73-127%	0.2	30%	
Hexachlorobutadiene	2380	---	500	ug/L	100	2000	ND	119	66-134%	2	30%	
Methylene chloride	2090	---	1000	ug/L	100	2000	ND	105	74-124%	0.2	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0741 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0741-MSD1)			Prepared: 06/21/24 11:19 Analyzed: 06/21/24 23:43									
QC Source Sample: Non-SDG (A4F1108-06RE1)												
1,1,1,2-Tetrachloroethane	2500	---	40.0	ug/L	100	2000	ND	**125**	**78-124%**	3	30%	Q-01
1,1,2,2-Tetrachloroethane	2330	---	50.0	ug/L	100	2000	ND	116	71-121%	1	30%	
Tetrachloroethene (PCE)	2280	---	40.0	ug/L	100	2000	ND	114	74-129%	0.8	30%	
1,2,3-Trichlorobenzene	2380	---	200	ug/L	100	2000	ND	119	69-129%	2	30%	
1,1,2-Trichloroethane	2210	---	50.0	ug/L	100	2000	ND	111	80-120%	2	30%	
1,2,4-Trichlorobenzene	2310	---	200	ug/L	100	2000	ND	116	69-130%	0.9	30%	
1,1,1-Trichloroethane	2310	---	40.0	ug/L	100	2000	ND	115	74-131%	0.7	30%	
Trichloroethene (TCE)	2200	---	40.0	ug/L	100	2000	ND	110	79-123%	2	30%	
Trichlorofluoromethane	2440	---	200	ug/L	100	2000	ND	122	65-141%	1	30%	
1,2,3-Trichloropropane	2200	---	100	ug/L	100	2000	ND	110	73-122%	4	30%	
Vinyl chloride	2300	---	20.0	ug/L	100	2000	ND	115	58-137%	0.7	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*98 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*				*"*			

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C							**Water**					
Blank (24F0754-BLK1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 02:26									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C									Water			
Blank (24F0754-BLK1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 02:26									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*102 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*			*"*				
LCS (24F0754-BS1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 01:32									
EPA 8260D												
Bromobenzene	20.9	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
Bromochloromethane	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromodichloromethane	22.4	---	1.00	ug/L	1	20.0	---	112	80-120%	---	---	
Bromoform	20.9	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Bromomethane	22.5	---	5.00	ug/L	1	20.0	---	112	80-120%	---	---	
Carbon tetrachloride	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chlorobenzene	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Chloroethane	22.6	---	5.00	ug/L	1	20.0	---	113	80-120%	---	---	
Chloroform	21.1	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Chloromethane	20.2	---	5.00	ug/L	1	20.0	---	101	80-120%	---	---	
2-Chlorotoluene	20.8	---	1.00	ug/L	1	20.0	---	104	80-120%	---	---	
4-Chlorotoluene	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Dibromochloromethane	19.5	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.4	---	5.00	ug/L	1	20.0	---	92	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.5	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromomethane	21.7	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
1,2-Dichlorobenzene	22.0	---	0.500	ug/L	1	20.0	---	110	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C							**Water**					
LCS (24F0754-BS1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 01:32									
1,3-Dichlorobenzene	21.6	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
1,4-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dichlorodifluoromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
1,1-Dichloroethane	21.6	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichloroethane (EDC)	20.5	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,1-Dichloroethene	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,2-Dichloroethene	21.9	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
trans-1,2-Dichloroethene	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloropropane	21.3	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
1,3-Dichloropropane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
2,2-Dichloropropane	18.0	---	1.00	ug/L	1	20.0	---	90	80-120%	---	---	
1,1-Dichloropropene	22.6	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
cis-1,3-Dichloropropene	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,3-Dichloropropene	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Hexachlorobutadiene	21.2	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Methylene chloride	20.1	---	10.0	ug/L	1	20.0	---	101	80-120%	---	---	
1,1,1,2-Tetrachloroethane	24.2	---	0.400	ug/L	1	20.0	---	**121**	**80-120%**	---	---	Q-56
1,1,2,2-Tetrachloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
Tetrachloroethene (PCE)	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,3-Trichlorobenzene	22.1	---	2.00	ug/L	1	20.0	---	110	80-120%	---	---	
1,1,2-Trichloroethane	21.0	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,2,4-Trichlorobenzene	21.5	---	2.00	ug/L	1	20.0	---	107	80-120%	---	---	
1,1,1-Trichloroethane	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
Trichloroethene (TCE)	22.0	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
Trichlorofluoromethane	23.0	---	2.00	ug/L	1	20.0	---	115	80-120%	---	---	
1,2,3-Trichloropropane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Vinyl chloride	21.0	---	0.200	ug/L	1	20.0	---	105	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 101 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*			*"*				
Duplicate (24F0754-DUP1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 08:21									
QC Source Sample: Non-SDG (A4F1157-02)												
Bromobenzene	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C							**Water**					
Duplicate (24F0754-DUP1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 08:21									
QC Source Sample: Non-SDG (A4F1157-02)												
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%	
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%	
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%	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	---	ND	---	---	---	30%	
Methylene chloride	ND	---	100	ug/L	10	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C							**Water**					
Duplicate (24F0754-DUP1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 08:21									
QC Source Sample: Non-SDG (A4F1157-02)												
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	4.00	ug/L	10	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	5.00	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%	
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%	
Vinyl chloride	ND	---	2.00	ug/L	10	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*100 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
Matrix Spike (24F0754-MS1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 13:21									
QC Source Sample: MGMS1-1(43) (A4F1140-17)												
EPA 8260D												
Bromobenzene	220	---	5.00	ug/L	10	200	ND	110	80-120%	---	---	
Bromochloromethane	232	---	10.0	ug/L	10	200	ND	116	78-123%	---	---	
Bromodichloromethane	243	---	10.0	ug/L	10	200	ND	122	79-125%	---	---	
Bromoform	229	---	10.0	ug/L	10	200	ND	115	66-130%	---	---	
Bromomethane	175	---	50.0	ug/L	10	200	ND	88	53-141%	---	---	
Carbon tetrachloride	246	---	10.0	ug/L	10	200	ND	123	72-136%	---	---	
Chlorobenzene	224	---	5.00	ug/L	10	200	ND	112	80-120%	---	---	
Chloroethane	255	---	50.0	ug/L	10	200	ND	128	60-138%	---	---	
Chloroform	227	---	10.0	ug/L	10	200	ND	114	79-124%	---	---	
Chloromethane	206	---	50.0	ug/L	10	200	ND	103	50-139%	---	---	
2-Chlorotoluene	219	---	10.0	ug/L	10	200	ND	110	79-122%	---	---	
4-Chlorotoluene	231	---	10.0	ug/L	10	200	ND	115	78-122%	---	---	
Dibromochloromethane	210	---	10.0	ug/L	10	200	ND	105	74-126%	---	---	
1,2-Dibromo-3-chloropropane	190	---	50.0	ug/L	10	200	ND	95	62-128%	---	---	
1,2-Dibromoethane (EDB)	225	---	5.00	ug/L	10	200	ND	113	77-121%	---	---	
Dibromomethane	230	---	10.0	ug/L	10	200	ND	115	79-123%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0754 - EPA 5030C							**Water**					
Matrix Spike (24F0754-MS1)			Prepared: 06/21/24 13:09 Analyzed: 06/22/24 13:21									
QC Source Sample: MGMS1-1(43) (A4F1140-17)												
1,2-Dichlorobenzene	231	---	5.00	ug/L	10	200	ND	116	80-120%	---	---	
1,3-Dichlorobenzene	230	---	5.00	ug/L	10	200	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	209	---	5.00	ug/L	10	200	ND	105	79-120%	---	---	
Dichlorodifluoromethane	224	---	10.0	ug/L	10	200	ND	112	32-152%	---	---	
1,1-Dichloroethane	334	---	4.00	ug/L	10	200	103	115	77-125%	---	---	
1,2-Dichloroethane (EDC)	218	---	4.00	ug/L	10	200	ND	109	73-128%	---	---	
1,1-Dichloroethene	242	---	4.00	ug/L	10	200	18.5	112	71-131%	---	---	
cis-1,2-Dichloroethene	2710	---	4.00	ug/L	10	200	2600	**54**	**78-123%**	---	---	E, Q-03
trans-1,2-Dichloroethene	261	---	4.00	ug/L	10	200	40.7	110	75-124%	---	---	
1,2-Dichloropropane	223	---	5.00	ug/L	10	200	ND	112	78-122%	---	---	
1,3-Dichloropropane	232	---	10.0	ug/L	10	200	ND	116	80-120%	---	---	
2,2-Dichloropropane	145	---	10.0	ug/L	10	200	ND	72	60-139%	---	---	
1,1-Dichloropropene	242	---	10.0	ug/L	10	200	ND	121	79-125%	---	---	
cis-1,3-Dichloropropene	191	---	10.0	ug/L	10	200	ND	96	75-124%	---	---	
trans-1,3-Dichloropropene	211	---	10.0	ug/L	10	200	ND	106	73-127%	---	---	
Hexachlorobutadiene	226	---	50.0	ug/L	10	200	ND	113	66-134%	---	---	
Methylene chloride	214	---	100	ug/L	10	200	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	260	---	4.00	ug/L	10	200	ND	**130**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	239	---	5.00	ug/L	10	200	ND	120	71-121%	---	---	
Tetrachloroethene (PCE)	322	---	4.00	ug/L	10	200	98.3	112	74-129%	---	---	
1,2,3-Trichlorobenzene	230	---	20.0	ug/L	10	200	ND	115	69-129%	---	---	
1,1,2-Trichloroethane	223	---	5.00	ug/L	10	200	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	216	---	20.0	ug/L	10	200	ND	108	69-130%	---	---	
1,1,1-Trichloroethane	238	---	4.00	ug/L	10	200	ND	119	74-131%	---	---	
Trichloroethene (TCE)	538	---	4.00	ug/L	10	200	306	116	79-123%	---	---	
Trichlorofluoromethane	266	---	20.0	ug/L	10	200	ND	133	65-141%	---	---	
1,2,3-Trichloropropane	224	---	10.0	ug/L	10	200	ND	112	73-122%	---	---	
Vinyl chloride	263	---	2.00	ug/L	10	200	36.6	113	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 102 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*98 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*96 %*	*80-120 %*	*"*

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Blank (24F0773-BLK1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 14:42									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Blank (24F0773-BLK1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 14:42									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
LCS (24F0773-BS1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 13:47									**A-01**
EPA 8260D												
Bromobenzene	20.3	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	21.7	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromoform	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromomethane	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Carbon tetrachloride	20.9	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Chloroethane	23.4	---	5.00	ug/L	1	20.0	---	117	80-120%	---	---	
Chloroform	20.3	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Chloromethane	18.7	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
2-Chlorotoluene	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
4-Chlorotoluene	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Dibromochloromethane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.7	---	5.00	ug/L	1	20.0	---	94	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.2	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
Dibromomethane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichlorobenzene	21.6	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
LCS (24F0773-BS1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 13:47									**A-01**
1,3-Dichlorobenzene	21.1	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
1,4-Dichlorobenzene	19.6	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dichlorodifluoromethane	19.4	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
1,1-Dichloroethane	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloroethane (EDC)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,1-Dichloroethene	19.3	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	20.5	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
trans-1,2-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dichloropropane	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
2,2-Dichloropropane	25.3	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,1-Dichloropropene	20.7	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
Hexachlorobutadiene	21.2	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Methylene chloride	19.5	---	10.0	ug/L	1	20.0	---	98	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.9	---	0.400	ug/L	1	20.0	---	119	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.4	---	0.500	ug/L	1	20.0	---	112	80-120%	---	---	
Tetrachloroethene (PCE)	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,3-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	21.3	---	2.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,1,1-Trichloroethane	20.8	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
Trichloroethene (TCE)	19.7	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,2,3-Trichloropropane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Vinyl chloride	20.0	---	0.200	ug/L	1	20.0	---	100	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 21:31									
QC Source Sample: Non-SDG (A4F1281-03)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 21:31									
QC Source Sample: Non-SDG (A4F1281-03)												
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**0.410**	---	0.400	ug/L	1	---	0.440	---	---	7	30%	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 21:31									
QC Source Sample: Non-SDG (A4F1281-03)												
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**2.03**	---	0.400	ug/L	1	---	1.69	---	---	18	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**3.12**	---	0.400	ug/L	1	---	2.82	---	---	10	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0457 - Method Prep: Aq							**Water**					
Blank (24F0457-BLK1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 15:57									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0457-BS1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 15:58									
SM 4500-NH3 G												
Ammonia as N	1.96	---	0.0200	mg/L	1	2.00	---	98	90-111%	---	---	
Matrix Spike (24F0457-MS1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 16:12									
QC Source Sample: Non-SDG (A4F1085-01)												
SM 4500-NH3 G												
Ammonia as N	2.45	---	0.0250	mg/L	1	2.50	0.0130	98	90-111%	---	---	
Matrix Spike Dup (24F0457-MSD1)			Prepared: 06/13/24 09:27 Analyzed: 06/13/24 16:13									
QC Source Sample: Non-SDG (A4F1085-01)												
Ammonia as N	2.46	---	0.0250	mg/L	1	2.50	0.0130	98	90-111%	0.5	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0484 - Method Prep: Aq							**Water**					
Blank (24F0484-BLK1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:25									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0484-BS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:26									
SM 4500-NH3 G												
Ammonia as N	1.98	---	0.0200	mg/L	1	2.00	---	99	90-111%	---	---	
Matrix Spike (24F0484-MS1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:34									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
SM 4500-NH3 G												
Ammonia as N	2.45	---	0.0250	mg/L	1	2.50	0.0490	96	90-111%	---	---	
Matrix Spike Dup (24F0484-MSD1)			Prepared: 06/13/24 15:34 Analyzed: 06/13/24 17:35									
QC Source Sample: Non-SDG (A4F1044-01RE1)												
Ammonia as N	2.50	---	0.0250	mg/L	1	2.50	0.0490	98	90-111%	2	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0449 - Method Prep: Aq							**Water**					
Blank (24F0449-BLK1)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 11:23									
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0449-BS1)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 11:45									
EPA 300.0												
Nitrate-Nitrogen	2.08	---	0.250	mg/L	1	2.00	---	104	90-110%	---	---	
Nitrite-Nitrogen	2.07	---	0.250	mg/L	1	2.00	---	104	90-110%	---	---	
Duplicate (24F0449-DUP1)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 12:28									
QC Source Sample: Non-SDG (A4F1131-01)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0449-DUP2)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 13:54									
QC Source Sample: MW-25i (A4F1140-01)												
EPA 300.0												
Nitrate-Nitrogen	**1.71**	---	0.250	mg/L	1	---	1.71	---	---	0.4	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0449-MS1)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 12:50									
QC Source Sample: Non-SDG (A4F1131-01)												
EPA 300.0												
Nitrate-Nitrogen	2.71	---	0.312	mg/L	1	2.50	ND	109	87-112%	---	---	
Nitrite-Nitrogen	2.60	---	0.312	mg/L	1	2.50	ND	104	90-114%	---	---	
Matrix Spike (24F0449-MS2)			Prepared: 06/13/24 08:56 Analyzed: 06/13/24 14:16									
QC Source Sample: MW-25i (A4F1140-01)												
EPA 300.0												
Nitrate-Nitrogen	4.33	---	0.312	mg/L	1	2.50	1.71	105	87-112%	---	---	
Nitrite-Nitrogen	2.62	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0450 - Method Prep: Aq							**Water**					
Blank (24F0450-BLK1)			Prepared: 06/13/24 10:33		Analyzed: 06/13/24 22:32							
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0450-BS1)			Prepared: 06/13/24 10:33		Analyzed: 06/13/24 22:53							
EPA 300.0												
Nitrite-Nitrogen	2.06	---	0.250	mg/L	1	2.00	---	103	90-110%	---	---	
Duplicate (24F0450-DUP1)			Prepared: 06/13/24 10:33		Analyzed: 06/14/24 00:41							
QC Source Sample: MW-17 (A4F1140-02RE1)												
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0450-MS1)			Prepared: 06/13/24 10:33		Analyzed: 06/14/24 01:03							
QC Source Sample: MW-17 (A4F1140-02RE1)												
EPA 300.0												
Nitrite-Nitrogen	2.65	---	0.312	mg/L	1	2.50	ND	106	90-114%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0741							
A4F1140-01	Water	EPA 8260D	06/12/24 08:23	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-02	Water	EPA 8260D	06/12/24 09:29	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-05	Water	EPA 8260D	06/12/24 12:37	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
Batch: 24F0754							
A4F1140-04	Water	EPA 8260D	06/12/24 11:43	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-06	Water	EPA 8260D	06/12/24 14:22	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-07	Water	EPA 8260D	06/12/24 14:22	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-08	Water	EPA 8260D	06/12/24 15:15	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-09	Water	EPA 8260D	06/12/24 16:00	06/21/24 11:19	5mL/5mL	5mL/5mL	1.00
A4F1140-10	Water	EPA 8260D	06/12/24 14:11	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-11	Water	EPA 8260D	06/12/24 13:13	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-12	Water	EPA 8260D	06/12/24 11:37	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-13	Water	EPA 8260D	06/12/24 10:52	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-14	Water	EPA 8260D	06/12/24 09:56	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-15	Water	EPA 8260D	06/12/24 09:04	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-16	Water	EPA 8260D	06/12/24 08:34	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
A4F1140-17	Water	EPA 8260D	06/12/24 08:00	06/21/24 13:09	5mL/5mL	5mL/5mL	1.00
Batch: 24F0773							
A4F1140-03RE1	Water	EPA 8260D	06/12/24 10:20	06/23/24 11:37	5mL/5mL	5mL/5mL	1.00
A4F1140-06RE1	Water	EPA 8260D	06/12/24 14:22	06/23/24 11:37	5mL/5mL	5mL/5mL	1.00
A4F1140-07RE1	Water	EPA 8260D	06/12/24 14:22	06/23/24 11:37	5mL/5mL	5mL/5mL	1.00
A4F1140-17RE1	Water	EPA 8260D	06/12/24 08:00	06/23/24 11:52	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0457							
A4F1140-01	Water	SM 4500-NH3 G	06/12/24 08:23	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-02	Water	SM 4500-NH3 G	06/12/24 09:29	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-03	Water	SM 4500-NH3 G	06/12/24 10:20	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-04	Water	SM 4500-NH3 G	06/12/24 11:43	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-05	Water	SM 4500-NH3 G	06/12/24 12:37	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
Batch: 24F0484							
A4F1140-06	Water	SM 4500-NH3 G	06/12/24 14:22	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00

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5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

SAMPLE PREPARATION INFORMATION

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4F1140-07	Water	SM 4500-NH3 G	06/12/24 14:22	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-08	Water	SM 4500-NH3 G	06/12/24 15:15	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-09	Water	SM 4500-NH3 G	06/12/24 16:00	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-10	Water	SM 4500-NH3 G	06/12/24 14:11	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-11	Water	SM 4500-NH3 G	06/12/24 13:13	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-12	Water	SM 4500-NH3 G	06/12/24 11:37	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-13	Water	SM 4500-NH3 G	06/12/24 10:52	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-14	Water	SM 4500-NH3 G	06/12/24 09:56	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-15	Water	SM 4500-NH3 G	06/12/24 09:04	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-16	Water	SM 4500-NH3 G	06/12/24 08:34	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00
A4F1140-17	Water	SM 4500-NH3 G	06/12/24 08:00	06/13/24 09:27	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0449							
A4F1140-01	Water	EPA 300.0	06/12/24 08:23	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-02	Water	EPA 300.0	06/12/24 09:29	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-03	Water	EPA 300.0	06/12/24 10:20	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-04	Water	EPA 300.0	06/12/24 11:43	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-05	Water	EPA 300.0	06/12/24 12:37	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-06	Water	EPA 300.0	06/12/24 14:22	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-07	Water	EPA 300.0	06/12/24 14:22	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-08	Water	EPA 300.0	06/12/24 15:15	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-09	Water	EPA 300.0	06/12/24 16:00	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-10	Water	EPA 300.0	06/12/24 14:11	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-11	Water	EPA 300.0	06/12/24 13:13	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-12	Water	EPA 300.0	06/12/24 11:37	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-13	Water	EPA 300.0	06/12/24 10:52	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-14	Water	EPA 300.0	06/12/24 09:56	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-15	Water	EPA 300.0	06/12/24 09:04	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-16	Water	EPA 300.0	06/12/24 08:34	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-17	Water	EPA 300.0	06/12/24 08:00	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
Batch: 24F0450							
A4F1140-02RE1	Water	EPA 300.0	06/12/24 09:29	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-03RE1	Water	EPA 300.0	06/12/24 10:20	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

SAMPLE PREPARATION INFORMATION

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4F1140-06RE1	Water	EPA 300.0	06/12/24 14:22	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00
A4F1140-07RE1	Water	EPA 300.0	06/12/24 14:22	06/13/24 08:56	5mL/5mL	5mL/5mL	1.00

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QUALIFIER DEFINITIONS

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

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A-01	Preparation error on Matrix Spike/Dup. Batch accepted based on recovery of the Blank Spike.
E	Estimated Value. The result is above the calibration range of the instrument.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-03	Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +1% . The results are reported as Estimated Values.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories

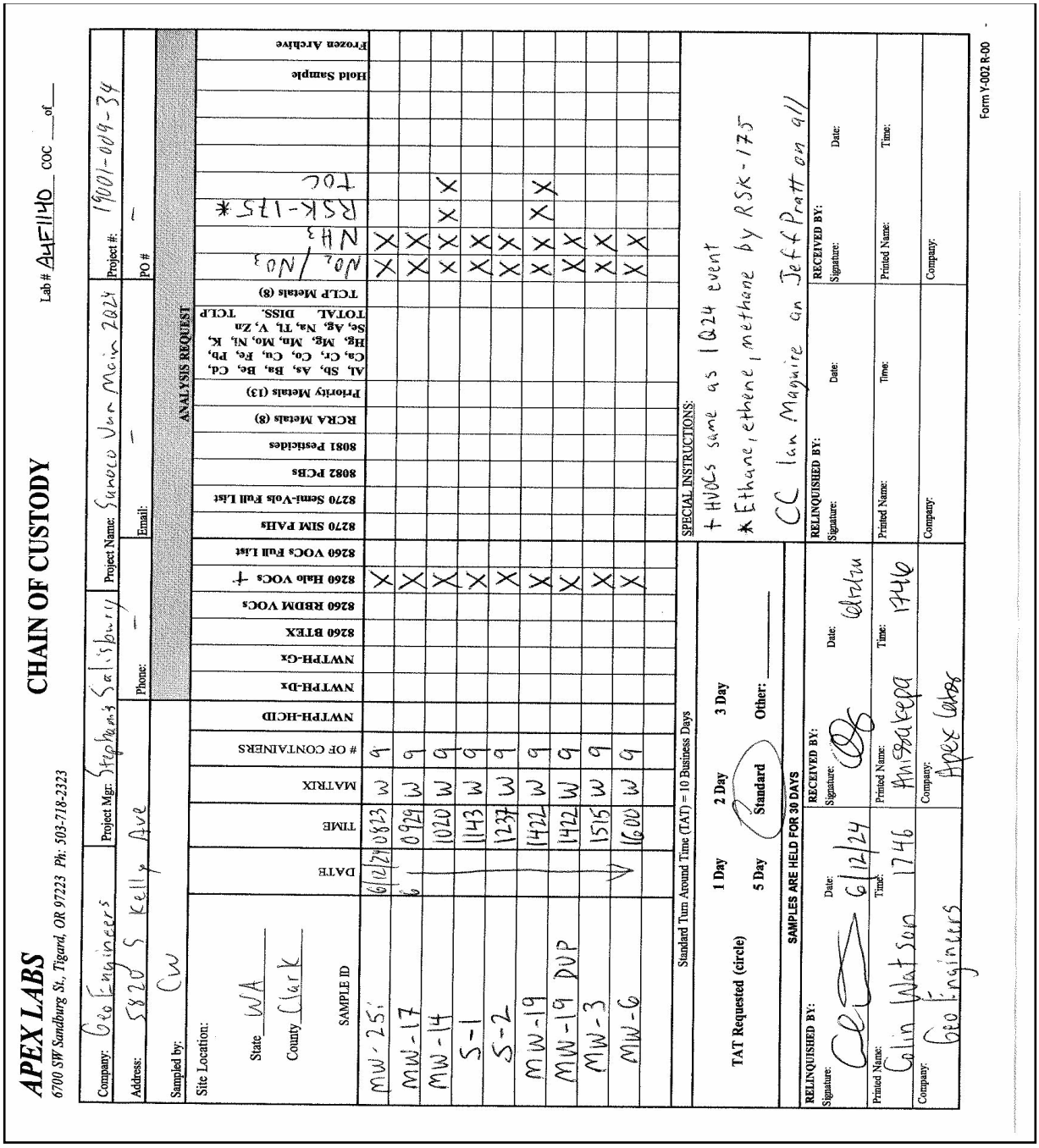


Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**



APEX LABS — 6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4F1140 COC ___ of ___

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Sunoco Van Main 2Q24 | Project #: 19001-009-34

Address: 5820 S Kelly Ave | Phone: - | Email: - | PO # -

Sampled by: CW

Site Location: State WA County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO2/NO3 NH3	RSK-175* TOC	Hold Sample	Frozen Archive
MW-25	6/12/24	0823	W	9						X										X		
MW-17	6/12/24	0929	W	9						X										X		
MW-14	6/12/24	1020	W	9						X										X X		
S-1	6/12/24	1143	W	9						X										X X		
S-2	6/12/24	1237	W	9						X										X		
MW-19	6/12/24	1422	W	9						X										X X		
MW-19 DUP	6/12/24	1422	W	9						X										X X		
MW-3	6/12/24	1515	W	9						X										X X		
MW-6	6/12/24	1600	W	9						X										X X		

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: ___

SPECIAL INSTRUCTIONS:
+ HVOCs same as 1Q24 event
* Ethane, ethene, methane by RSK-175
CC Ian Maguire on Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: Date: 6/12/24 Time: 1746 Printed Name: Colin Watson Company: GeoEngineers

RECEIVED BY: Signature: Date: Time: Printed Name: Company:

RELINQUISHED BY: Signature: Date: Time: Printed Name: Company:

RECEIVED BY: Signature: Date: Time: Printed Name: Company:

RELINQUISHED BY: Signature: Date: Time: Printed Name: Company:

RECEIVED BY: Signature: Date: Time: Printed Name: Company:

Form Y-002 R-00

Apex Laboratories

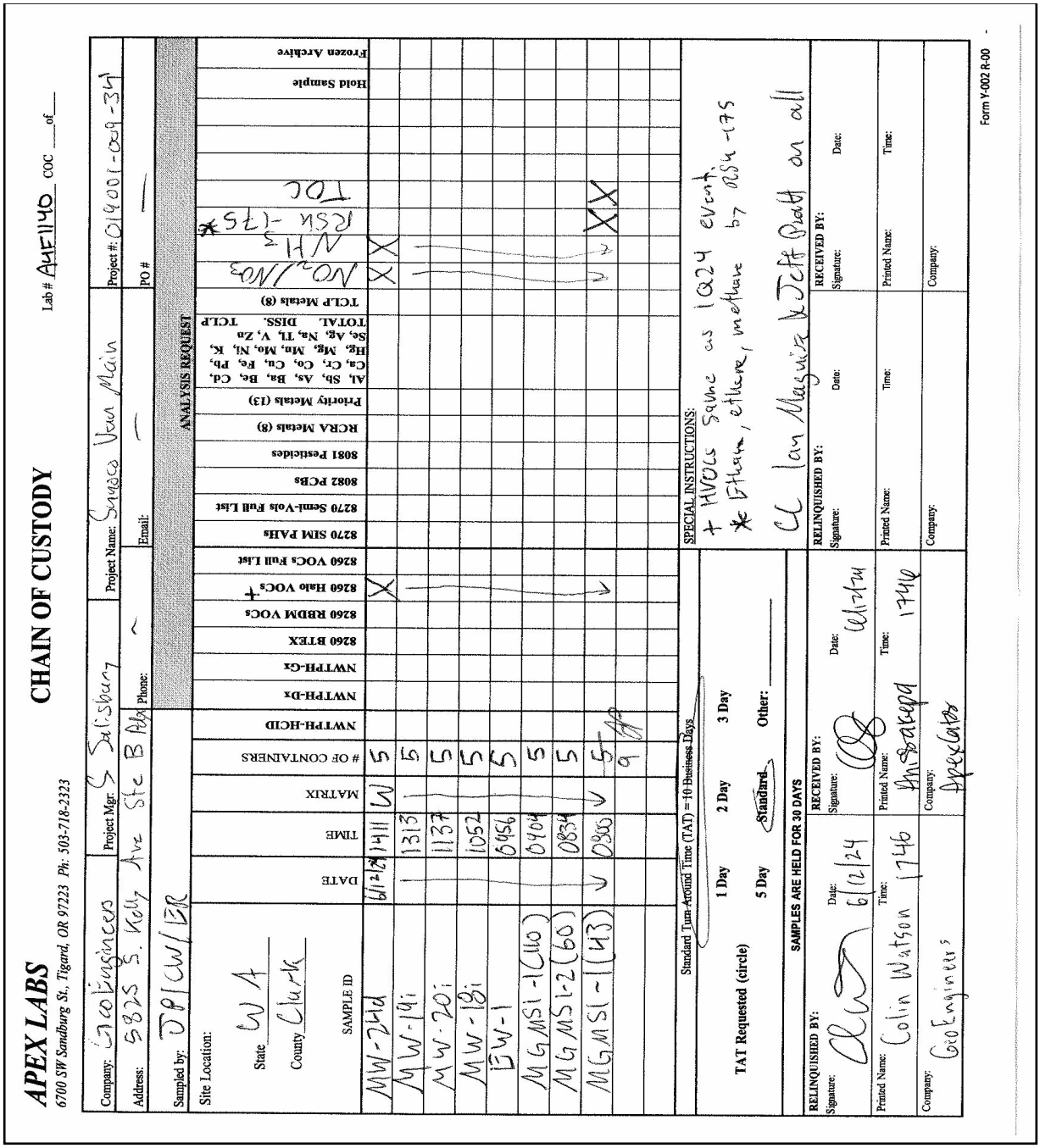
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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**



APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4F1140 COC ___ of ___

Company: GeoEngineers | Project Mgr: S Salisbury | Project Name: Sunoco Van Main | Project #: 19001-009-34
Address: 5825 S. Kelly Ave Ste B Port | Phone: ~ | Email: ~ | PO #: ~
Sampled by: DPI CW/IER

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO2/NO3	NH3	RSK-175*	TOC	Hold Sample	Frozen Archive
MW-24d	6/12/24	1411	GW	5						X										X	X			
MW-19i		1313		5																				
MW-20i		1137		5																				
MW-18i		1052		5																				
EW-1		0956		5																				
MGMSI-1(40)		0904		5																				
MGMSI-2(60)		0834		5																				
MGMSI-1(43)	V	0805	V	5+1						V										V	V			

Standard Turn-Around Time (TAT) = 10 Business Days
TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: ___

SPECIAL INSTRUCTIONS:
+ HVOCs same as 1Q24 event.
* Ethene, ethane, methane by RSK-175
CC Ian Maguire & Jeff Path on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:	RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/12/24		Signature:			Signature:			Signature:		
Printed Name: Colin Watson		1746	Printed Name:			Printed Name:			Printed Name:		
Company: GeoEngineers			Company: Apex Labs			Company:			Company:		

Form V-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **19001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1140 - 06 27 24 1740**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4 F1140 Also for KPAH U1123

Project/Project #: Sunoco Van Main 2Q24 / 19001-009-34

Delivery Info:

Date/time received: 6/27/24 @ 1746 By: AMC

Delivered by: Apex__ Client X ESS__ FedEx__ UPS__ Radio__ Morgan__ SDS__ Evergreen__ Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 6/27/24 @ 1746 By: AMC

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	5.3	4.6					
Custody seals? (Y/N)	N	N					
Received on ice? (Y/N)	Y	Y					
Temp. blanks? (Y/N)	Y	Y					
Ice type: (Gel/Real/Other)	Real	Real					
Condition (In/Out):	In	In					

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

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

Out of temperature samples form initiated? Yes/(No)

Sample Inspection: Date/time inspected: 6/27/24 @ 1826 By: KAB

All samples intact? Yes X No ___ Comments: _____

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

COC/container discrepancies form initiated? Yes ___ No X

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

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

Comments _____

Water samples: pH checked: Yes X No___NA___ pH appropriate? Yes X No___NA___ pH ID: A23172

Comments: _____

Labeled by: KAB Witness: AMC Cooler Inspected by: KAB

Form Y-003 R-02

Apex Laboratories

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Darrell Auvil, Client Services Manager

June 25, 2024 Service Request No:K2406170

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

Laboratory Results for: A4F1140

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 13, 2024
For your reference, these analyses have been assigned our service request number **K2406170.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Client: Apex Laboratories
Project: A4F1140
Sample Matrix: Water

Service Request: K2406170
Date Received: 06/13/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 06/13/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/25/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MW-14			Lab ID: K2406170-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.00		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-19			Lab ID: K2406170-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	4.40		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MGMS1-1(43)			Lab ID: K2406170-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	4.60		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Laboratories **Service Request:**K2406170

Project: A4F1140

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406170-001	MW-14	6/12/2024	1020
K2406170-002	MW-19	6/12/2024	1422
K2406170-003	MGMS1-1(43)	6/12/2024	0800

SUBCONTRACT ORDER V24060170

Apex Laboratories

A4F1140

Accelerated VAB 6/13/24

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MW-14 **Sampled: 06/12/24 10:20** (A4F1140-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/25/24 17:00	07/10/24 10:20	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-19 **Sampled: 06/12/24 14:22** (A4F1140-06)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/25/24 17:00	07/10/24 14:22	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MGMS1-1(43) **Sampled: 06/12/24 08:00** (A4F1140-17)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/25/24 17:00	07/10/24 08:00	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date 6/13/24 1135	Received By	Date 6/13/24 1138
Released By	Date 6/13/24 1410	Received By	Date 6/13/24 1410

PM HH

Cooler Receipt and Preservation Form

Client APex Service Request K24 06170

Received: 6/13/24 Opened: 6/13/24 By: HS Unloaded: 6/13/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	4.5	IR06					

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140/		

Sample Name:	MW-14	**Date Collected:**	06/12/24
Lab Code:	K2406170-001	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-19	**Date Collected:**	06/12/24
Lab Code:	K2406170-002	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MGMS1-1(43)	**Date Collected:**	06/12/24
Lab Code:	K2406170-003	**Date Received:**	06/13/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140	**Date Collected:**	06/12/24 10:20
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MW-14	**Basis:**	NA
Lab Code:	K2406170-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.00**	mg/L	0.50	0.08	1	06/21/24 15:38	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140	**Date Collected:**	06/12/24 14:22
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MW-19	**Basis:**	NA
Lab Code:	K2406170-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**4.40**	mg/L	0.50	0.08	1	06/21/24 15:38	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140	**Date Collected:**	06/12/24 08:00
Sample Matrix:	Water	**Date Received:**	06/13/24 14:10
Sample Name:	MGMS1-1(43)	**Basis:**	NA
Lab Code:	K2406170-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**4.60**	mg/L	0.50	0.08	1	06/21/24 15:38	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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General Chemistry

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406170-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/21/24 15:38	

Client:	Apex Laboratories	**Service Request:**	K2406170
Project:	A4F1140	**Date Analyzed:**	06/21/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845085

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406170-LCS	23.4	25.0	94	83-117

Air TECHNOLOGY
Laboratories, Inc.

July 3, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1140
Lab Number: R061802-01/03

Enclosed are results for sample(s) received 6/18/24 by Air Technology Laboratories. Samples were received intact and chilled to 6° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

A4F1140

Accelerated JS R061802-01/03

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

01 **Sample Name: MW-14** **Water** **Sampled: 06/12/24 10:20** (A4F1140-03)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/25/24 17:00	06/26/24 10:20	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

02 **Sample Name: MW-19** **Water** **Sampled: 06/12/24 14:22** (A4F1140-06)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/25/24 17:00	06/26/24 14:22	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

03 **Sample Name: MGMS1-1(43)** CLIENT LABEL: MGMS1-3(43') **Water** **Sampled: 06/12/24 08:00** (A4F1140-17)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/25/24 17:00 (DO 6/19/24)	06/26/24 08:00	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

Standard TAT

6°C +10

Released By	Date	Received By	Date
	6/17/24	UPS (Shipper)	
UPS (Shipper)	6/18/24 10:29		6/18/24 10:29
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1140**
Date Received:	**06/18/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R061802-01		R061802-02		R061802-03			
Client Sample I.D.:	MW-14 (A4F1140-03)		MW-19 (A4F1140-06)		MGMS1-1(43) (A4F1140-17)			
Date/Time Sampled:	6/12/24 10:20		6/12/24 14:22		6/12/24 8:00			
Date/Time Analyzed:	6/26/24 11:33		6/26/24 12:39		6/26/24 12:26			
QC Batch No.:	240626GC8A1		240626GC8A1		240626GC8A1			
Analyst Initials:	RC		RC		RC			
Dilution Factor:	1.0		1.0		1.0			
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**		
Ethene	ND	1.0	ND	1.0	ND	1.0		
Ethane	ND	1.0	18	1.0	4.3	1.0		
Methane	ND	1.0	1,800	1.0	27	1.0		

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 7/2/24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240626GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/26/24 11:04			6/26/24 10:41		6/26/24 10:52					
Analyst Initials:	AS/KD			AS/KD		AS/KD					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	1,010	98	990	96	1.8	70	130	30
Ethane	ND	1.0	1,100	1,090	99	1,060	96	2.6	70	130	30
Methane	ND	1.0	590	566	96	553	94	2.4	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/2/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Thursday, June 27, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1166 - Sunoco Vancouver Main Terminal - 019001-009-34

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 A4F1166, which was received by the laboratory on 6/13/2024 at 3:02:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 3.1 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

Apex Laboratories, LLC

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EX	**A4F1166-01**	**Water**	**06/13/24 10:11**	**06/13/24 15:02**
MW-23i	**A4F1166-02**	**Water**	**06/13/24 08:47**	**06/13/24 15:02**
MW-24i	**A4F1166-03**	**Water**	**06/13/24 09:32**	**06/13/24 15:02**
MW-21i-40	**A4F1166-04**	**Water**	**06/13/24 07:59**	**06/13/24 15:02**

Apex Laboratories



Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EX (A4F1166-01)				**Matrix: Water**		**Batch: 24F0773**		
Bromobenzene	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	06/24/24 01:36	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1-Dichloroethane	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1-Dichloroethene	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
cis-1,2-Dichloroethene	**141**	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	06/24/24 01:36	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EX (A4F1166-01)				**Matrix: Water**		**Batch: 24F0773**		
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Tetrachloroethene (PCE)	**1850**	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Trichloroethene (TCE)	**113**	---	4.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	06/24/24 01:36	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	06/24/24 01:36	EPA 8260D	
Vinyl chloride	**2.20**	---	2.00	ug/L	10	06/24/24 01:36	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*	*1*	*06/24/24 01:36*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/24/24 01:36*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*06/24/24 01:36*	*EPA 8260D*	
MW-23i (A4F1166-02)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 10:53	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-23i (A4F1166-02)				**Matrix: Water**		**Batch: 24F0779**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/24/24 10:53	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 10:53	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:53	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 10:53	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*06/24/24 10:53*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/24/24 10:53*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/24/24 10:53*	*EPA 8260D*	
MW-24i (A4F1166-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-24i (A4F1166-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromoform	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 11:20	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1-Dichloroethane	**1.09**	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
cis-1,2-Dichloroethene	**17.5**	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
Tetrachloroethene (PCE)	**16.7**	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main Terminal	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1166 - 06 27 24 1632

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-24i (A4F1166-03)				**Matrix: Water**		**Batch: 24F0779**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
Trichloroethene (TCE)	**8.68**	---	0.400	ug/L	1	06/24/24 11:20	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 11:20	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:20	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 11:20	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*108 %*	*Limits: 80-120 %*	*1*	*06/24/24 11:20*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/24/24 11:20*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/24/24 11:20*	*EPA 8260D*	
MW-21i-40 (A4F1166-04)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 11:47	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1-Dichloroethane	**1.10**	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-40 (A4F1166-04)				**Matrix: Water**		**Batch: 24F0779**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
cis-1,2-Dichloroethene	**23.0**	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
Tetrachloroethene (PCE)	**16.3**	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
Trichloroethene (TCE)	**9.18**	---	0.400	ug/L	1	06/24/24 11:47	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 11:47	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 11:47	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 11:47	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits:* *80-120 %*	*1*	*06/24/24 11:47*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/24/24 11:47*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*06/24/24 11:47*	*EPA 8260D*	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EX (A4F1166-01RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**28.4**	---	0.200	mg/L	10	06/17/24 15:06	SM 4500-NH3 G	
MW-23i (A4F1166-02)				**Matrix: Water**		**Batch: 24F0559**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/17/24 13:41	SM 4500-NH3 G	
MW-24i (A4F1166-03)				**Matrix: Water**		**Batch: 24F0559**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/17/24 13:42	SM 4500-NH3 G	
MW-21i-40 (A4F1166-04)				**Matrix: Water**		**Batch: 24F0559**		
Ammonia as N	ND	---	0.0200	mg/L	1	06/17/24 13:44	SM 4500-NH3 G	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
EX (A4F1166-01)				**Matrix: Water**				
Batch: 24F0506								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 16:43	EPA 300.0	
EX (A4F1166-01RE1)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**42.0**	---	5.00	mg/L	20	06/14/24 16:21	EPA 300.0	
MW-23i (A4F1166-02)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**1.77**	---	0.250	mg/L	1	06/14/24 17:04	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 17:04	EPA 300.0	
MW-24i (A4F1166-03)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**8.40**	---	0.250	mg/L	1	06/14/24 17:26	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 17:26	EPA 300.0	
MW-21i-40 (A4F1166-04)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**2.12**	---	0.250	mg/L	1	06/14/24 17:47	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 17:47	EPA 300.0	

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Blank (24F0773-BLK1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 14:42									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Blank (24F0773-BLK1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 14:42									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*80-120 %*			*"*				
LCS (24F0773-BS1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 13:47									**A-01**
EPA 8260D												
Bromobenzene	20.3	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
Bromodichloromethane	21.7	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromoform	21.8	---	1.00	ug/L	1	20.0	---	109	80-120%	---	---	
Bromomethane	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Carbon tetrachloride	20.9	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
Chloroethane	23.4	---	5.00	ug/L	1	20.0	---	117	80-120%	---	---	
Chloroform	20.3	---	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Chloromethane	18.7	---	5.00	ug/L	1	20.0	---	93	80-120%	---	---	
2-Chlorotoluene	20.0	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
4-Chlorotoluene	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Dibromochloromethane	19.6	---	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.7	---	5.00	ug/L	1	20.0	---	94	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.2	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
Dibromomethane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,2-Dichlorobenzene	21.6	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main Terminal	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1166 - 06 27 24 1632

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
LCS (24F0773-BS1)			Prepared: 06/23/24 11:37		Analyzed: 06/23/24 13:47							**A-01**
1,3-Dichlorobenzene	21.1	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
1,4-Dichlorobenzene	19.6	---	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Dichlorodifluoromethane	19.4	---	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
1,1-Dichloroethane	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloroethane (EDC)	19.8	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,1-Dichloroethene	19.3	---	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,2-Dichloroethene	20.5	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
trans-1,2-Dichloroethene	19.5	---	0.400	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dichloropropane	20.4	---	0.500	ug/L	1	20.0	---	102	80-120%	---	---	
1,3-Dichloropropane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
2,2-Dichloropropane	25.3	---	1.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,1-Dichloropropene	20.7	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,3-Dichloropropene	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
Hexachlorobutadiene	21.2	---	5.00	ug/L	1	20.0	---	106	80-120%	---	---	
Methylene chloride	19.5	---	10.0	ug/L	1	20.0	---	98	80-120%	---	---	
1,1,1,2-Tetrachloroethane	23.9	---	0.400	ug/L	1	20.0	---	119	80-120%	---	---	
1,1,2,2-Tetrachloroethane	22.4	---	0.500	ug/L	1	20.0	---	112	80-120%	---	---	
Tetrachloroethene (PCE)	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2,3-Trichlorobenzene	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	21.3	---	2.00	ug/L	1	20.0	---	106	80-120%	---	---	
1,1,1-Trichloroethane	20.8	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
Trichloroethene (TCE)	19.7	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
Trichlorofluoromethane	22.2	---	2.00	ug/L	1	20.0	---	111	80-120%	---	---	
1,2,3-Trichloropropane	21.0	---	1.00	ug/L	1	20.0	---	105	80-120%	---	---	
Vinyl chloride	20.0	---	0.200	ug/L	1	20.0	---	100	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 100 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37		Analyzed: 06/23/24 21:31							
QC Source Sample: Non-SDG (A4F1281-03)												
Bromobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	

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ORELAP ID: OR100062

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main Terminal	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1166 - 06 27 24 1632

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 21:31									
QC Source Sample: Non-SDG (A4F1281-03)												
Bromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**0.410**	---	0.400	ug/L	1	---	0.440	---	---	7	30%	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	---	10.0	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0773 - EPA 5030C							**Water**					
Duplicate (24F0773-DUP1)			Prepared: 06/23/24 11:37 Analyzed: 06/23/24 21:31									
QC Source Sample: Non-SDG (A4F1281-03)												
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**2.03**	---	0.400	ug/L	1	---	1.69	---	---	18	30%	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**3.12**	---	0.400	ug/L	1	---	2.82	---	---	10	30%	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.200	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C									Water			
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 07:58									
EPA 8260D												
Bromobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	22.6	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Bromodichloromethane	23.2	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
Bromoform	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Bromomethane	22.2	---	5.00	ug/L	1	20.0	---	111	80-120%	---	---	
Carbon tetrachloride	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	26.7	---	5.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
Chloroform	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.7	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Dibromomethane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 07:58									
1,3-Dichlorobenzene	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,4-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dichlorodifluoromethane	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,1-Dichloroethene	20.9	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	21.4	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
trans-1,2-Dichloroethene	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloropropane	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
1,3-Dichloropropane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
2,2-Dichloropropane	23.9	---	1.00	ug/L	1	20.0	---	120	80-120%	---	---	
1,1-Dichloropropene	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
cis-1,3-Dichloropropene	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
trans-1,3-Dichloropropene	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Hexachlorobutadiene	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	24.2	---	0.400	ug/L	1	20.0	---	**121**	**80-120%**	---	---	Q-56
1,1,2,2-Tetrachloroethane	22.5	---	0.500	ug/L	1	20.0	---	113	80-120%	---	---	
Tetrachloroethene (PCE)	19.9	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,3-Trichlorobenzene	22.5	---	2.00	ug/L	1	20.0	---	112	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	20.9	---	2.00	ug/L	1	20.0	---	104	80-120%	---	---	
1,1,1-Trichloroethane	21.9	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
Trichloroethene (TCE)	20.7	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
Trichlorofluoromethane	25.5	---	2.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	22.1	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Vinyl chloride	20.8	---	0.200	ug/L	1	20.0	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 21:20									**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
Bromobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 21:20							**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
Bromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**129**	---	40.0	ug/L	100	---	125	---	---	3	30%	
trans-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	1000	ug/L	100	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	

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Darrell Auvil, Client Services Manager

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 21:20									**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
1,1,2,2-Tetrachloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**207**	---	40.0	ug/L	100	---	197	---	---	5	30%	
1,2,3-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**84.0**	---	40.0	ug/L	100	---	86.0	---	---	2	30%	
Trichlorofluoromethane	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Vinyl chloride	**32.0**	---	20.0	ug/L	100	---	37.0	---	---	14	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 15:53									
QC Source Sample: Non-SDG (A4F1281-01RE1)												
EPA 8260D												
Bromobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Bromochloromethane	23.1	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	79-125%	---	---	
Bromoform	22.5	---	1.00	ug/L	1	20.0	ND	113	66-130%	---	---	
Bromomethane	25.1	---	5.00	ug/L	1	20.0	ND	125	53-141%	---	---	
Carbon tetrachloride	24.4	---	1.00	ug/L	1	20.0	ND	122	72-136%	---	---	
Chlorobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Chloroethane	27.8	---	5.00	ug/L	1	20.0	ND	**139**	**60-138%**	---	---	Q-54a
Chloroform	23.0	---	1.00	ug/L	1	20.0	ND	115	79-124%	---	---	
Chloromethane	22.5	---	5.00	ug/L	1	20.0	ND	112	50-139%	---	---	
2-Chlorotoluene	22.5	---	1.00	ug/L	1	20.0	ND	112	79-122%	---	---	
4-Chlorotoluene	23.4	---	1.00	ug/L	1	20.0	ND	117	78-122%	---	---	
Dibromochloromethane	20.5	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	20.8	---	5.00	ug/L	1	20.0	ND	104	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	---	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 15:53							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
1,2-Dichlorobenzene	23.5	---	0.500	ug/L	1	20.0	ND	118	80-120%	---	---	
1,3-Dichlorobenzene	23.1	---	0.500	ug/L	1	20.0	ND	116	80-120%	---	---	
1,4-Dichlorobenzene	21.3	---	0.500	ug/L	1	20.0	ND	107	79-120%	---	---	
Dichlorodifluoromethane	23.8	---	1.00	ug/L	1	20.0	ND	119	32-152%	---	---	
1,1-Dichloroethane	23.6	---	0.400	ug/L	1	20.0	ND	118	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.8	---	0.400	ug/L	1	20.0	ND	109	73-128%	---	---	
1,1-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	0.220	115	71-131%	---	---	
cis-1,2-Dichloroethene	23.2	---	0.400	ug/L	1	20.0	0.260	114	78-123%	---	---	
trans-1,2-Dichloroethene	23.0	---	0.400	ug/L	1	20.0	ND	115	75-124%	---	---	
1,2-Dichloropropane	22.6	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	115	80-120%	---	---	
2,2-Dichloropropane	27.1	---	1.00	ug/L	1	20.0	ND	135	60-139%	---	---	
1,1-Dichloropropene	25.2	---	1.00	ug/L	1	20.0	ND	**126**	**79-125%**	---	---	Q-01
cis-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	75-124%	---	---	
trans-1,3-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	73-127%	---	---	
Hexachlorobutadiene	24.7	---	5.00	ug/L	1	20.0	ND	124	66-134%	---	---	
Methylene chloride	21.4	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.8	---	0.400	ug/L	1	20.0	ND	**129**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.1	---	0.500	ug/L	1	20.0	ND	121	71-121%	---	---	
Tetrachloroethene (PCE)	25.1	---	0.400	ug/L	1	20.0	2.01	116	74-129%	---	---	
1,2,3-Trichlorobenzene	24.6	---	2.00	ug/L	1	20.0	ND	123	69-129%	---	---	
1,1,2-Trichloroethane	22.2	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	26.6	---	0.400	ug/L	1	20.0	3.65	115	79-123%	---	---	
Trichlorofluoromethane	26.9	---	2.00	ug/L	1	20.0	ND	135	65-141%	---	---	Q-54b
1,2,3-Trichloropropane	23.4	---	1.00	ug/L	1	20.0	ND	117	73-122%	---	---	
Vinyl chloride	24.8	---	0.200	ug/L	1	20.0	ND	124	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 103 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*98 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*97 %*	*80-120 %*	*"*

Matrix Spike (24F0779-MS2) Prepared: 06/24/24 07:25 Analyzed: 06/24/24 13:09

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
EPA 8260D												
Bromobenzene	21.9	---	0.500	ug/L	1	20.0	ND	109	80-120%	---	---	
Bromochloromethane	23.6	---	1.00	ug/L	1	20.0	ND	118	78-123%	---	---	
Bromodichloromethane	24.8	---	1.00	ug/L	1	20.0	ND	124	79-125%	---	---	
Bromoform	23.0	---	1.00	ug/L	1	20.0	ND	115	66-130%	---	---	
Bromomethane	25.2	---	5.00	ug/L	1	20.0	ND	126	53-141%	---	---	
Carbon tetrachloride	24.7	---	1.00	ug/L	1	20.0	ND	123	72-136%	---	---	
Chlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	---	---	
Chloroethane	28.6	---	5.00	ug/L	1	20.0	ND	**143**	**60-138%**	---	---	Q-54a
Chloroform	23.8	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	21.8	---	5.00	ug/L	1	20.0	ND	109	50-139%	---	---	
2-Chlorotoluene	21.9	---	1.00	ug/L	1	20.0	ND	109	79-122%	---	---	
4-Chlorotoluene	23.1	---	1.00	ug/L	1	20.0	ND	116	78-122%	---	---	
Dibromochloromethane	20.7	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	19.0	---	5.00	ug/L	1	20.0	ND	95	62-128%	---	---	
1,2-Dibromoethane (EDB)	21.8	---	0.500	ug/L	1	20.0	ND	109	77-121%	---	---	
Dibromomethane	23.3	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	23.0	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	22.9	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	21.2	---	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	23.3	---	0.400	ug/L	1	20.0	ND	117	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.9	---	0.400	ug/L	1	20.0	ND	110	73-128%	---	---	
1,1-Dichloroethene	22.7	---	0.400	ug/L	1	20.0	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	22.9	---	0.400	ug/L	1	20.0	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	22.5	---	0.400	ug/L	1	20.0	ND	112	75-124%	---	---	
1,2-Dichloropropane	22.8	---	0.500	ug/L	1	20.0	ND	114	78-122%	---	---	
1,3-Dichloropropane	22.4	---	1.00	ug/L	1	20.0	ND	112	80-120%	---	---	
2,2-Dichloropropane	25.8	---	1.00	ug/L	1	20.0	ND	129	60-139%	---	---	
1,1-Dichloropropene	24.7	---	1.00	ug/L	1	20.0	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	20.3	---	1.00	ug/L	1	20.0	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	23.2	---	1.00	ug/L	1	20.0	ND	116	73-127%	---	---	
Hexachlorobutadiene	23.6	---	5.00	ug/L	1	20.0	ND	118	66-134%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.6	---	0.400	ug/L	1	20.0	ND	**128**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.0	---	0.500	ug/L	1	20.0	ND	120	71-121%	---	---	
Tetrachloroethene (PCE)	22.3	---	0.400	ug/L	1	20.0	ND	112	74-129%	---	---	
1,2,3-Trichlorobenzene	23.8	---	2.00	ug/L	1	20.0	ND	119	69-129%	---	---	
1,1,2-Trichloroethane	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	22.3	---	2.00	ug/L	1	20.0	ND	111	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	22.2	---	0.400	ug/L	1	20.0	ND	111	79-123%	---	---	
Trichlorofluoromethane	28.9	---	2.00	ug/L	1	20.0	ND	**144**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	114	73-122%	---	---	
Vinyl chloride	23.1	---	0.200	ug/L	1	20.0	ND	115	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*97 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*				*"*			
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Bromobenzene	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	4	30%	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	ND	110	78-123%	5	30%	
Bromodichloromethane	23.3	---	1.00	ug/L	1	20.0	ND	117	79-125%	4	30%	
Bromoform	22.2	---	1.00	ug/L	1	20.0	ND	111	66-130%	2	30%	
Bromomethane	24.5	---	5.00	ug/L	1	20.0	ND	122	53-141%	2	30%	
Carbon tetrachloride	23.5	---	1.00	ug/L	1	20.0	ND	118	72-136%	4	30%	
Chlorobenzene	21.5	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
Chloroethane	26.1	---	5.00	ug/L	1	20.0	ND	131	60-138%	6	30%	Q-54a
Chloroform	22.1	---	1.00	ug/L	1	20.0	ND	110	79-124%	4	30%	
Chloromethane	20.8	---	5.00	ug/L	1	20.0	ND	104	50-139%	8	30%	
2-Chlorotoluene	21.5	---	1.00	ug/L	1	20.0	ND	108	79-122%	4	30%	
4-Chlorotoluene	22.9	---	1.00	ug/L	1	20.0	ND	114	78-122%	2	30%	
Dibromochloromethane	20.0	---	1.00	ug/L	1	20.0	ND	100	74-126%	2	30%	
1,2-Dibromo-3-chloropropane	19.5	---	5.00	ug/L	1	20.0	ND	97	62-128%	7	30%	
1,2-Dibromoethane (EDB)	21.6	---	0.500	ug/L	1	20.0	ND	108	77-121%	2	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Dibromomethane	22.7	---	1.00	ug/L	1	20.0	ND	113	79-123%	2	30%	
1,2-Dichlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	4	30%	
1,3-Dichlorobenzene	22.3	---	0.500	ug/L	1	20.0	ND	112	80-120%	3	30%	
1,4-Dichlorobenzene	20.6	---	0.500	ug/L	1	20.0	ND	103	79-120%	4	30%	
Dichlorodifluoromethane	22.6	---	1.00	ug/L	1	20.0	ND	113	32-152%	5	30%	
1,1-Dichloroethane	22.4	---	0.400	ug/L	1	20.0	ND	112	77-125%	5	30%	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	ND	105	73-128%	4	30%	
1,1-Dichloroethene	22.4	---	0.400	ug/L	1	20.0	0.220	111	71-131%	4	30%	
cis-1,2-Dichloroethene	22.8	---	0.400	ug/L	1	20.0	0.260	113	78-123%	2	30%	
trans-1,2-Dichloroethene	22.1	---	0.400	ug/L	1	20.0	ND	110	75-124%	4	30%	
1,2-Dichloropropane	21.9	---	0.500	ug/L	1	20.0	ND	110	78-122%	3	30%	
1,3-Dichloropropane	22.1	---	1.00	ug/L	1	20.0	ND	111	80-120%	3	30%	
2,2-Dichloropropane	26.3	---	1.00	ug/L	1	20.0	ND	132	60-139%	3	30%	
1,1-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	79-125%	7	30%	
cis-1,3-Dichloropropene	21.0	---	1.00	ug/L	1	20.0	ND	105	75-124%	2	30%	
trans-1,3-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	ND	114	73-127%	4	30%	
Hexachlorobutadiene	23.2	---	5.00	ug/L	1	20.0	ND	116	66-134%	7	30%	
Methylene chloride	20.6	---	10.0	ug/L	1	20.0	ND	103	74-124%	4	30%	
1,1,1,2-Tetrachloroethane	25.2	---	0.400	ug/L	1	20.0	ND	**126**	**78-124%**	2	30%	Q-54
1,1,2,2-Tetrachloroethane	23.5	---	0.500	ug/L	1	20.0	ND	118	71-121%	3	30%	
Tetrachloroethene (PCE)	24.0	---	0.400	ug/L	1	20.0	2.01	110	74-129%	5	30%	
1,2,3-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	118	69-129%	4	30%	
1,1,2-Trichloroethane	21.3	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
1,2,4-Trichlorobenzene	22.4	---	2.00	ug/L	1	20.0	ND	112	69-130%	5	30%	
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	ND	116	74-131%	4	30%	
Trichloroethene (TCE)	25.3	---	0.400	ug/L	1	20.0	3.65	108	79-123%	5	30%	
Trichlorofluoromethane	25.6	---	2.00	ug/L	1	20.0	ND	128	65-141%	5	30%	Q-54b
1,2,3-Trichloropropane	21.7	---	1.00	ug/L	1	20.0	ND	109	73-122%	7	30%	
Vinyl chloride	23.4	---	0.200	ug/L	1	20.0	ND	117	58-137%	6	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0559 - Method Prep: Aq							**Water**					
Blank (24F0559-BLK1)			Prepared: 06/17/24 11:08		Analyzed: 06/17/24 13:12							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0559-BS1)			Prepared: 06/17/24 11:08		Analyzed: 06/17/24 13:14							
SM 4500-NH3 G												
Ammonia as N	2.01	---	0.0200	mg/L	1	2.00	---	100	90-111%	---	---	
Matrix Spike (24F0559-MS1)			Prepared: 06/17/24 11:08		Analyzed: 06/17/24 13:18							
QC Source Sample: Non-SDG (A4F1150-01)												
SM 4500-NH3 G												
Ammonia as N	2.58	---	0.0250	mg/L	1	2.50	0.0290	102	90-111%	---	---	
Matrix Spike Dup (24F0559-MSD1)			Prepared: 06/17/24 11:08		Analyzed: 06/17/24 13:20							
QC Source Sample: Non-SDG (A4F1150-01)												
Ammonia as N	2.65	---	0.0250	mg/L	1	2.50	0.0290	105	90-111%	3	13%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0562 - Method Prep: Aq									Water			
Blank (24F0562-BLK1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:18									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0562-BS1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:20									
SM 4500-NH3 G												
Ammonia as N	2.05	---	0.0200	mg/L	1	2.00	---	103	90-111%	---	---	
Matrix Spike (24F0562-MS1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:24									
QC Source Sample: Non-SDG (A4F1165-08)												
SM 4500-NH3 G												
Ammonia as N	2.62	---	0.0250	mg/L	1	2.50	0.0160	104	90-111%	---	---	
Matrix Spike Dup (24F0562-MSD1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:26									
QC Source Sample: Non-SDG (A4F1165-08)												
Ammonia as N	2.64	---	0.0250	mg/L	1	2.50	0.0160	105	90-111%	0.8	13%	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main Terminal	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1166 - 06 27 24 1632

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0506 - Method Prep: Aq							Water					
Blank (24F0506-BLK1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 15:38							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0506-BS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 16:00							
EPA 300.0												
Nitrate-Nitrogen	2.09	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Nitrite-Nitrogen	2.11	---	0.250	mg/L	1	2.00	---	106	90-110%	---	---	
Duplicate (24F0506-DUP1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:30							
QC Source Sample: Non-SDG (A4F1167-01)												
Nitrate-Nitrogen	**0.632**	---	0.250	mg/L	1	---	0.625	---	---	1	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0506-DUP2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:18							
QC Source Sample: Non-SDG (A4F1167-02)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0506-MS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:52							
QC Source Sample: Non-SDG (A4F1167-01)												
EPA 300.0												
Nitrate-Nitrogen	3.27	---	0.312	mg/L	1	2.50	0.625	106	87-112%	---	---	
Nitrite-Nitrogen	2.63	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	
Matrix Spike (24F0506-MS2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:40							
QC Source Sample: Non-SDG (A4F1167-02)												
EPA 300.0												
Nitrate-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	87-112%	---	---	
Nitrite-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	90-114%	---	---	

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0773							
A4F1166-01	Water	EPA 8260D	06/13/24 10:11	06/23/24 12:02	5mL/5mL	5mL/5mL	1.00
Batch: 24F0779							
A4F1166-02	Water	EPA 8260D	06/13/24 08:47	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1166-03	Water	EPA 8260D	06/13/24 09:32	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1166-04	Water	EPA 8260D	06/13/24 07:59	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0559							
A4F1166-02	Water	SM 4500-NH3 G	06/13/24 08:47	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1166-03	Water	SM 4500-NH3 G	06/13/24 09:32	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1166-04	Water	SM 4500-NH3 G	06/13/24 07:59	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
Batch: 24F0562							
A4F1166-01RE1	Water	SM 4500-NH3 G	06/13/24 10:11	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0506							
A4F1166-01	Water	EPA 300.0	06/13/24 10:11	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1166-01RE1	Water	EPA 300.0	06/13/24 10:11	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1166-02	Water	EPA 300.0	06/13/24 08:47	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1166-03	Water	EPA 300.0	06/13/24 09:32	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1166-04	Water	EPA 300.0	06/13/24 07:59	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project:	**Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number:	**019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager:	**Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

QUALIFIER DEFINITIONS

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

Apex Laboratories

A-01	Preparation error on Matrix Spike/Dup. Batch accepted based on recovery of the Blank Spike.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +1%. 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 8260/8270 by +13%. 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 8260/8270 by +7%. The results are reported as Estimated Values.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



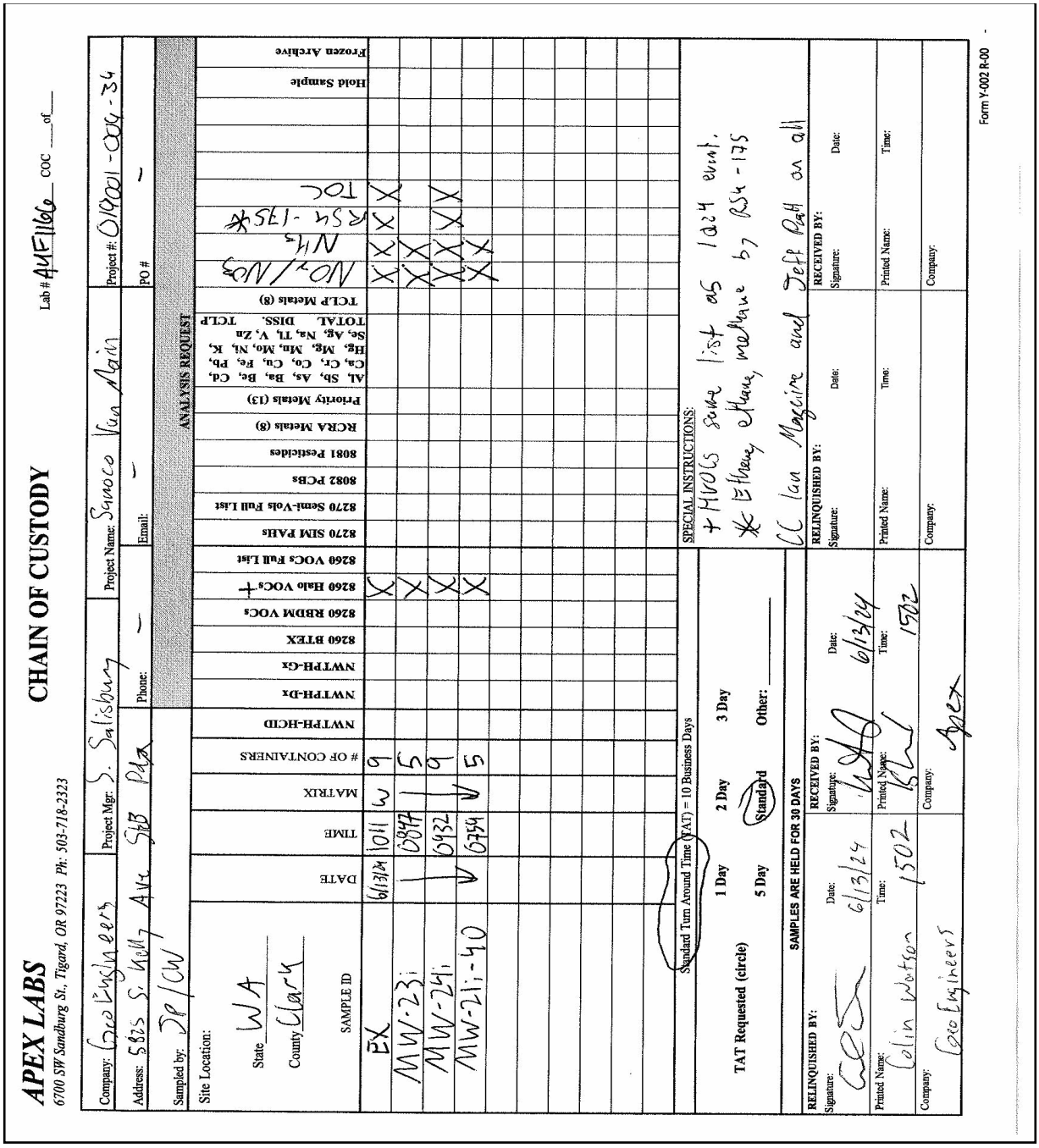
Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**



APEX LABS — **CHAIN OF CUSTODY**
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

Lab # 4AF1166 COC ___ of ___

Company: GeoEngineers | Project Mgr: S. Salisbury | Project Name: Sunoco Van Main | Project #: 019001-009-34
Address: 5820 S. Kelly Ave Ste B Pdx | Phone: - | Email: - | PO # -
Sampled by: DP/CW

Site Location: State WA County Clark

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO3/NO2	Nitrate	RSK-175*	TOC	Hold Sample	Frozen Archive
EX	6/13/24	1011	W	9						X										X	X	X		
MW-23;		0847		5																				
MW-24;		0932		9						X										X	X	X		
MW-21;-40	V	0754	V	5																				

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: ___

SPECIAL INSTRUCTIONS:
+ HVOCs same list as 1024 event.
* Ethene, ethane, methane by RSK-175
CC Ian Maguire and Jeff Pgh on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:	RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/13/24		Signature:	6/13/24		Signature:			Signature:		
Printed Name: Colin Watson		1502	Printed Name:		1502	Printed Name:			Printed Name:		
Company: GeoEngineers			Company: Apex			Company:			Company:		

Form Y-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

Apex Laboratories, LLC
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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main Terminal**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1166 - 06 27 24 1632**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4F1166

Project/Project #: Sunoco Van Main / 019001-009-34

Delivery Info:

Date/time received: 6/13/24 @ 1502 By: KRS

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 6/13/24 @ 1502 By: KRS

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	3.1						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	Y						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes (No)

Sample Inspection: Date/time inspected: 6/13/24 @ 15:12 By: KAM

All samples intact? Yes X No ___ Comments: _____

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

COC/container discrepancies form initiated? Yes ___ No X

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

Do VOA vials have visible headspace? Yes ___ No X NA X KAM 6/13/24

Comments _____

Water samples: pH checked: Yes X No___NA___ pH appropriate? Yes X No___NA___ pH ID: A23II72

Comments: _____

Labeled by: KAM Witness: S Cooler Inspected by: KRM

Form Y-003 R-02

Apex Laboratories

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Darrell Auvil, Client Services Manager

June 27, 2024 Service Request No:K2406212

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

Laboratory Results for: A4F1166

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 14, 2024
For your reference, these analyses have been assigned our service request number **K2406212.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories
Project: A4F1166
Sample Matrix: Water

Service Request: K2406212
Date Received: 06/14/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two water samples were received for analysis at ALS Environmental on 06/14/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/27/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: EX			Lab ID: K2406212-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	2.00		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-24i			Lab ID: K2406212-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	0.42	J	0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2406212

Project: A4F1166

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406212-001	EX	6/13/2024	1011
K2406212-002	MW-24i	6/13/2024	0932

VN2406212

SUBCONTRACT ORDER

Apex Laboratories

6/13/24 **A4F1166**

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: EX **Sampled: 06/13/24 10:11** (A4F1166-01)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/26/24 17:00	07/11/24 10:11	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-24i **Sampled: 06/13/24 09:32** (A4F1166-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/26/24 17:00	07/11/24 09:32	ALS Kelso, no data package
Containers Supplied: (H)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	Date	Received By	Date
	6/14/24 1047		6/14/24 1047
	6/14/24 1210	Haleigh Smith	6/14/24 1210

PM HH

Cooler Receipt and Preservation Form

Client Apex Service Request K24 06212

Received: 6/14/24 Opened: 6/14/24 By: HS Unloaded: 6/14/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	6.9	IR6					

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Apex Laboratories	**Service Request:**	K2406212
Project:	A4F1166/		

Sample Name:	EX	**Date Collected:**	06/13/24
Lab Code:	K2406212-001	**Date Received:**	06/14/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-24i	**Date Collected:**	06/13/24
Lab Code:	K2406212-002	**Date Received:**	06/14/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406212
Project:	A4F1166	**Date Collected:**	06/13/24 10:11
Sample Matrix:	Water	**Date Received:**	06/14/24 12:10
Sample Name:	EX	**Basis:**	NA
Lab Code:	K2406212-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**2.00**	mg/L	0.50	0.08	1	06/24/24 17:33	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406212
Project:	A4F1166	**Date Collected:**	06/13/24 09:32
Sample Matrix:	Water	**Date Received:**	06/14/24 12:10
Sample Name:	MW-24i	**Basis:**	NA
Lab Code:	K2406212-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**0.42 J**	mg/L	0.50	0.08	1	06/24/24 17:33	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406212
Project:	A4F1166	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406212-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/24/24 17:33	

Client:	Apex Laboratories	**Service Request:**	K2406212
Project:	A4F1166	**Date Analyzed:**	06/24/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845302

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406212-LCS	23.7	25.0	95	83-117

AirTECHNOLOGY
Laboratories, Inc.

July 3, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1166
Lab Number: R061803-01/02

Enclosed are results for sample(s) received 6/18/24 by Air Technology Laboratories. Samples were received intact and chilled to 6° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

6/13/24 **A4F1166** JS R061803-01/02

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

01 **Sample Name: EX** **Water** **Sampled: 06/13/24 10:11** (A4F1166-01)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/26/24 17:00	06/27/24 10:11	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

02 **Sample Name: MW-24i** **Water** **Sampled: 06/13/24 09:32** (A4F1166-03)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/26/24 17:00	06/27/24 09:32	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

Standard TAT

6°C
+10

Released By	Date	Received By	Date
	6/17/24	UPS (Shipper)	
UPS (Shipper)	6/18/24 10:29		6/18/24 10:29
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1166**
Date Received:	**06/18/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R061803-01		R061803-02					
Client Sample I.D.:	EX (A4F1166-01)		MW-24i (A4F1166-03)					
Date/Time Sampled:	6/13/24 10:11		6/13/24 9:32					
Date/Time Analyzed:	6/26/24 13:01		6/26/24 13:13					
QC Batch No.:	240626GC8A1		240626GC8A1					
Analyst Initials:	RC		RC					
Dilution Factor:	1.0		1.0					
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**				
Ethene	ND	1.0	ND	1.0				
Ethane	1.3	1.0	ND	1.0				
Methane	9.6	1.0	ND	1.0				

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/2/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240626GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/26/24 11:04			6/26/24 10:41		6/26/24 10:52					
Analyst Initials:	AS/KD			AS/KD		AS/KD					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	1,010	98	990	96	1.8	70	130	30
Ethane	ND	1.0	1,100	1,090	99	1,060	96	2.6	70	130	30
Methane	ND	1.0	590	566	96	553	94	2.4	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/2/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Thursday, June 27, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1169 - Sunoco Vancouver Main 2Q24 - 019001-009-34

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 A4F1169, which was received by the laboratory on 6/13/2024 at 3:02:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 3.1 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-21i-105	A4F1169-01	Water	06/13/24 08:08	06/13/24 15:02
MW-1	A4F1169-02	Water	06/13/24 10:25	06/13/24 15:02
MP-1	A4F1169-03	Water	06/13/24 11:18	06/13/24 15:02
MW-12	A4F1169-04	Water	06/13/24 12:18	06/13/24 15:02
MW-12 DUP	A4F1169-05	Water	06/13/24 12:18	06/13/24 15:02
MW-13	A4F1169-06	Water	06/13/24 13:23	06/13/24 15:02

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4F1169-01)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 12:42	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1-Dichloroethane	**0.730**	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
cis-1,2-Dichloroethene	**17.4**	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
trans-1,2-Dichloroethene	**0.540**	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 12:42	EPA 8260D	

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1169 - 06 27 24 1252

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4F1169-01)				**Matrix: Water**		**Batch: 24F0779**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
Tetrachloroethene (PCE)	**21.6**	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
Trichloroethene (TCE)	**10.9**	---	0.400	ug/L	1	06/24/24 12:42	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 12:42	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:42	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 12:42	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*109 %*	*Limits: 80-120 %*	*1*	*06/24/24 12:42*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*	*80-120 %*	*1*	*06/24/24 12:42*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/24/24 12:42*	*EPA 8260D*	
MW-1 (A4F1169-02)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 12:15	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-1 (A4F1169-02)				**Matrix: Water**		**Batch: 24F0779**		
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1-Dichloroethane	**2.92**	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
cis-1,2-Dichloroethene	**46.1**	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
trans-1,2-Dichloroethene	**0.570**	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
Tetrachloroethene (PCE)	**20.1**	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
Trichloroethene (TCE)	**11.2**	---	0.400	ug/L	1	06/24/24 12:15	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 12:15	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 12:15	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 12:15	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits:*	*80-120 %*	*1*	*06/24/24 12:15*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*		*80-120 %*	*1*	*06/24/24 12:15*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*06/24/24 12:15*	*EPA 8260D*	
MP-1 (A4F1169-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Bromochloromethane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MP-1 (A4F1169-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromoform	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Bromomethane	ND	---	12.5	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Chlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Chloroethane	ND	---	12.5	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Chloroform	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Chloromethane	ND	---	12.5	ug/L	2.5	06/24/24 19:03	EPA 8260D	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Dibromomethane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1-Dichloroethane	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
cis-1,2-Dichloroethene	**10.0**	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Methylene chloride	ND	---	25.0	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Tetrachloroethene (PCE)	**159**	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MP-1 (A4F1169-03)				**Matrix: Water**		**Batch: 24F0779**		
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,1,1-Trichloroethane	ND	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Trichloroethene (TCE)	**35.6**	---	1.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	06/24/24 19:03	EPA 8260D	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Vinyl chloride	ND	---	0.500	ug/L	2.5	06/24/24 19:03	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*109 %*	*Limits: 80-120 %*	*1*	*06/24/24 19:03*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/24/24 19:03*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*99 %*	*80-120 %*	*1*	*06/24/24 19:03*	*EPA 8260D*	
MW-12 (A4F1169-04RE1)				**Matrix: Water**		**Batch: 24F0827**		
Bromobenzene	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/25/24 10:04	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1-Dichloroethane	**29.9**	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 (A4F1169-04RE1)				**Matrix: Water**		**Batch: 24F0827**		
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1-Dichloroethene	**0.440**	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
cis-1,2-Dichloroethene	**32.8**	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
Tetrachloroethene (PCE)	**3.88**	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
Trichloroethene (TCE)	**3.90**	---	0.400	ug/L	1	06/25/24 10:04	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/25/24 10:04	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:04	EPA 8260D	
Vinyl chloride	**22.8**	---	0.200	ug/L	1	06/25/24 10:04	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits:*	*80-120 %*	*1*	*06/25/24 10:04*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*		*80-120 %*	*1*	*06/25/24 10:04*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*		*80-120 %*	*1*	*06/25/24 10:04*	*EPA 8260D*	
MW-12 DUP (A4F1169-05RE1)				**Matrix: Water**		**Batch: 24F0827**		
Bromobenzene	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 DUP (A4F1169-05RE1)				**Matrix: Water**		**Batch: 24F0827**		
Chlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/25/24 10:32	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1-Dichloroethane	**27.2**	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1-Dichloroethene	**0.410**	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
cis-1,2-Dichloroethene	**30.2**	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
Tetrachloroethene (PCE)	**3.86**	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/25/24 10:32	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 DUP (A4F1169-05RE1)				**Matrix: Water**		**Batch: 24F0827**		
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
Trichloroethene (TCE)	**3.89**	---	0.400	ug/L	1	06/25/24 10:32	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/25/24 10:32	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/25/24 10:32	EPA 8260D	
Vinyl chloride	**16.0**	---	0.200	ug/L	1	06/25/24 10:32	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*06/25/24 10:32*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/25/24 10:32*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/25/24 10:32*	*EPA 8260D*	
MW-13 (A4F1169-06RE1)				**Matrix: Water**		**Batch: 24F0827**		
Bromobenzene	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Bromochloromethane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Bromodichloromethane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Bromoform	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Bromomethane	ND	---	50.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Carbon tetrachloride	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Chlorobenzene	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Chloroethane	ND	---	50.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Chloroform	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Chloromethane	ND	---	50.0	ug/L	10	06/25/24 16:26	EPA 8260D	
2-Chlorotoluene	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
4-Chlorotoluene	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Dibromochloromethane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	50.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Dibromomethane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2-Dichlorobenzene	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,3-Dichlorobenzene	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,4-Dichlorobenzene	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Dichlorodifluoromethane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1-Dichloroethane	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1-Dichloroethene	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
cis-1,2-Dichloroethene	**147**	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-13 (A4F1169-06RE1)				**Matrix: Water**		**Batch: 24F0827**		
trans-1,2-Dichloroethene	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2-Dichloropropane	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,3-Dichloropropane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
2,2-Dichloropropane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1-Dichloropropene	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Hexachlorobutadiene	ND	---	50.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Methylene chloride	ND	---	100	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Tetrachloroethene (PCE)	**212**	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	20.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1,2-Trichloroethane	ND	---	5.00	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	20.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,1,1-Trichloroethane	ND	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Trichloroethene (TCE)	**89.4**	---	4.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Trichlorofluoromethane	ND	---	20.0	ug/L	10	06/25/24 16:26	EPA 8260D	
1,2,3-Trichloropropane	ND	---	10.0	ug/L	10	06/25/24 16:26	EPA 8260D	
Vinyl chloride	**35.9**	---	2.00	ug/L	10	06/25/24 16:26	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits:*	*80-120 %*	*1*	*06/25/24 16:26*	*EPA 8260D*	
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/25/24 16:26*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*	*1*	*06/25/24 16:26*	*EPA 8260D*	

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ANALYTICAL REPORT

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4F1169-01)				**Matrix: Water**		**Batch: 24F0559**		
Ammonia as N	**1.32**	---	0.0200	mg/L	1	06/17/24 13:48	SM 4500-NH3 G	
MW-1 (A4F1169-02RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**60.1**	---	1.00	mg/L	50	06/17/24 15:09	SM 4500-NH3 G	
MP-1 (A4F1169-03RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**0.225**	---	0.0200	mg/L	1	06/17/24 15:10	SM 4500-NH3 G	
MW-12 (A4F1169-04RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**90.0**	---	2.00	mg/L	100	06/17/24 15:13	SM 4500-NH3 G	
MW-12 DUP (A4F1169-05RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**87.9**	---	2.00	mg/L	100	06/17/24 15:15	SM 4500-NH3 G	
MW-13 (A4F1169-06RE1)				**Matrix: Water**		**Batch: 24F0562**		
Ammonia as N	**10.4**	---	0.100	mg/L	5	06/17/24 15:18	SM 4500-NH3 G	

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ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-21i-105 (A4F1169-01)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**0.970**	---	0.250	mg/L	1	06/14/24 21:01	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 21:01	EPA 300.0	
MW-1 (A4F1169-02)				**Matrix: Water**				
Batch: 24F0506								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 21:44	EPA 300.0	
MW-1 (A4F1169-02RE1)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**105**	---	5.00	mg/L	20	06/14/24 21:23	EPA 300.0	
MP-1 (A4F1169-03)				**Matrix: Water**				
Batch: 24F0506								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 22:28	EPA 300.0	
MP-1 (A4F1169-03RE1)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**11.9**	---	2.50	mg/L	10	06/14/24 22:06	EPA 300.0	
MW-12 (A4F1169-04RE1)				**Matrix: Water**				
Batch: 24F0560								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/17/24 14:30	EPA 300.0	H-01
MW-12 (A4F1169-04RE2)				**Matrix: Water**				
Batch: 24F0607								
Nitrate-Nitrogen	**11.1**	---	1.25	mg/L	5	06/18/24 16:23	EPA 300.0	**H-01**
MW-12 DUP (A4F1169-05)				**Matrix: Water**				
Batch: 24F0506								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/14/24 23:11	EPA 300.0	
MW-12 DUP (A4F1169-05RE1)				**Matrix: Water**				
Batch: 24F0560								
Nitrate-Nitrogen	**11.6**	---	1.25	mg/L	5	06/17/24 15:35	EPA 300.0	**H-01**

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-13 (A4F1169-06)				**Matrix: Water**				
Batch: 24F0506								
Nitrite-Nitrogen	**0.777**	---	0.250	mg/L	1	06/15/24 00:37	EPA 300.0	
MW-13 (A4F1169-06RE1)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**27.3**	---	5.00	mg/L	20	06/15/24 00:15	EPA 300.0	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

ANALYTICAL SAMPLE RESULTS

Nitrate + Nitrite by EPA 353.2

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-12 (A4F1169-04)				**Matrix: Water**		**Batch: 24F0702**		
Nitrate+Nitrite Nitrogen	**12.9**	---	0.400	mg/L	20	06/20/24 15:37	EPA 353.2	
MW-12 DUP (A4F1169-05)				**Matrix: Water**		**Batch: 24F0702**		
Nitrate+Nitrite Nitrogen	**11.3**	---	0.400	mg/L	20	06/20/24 15:38	EPA 353.2	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 07:58									
EPA 8260D												
Bromobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	22.6	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Bromodichloromethane	23.2	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
Bromoform	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Bromomethane	22.2	---	5.00	ug/L	1	20.0	---	111	80-120%	---	---	
Carbon tetrachloride	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	26.7	---	5.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
Chloroform	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.7	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Dibromomethane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 07:58							
1,3-Dichlorobenzene	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,4-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dichlorodifluoromethane	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,1-Dichloroethene	20.9	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	21.4	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
trans-1,2-Dichloroethene	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloropropane	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
1,3-Dichloropropane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
2,2-Dichloropropane	23.9	---	1.00	ug/L	1	20.0	---	120	80-120%	---	---	
1,1-Dichloropropene	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
cis-1,3-Dichloropropene	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
trans-1,3-Dichloropropene	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Hexachlorobutadiene	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	24.2	---	0.400	ug/L	1	20.0	---	**121**	**80-120%**	---	---	Q-56
1,1,2,2-Tetrachloroethane	22.5	---	0.500	ug/L	1	20.0	---	113	80-120%	---	---	
Tetrachloroethene (PCE)	19.9	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,3-Trichlorobenzene	22.5	---	2.00	ug/L	1	20.0	---	112	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	20.9	---	2.00	ug/L	1	20.0	---	104	80-120%	---	---	
1,1,1-Trichloroethane	21.9	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
Trichloroethene (TCE)	20.7	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
Trichlorofluoromethane	25.5	---	2.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	22.1	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Vinyl chloride	20.8	---	0.200	ug/L	1	20.0	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 21:20							**T-02**

QC Source Sample: MW-13 (A4F1169-06)

EPA 8260D

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 21:20							**T-02**
QC Source Sample: MW-13 (A4F1169-06)												
Bromobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**129**	---	40.0	ug/L	100	---	125	---	---	3	30%	
trans-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	1000	ug/L	100	---	ND	---	---	---	30%	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 21:20									**T-02**
QC Source Sample: MW-13 (A4F1169-06)												
1,1,1,2-Tetrachloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**207**	---	40.0	ug/L	100	---	197	---	---	5	30%	
1,2,3-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**84.0**	---	40.0	ug/L	100	---	86.0	---	---	2	30%	
Trichlorofluoromethane	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Vinyl chloride	**32.0**	---	20.0	ug/L	100	---	37.0	---	---	14	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 15:53									
QC Source Sample: Non-SDG (A4F1281-01RE1)												
EPA 8260D												
Bromobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Bromochloromethane	23.1	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	79-125%	---	---	
Bromoform	22.5	---	1.00	ug/L	1	20.0	ND	113	66-130%	---	---	
Bromomethane	25.1	---	5.00	ug/L	1	20.0	ND	125	53-141%	---	---	
Carbon tetrachloride	24.4	---	1.00	ug/L	1	20.0	ND	122	72-136%	---	---	
Chlorobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Chloroethane	27.8	---	5.00	ug/L	1	20.0	ND	**139**	**60-138%**	---	---	Q-54b
Chloroform	23.0	---	1.00	ug/L	1	20.0	ND	115	79-124%	---	---	
Chloromethane	22.5	---	5.00	ug/L	1	20.0	ND	112	50-139%	---	---	
2-Chlorotoluene	22.5	---	1.00	ug/L	1	20.0	ND	112	79-122%	---	---	
4-Chlorotoluene	23.4	---	1.00	ug/L	1	20.0	ND	117	78-122%	---	---	
Dibromochloromethane	20.5	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	20.8	---	5.00	ug/L	1	20.0	ND	104	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	---	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 15:53							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	23.5	---	0.500	ug/L	1	20.0	ND	118	80-120%	---	---	
1,3-Dichlorobenzene	23.1	---	0.500	ug/L	1	20.0	ND	116	80-120%	---	---	
1,4-Dichlorobenzene	21.3	---	0.500	ug/L	1	20.0	ND	107	79-120%	---	---	
Dichlorodifluoromethane	23.8	---	1.00	ug/L	1	20.0	ND	119	32-152%	---	---	
1,1-Dichloroethane	23.6	---	0.400	ug/L	1	20.0	ND	118	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.8	---	0.400	ug/L	1	20.0	ND	109	73-128%	---	---	
1,1-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	0.220	115	71-131%	---	---	
cis-1,2-Dichloroethene	23.2	---	0.400	ug/L	1	20.0	0.260	114	78-123%	---	---	
trans-1,2-Dichloroethene	23.0	---	0.400	ug/L	1	20.0	ND	115	75-124%	---	---	
1,2-Dichloropropane	22.6	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	115	80-120%	---	---	
2,2-Dichloropropane	27.1	---	1.00	ug/L	1	20.0	ND	135	60-139%	---	---	
1,1-Dichloropropene	25.2	---	1.00	ug/L	1	20.0	ND	**126**	**79-125%**	---	---	Q-01
cis-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	75-124%	---	---	
trans-1,3-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	73-127%	---	---	
Hexachlorobutadiene	24.7	---	5.00	ug/L	1	20.0	ND	124	66-134%	---	---	
Methylene chloride	21.4	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.8	---	0.400	ug/L	1	20.0	ND	**129**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.1	---	0.500	ug/L	1	20.0	ND	121	71-121%	---	---	
Tetrachloroethene (PCE)	25.1	---	0.400	ug/L	1	20.0	2.01	116	74-129%	---	---	
1,2,3-Trichlorobenzene	24.6	---	2.00	ug/L	1	20.0	ND	123	69-129%	---	---	
1,1,2-Trichloroethane	22.2	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	26.6	---	0.400	ug/L	1	20.0	3.65	115	79-123%	---	---	
Trichlorofluoromethane	26.9	---	2.00	ug/L	1	20.0	ND	135	65-141%	---	---	Q-54e
1,2,3-Trichloropropane	23.4	---	1.00	ug/L	1	20.0	ND	117	73-122%	---	---	
Vinyl chloride	24.8	---	0.200	ug/L	1	20.0	ND	124	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				

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Darrell Auvil, Client Services Manager

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
EPA 8260D												
Bromobenzene	21.9	---	0.500	ug/L	1	20.0	ND	109	80-120%	---	---	
Bromochloromethane	23.6	---	1.00	ug/L	1	20.0	ND	118	78-123%	---	---	
Bromodichloromethane	24.8	---	1.00	ug/L	1	20.0	ND	124	79-125%	---	---	
Bromoform	23.0	---	1.00	ug/L	1	20.0	ND	115	66-130%	---	---	
Bromomethane	25.2	---	5.00	ug/L	1	20.0	ND	126	53-141%	---	---	
Carbon tetrachloride	24.7	---	1.00	ug/L	1	20.0	ND	123	72-136%	---	---	
Chlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	---	---	
Chloroethane	28.6	---	5.00	ug/L	1	20.0	ND	**143**	**60-138%**	---	---	Q-54b
Chloroform	23.8	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	21.8	---	5.00	ug/L	1	20.0	ND	109	50-139%	---	---	
2-Chlorotoluene	21.9	---	1.00	ug/L	1	20.0	ND	109	79-122%	---	---	
4-Chlorotoluene	23.1	---	1.00	ug/L	1	20.0	ND	116	78-122%	---	---	
Dibromochloromethane	20.7	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	19.0	---	5.00	ug/L	1	20.0	ND	95	62-128%	---	---	
1,2-Dibromoethane (EDB)	21.8	---	0.500	ug/L	1	20.0	ND	109	77-121%	---	---	
Dibromomethane	23.3	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	23.0	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	22.9	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	21.2	---	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	23.3	---	0.400	ug/L	1	20.0	ND	117	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.9	---	0.400	ug/L	1	20.0	ND	110	73-128%	---	---	
1,1-Dichloroethene	22.7	---	0.400	ug/L	1	20.0	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	22.9	---	0.400	ug/L	1	20.0	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	22.5	---	0.400	ug/L	1	20.0	ND	112	75-124%	---	---	
1,2-Dichloropropane	22.8	---	0.500	ug/L	1	20.0	ND	114	78-122%	---	---	
1,3-Dichloropropane	22.4	---	1.00	ug/L	1	20.0	ND	112	80-120%	---	---	
2,2-Dichloropropane	25.8	---	1.00	ug/L	1	20.0	ND	129	60-139%	---	---	
1,1-Dichloropropene	24.7	---	1.00	ug/L	1	20.0	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	20.3	---	1.00	ug/L	1	20.0	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	23.2	---	1.00	ug/L	1	20.0	ND	116	73-127%	---	---	
Hexachlorobutadiene	23.6	---	5.00	ug/L	1	20.0	ND	118	66-134%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.6	---	0.400	ug/L	1	20.0	ND	**128**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.0	---	0.500	ug/L	1	20.0	ND	120	71-121%	---	---	
Tetrachloroethene (PCE)	22.3	---	0.400	ug/L	1	20.0	ND	112	74-129%	---	---	
1,2,3-Trichlorobenzene	23.8	---	2.00	ug/L	1	20.0	ND	119	69-129%	---	---	
1,1,2-Trichloroethane	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	22.3	---	2.00	ug/L	1	20.0	ND	111	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	22.2	---	0.400	ug/L	1	20.0	ND	111	79-123%	---	---	
Trichlorofluoromethane	28.9	---	2.00	ug/L	1	20.0	ND	**144**	**65-141%**	---	---	Q-54e
1,2,3-Trichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	114	73-122%	---	---	
Vinyl chloride	23.1	---	0.200	ug/L	1	20.0	ND	115	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*97 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*				*"*			
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Bromobenzene	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	4	30%	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	ND	110	78-123%	5	30%	
Bromodichloromethane	23.3	---	1.00	ug/L	1	20.0	ND	117	79-125%	4	30%	
Bromoform	22.2	---	1.00	ug/L	1	20.0	ND	111	66-130%	2	30%	
Bromomethane	24.5	---	5.00	ug/L	1	20.0	ND	122	53-141%	2	30%	
Carbon tetrachloride	23.5	---	1.00	ug/L	1	20.0	ND	118	72-136%	4	30%	
Chlorobenzene	21.5	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
Chloroethane	26.1	---	5.00	ug/L	1	20.0	ND	131	60-138%	6	30%	Q-54b
Chloroform	22.1	---	1.00	ug/L	1	20.0	ND	110	79-124%	4	30%	
Chloromethane	20.8	---	5.00	ug/L	1	20.0	ND	104	50-139%	8	30%	
2-Chlorotoluene	21.5	---	1.00	ug/L	1	20.0	ND	108	79-122%	4	30%	
4-Chlorotoluene	22.9	---	1.00	ug/L	1	20.0	ND	114	78-122%	2	30%	
Dibromochloromethane	20.0	---	1.00	ug/L	1	20.0	ND	100	74-126%	2	30%	
1,2-Dibromo-3-chloropropane	19.5	---	5.00	ug/L	1	20.0	ND	97	62-128%	7	30%	
1,2-Dibromoethane (EDB)	21.6	---	0.500	ug/L	1	20.0	ND	108	77-121%	2	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Dibromomethane	22.7	---	1.00	ug/L	1	20.0	ND	113	79-123%	2	30%	
1,2-Dichlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	4	30%	
1,3-Dichlorobenzene	22.3	---	0.500	ug/L	1	20.0	ND	112	80-120%	3	30%	
1,4-Dichlorobenzene	20.6	---	0.500	ug/L	1	20.0	ND	103	79-120%	4	30%	
Dichlorodifluoromethane	22.6	---	1.00	ug/L	1	20.0	ND	113	32-152%	5	30%	
1,1-Dichloroethane	22.4	---	0.400	ug/L	1	20.0	ND	112	77-125%	5	30%	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	ND	105	73-128%	4	30%	
1,1-Dichloroethene	22.4	---	0.400	ug/L	1	20.0	0.220	111	71-131%	4	30%	
cis-1,2-Dichloroethene	22.8	---	0.400	ug/L	1	20.0	0.260	113	78-123%	2	30%	
trans-1,2-Dichloroethene	22.1	---	0.400	ug/L	1	20.0	ND	110	75-124%	4	30%	
1,2-Dichloropropane	21.9	---	0.500	ug/L	1	20.0	ND	110	78-122%	3	30%	
1,3-Dichloropropane	22.1	---	1.00	ug/L	1	20.0	ND	111	80-120%	3	30%	
2,2-Dichloropropane	26.3	---	1.00	ug/L	1	20.0	ND	132	60-139%	3	30%	
1,1-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	79-125%	7	30%	
cis-1,3-Dichloropropene	21.0	---	1.00	ug/L	1	20.0	ND	105	75-124%	2	30%	
trans-1,3-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	ND	114	73-127%	4	30%	
Hexachlorobutadiene	23.2	---	5.00	ug/L	1	20.0	ND	116	66-134%	7	30%	
Methylene chloride	20.6	---	10.0	ug/L	1	20.0	ND	103	74-124%	4	30%	
1,1,1,2-Tetrachloroethane	25.2	---	0.400	ug/L	1	20.0	ND	**126**	**78-124%**	2	30%	Q-54
1,1,2,2-Tetrachloroethane	23.5	---	0.500	ug/L	1	20.0	ND	118	71-121%	3	30%	
Tetrachloroethene (PCE)	24.0	---	0.400	ug/L	1	20.0	2.01	110	74-129%	5	30%	
1,2,3-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	118	69-129%	4	30%	
1,1,2-Trichloroethane	21.3	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
1,2,4-Trichlorobenzene	22.4	---	2.00	ug/L	1	20.0	ND	112	69-130%	5	30%	
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	ND	116	74-131%	4	30%	
Trichloroethene (TCE)	25.3	---	0.400	ug/L	1	20.0	3.65	108	79-123%	5	30%	
Trichlorofluoromethane	25.6	---	2.00	ug/L	1	20.0	ND	128	65-141%	5	30%	Q-54e
1,2,3-Trichloropropane	21.7	---	1.00	ug/L	1	20.0	ND	109	73-122%	7	30%	
Vinyl chloride	23.4	---	0.200	ug/L	1	20.0	ND	117	58-137%	6	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C							**Water**					
Blank (24F0827-BLK1)			Prepared: 06/25/24 06:17		Analyzed: 06/25/24 09:31							
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C												**Water**
Blank (24F0827-BLK1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 09:31									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*108 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*			*"*				
LCS (24F0827-BS1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 08:01									
EPA 8260D												
Bromobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Bromodichloromethane	23.3	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
Bromoform	22.4	---	1.00	ug/L	1	20.0	---	112	80-120%	---	---	
Bromomethane	23.7	---	5.00	ug/L	1	20.0	---	118	80-120%	---	---	
Carbon tetrachloride	22.7	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Chlorobenzene	21.2	---	0.500	ug/L	1	20.0	---	106	80-120%	---	---	
Chloroethane	28.4	---	5.00	ug/L	1	20.0	---	**142**	**80-120%**	---	---	Q-56
Chloroform	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	19.7	---	5.00	ug/L	1	20.0	---	99	80-120%	---	---	
2-Chlorotoluene	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
4-Chlorotoluene	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Dibromochloromethane	19.9	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,2-Dibromo-3-chloropropane	18.2	---	5.00	ug/L	1	20.0	---	91	80-120%	---	---	
1,2-Dibromoethane (EDB)	21.0	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
Dibromomethane	22.6	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,2-Dichlorobenzene	21.6	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C							**Water**					
LCS (24F0827-BS1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 08:01									
1,3-Dichlorobenzene	21.4	---	0.500	ug/L	1	20.0	---	107	80-120%	---	---	
1,4-Dichlorobenzene	19.8	---	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dichlorodifluoromethane	20.6	---	1.00	ug/L	1	20.0	---	103	80-120%	---	---	
1,1-Dichloroethane	22.0	---	0.400	ug/L	1	20.0	---	110	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.1	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,1-Dichloroethene	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
trans-1,2-Dichloroethene	20.4	---	0.400	ug/L	1	20.0	---	102	80-120%	---	---	
1,2-Dichloropropane	21.5	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
1,3-Dichloropropane	21.9	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
2,2-Dichloropropane	26.3	---	1.00	ug/L	1	20.0	---	**131**	**80-120%**	---	---	Q-56
1,1-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
cis-1,3-Dichloropropene	21.7	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
trans-1,3-Dichloropropene	22.8	---	1.00	ug/L	1	20.0	---	114	80-120%	---	---	
Hexachlorobutadiene	22.1	---	5.00	ug/L	1	20.0	---	111	80-120%	---	---	
Methylene chloride	20.3	---	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
1,1,1,2-Tetrachloroethane	24.5	---	0.400	ug/L	1	20.0	---	**122**	**80-120%**	---	---	Q-56
1,1,2,2-Tetrachloroethane	22.5	---	0.500	ug/L	1	20.0	---	112	80-120%	---	---	
Tetrachloroethene (PCE)	21.3	---	0.400	ug/L	1	20.0	---	106	80-120%	---	---	
1,2,3-Trichlorobenzene	22.6	---	2.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,1,2-Trichloroethane	20.9	---	0.500	ug/L	1	20.0	---	105	80-120%	---	---	
1,2,4-Trichlorobenzene	21.1	---	2.00	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1-Trichloroethane	22.2	---	0.400	ug/L	1	20.0	---	111	80-120%	---	---	
Trichloroethene (TCE)	20.7	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
Trichlorofluoromethane	26.1	---	2.00	ug/L	1	20.0	---	**131**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	21.1	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Vinyl chloride	20.9	---	0.200	ug/L	1	20.0	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				
Duplicate (24F0827-DUP1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 19:36									
QC Source Sample: Non-SDG (A4F1340-07)												
Bromobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C							**Water**					
Duplicate (24F0827-DUP1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 19:36									
QC Source Sample: Non-SDG (A4F1340-07)												
Bromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	1000	ug/L	100	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	

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Darrell Auvil, Client Services Manager

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C							**Water**					
Duplicate (24F0827-DUP1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 19:36									
QC Source Sample: Non-SDG (A4F1340-07)												
1,1,2,2-Tetrachloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	20.0	ug/L	100	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 99 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*103 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*				*"*			
Matrix Spike (24F0827-MS1)			Prepared: 06/25/24 06:17 Analyzed: 06/25/24 20:04									**T-02**
QC Source Sample: Non-SDG (A4F1340-10)												
EPA 8260D												
Bromobenzene	21.0	---	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
Bromochloromethane	23.2	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	40.1	---	1.00	ug/L	1	20.0	14.1	**130**	**79-125%**	---	---	Q-01
Bromoform	22.9	---	1.00	ug/L	1	20.0	0.780	111	66-130%	---	---	
Bromomethane	19.9	---	5.00	ug/L	1	20.0	ND	99	53-141%	---	---	
Carbon tetrachloride	24.7	---	1.00	ug/L	1	20.0	ND	123	72-136%	---	---	
Chlorobenzene	22.3	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
Chloroethane	27.8	---	5.00	ug/L	1	20.0	ND	**139**	**60-138%**	---	---	Q-54d
Chloroform	109	---	1.00	ug/L	1	20.0	87.7	107	79-124%	---	---	
Chloromethane	27.1	---	5.00	ug/L	1	20.0	ND	136	50-139%	---	---	
2-Chlorotoluene	23.1	---	1.00	ug/L	1	20.0	ND	115	79-122%	---	---	
4-Chlorotoluene	22.6	---	1.00	ug/L	1	20.0	ND	113	78-122%	---	---	
Dibromochloromethane	22.9	---	1.00	ug/L	1	20.0	1.54	107	74-126%	---	---	
1,2-Dibromo-3-chloropropane	23.2	---	5.00	ug/L	1	20.0	ND	116	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.4	---	0.500	ug/L	1	20.0	ND	112	77-121%	---	---	
Dibromomethane	23.2	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0827 - EPA 5030C							**Water**					
Matrix Spike (24F0827-MS1)			Prepared: 06/25/24 06:17		Analyzed: 06/25/24 20:04							**T-02**
QC Source Sample: Non-SDG (A4F1340-10)												
1,2-Dichlorobenzene	23.5	---	0.500	ug/L	1	20.0	ND	118	80-120%	---	---	
1,3-Dichlorobenzene	22.3	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,4-Dichlorobenzene	20.8	---	0.500	ug/L	1	20.0	ND	104	79-120%	---	---	
Dichlorodifluoromethane	21.8	---	1.00	ug/L	1	20.0	ND	109	32-152%	---	---	
1,1-Dichloroethane	23.3	---	0.400	ug/L	1	20.0	ND	117	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.5	---	0.400	ug/L	1	20.0	ND	108	73-128%	---	---	
1,1-Dichloroethene	19.7	---	0.400	ug/L	1	20.0	ND	98	71-131%	---	---	
cis-1,2-Dichloroethene	22.6	---	0.400	ug/L	1	20.0	ND	113	78-123%	---	---	
trans-1,2-Dichloroethene	22.1	---	0.400	ug/L	1	20.0	ND	111	75-124%	---	---	
1,2-Dichloropropane	23.0	---	0.500	ug/L	1	20.0	ND	115	78-122%	---	---	
1,3-Dichloropropane	23.2	---	1.00	ug/L	1	20.0	ND	116	80-120%	---	---	
2,2-Dichloropropane	23.1	---	1.00	ug/L	1	20.0	ND	116	60-139%	---	---	Q-54a
1,1-Dichloropropene	17.8	---	1.00	ug/L	1	20.0	ND	89	79-125%	---	---	
cis-1,3-Dichloropropene	20.3	---	1.00	ug/L	1	20.0	ND	101	75-124%	---	---	
trans-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	73-127%	---	---	
Hexachlorobutadiene	24.4	---	5.00	ug/L	1	20.0	ND	122	66-134%	---	---	
Methylene chloride	21.2	---	10.0	ug/L	1	20.0	ND	106	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.7	---	0.400	ug/L	1	20.0	ND	**129**	**78-124%**	---	---	Q-54c
1,1,2,2-Tetrachloroethane	24.3	---	0.500	ug/L	1	20.0	ND	**122**	**71-121%**	---	---	Q-01
Tetrachloroethene (PCE)	22.1	---	0.400	ug/L	1	20.0	ND	111	74-129%	---	---	
1,2,3-Trichlorobenzene	25.3	---	2.00	ug/L	1	20.0	ND	126	69-129%	---	---	
1,1,2-Trichloroethane	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
1,2,4-Trichlorobenzene	25.6	---	2.00	ug/L	1	20.0	ND	128	69-130%	---	---	
1,1,1-Trichloroethane	23.6	---	0.400	ug/L	1	20.0	ND	118	74-131%	---	---	
Trichloroethene (TCE)	21.3	---	0.400	ug/L	1	20.0	ND	107	79-123%	---	---	
Trichlorofluoromethane	26.5	---	2.00	ug/L	1	20.0	ND	132	65-141%	---	---	Q-54a
1,2,3-Trichloropropane	21.4	---	1.00	ug/L	1	20.0	ND	107	73-122%	---	---	
Vinyl chloride	16.9	---	0.200	ug/L	1	20.0	ND	84	58-137%	---	---	

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 101 %*	*Limits: 80-120 %*	*Dilution: 1x*
Toluene-d8 (Surr)	*97 %*	*80-120 %*	*"*
4-Bromofluorobenzene (Surr)	*93 %*	*80-120 %*	*"*

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0559 - Method Prep: Aq							**Water**					
Blank (24F0559-BLK1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:12									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0559-BS1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:14									
SM 4500-NH3 G												
Ammonia as N	2.01	---	0.0200	mg/L	1	2.00	---	100	90-111%	---	---	
Matrix Spike (24F0559-MS1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:18									
QC Source Sample: Non-SDG (A4F1150-01)												
SM 4500-NH3 G												
Ammonia as N	2.58	---	0.0250	mg/L	1	2.50	0.0290	102	90-111%	---	---	
Matrix Spike Dup (24F0559-MSD1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:20									
QC Source Sample: Non-SDG (A4F1150-01)												
Ammonia as N	2.65	---	0.0250	mg/L	1	2.50	0.0290	105	90-111%	3	13%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0562 - Method Prep: Aq							**Water**					
Blank (24F0562-BLK1)			Prepared: 06/17/24 11:30		Analyzed: 06/17/24 14:18							
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0562-BS1)			Prepared: 06/17/24 11:30		Analyzed: 06/17/24 14:20							
SM 4500-NH3 G												
Ammonia as N	2.05	---	0.0200	mg/L	1	2.00	---	103	90-111%	---	---	
Matrix Spike (24F0562-MS1)			Prepared: 06/17/24 11:30		Analyzed: 06/17/24 14:24							
QC Source Sample: Non-SDG (A4F1165-08)												
SM 4500-NH3 G												
Ammonia as N	2.62	---	0.0250	mg/L	1	2.50	0.0160	104	90-111%	---	---	
Matrix Spike Dup (24F0562-MSD1)			Prepared: 06/17/24 11:30		Analyzed: 06/17/24 14:26							
QC Source Sample: Non-SDG (A4F1165-08)												
Ammonia as N	2.64	---	0.0250	mg/L	1	2.50	0.0160	105	90-111%	0.8	13%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0506 - Method Prep: Aq							Water					
Blank (24F0506-BLK1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 15:38							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0506-BS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 16:00							
EPA 300.0												
Nitrate-Nitrogen	2.09	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Nitrite-Nitrogen	2.11	---	0.250	mg/L	1	2.00	---	106	90-110%	---	---	
Duplicate (24F0506-DUP1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:30							
QC Source Sample: Non-SDG (A4F1167-01)												
Nitrate-Nitrogen	**0.632**	---	0.250	mg/L	1	---	0.625	---	---	1	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0506-DUP2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:18							
QC Source Sample: Non-SDG (A4F1167-02)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0506-MS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:52							
QC Source Sample: Non-SDG (A4F1167-01)												
EPA 300.0												
Nitrate-Nitrogen	3.27	---	0.312	mg/L	1	2.50	0.625	106	87-112%	---	---	
Nitrite-Nitrogen	2.63	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	
Matrix Spike (24F0506-MS2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:40							
QC Source Sample: Non-SDG (A4F1167-02)												
EPA 300.0												
Nitrate-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	87-112%	---	---	
Nitrite-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	90-114%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0560 - Method Prep: Aq							**Water**					
Blank (24F0560-BLK1)			Prepared: 06/17/24 11:11		Analyzed: 06/17/24 13:47							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0560-BS1)			Prepared: 06/17/24 11:11		Analyzed: 06/17/24 14:08							
EPA 300.0												
Nitrate-Nitrogen	2.09	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Nitrite-Nitrogen	2.09	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Duplicate (24F0560-DUP1)			Prepared: 06/17/24 11:11		Analyzed: 06/17/24 14:51							
QC Source Sample: MW-12 (A4F1169-04RE1)												
EPA 300.0												
Nitrate-Nitrogen	**11.0**	---	0.250	mg/L	1	---	11.0	---	---	0.5	3%	E, H-01
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	H-01
Matrix Spike (24F0560-MS1)			Prepared: 06/17/24 11:11		Analyzed: 06/17/24 15:13							
QC Source Sample: MW-12 (A4F1169-04RE1)												
EPA 300.0												
Nitrate-Nitrogen	13.0	---	0.312	mg/L	1	2.50	11.0	**82**	**87-112%**	---	---	E, Q-02
Nitrite-Nitrogen	2.67	---	0.312	mg/L	1	2.50	ND	107	90-114%	---	---	H-01
Matrix Spike (24F0560-MS2)			Prepared: 06/17/24 11:11		Analyzed: 06/17/24 15:56							
QC Source Sample: MW-12 DUP (A4F1169-05RE1)												
Nitrate-Nitrogen	21.8	---	1.25	mg/L	5	10.0	11.6	102	87-112%	---	---	H-01
Nitrite-Nitrogen	10.4	---	1.25	mg/L	5	10.0	ND	104	90-114%	---	---	H-01

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QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0607 - Method Prep: Aq							**Water**					
Blank (24F0607-BLK1)			Prepared: 06/18/24 11:13		Analyzed: 06/18/24 13:08							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0607-BS1)			Prepared: 06/18/24 11:13		Analyzed: 06/18/24 13:30							
EPA 300.0												
Nitrate-Nitrogen	2.12	---	0.250	mg/L	1	2.00	---	106	90-110%	---	---	
Duplicate (24F0607-DUP1)			Prepared: 06/18/24 11:13		Analyzed: 06/18/24 14:35							
QC Source Sample: Non-SDG (A4F1260-01)												
Nitrate-Nitrogen	**77.3**	---	12.5	mg/L	50	---	77.7	---	---	0.6	3%	
Matrix Spike (24F0607-MS1)			Prepared: 06/18/24 11:13		Analyzed: 06/18/24 14:56							
QC Source Sample: Non-SDG (A4F1260-01)												
EPA 300.0												
Nitrate-Nitrogen	181	---	12.5	mg/L	50	100	77.7	103	87-112%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Nitrate + Nitrite by EPA 353.2

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0702 - Method Prep: Aq									Water			
Blank (24F0702-BLK1)			Prepared: 06/20/24 12:03		Analyzed: 06/20/24 15:20							
EPA 353.2												
Nitrate+Nitrite Nitrogen	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0702-BS1)			Prepared: 06/20/24 12:03		Analyzed: 06/20/24 15:21							
EPA 353.2												
Nitrate+Nitrite Nitrogen	0.367	---	0.0200	mg/L	1	0.375	---	98	90-110%	---	---	
Duplicate (24F0702-DUP1)			Prepared: 06/20/24 12:03		Analyzed: 06/20/24 15:25							
QC Source Sample: Non-SDG (A4F1107-03)												
Nitrate+Nitrite Nitrogen	**15.7**	---	0.800	mg/L	40	---	14.4	---	---	9	16%	
Matrix Spike (24F0702-MS1)			Prepared: 06/20/24 12:03		Analyzed: 06/20/24 15:26							
QC Source Sample: Non-SDG (A4F1107-03)												
EPA 353.2												
Nitrate+Nitrite Nitrogen	28.1	---	0.800	mg/L	40	15.0	14.4	92	90-110%	---	---	

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SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0779							
A4F1169-01	Water	EPA 8260D	06/13/24 08:08	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1169-02	Water	EPA 8260D	06/13/24 10:25	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1169-03	Water	EPA 8260D	06/13/24 11:18	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
Batch: 24F0827							
A4F1169-04RE1	Water	EPA 8260D	06/13/24 12:18	06/25/24 09:19	5mL/5mL	5mL/5mL	1.00
A4F1169-05RE1	Water	EPA 8260D	06/13/24 12:18	06/25/24 09:19	5mL/5mL	5mL/5mL	1.00
A4F1169-06RE1	Water	EPA 8260D	06/13/24 13:23	06/25/24 09:19	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0559							
A4F1169-01	Water	SM 4500-NH3 G	06/13/24 08:08	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
Batch: 24F0562							
A4F1169-02RE1	Water	SM 4500-NH3 G	06/13/24 10:25	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1169-03RE1	Water	SM 4500-NH3 G	06/13/24 11:18	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1169-04RE1	Water	SM 4500-NH3 G	06/13/24 12:18	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1169-05RE1	Water	SM 4500-NH3 G	06/13/24 12:18	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1169-06RE1	Water	SM 4500-NH3 G	06/13/24 13:23	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0506							
A4F1169-01	Water	EPA 300.0	06/13/24 08:08	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-02	Water	EPA 300.0	06/13/24 10:25	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-02RE1	Water	EPA 300.0	06/13/24 10:25	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-03	Water	EPA 300.0	06/13/24 11:18	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-03RE1	Water	EPA 300.0	06/13/24 11:18	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-05	Water	EPA 300.0	06/13/24 12:18	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-06	Water	EPA 300.0	06/13/24 13:23	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
A4F1169-06RE1	Water	EPA 300.0	06/13/24 13:23	06/14/24 09:21	5mL/5mL	5mL/5mL	1.00
Batch: 24F0560							

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SAMPLE PREPARATION INFORMATION

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4F1169-04RE1	Water	EPA 300.0	06/13/24 12:18	06/17/24 11:11	5mL/5mL	5mL/5mL	1.00
A4F1169-05RE1	Water	EPA 300.0	06/13/24 12:18	06/17/24 11:11	5mL/5mL	5mL/5mL	1.00
Batch: 24F0607							
A4F1169-04RE2	Water	EPA 300.0	06/13/24 12:18	06/18/24 11:13	5mL/5mL	5mL/5mL	1.00

Nitrate + Nitrite by EPA 353.2

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0702							
A4F1169-04	Water	EPA 353.2	06/13/24 12:18	06/20/24 12:03	4mL/4mL	4mL/4mL	1.00
A4F1169-05	Water	EPA 353.2	06/13/24 12:18	06/20/24 12:03	4mL/4mL	4mL/4mL	1.00

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QUALIFIER DEFINITIONS

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

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E	Estimated Value. The result is above the calibration range of the instrument.
H-01	Analyzed outside the recommended holding time.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-02	Spike recovery is outside of established control limits due to matrix interference.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +1%. 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 8260/8270 by +11%. 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 8260/8270 by +13%. 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 8260/8270 by +2%. The results are reported as Estimated Values.
Q-54d	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +22%. The results are reported as Estimated Values.
Q-54e	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +7%. The results are reported as Estimated Values.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project:	**Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number:	**019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager:	**Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories



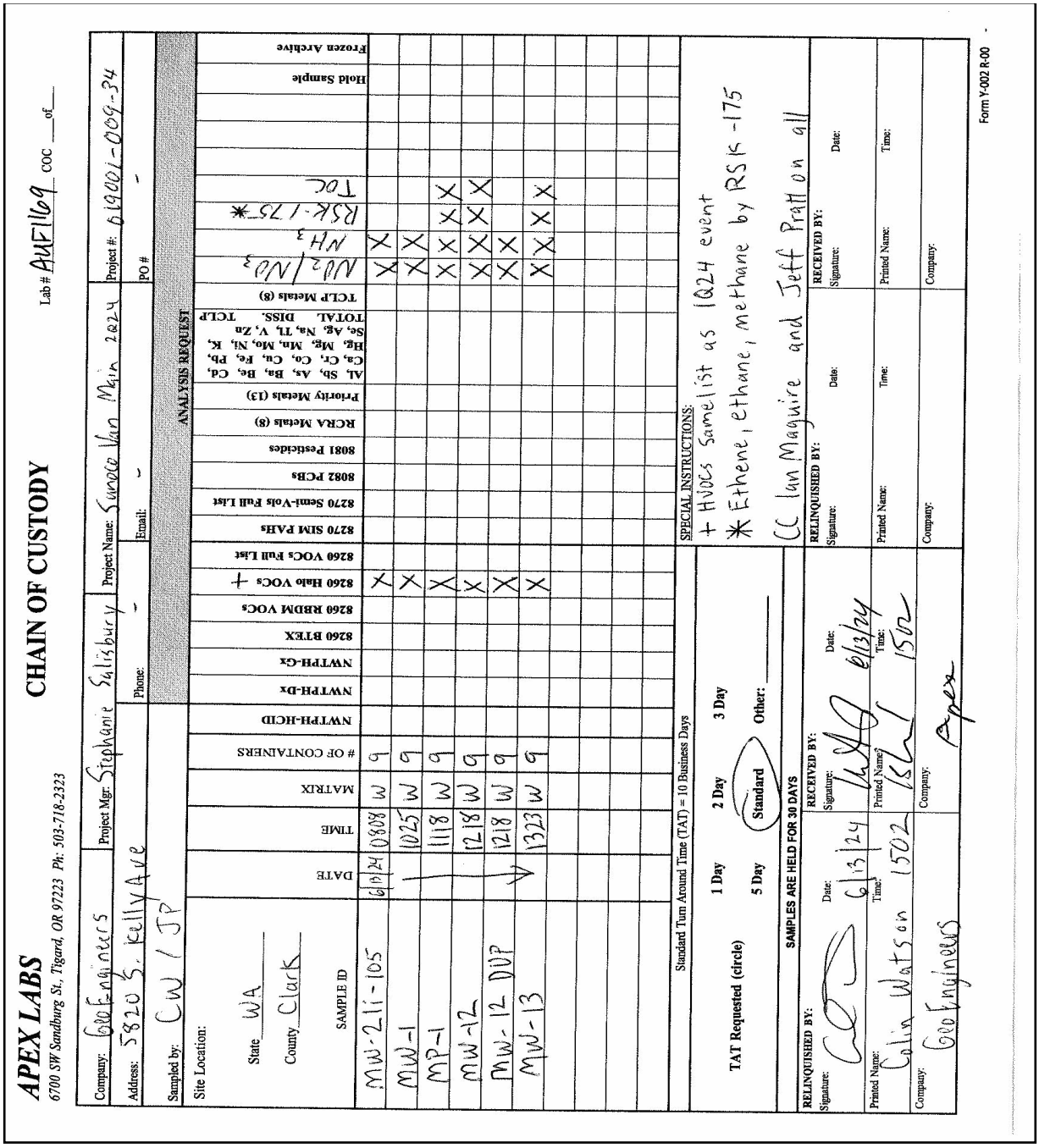
Darrell Auvil, Client Services Manager

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**



APEX LABS
6700 SW Sandburg St, Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # AUF1169 COC ___ of ___

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Sunoco Van Main 2024 | Project #: 019001-009-34
Address: 5820 S. Kelly Ave | Phone: - | Email: - | PO #: -
Sampled by: CW / JP
Site Location: State WA, County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RRDM VOCs	8260 Halo VOCs +	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2/NO_3	NH_3	RSK-175* TOC	Hold Sample	Frozen Archive
MW-21i-105	6/6/24	0808	W	9						X										X	X	X	
MW-1		1025	W	9						X										X	X	X	
MP-1		1118	W	9						X										X	X	X	
MW-12		1218	W	9						X										X	X	X	
MW-12 DUP		1218	W	9						X										X	X		
MW-13		1323	W	9						X										X	X	X	

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day | 2 Day | 3 Day | 5 Day | Standard | Other: ___

SPECIAL INSTRUCTIONS:
+ HVOCs Same list as 1Q24 event
* Ethene, ethane, methane by RSK-175
CC Ian Maguire and Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/13/24		Signature:	6/13/24	
Printed Name: Colin Watson		1502	Printed Name:		1502
Company: GeoEngineers			Company: Apex		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1169 - 06 27 24 1252**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4F11169

Project/Project #: Sunoco Van Main 2024/019001-009-34

Delivery Info:

Date/time received: 6/13/24 @ 1502 By: KRS

Delivered by: Apex__ Client X ESS__ FedEx__ UPS__ Radio__ Morgan__ SDS__ Evergreen__ Other__

From USDA Regulated Origin? Yes ____ No X

Cooler Inspection Date/time inspected: 6/13/24 @ 1502 By: KRS

Chain of Custody included? Yes X No ____

Signed/dated by client? Yes X No ____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	3.1						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	Y						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes/(No)

Sample Inspection: Date/time inspected: 6/13/24 @ 15:31 By: KAM

All samples intact? Yes X No ___ Comments: ____

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

COC/container discrepancies form initiated? Yes ___ No X

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

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

Comments ____

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

Comments: ____

Labeled by: KAM Witness: [signature] Cooler Inspected by: VKM

Form Y-003 R-02

Apex Laboratories

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

Darrell Auvil, Client Services Manager

June 27, 2024 Service Request No:K2406210

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

Laboratory Results for: A4F1169

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 14, 2024
For your reference, these analyses have been assigned our service request number **K2406210.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Apex Laboratories
Project: A4F1169
Sample Matrix: Water

Service Request: K2406210
Date Received: 06/14/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 06/14/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by _____ Date 06/27/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MP-1			Lab ID: K2406210-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	0.80		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-12			Lab ID: K2406210-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	9.70		0.08	0.50	mg/L	SM 5310 C

CLIENT ID: MW-13			Lab ID: K2406210-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	2.10		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2406210

Project: A4F1169

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406210-001	MP-1	6/13/2024	1118
K2406210-002	MW-12	6/13/2024	1218
K2406210-003	MW-13	6/13/2024	1323

V24O6210

SUBCONTRACT ORDER

Apex Laboratories

6/13/24 **A4F1169**

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MP-1 **Sampled: 06/13/24 11:18** (A4F1169-03)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/26/24 17:00	07/11/24 11:18	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-12 **Sampled: 06/13/24 12:18** (A4F1169-04)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/26/24 17:00	07/11/24 12:18	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Sample Name: MW-13 **Sampled: 06/13/24 13:23** (A4F1169-06)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C)	06/26/24 17:00	07/11/24 13:23	ALS Kelso, no data package
Containers Supplied:			
(H)250 mL Poly - Sulfuric (H2SO4)			

Standard TAT

Released By	6/14/24 1047 Date	Received By	6/14/24 1047 Date
Released By	6/14/24 1210 Date	Received By	6/14/24 1210 Date

PM HH

Cooler Receipt and Preservation Form

Client Apex Service Request K24 06210

Received: 6/14/24 Opened: 6/14/24 By: HS Unloaded: 6/14/24 By: HS

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	6.5	IR06					

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169/		

Sample Name:	MP-1	**Date Collected:**	06/13/24
Lab Code:	K2406210-001	**Date Received:**	06/14/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-12	**Date Collected:**	06/13/24
Lab Code:	K2406210-002	**Date Received:**	06/14/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Name:	MW-13	**Date Collected:**	06/13/24
Lab Code:	K2406210-003	**Date Received:**	06/14/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Collected:**	06/13/24 11:18
Sample Matrix:	Water	**Date Received:**	06/14/24 12:10
Sample Name:	MP-1	**Basis:**	NA
Lab Code:	K2406210-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**0.80**	mg/L	0.50	0.08	1	06/24/24 17:33	

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Collected:**	06/13/24 12:18
Sample Matrix:	Water	**Date Received:**	06/14/24 12:10
Sample Name:	MW-12	**Basis:**	NA
Lab Code:	K2406210-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**9.70**	mg/L	0.50	0.08	1	06/24/24 17:33	

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Collected:**	06/13/24 13:23
Sample Matrix:	Water	**Date Received:**	06/14/24 12:10
Sample Name:	MW-13	**Basis:**	NA
Lab Code:	K2406210-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**2.10**	mg/L	0.50	0.08	1	06/24/24 17:33	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406210-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/24/24 17:33	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Collected:**	06/13/24
Sample Matrix:	Water	**Date Received:**	06/14/24
		Date Analyzed:	06/24/24
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	MP-1	**Units:**	mg/L
Lab Code:	K2406210-001	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2406210-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.80	25.0	25.0	97	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	Apex Laboratories	**Service Request:**	K2406210
Project	A4F1169	**Date Collected:**	06/13/24
Sample Matrix:	Water	**Date Received:**	06/14/24
		Date Analyzed:	06/24/24

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	MP-1	**Units:**	mg/L
Lab Code:	K2406210-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample K2406210-001DUP Result	Average	RPD	RPD Limit
Carbon, Total Organic	SM 5310 C	0.50	0.08	0.80	0.80	0.800	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Apex Laboratories	**Service Request:**	K2406210
Project:	A4F1169	**Date Analyzed:**	06/24/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845302

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406210-LCS	23.7	25.0	95	83-117

AirTECHNOLOGY
Laboratories, Inc.

July 3, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1169
Lab Number: R061804-01/03

Enclosed are results for sample(s) received 6/18/24 by Air Technology Laboratories. Samples were received intact and chilled to 6° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

6/13/24 **A4F1169**

JS

R061804-01/03

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

01 **Sample Name: MP-1** **Water** **Sampled: 06/13/24 11:18** (A4F1169-03)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/26/24 17:00	06/27/24 11:18	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

02 **Sample Name: MW-12** **Water** **Sampled: 06/13/24 12:18** (A4F1169-04)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/26/24 17:00	06/27/24 12:18	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

03 **Sample Name: MW-13** **Water** **Sampled: 06/13/24 13:23** (A4F1169-06)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub)	06/26/24 17:00	06/27/24 13:23	air tech lab
Containers Supplied:			
(D)40 mL VOA - HCL			
(E)40 mL VOA - HCL			
(F)40 mL VOA - HCL			

Standard TAT

6°C HO

Released By	6/17/24 Date	UPS (Shipper) Received By	Date
UPS (Shipper) Released By	6/18/24 10:29 Date	Received By	6/18/24 10:29 Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1169**
Date Received:	**06/18/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	R061804-01		R061804-02		R061804-03			
Client Sample I.D.:	MP-1 (A4F1169-03)		MW-12 (A4F1169-04)		MW-13 (A4F1169-06)			
Date/Time Sampled:	6/13/24 11:18		6/13/24 12:18		6/13/24 13:23			
Date/Time Analyzed:	6/26/24 13:24		6/26/24 13:35		6/26/24 13:46			
QC Batch No.:	240626GC8A1		240626GC8A1		240626GC8A1			
Analyst Initials:	RC		RC		RC			
Dilution Factor:	1.0		1.0		1.0			
ANALYTE	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**	**Result ug/L**	**RL ug/L**		
Ethene	ND	1.0	2.3	1.0	8.2	1.0		
Ethane	ND	1.0	120	1.0	4.2	1.0		
Methane	1.1	1.0	2,800	1.0	100	1.0		

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: MM. **Date** 7/2/24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 240626GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/26/24 11:04			6/26/24 10:41		6/26/24 10:52					
Analyst Initials:	AS/KD			AS/KD		AS/KD					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	1,010	98	990	96	1.8	70	130	30
Ethane	ND	1.0	1,100	1,090	99	1,060	96	2.6	70	130	30
Methane	ND	1.0	590	566	96	553	94	2.4	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 7/2/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

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

ANALYTICAL REPORT

Wednesday, July 3, 2024

Stephanie Bosze-Salisbury
GeoEngineers - Portland
5820 S Kelly Ave Unit B
Portland, OR 97239

RE: A4F1206 - Sunoco Vancouver Main 2Q24 - 019001-009-34

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 A4F1206, which was received by the laboratory on 6/14/2024 at 1:29:00PM.

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

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

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 5.7 degC

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

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	A4F1206-01	Water	06/14/24 08:10	06/14/24 13:29
MW-26	A4F1206-02	Water	06/14/24 09:36	06/14/24 13:29
MW-22i	A4F1206-03	Water	06/14/24 10:48	06/14/24 13:29

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1206 - 07 03 24 1056

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4F1206-01)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Bromoform	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 09:58	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1-Dichloroethane	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
cis-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 09:58	EPA 8260D	

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1206 - 07 03 24 1056

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4F1206-01)				**Matrix: Water**		**Batch: 24F0779**		
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
Tetrachloroethene (PCE)	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
Trichloroethene (TCE)	ND	---	0.400	ug/L	1	06/24/24 09:58	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 09:58	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 09:58	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 09:58	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*06/24/24 09:58*	*EPA 8260D*	
Toluene-d8 (Surr)			*104 %*	*80-120 %*	*1*	*06/24/24 09:58*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*100 %*	*80-120 %*	*1*	*06/24/24 09:58*	*EPA 8260D*	
MW-26 (A4F1206-02)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Bromochloromethane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Bromodichloromethane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Bromoform	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Bromomethane	ND	---	12.5	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Carbon tetrachloride	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Chlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Chloroethane	ND	---	12.5	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Chloroform	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Chloromethane	ND	---	12.5	ug/L	2.5	06/24/24 17:42	EPA 8260D	
2-Chlorotoluene	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
4-Chlorotoluene	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Dibromochloromethane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	12.5	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Dibromomethane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,3-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	

Apex Laboratories

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

Darrell Auvil, Client Services Manager

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

ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1206 - 07 03 24 1056

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-26 (A4F1206-02)				**Matrix: Water**		**Batch: 24F0779**		
1,4-Dichlorobenzene	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Dichlorodifluoromethane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1-Dichloroethane	**2.38**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1-Dichloroethene	ND	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
cis-1,2-Dichloroethene	**37.4**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
trans-1,2-Dichloroethene	**1.32**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2-Dichloropropane	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,3-Dichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
2,2-Dichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Hexachlorobutadiene	ND	---	12.5	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Methylene chloride	ND	---	25.0	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Tetrachloroethene (PCE)	**160**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2,3-Trichlorobenzene	ND	---	5.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1,2-Trichloroethane	ND	---	1.25	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	5.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,1,1-Trichloroethane	**1.40**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Trichloroethene (TCE)	**204**	---	1.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Trichlorofluoromethane	ND	---	5.00	ug/L	2.5	06/24/24 17:42	EPA 8260D	
1,2,3-Trichloropropane	ND	---	2.50	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Vinyl chloride	ND	---	0.500	ug/L	2.5	06/24/24 17:42	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*108 %*	*Limits:*	*80-120 %*	*1*	*06/24/24 17:42*	*EPA 8260D*
Toluene-d8 (Surr)			*102 %*		*80-120 %*	*1*	*06/24/24 17:42*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*100 %*		*80-120 %*	*1*	*06/24/24 17:42*	*EPA 8260D*
MW-22i (A4F1206-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromobenzene	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
Bromochloromethane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Bromodichloromethane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-22i (A4F1206-03)				**Matrix: Water**		**Batch: 24F0779**		
Bromoform	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Bromomethane	ND	---	5.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Carbon tetrachloride	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Chlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
Chloroethane	ND	---	5.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Chloroform	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Chloromethane	ND	---	5.00	ug/L	1	06/24/24 10:26	EPA 8260D	
2-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
4-Chlorotoluene	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Dibromochloromethane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	---	5.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
Dibromomethane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
1,3-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
1,4-Dichlorobenzene	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
Dichlorodifluoromethane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1-Dichloroethane	**0.460**	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
cis-1,2-Dichloroethene	**15.0**	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
trans-1,2-Dichloroethene	ND	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2-Dichloropropane	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
1,3-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
2,2-Dichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
cis-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
trans-1,3-Dichloropropene	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Methylene chloride	ND	---	10.0	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
Tetrachloroethene (PCE)	**1.55**	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-22i (A4F1206-03)				**Matrix: Water**		**Batch: 24F0779**		
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,1,1-Trichloroethane	ND	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
Trichloroethene (TCE)	**4.29**	---	0.400	ug/L	1	06/24/24 10:26	EPA 8260D	
Trichlorofluoromethane	ND	---	2.00	ug/L	1	06/24/24 10:26	EPA 8260D	
1,2,3-Trichloropropane	ND	---	1.00	ug/L	1	06/24/24 10:26	EPA 8260D	
Vinyl chloride	ND	---	0.200	ug/L	1	06/24/24 10:26	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*107 %*	*Limits: 80-120 %*	*1*	*06/24/24 10:26*	*EPA 8260D*	
Toluene-d8 (Surr)			*103 %*	*80-120 %*	*1*	*06/24/24 10:26*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*102 %*	*80-120 %*	*1*	*06/24/24 10:26*	*EPA 8260D*	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

ANALYTICAL SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4F1206-01RE1)				**Matrix: Water**			**Batch: 24F0562**	
Ammonia as N	**9.80**	---	0.100	mg/L	5	06/17/24 15:22	SM 4500-NH3 G	
MW-26 (A4F1206-02RE1)				**Matrix: Water**			**Batch: 24F0562**	
Ammonia as N	**96.5**	---	2.00	mg/L	100	06/17/24 15:24	SM 4500-NH3 G	
MW-22i (A4F1206-03RE1)				**Matrix: Water**			**Batch: 24F0562**	
Ammonia as N	**0.411**	---	0.0200	mg/L	1	06/17/24 15:27	SM 4500-NH3 G	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

ANALYTICAL SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW-2 (A4F1206-01)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/15/24 01:20	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/15/24 01:20	EPA 300.0	
MW-26 (A4F1206-02)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	**381**	---	25.0	mg/L	100	06/15/24 01:42	EPA 300.0	
MW-26 (A4F1206-02RE1)				**Matrix: Water**				
Batch: 24F0531								
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/15/24 03:51	EPA 300.0	
MW-22i (A4F1206-03)				**Matrix: Water**				
Batch: 24F0506								
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	06/15/24 02:03	EPA 300.0	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	06/15/24 02:03	EPA 300.0	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
EPA 8260D												
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
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	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	5.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	---	10.0	ug/L	1	---	---	---	---	---	---	

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Blank (24F0779-BLK1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 09:04									
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	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.500	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.400	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	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*105 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*102 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*101 %*		*80-120 %*			*"*				
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 07:58									
EPA 8260D												
Bromobenzene	20.2	---	0.500	ug/L	1	20.0	---	101	80-120%	---	---	
Bromochloromethane	22.6	---	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
Bromodichloromethane	23.2	---	1.00	ug/L	1	20.0	---	116	80-120%	---	---	
Bromoform	21.2	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
Bromomethane	22.2	---	5.00	ug/L	1	20.0	---	111	80-120%	---	---	
Carbon tetrachloride	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Chlorobenzene	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Chloroethane	26.7	---	5.00	ug/L	1	20.0	---	**133**	**80-120%**	---	---	Q-56
Chloroform	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
Chloromethane	19.6	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
2-Chlorotoluene	20.3	---	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
4-Chlorotoluene	21.4	---	1.00	ug/L	1	20.0	---	107	80-120%	---	---	
Dibromochloromethane	19.2	---	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dibromo-3-chloropropane	19.7	---	5.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,2-Dibromoethane (EDB)	20.5	---	0.500	ug/L	1	20.0	---	103	80-120%	---	---	
Dibromomethane	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
1,2-Dichlorobenzene	21.7	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
LCS (24F0779-BS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 07:58									
1,3-Dichlorobenzene	21.8	---	0.500	ug/L	1	20.0	---	109	80-120%	---	---	
1,4-Dichlorobenzene	20.0	---	0.500	ug/L	1	20.0	---	100	80-120%	---	---	
Dichlorodifluoromethane	20.1	---	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,1-Dichloroethane	21.7	---	0.400	ug/L	1	20.0	---	108	80-120%	---	---	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
1,1-Dichloroethene	20.9	---	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
cis-1,2-Dichloroethene	21.4	---	0.400	ug/L	1	20.0	---	107	80-120%	---	---	
trans-1,2-Dichloroethene	20.6	---	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
1,2-Dichloropropane	21.7	---	0.500	ug/L	1	20.0	---	108	80-120%	---	---	
1,3-Dichloropropane	21.6	---	1.00	ug/L	1	20.0	---	108	80-120%	---	---	
2,2-Dichloropropane	23.9	---	1.00	ug/L	1	20.0	---	120	80-120%	---	---	
1,1-Dichloropropene	22.0	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
cis-1,3-Dichloropropene	21.3	---	1.00	ug/L	1	20.0	---	106	80-120%	---	---	
trans-1,3-Dichloropropene	22.2	---	1.00	ug/L	1	20.0	---	111	80-120%	---	---	
Hexachlorobutadiene	20.6	---	5.00	ug/L	1	20.0	---	103	80-120%	---	---	
Methylene chloride	21.0	---	10.0	ug/L	1	20.0	---	105	80-120%	---	---	
1,1,1,2-Tetrachloroethane	24.2	---	0.400	ug/L	1	20.0	---	**121**	**80-120%**	---	---	Q-56
1,1,2,2-Tetrachloroethane	22.5	---	0.500	ug/L	1	20.0	---	113	80-120%	---	---	
Tetrachloroethene (PCE)	19.9	---	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,2,3-Trichlorobenzene	22.5	---	2.00	ug/L	1	20.0	---	112	80-120%	---	---	
1,1,2-Trichloroethane	20.8	---	0.500	ug/L	1	20.0	---	104	80-120%	---	---	
1,2,4-Trichlorobenzene	20.9	---	2.00	ug/L	1	20.0	---	104	80-120%	---	---	
1,1,1-Trichloroethane	21.9	---	0.400	ug/L	1	20.0	---	109	80-120%	---	---	
Trichloroethene (TCE)	20.7	---	0.400	ug/L	1	20.0	---	104	80-120%	---	---	
Trichlorofluoromethane	25.5	---	2.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
1,2,3-Trichloropropane	22.1	---	1.00	ug/L	1	20.0	---	110	80-120%	---	---	
Vinyl chloride	20.8	---	0.200	ug/L	1	20.0	---	104	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 21:20									**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
Bromobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	

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ORELAP ID: **OR100062**

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 21:20							**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
Bromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromoform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Bromomethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Chloroethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Chloroform	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Chloromethane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dibromomethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	**129**	---	40.0	ug/L	100	---	125	---	---	3	30%	
trans-1,2-Dichloroethene	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	500	ug/L	100	---	ND	---	---	---	30%	
Methylene chloride	ND	---	1000	ug/L	100	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Duplicate (24F0779-DUP1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 21:20									**T-02**
QC Source Sample: Non-SDG (A4F1169-06)												
1,1,2,2-Tetrachloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**207**	---	40.0	ug/L	100	---	197	---	---	5	30%	
1,2,3-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	50.0	ug/L	100	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	40.0	ug/L	100	---	ND	---	---	---	30%	
Trichloroethene (TCE)	**84.0**	---	40.0	ug/L	100	---	86.0	---	---	2	30%	
Trichlorofluoromethane	ND	---	200	ug/L	100	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	100	ug/L	100	---	ND	---	---	---	30%	
Vinyl chloride	**32.0**	---	20.0	ug/L	100	---	37.0	---	---	14	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*103 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*99 %*		*80-120 %*			*"*				
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25 Analyzed: 06/24/24 15:53									
QC Source Sample: Non-SDG (A4F1281-01RE1)												
EPA 8260D												
Bromobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Bromochloromethane	23.1	---	1.00	ug/L	1	20.0	ND	116	78-123%	---	---	
Bromodichloromethane	24.3	---	1.00	ug/L	1	20.0	ND	121	79-125%	---	---	
Bromoform	22.5	---	1.00	ug/L	1	20.0	ND	113	66-130%	---	---	
Bromomethane	25.1	---	5.00	ug/L	1	20.0	ND	125	53-141%	---	---	
Carbon tetrachloride	24.4	---	1.00	ug/L	1	20.0	ND	122	72-136%	---	---	
Chlorobenzene	22.4	---	0.500	ug/L	1	20.0	ND	112	80-120%	---	---	
Chloroethane	27.8	---	5.00	ug/L	1	20.0	ND	**139**	**60-138%**	---	---	Q-54a
Chloroform	23.0	---	1.00	ug/L	1	20.0	ND	115	79-124%	---	---	
Chloromethane	22.5	---	5.00	ug/L	1	20.0	ND	112	50-139%	---	---	
2-Chlorotoluene	22.5	---	1.00	ug/L	1	20.0	ND	112	79-122%	---	---	
4-Chlorotoluene	23.4	---	1.00	ug/L	1	20.0	ND	117	78-122%	---	---	
Dibromochloromethane	20.5	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	20.8	---	5.00	ug/L	1	20.0	ND	104	62-128%	---	---	
1,2-Dibromoethane (EDB)	22.0	---	0.500	ug/L	1	20.0	ND	110	77-121%	---	---	
Dibromomethane	23.1	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 15:53							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
1,2-Dichlorobenzene	23.5	---	0.500	ug/L	1	20.0	ND	118	80-120%	---	---	
1,3-Dichlorobenzene	23.1	---	0.500	ug/L	1	20.0	ND	116	80-120%	---	---	
1,4-Dichlorobenzene	21.3	---	0.500	ug/L	1	20.0	ND	107	79-120%	---	---	
Dichlorodifluoromethane	23.8	---	1.00	ug/L	1	20.0	ND	119	32-152%	---	---	
1,1-Dichloroethane	23.6	---	0.400	ug/L	1	20.0	ND	118	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.8	---	0.400	ug/L	1	20.0	ND	109	73-128%	---	---	
1,1-Dichloroethene	23.3	---	0.400	ug/L	1	20.0	0.220	115	71-131%	---	---	
cis-1,2-Dichloroethene	23.2	---	0.400	ug/L	1	20.0	0.260	114	78-123%	---	---	
trans-1,2-Dichloroethene	23.0	---	0.400	ug/L	1	20.0	ND	115	75-124%	---	---	
1,2-Dichloropropane	22.6	---	0.500	ug/L	1	20.0	ND	113	78-122%	---	---	
1,3-Dichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	115	80-120%	---	---	
2,2-Dichloropropane	27.1	---	1.00	ug/L	1	20.0	ND	135	60-139%	---	---	
1,1-Dichloropropene	25.2	---	1.00	ug/L	1	20.0	ND	**126**	**79-125%**	---	---	Q-01
cis-1,3-Dichloropropene	21.4	---	1.00	ug/L	1	20.0	ND	107	75-124%	---	---	
trans-1,3-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	73-127%	---	---	
Hexachlorobutadiene	24.7	---	5.00	ug/L	1	20.0	ND	124	66-134%	---	---	
Methylene chloride	21.4	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.8	---	0.400	ug/L	1	20.0	ND	**129**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.1	---	0.500	ug/L	1	20.0	ND	121	71-121%	---	---	
Tetrachloroethene (PCE)	25.1	---	0.400	ug/L	1	20.0	2.01	116	74-129%	---	---	
1,2,3-Trichlorobenzene	24.6	---	2.00	ug/L	1	20.0	ND	123	69-129%	---	---	
1,1,2-Trichloroethane	22.2	---	0.500	ug/L	1	20.0	ND	111	80-120%	---	---	
1,2,4-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	117	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	26.6	---	0.400	ug/L	1	20.0	3.65	115	79-123%	---	---	
Trichlorofluoromethane	26.9	---	2.00	ug/L	1	20.0	ND	135	65-141%	---	---	Q-54b
1,2,3-Trichloropropane	23.4	---	1.00	ug/L	1	20.0	ND	117	73-122%	---	---	
Vinyl chloride	24.8	---	0.200	ug/L	1	20.0	ND	124	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*			*"*				
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
EPA 8260D												
Bromobenzene	21.9	---	0.500	ug/L	1	20.0	ND	109	80-120%	---	---	
Bromochloromethane	23.6	---	1.00	ug/L	1	20.0	ND	118	78-123%	---	---	
Bromodichloromethane	24.8	---	1.00	ug/L	1	20.0	ND	124	79-125%	---	---	
Bromoform	23.0	---	1.00	ug/L	1	20.0	ND	115	66-130%	---	---	
Bromomethane	25.2	---	5.00	ug/L	1	20.0	ND	126	53-141%	---	---	
Carbon tetrachloride	24.7	---	1.00	ug/L	1	20.0	ND	123	72-136%	---	---	
Chlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	---	---	
Chloroethane	28.6	---	5.00	ug/L	1	20.0	ND	**143**	**60-138%**	---	---	Q-54a
Chloroform	23.8	---	1.00	ug/L	1	20.0	ND	119	79-124%	---	---	
Chloromethane	21.8	---	5.00	ug/L	1	20.0	ND	109	50-139%	---	---	
2-Chlorotoluene	21.9	---	1.00	ug/L	1	20.0	ND	109	79-122%	---	---	
4-Chlorotoluene	23.1	---	1.00	ug/L	1	20.0	ND	116	78-122%	---	---	
Dibromochloromethane	20.7	---	1.00	ug/L	1	20.0	ND	103	74-126%	---	---	
1,2-Dibromo-3-chloropropane	19.0	---	5.00	ug/L	1	20.0	ND	95	62-128%	---	---	
1,2-Dibromoethane (EDB)	21.8	---	0.500	ug/L	1	20.0	ND	109	77-121%	---	---	
Dibromomethane	23.3	---	1.00	ug/L	1	20.0	ND	116	79-123%	---	---	
1,2-Dichlorobenzene	23.0	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,3-Dichlorobenzene	22.9	---	0.500	ug/L	1	20.0	ND	115	80-120%	---	---	
1,4-Dichlorobenzene	21.2	---	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	23.3	---	0.400	ug/L	1	20.0	ND	117	77-125%	---	---	
1,2-Dichloroethane (EDC)	21.9	---	0.400	ug/L	1	20.0	ND	110	73-128%	---	---	
1,1-Dichloroethene	22.7	---	0.400	ug/L	1	20.0	ND	113	71-131%	---	---	
cis-1,2-Dichloroethene	22.9	---	0.400	ug/L	1	20.0	ND	114	78-123%	---	---	
trans-1,2-Dichloroethene	22.5	---	0.400	ug/L	1	20.0	ND	112	75-124%	---	---	
1,2-Dichloropropane	22.8	---	0.500	ug/L	1	20.0	ND	114	78-122%	---	---	
1,3-Dichloropropane	22.4	---	1.00	ug/L	1	20.0	ND	112	80-120%	---	---	
2,2-Dichloropropane	25.8	---	1.00	ug/L	1	20.0	ND	129	60-139%	---	---	
1,1-Dichloropropene	24.7	---	1.00	ug/L	1	20.0	ND	123	79-125%	---	---	
cis-1,3-Dichloropropene	20.3	---	1.00	ug/L	1	20.0	ND	102	75-124%	---	---	
trans-1,3-Dichloropropene	23.2	---	1.00	ug/L	1	20.0	ND	116	73-127%	---	---	
Hexachlorobutadiene	23.6	---	5.00	ug/L	1	20.0	ND	118	66-134%	---	---	

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike (24F0779-MS2)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 13:09							
QC Source Sample: Non-SDG (A4F1332-01)												
Methylene chloride	21.5	---	10.0	ug/L	1	20.0	ND	107	74-124%	---	---	
1,1,1,2-Tetrachloroethane	25.6	---	0.400	ug/L	1	20.0	ND	**128**	**78-124%**	---	---	Q-54
1,1,2,2-Tetrachloroethane	24.0	---	0.500	ug/L	1	20.0	ND	120	71-121%	---	---	
Tetrachloroethene (PCE)	22.3	---	0.400	ug/L	1	20.0	ND	112	74-129%	---	---	
1,2,3-Trichlorobenzene	23.8	---	2.00	ug/L	1	20.0	ND	119	69-129%	---	---	
1,1,2-Trichloroethane	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	---	---	
1,2,4-Trichlorobenzene	22.3	---	2.00	ug/L	1	20.0	ND	111	69-130%	---	---	
1,1,1-Trichloroethane	24.1	---	0.400	ug/L	1	20.0	ND	120	74-131%	---	---	
Trichloroethene (TCE)	22.2	---	0.400	ug/L	1	20.0	ND	111	79-123%	---	---	
Trichlorofluoromethane	28.9	---	2.00	ug/L	1	20.0	ND	**144**	**65-141%**	---	---	Q-54b
1,2,3-Trichloropropane	22.9	---	1.00	ug/L	1	20.0	ND	114	73-122%	---	---	
Vinyl chloride	23.1	---	0.200	ug/L	1	20.0	ND	115	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*97 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*95 %*		*80-120 %*			*"*				
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Bromobenzene	21.6	---	0.500	ug/L	1	20.0	ND	108	80-120%	4	30%	
Bromochloromethane	21.9	---	1.00	ug/L	1	20.0	ND	110	78-123%	5	30%	
Bromodichloromethane	23.3	---	1.00	ug/L	1	20.0	ND	117	79-125%	4	30%	
Bromoform	22.2	---	1.00	ug/L	1	20.0	ND	111	66-130%	2	30%	
Bromomethane	24.5	---	5.00	ug/L	1	20.0	ND	122	53-141%	2	30%	
Carbon tetrachloride	23.5	---	1.00	ug/L	1	20.0	ND	118	72-136%	4	30%	
Chlorobenzene	21.5	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
Chloroethane	26.1	---	5.00	ug/L	1	20.0	ND	131	60-138%	6	30%	Q-54a
Chloroform	22.1	---	1.00	ug/L	1	20.0	ND	110	79-124%	4	30%	
Chloromethane	20.8	---	5.00	ug/L	1	20.0	ND	104	50-139%	8	30%	
2-Chlorotoluene	21.5	---	1.00	ug/L	1	20.0	ND	108	79-122%	4	30%	
4-Chlorotoluene	22.9	---	1.00	ug/L	1	20.0	ND	114	78-122%	2	30%	
Dibromochloromethane	20.0	---	1.00	ug/L	1	20.0	ND	100	74-126%	2	30%	
1,2-Dibromo-3-chloropropane	19.5	---	5.00	ug/L	1	20.0	ND	97	62-128%	7	30%	
1,2-Dibromoethane (EDB)	21.6	---	0.500	ug/L	1	20.0	ND	108	77-121%	2	30%	

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0779 - EPA 5030C							**Water**					
Matrix Spike Dup (24F0779-MSD1)			Prepared: 06/24/24 07:25		Analyzed: 06/24/24 16:20							
QC Source Sample: Non-SDG (A4F1281-01RE1)												
Dibromomethane	22.7	---	1.00	ug/L	1	20.0	ND	113	79-123%	2	30%	
1,2-Dichlorobenzene	22.6	---	0.500	ug/L	1	20.0	ND	113	80-120%	4	30%	
1,3-Dichlorobenzene	22.3	---	0.500	ug/L	1	20.0	ND	112	80-120%	3	30%	
1,4-Dichlorobenzene	20.6	---	0.500	ug/L	1	20.0	ND	103	79-120%	4	30%	
Dichlorodifluoromethane	22.6	---	1.00	ug/L	1	20.0	ND	113	32-152%	5	30%	
1,1-Dichloroethane	22.4	---	0.400	ug/L	1	20.0	ND	112	77-125%	5	30%	
1,2-Dichloroethane (EDC)	21.0	---	0.400	ug/L	1	20.0	ND	105	73-128%	4	30%	
1,1-Dichloroethene	22.4	---	0.400	ug/L	1	20.0	0.220	111	71-131%	4	30%	
cis-1,2-Dichloroethene	22.8	---	0.400	ug/L	1	20.0	0.260	113	78-123%	2	30%	
trans-1,2-Dichloroethene	22.1	---	0.400	ug/L	1	20.0	ND	110	75-124%	4	30%	
1,2-Dichloropropane	21.9	---	0.500	ug/L	1	20.0	ND	110	78-122%	3	30%	
1,3-Dichloropropane	22.1	---	1.00	ug/L	1	20.0	ND	111	80-120%	3	30%	
2,2-Dichloropropane	26.3	---	1.00	ug/L	1	20.0	ND	132	60-139%	3	30%	
1,1-Dichloropropene	23.6	---	1.00	ug/L	1	20.0	ND	118	79-125%	7	30%	
cis-1,3-Dichloropropene	21.0	---	1.00	ug/L	1	20.0	ND	105	75-124%	2	30%	
trans-1,3-Dichloropropene	22.7	---	1.00	ug/L	1	20.0	ND	114	73-127%	4	30%	
Hexachlorobutadiene	23.2	---	5.00	ug/L	1	20.0	ND	116	66-134%	7	30%	
Methylene chloride	20.6	---	10.0	ug/L	1	20.0	ND	103	74-124%	4	30%	
1,1,1,2-Tetrachloroethane	25.2	---	0.400	ug/L	1	20.0	ND	**126**	**78-124%**	2	30%	Q-54
1,1,2,2-Tetrachloroethane	23.5	---	0.500	ug/L	1	20.0	ND	118	71-121%	3	30%	
Tetrachloroethene (PCE)	24.0	---	0.400	ug/L	1	20.0	2.01	110	74-129%	5	30%	
1,2,3-Trichlorobenzene	23.5	---	2.00	ug/L	1	20.0	ND	118	69-129%	4	30%	
1,1,2-Trichloroethane	21.3	---	0.500	ug/L	1	20.0	ND	107	80-120%	4	30%	
1,2,4-Trichlorobenzene	22.4	---	2.00	ug/L	1	20.0	ND	112	69-130%	5	30%	
1,1,1-Trichloroethane	23.2	---	0.400	ug/L	1	20.0	ND	116	74-131%	4	30%	
Trichloroethene (TCE)	25.3	---	0.400	ug/L	1	20.0	3.65	108	79-123%	5	30%	
Trichlorofluoromethane	25.6	---	2.00	ug/L	1	20.0	ND	128	65-141%	5	30%	Q-54b
1,2,3-Trichloropropane	21.7	---	1.00	ug/L	1	20.0	ND	109	73-122%	7	30%	
Vinyl chloride	23.4	---	0.200	ug/L	1	20.0	ND	117	58-137%	6	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*96 %*		*80-120 %*			*"*				

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GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0559 - Method Prep: Aq							**Water**					
Blank (24F0559-BLK1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:12									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0559-BS1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:14									
SM 4500-NH3 G												
Ammonia as N	2.01	---	0.0200	mg/L	1	2.00	---	100	90-111%	---	---	
Matrix Spike (24F0559-MS1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:18									
QC Source Sample: Non-SDG (A4F1150-01)												
SM 4500-NH3 G												
Ammonia as N	2.58	---	0.0250	mg/L	1	2.50	0.0290	102	90-111%	---	---	
Matrix Spike Dup (24F0559-MSD1)			Prepared: 06/17/24 11:08 Analyzed: 06/17/24 13:20									
QC Source Sample: Non-SDG (A4F1150-01)												
Ammonia as N	2.65	---	0.0250	mg/L	1	2.50	0.0290	105	90-111%	3	13%	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Ammonia by Gas Diffusion and Colorimetric Detection

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0562 - Method Prep: Aq							**Water**					
Blank (24F0562-BLK1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:18									
SM 4500-NH3 G												
Ammonia as N	ND	---	0.0200	mg/L	1	---	---	---	---	---	---	
LCS (24F0562-BS1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:20									
SM 4500-NH3 G												
Ammonia as N	2.05	---	0.0200	mg/L	1	2.00	---	103	90-111%	---	---	
Matrix Spike (24F0562-MS1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:24									
QC Source Sample: Non-SDG (A4F1165-08)												
SM 4500-NH3 G												
Ammonia as N	2.62	---	0.0250	mg/L	1	2.50	0.0160	104	90-111%	---	---	
Matrix Spike Dup (24F0562-MSD1)			Prepared: 06/17/24 11:30 Analyzed: 06/17/24 14:26									
QC Source Sample: Non-SDG (A4F1165-08)												
Ammonia as N	2.64	---	0.0250	mg/L	1	2.50	0.0160	105	90-111%	0.8	13%	

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ANALYTICAL REPORT

GeoEngineers - Portland	Project: Sunoco Vancouver Main 2Q24	
5820 S Kelly Ave Unit B	Project Number: 019001-009-34	Report ID:
Portland, OR 97239	Project Manager: Stephanie Bosze-Salisbury	A4F1206 - 07 03 24 1056

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0506 - Method Prep: Aq							Water					
Blank (24F0506-BLK1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 15:38							
EPA 300.0												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0506-BS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 16:00							
EPA 300.0												
Nitrate-Nitrogen	2.09	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Nitrite-Nitrogen	2.11	---	0.250	mg/L	1	2.00	---	106	90-110%	---	---	
Duplicate (24F0506-DUP1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:30							
QC Source Sample: Non-SDG (A4F1167-01)												
Nitrate-Nitrogen	**0.632**	---	0.250	mg/L	1	---	0.625	---	---	1	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Duplicate (24F0506-DUP2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:18							
QC Source Sample: Non-SDG (A4F1167-02)												
Nitrate-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	3%	
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0506-MS1)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 18:52							
QC Source Sample: Non-SDG (A4F1167-01)												
EPA 300.0												
Nitrate-Nitrogen	3.27	---	0.312	mg/L	1	2.50	0.625	106	87-112%	---	---	
Nitrite-Nitrogen	2.63	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	
Matrix Spike (24F0506-MS2)			Prepared: 06/14/24 09:21		Analyzed: 06/14/24 20:40							
QC Source Sample: Non-SDG (A4F1167-02)												
EPA 300.0												
Nitrate-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	87-112%	---	---	
Nitrite-Nitrogen	2.64	---	0.312	mg/L	1	2.50	ND	106	90-114%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALITY CONTROL (QC) SAMPLE RESULTS

Anions by Ion Chromatography

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24F0531 - Method Prep: Aq							**Water**					
Blank (24F0531-BLK1)			Prepared: 06/14/24 16:45		Analyzed: 06/15/24 03:08							
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	---	---	---	---	---	
LCS (24F0531-BS1)			Prepared: 06/14/24 16:45		Analyzed: 06/15/24 03:29							
EPA 300.0												
Nitrite-Nitrogen	2.10	---	0.250	mg/L	1	2.00	---	105	90-110%	---	---	
Duplicate (24F0531-DUP1)			Prepared: 06/14/24 16:45		Analyzed: 06/15/24 04:13							
QC Source Sample: MW-26 (A4F1206-02RE1)												
EPA 300.0												
Nitrite-Nitrogen	ND	---	0.250	mg/L	1	---	ND	---	---	---	10%	
Matrix Spike (24F0531-MS1)			Prepared: 06/14/24 16:45		Analyzed: 06/15/24 04:34							
QC Source Sample: MW-26 (A4F1206-02RE1)												
EPA 300.0												
Nitrite-Nitrogen	2.62	---	0.312	mg/L	1	2.50	ND	105	90-114%	---	---	

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0779							
A4F1206-01	Water	EPA 8260D	06/14/24 08:10	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1206-02	Water	EPA 8260D	06/14/24 09:36	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00
A4F1206-03	Water	EPA 8260D	06/14/24 10:48	06/24/24 08:27	5mL/5mL	5mL/5mL	1.00

Ammonia by Gas Diffusion and Colorimetric Detection

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0562							
A4F1206-01RE1	Water	SM 4500-NH3 G	06/14/24 08:10	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1206-02RE1	Water	SM 4500-NH3 G	06/14/24 09:36	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00
A4F1206-03RE1	Water	SM 4500-NH3 G	06/14/24 10:48	06/17/24 11:08	10mL/10mL	10mL/10mL	1.00

Anions by Ion Chromatography

Prep: Method Prep: Aq

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 24F0506							
A4F1206-01	Water	EPA 300.0	06/14/24 08:10	06/14/24 15:00	5mL/5mL	5mL/5mL	1.00
A4F1206-02	Water	EPA 300.0	06/14/24 09:36	06/14/24 15:00	5mL/5mL	5mL/5mL	1.00
A4F1206-03	Water	EPA 300.0	06/14/24 10:48	06/14/24 15:00	5mL/5mL	5mL/5mL	1.00
Batch: 24F0531							
A4F1206-02RE1	Water	EPA 300.0	06/14/24 09:36	06/14/24 16:45	5mL/5mL	5mL/5mL	1.00

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Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

QUALIFIER DEFINITIONS

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

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Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +1%. 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 8260/8270 by +13%. 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 8260/8270 by +7%. The results are reported as Estimated Values.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260. Samples that are ND (Non-Detect) are not impacted.
T-02	This Batch QC sample was analyzed outside of the method specified 12 hour analysis window. Results are estimated.

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ANALYTICAL REPORT

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5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

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

QC Source:

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

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

Miscellaneous Notes:

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

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

Apex Laboratories



Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

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

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

LABORATORY ACCREDITATION INFORMATION

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

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories

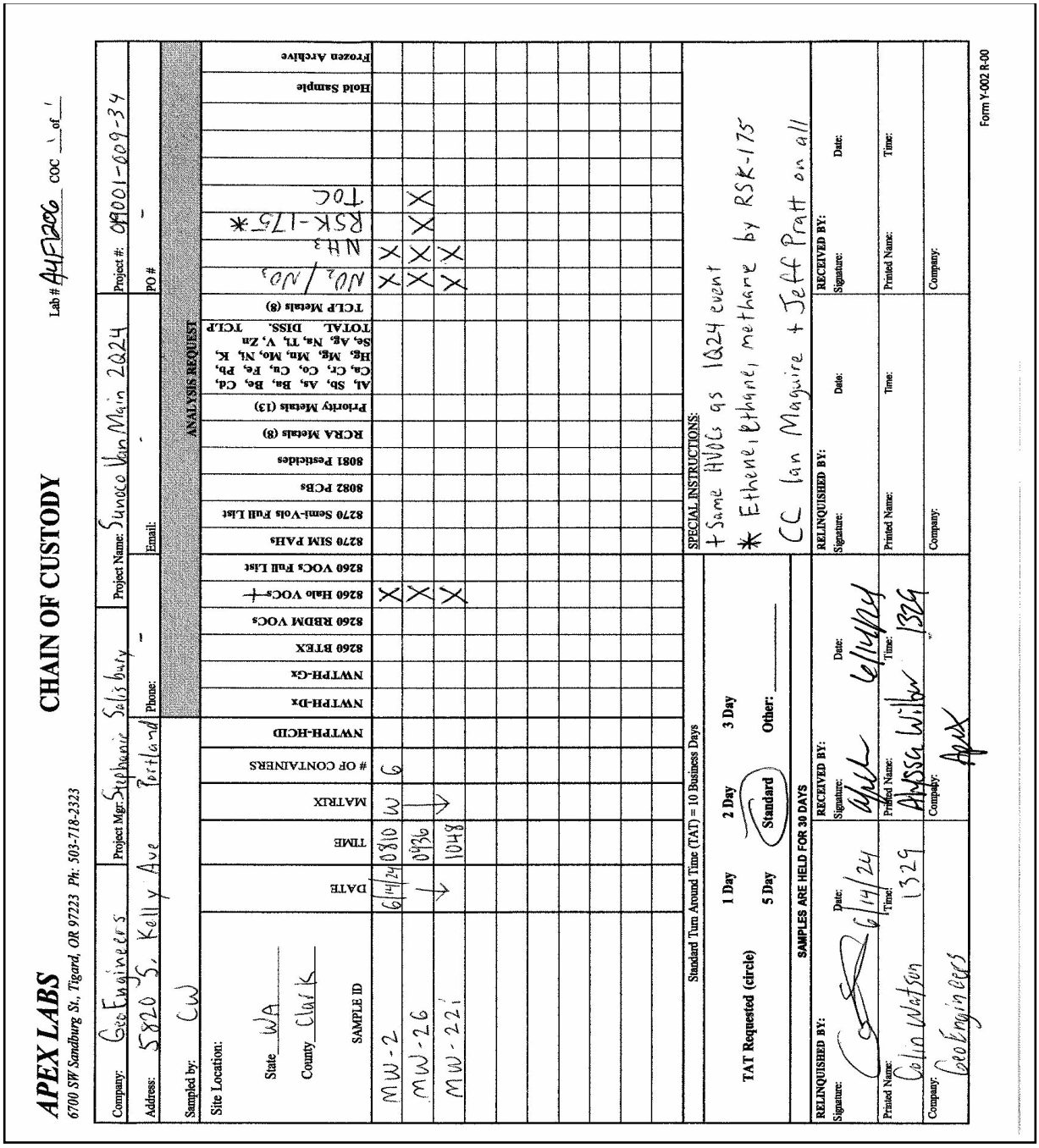


Darrell Auvil, Client Services Manager

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APEX LABS — 6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # 4UF1206 COC 1 of 1

Company: GeoEngineers | Project Mgr: Stephanie Salisbury | Project Name: Sunoco Van Main 2Q24 | Project #: 019001-009-34

Address: 5820 S. Kelly Ave Portland | Phone: - | Email: - | PO # -

Sampled by: CW

Site Location: State WA County Clark

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs+	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	NO_2 / NO_3	NH_3	RSK-175*	TOC	Hold Sample	Frozen Archive
MW-2	6/14/24	0810	W	6						X										X	X	X			
MW-26	↓	0936	↓	1						X										X	X	X			
MW-22'	↓	1048	↓	1						X										X	X	X			

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SPECIAL INSTRUCTIONS:
+ Same HVOCs as 1Q24 event
* Ethene, Ethane, methane by RSK-175
CC Ian Maguire + Jeff Pratt on all

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:	6/14/24	1329	Signature:	6/14/24	1329
Printed Name: Colin Watson			Printed Name: Alyssa Wilber		
Company: GeoEngineers			Company: Apex		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

RELINQUISHED BY:	Date:	Time:	RECEIVED BY:	Date:	Time:
Signature:			Signature:		
Printed Name:			Printed Name:		
Company:			Company:		

Form Y-002 R-00

Apex Laboratories

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Darrell Auvil, Client Services Manager

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

GeoEngineers - Portland	Project: **Sunoco Vancouver Main 2Q24**	
5820 S Kelly Ave Unit B	Project Number: **019001-009-34**	**Report ID:**
Portland, OR 97239	Project Manager: **Stephanie Bosze-Salisbury**	**A4F1206 - 07 03 24 1056**

APEX LABS COOLER RECEIPT FORM

Client: GeoEngineers Element WO#: A4F1206

Project/Project #: Sunoco Van Main 2Q24 019001-009-34

Delivery Info:

Date/time received: 6/14/24 @ 1329 By: APW

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

From USDA Regulated Origin? Yes _____ No X

Cooler Inspection Date/time inspected: 6/14/24 @ 1324 By: APW

Chain of Custody included? Yes X No _____

Signed/dated by client? Yes X No _____

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

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	5.7						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

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

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 6/14/24 @ 13:51 By: KAM

All samples intact? Yes X No ___ Comments: _____

Bottle labels/COCs agree? Yes X No Comments: Area for KAM clarification MW-2 9 cont. received, 6 on COC.

COC/container discrepancies form initiated? Yes ___ No X

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

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

Comments _____

Water samples: pH checked: Yes X No___NA___ pH appropriate? Yes X No___NA___ pH ID: A23192

Comments: _____

Labeled by: KAM Witness: APW Cooler Inspected by: KAM

Form Y-003 R-02

Apex Laboratories

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Darrell Auvil, Client Services Manager

June 27, 2024 Service Request No:K2406298

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

Laboratory Results for: A4F1206

Dear Darrell,

Enclosed are the results of the sample(s) submitted to our laboratory June 18, 2024
For your reference, these analyses have been assigned our service request number **K2406298.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories
Project: A4F1206
Sample Matrix: Water

Service Request: K2406298
Date Received: 06/18/2024

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 06/18/2024. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by  Date 06/27/2024

SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MW-26			Lab ID: K2406298-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Carbon, Total Organic	1.90		0.08	0.50	mg/L	SM 5310 C

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Apex Laboratories **Service Request:**K2406298

Project: A4F1206

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2406298-001	MW-26	6/14/2024	0936

SUBCONTRACT ORDER

Apex Laboratories EST

A4F1206

AAC 6/14/24 K24060298

SENDING LABORATORY:

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

RECEIVING LABORATORY:

ALS Group USA - Kelso
1317 S 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

Sample Name: MW-26 **Sampled: 06/14/24 09:36** (A4F1206-02)

Analysis	Due	Expires	Comments
Total Organic Carbon - H2O (5310C) *Containers Supplied:* (H)250 mL Poly - Sulfuric (H2SO4)	06/27/24 17:00	07/12/24 09:36	ALS Kelso, no data package

Standard TAT

Released By	Date	Received By	Date
	6/18/24 1123		6/18/24 1123
	6/18/24 1335		6/18/24 1335

PM MH

Cooler Receipt and Preservation Form

Client Apex Laboratories Service Request K24 060298

Received: 6/18/24 Opened: 6/18/24 By: PDP Unloaded: 6/18/24 By: PDP

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filet
	4.3	IR00					

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA (Y) N
   If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM. (NA) Y N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM (NA) Y N
16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value over the calibration range.
J	The result is an estimated value between the MDL and the MRL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Analyst Summary report

Client:	Apex Laboratories	**Service Request:**	K2406298
Project:	A4F1206/		

Sample Name:	MW-26	**Date Collected:**	06/14/24
Lab Code:	K2406298-001	**Date Received:**	06/18/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
SM 5310 C		MSPECHT

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

General Chemistry

ALS Environmental—Kelso Laboratory
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Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406298
Project:	A4F1206	**Date Collected:**	06/14/24 09:36
Sample Matrix:	Water	**Date Received:**	06/18/24 13:35
Sample Name:	MW-26	**Basis:**	NA
Lab Code:	K2406298-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	**1.90**	mg/L	0.50	0.08	1	06/24/24 17:33	

QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

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General Chemistry

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1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Analytical Report

Client:	Apex Laboratories	**Service Request:**	K2406298
Project:	A4F1206	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	K2406298-MB		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Carbon, Total Organic	SM 5310 C	ND U	mg/L	0.50	0.08	1	06/24/24 17:33	

Client:	Apex Laboratories	**Service Request:**	K2406298
Project:	A4F1206	**Date Analyzed:**	06/24/24
Sample Matrix:	Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	845302

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2406298-LCS	23.7	25.0	95	83-117

Air TECHNOLOGY
Laboratories, Inc.

July 3, 2024

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, ASTM D1946, RSK-175

TX Cert T104704450-14-6
EPA Methods TO14A, TO15

UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Apex Laboratories
ATTN: Darrell Auvil
6700 S.W. Sandburg St.
Tigard, OR 97223

LABORATORY TEST RESULTS

Project Reference: A4F1206
Lab Number: R061805-01

Enclosed are results for sample(s) received 6/18/24 by Air Technology Laboratories. Samples were received intact and chilled to 6° C. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

SUBCONTRACT ORDER

Apex Laboratories

A4F1206

6/14/24 JS R061865-01

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Air Technology Laboratories, Inc
18501 E. Gale Ave Suite 130
City of Industry, CA 91748
Phone :(626) 964-4032
Fax: (626) 964-5832

Sample Name: MW-26 **Water** **Sampled: 06/14/24 09:36** (A4F1206-02)

Analysis	Due	Expires	Comments
RSK 175 Preserved (Meth, Eth, Eth) (Sub) *Containers Supplied:* (D)40 mL VOA - HCL (E)40 mL VOA - HCL (F)40 mL VOA - HCL	06/27/24 17:00	06/28/24 09:36	air tech lab

Standard TAT

6°C
HO

Released By	Date	Received By	Date
	6/17/24	UPS (Shipper)	
UPS (Shipper)	6/18/24 10:29		6/18/24 10:29
Released By	Date	Received By	Date

Client:	**Apex Laboratories**
Attn:	**Darrell Auvil**
Project Name:	**NA**
Project No.:	**A4F1206**
Date Received:	**06/18/24**
Matrix:	**Water**
Reporting Units:	**ug/L**

RSK175

Lab No.:	**R061805-01**							
Client Sample I.D.:	**MW-26 (A4F1206-02)**							
Date/Time Sampled:	**6/14/24 9:36**							
Date/Time Analyzed:	**6/26/24 13:58**							
QC Batch No.:	**240626GC8A1**							
Analyst Initials:	**RC**							
Dilution Factor:	**1.0**							
ANALYTE	**Result ug/L**	**RL ug/L**						
Ethene	ND	1.0						
Ethane	ND	1.0						
Methane	180	1.0						

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 7/2/24

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

QC Batch No: 240626GC8A1
Matrix: Water
Reporting Units: ug/L

RSK 175
LABORATORY CONTROL SAMPLE SUMMARY

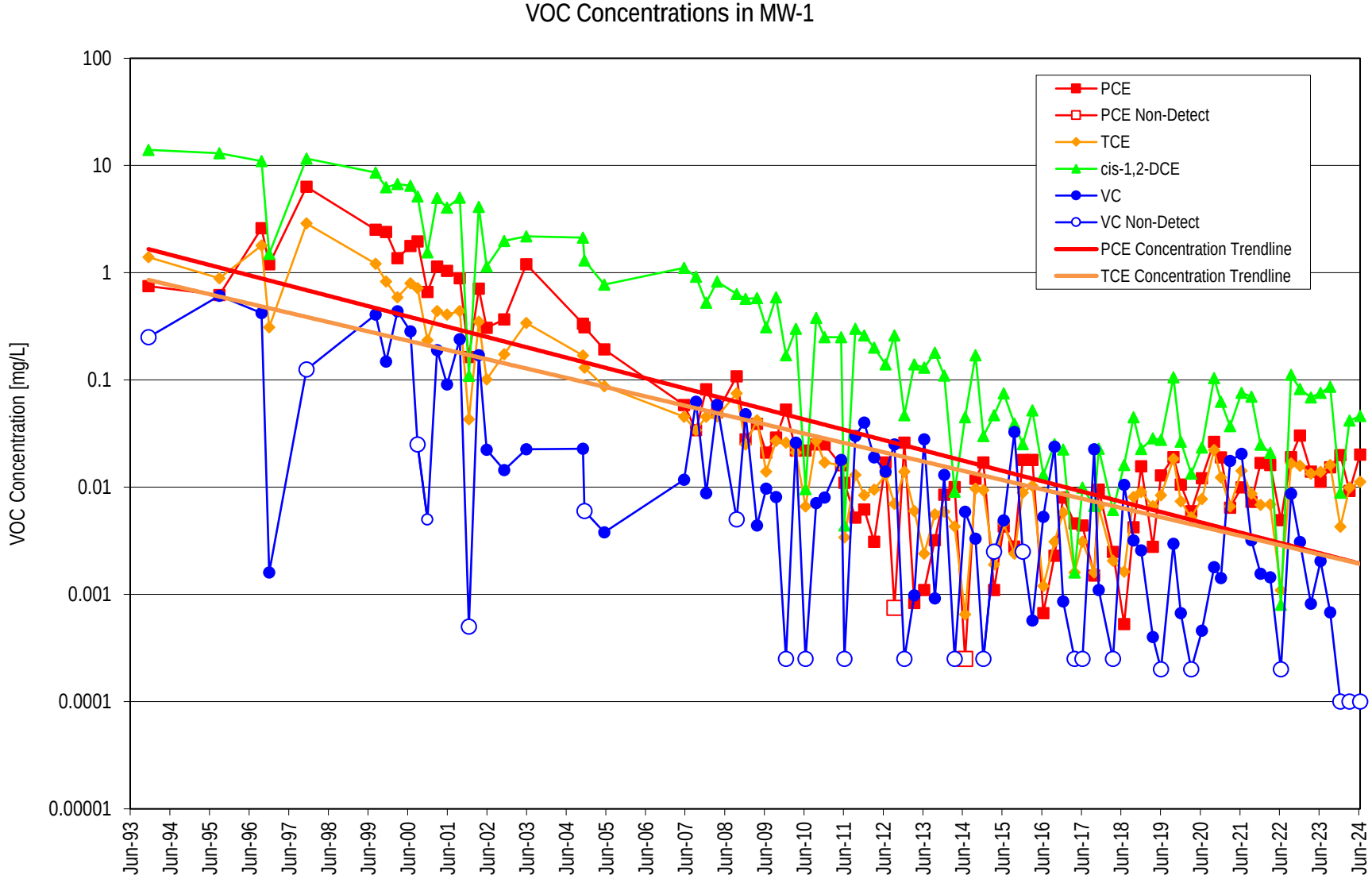
Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	6/26/24 11:04			6/26/24 10:41		6/26/24 10:52					
Analyst Initials:	AS/KD			AS/KD		AS/KD					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result ug/L	RL ug/L	SPIKE AMT. ug/L	Result ug/L	% Rec.	Result ug/L	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Ethene	ND	1.0	1,030	1,010	98	990	96	1.8	70	130	30
Ethane	ND	1.0	1,100	1,090	99	1,060	96	2.6	70	130	30
Methane	ND	1.0	590	566	96	553	94	2.4	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

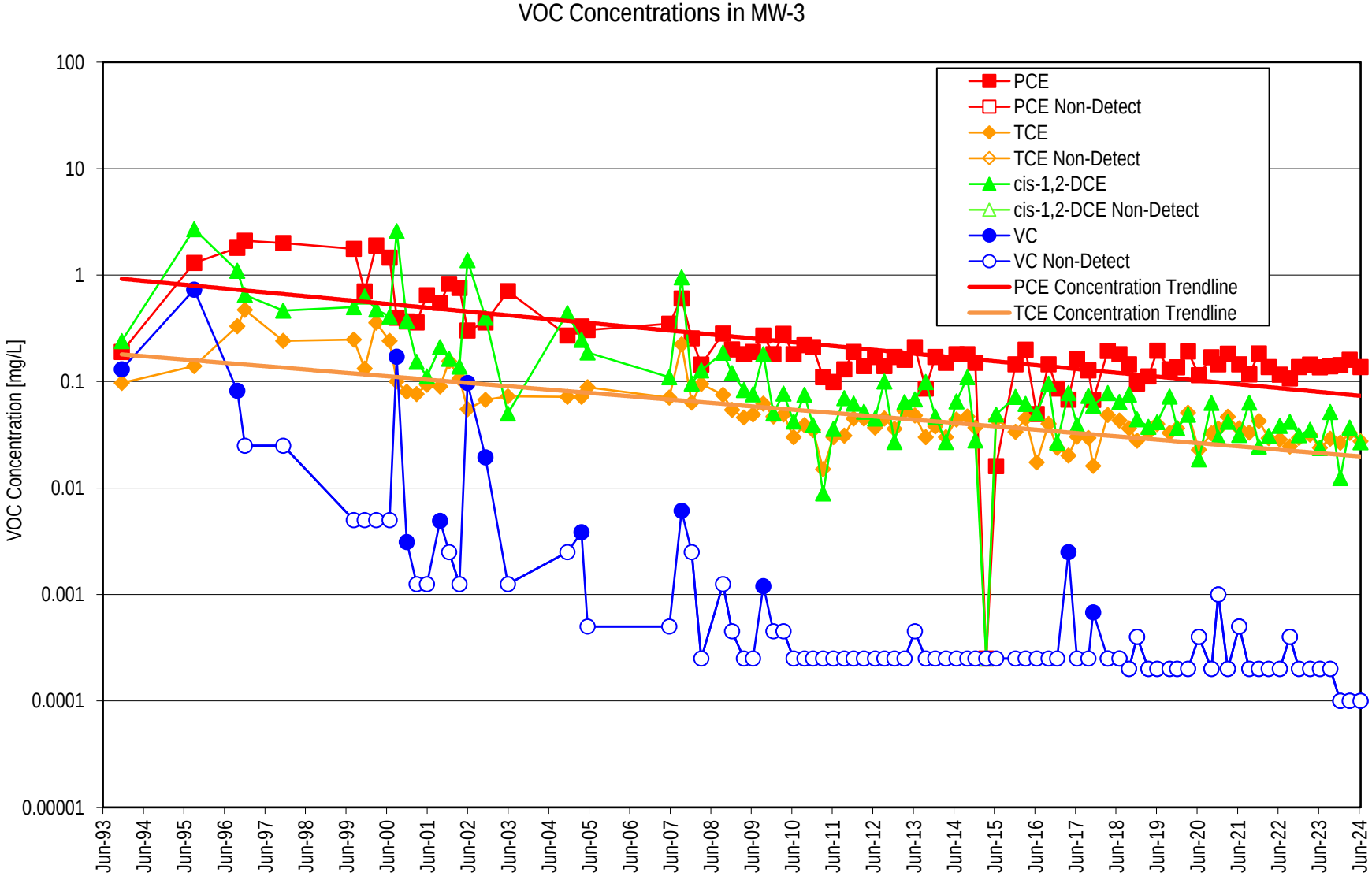
Reviewed/Approved By: _____ Date 7/2/24
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

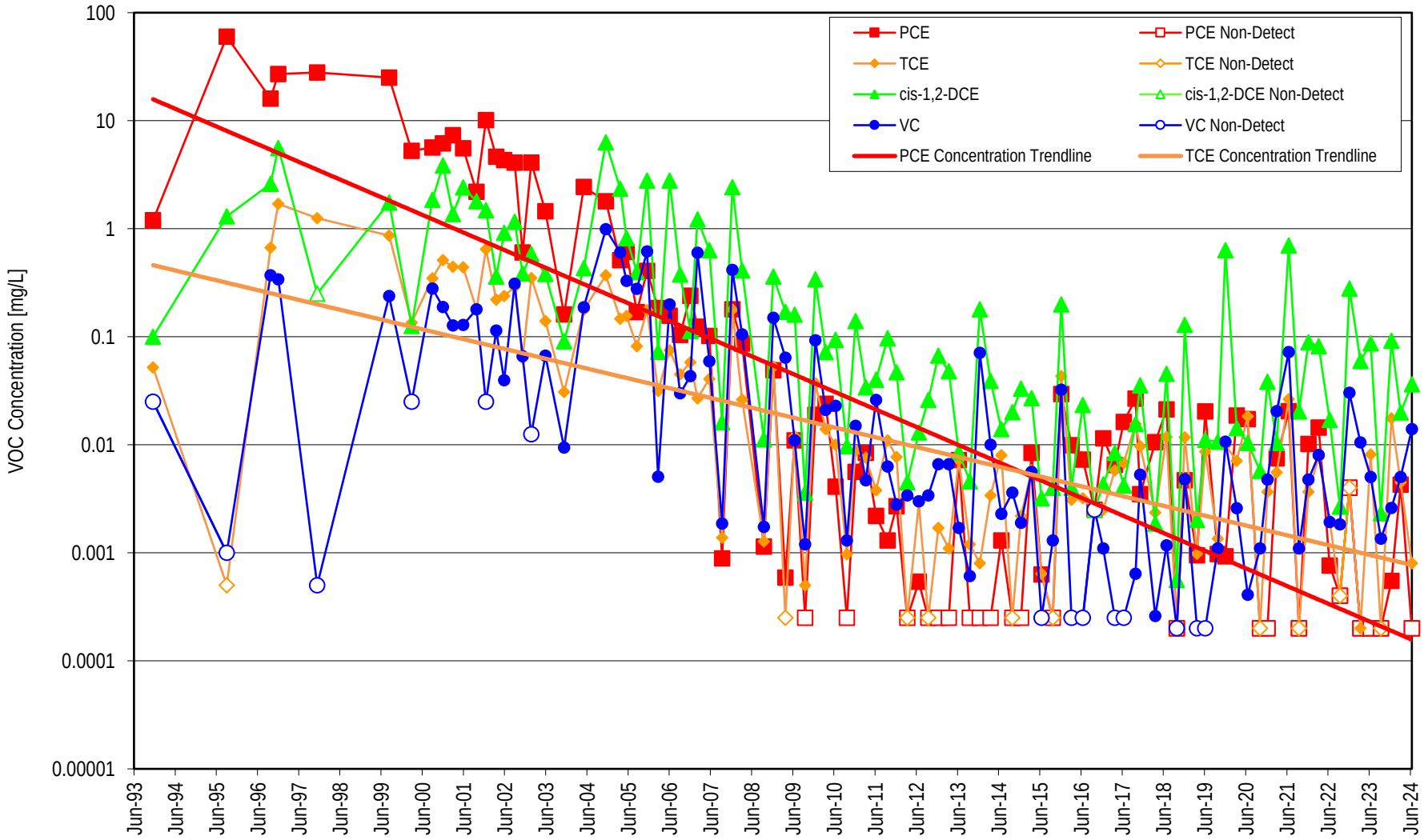
APPENDIX D
HVOC Concentration Trend Plots



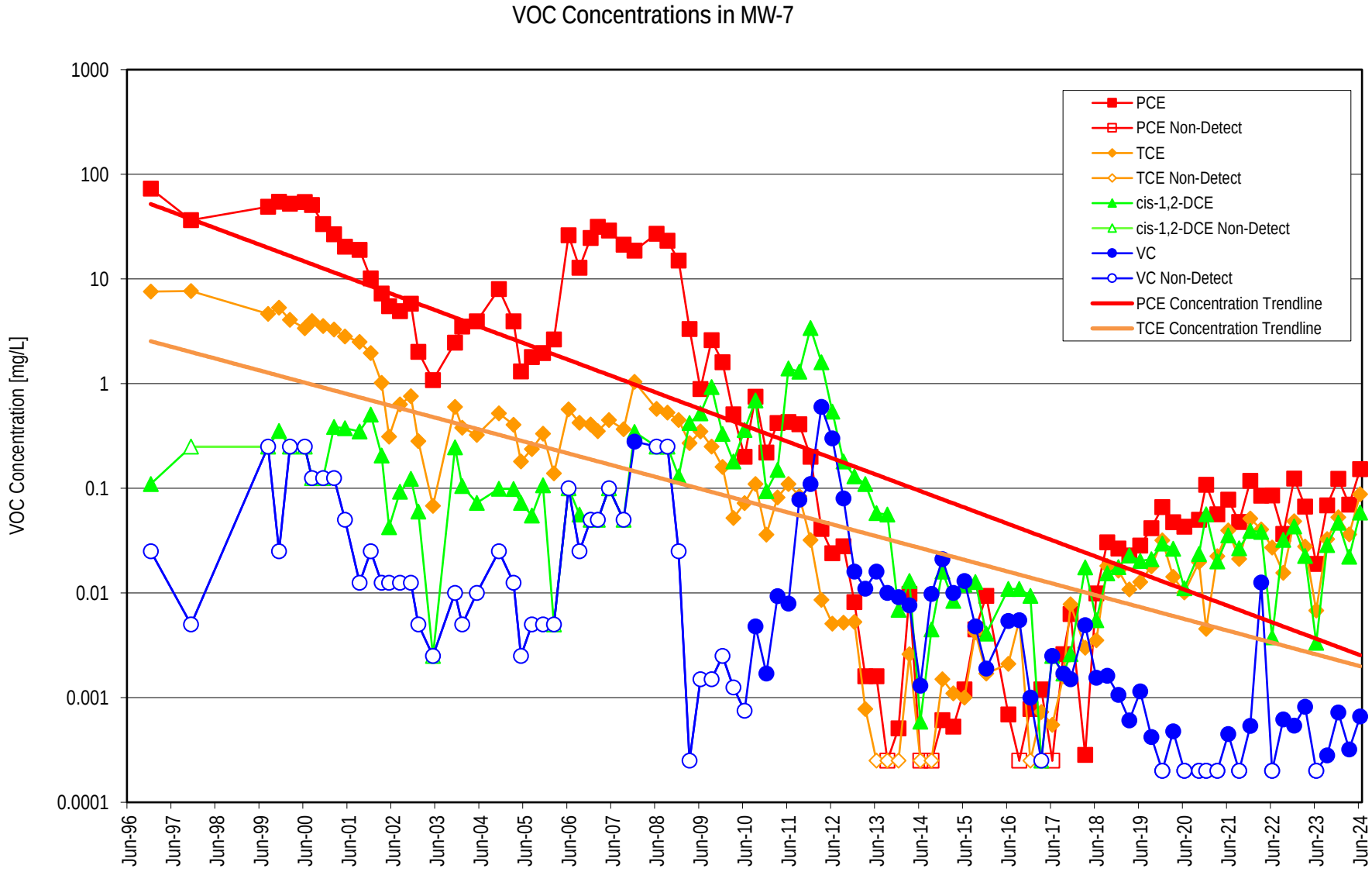
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Note: Not detected values plotted at 1/2 the reporting limit.

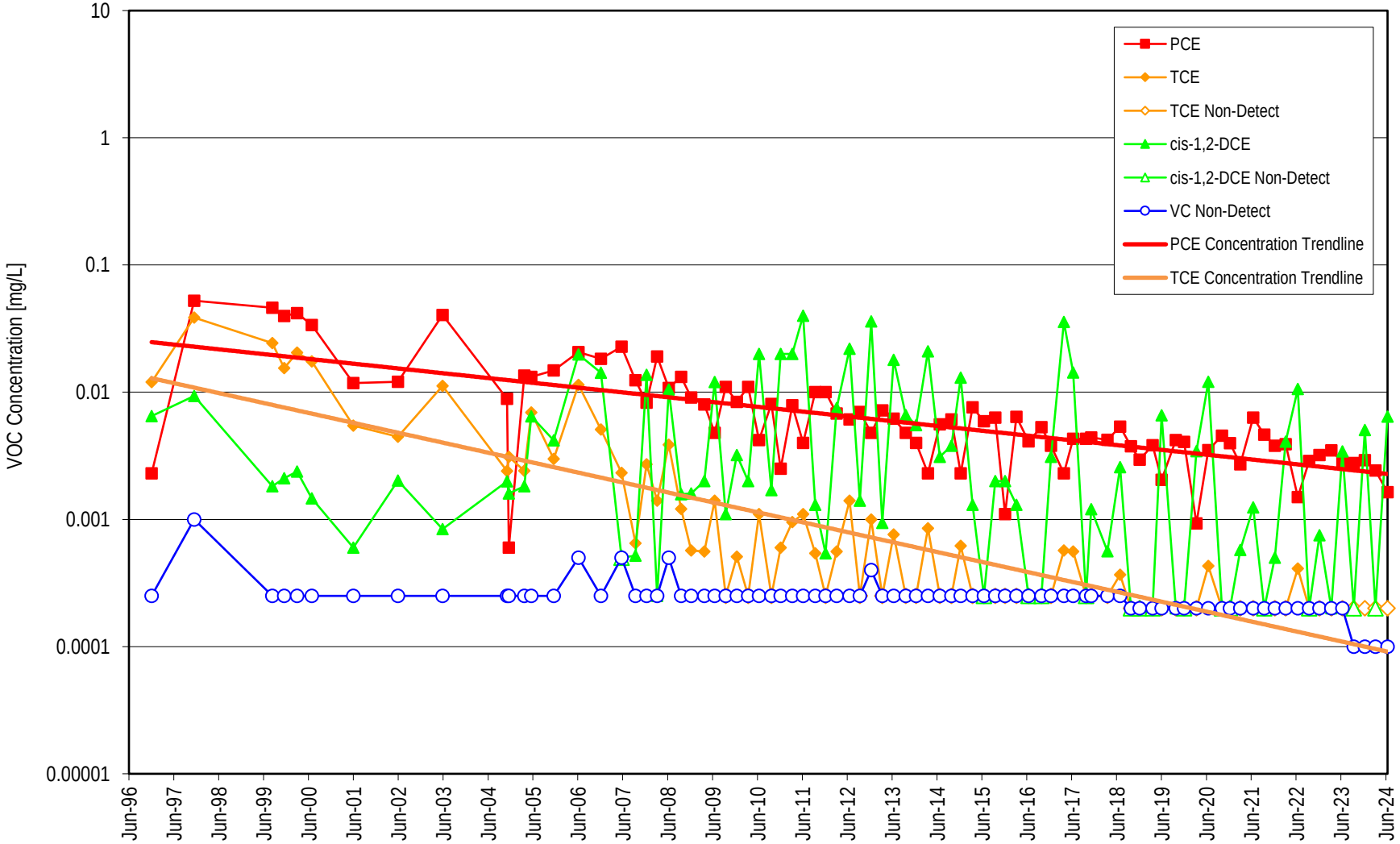


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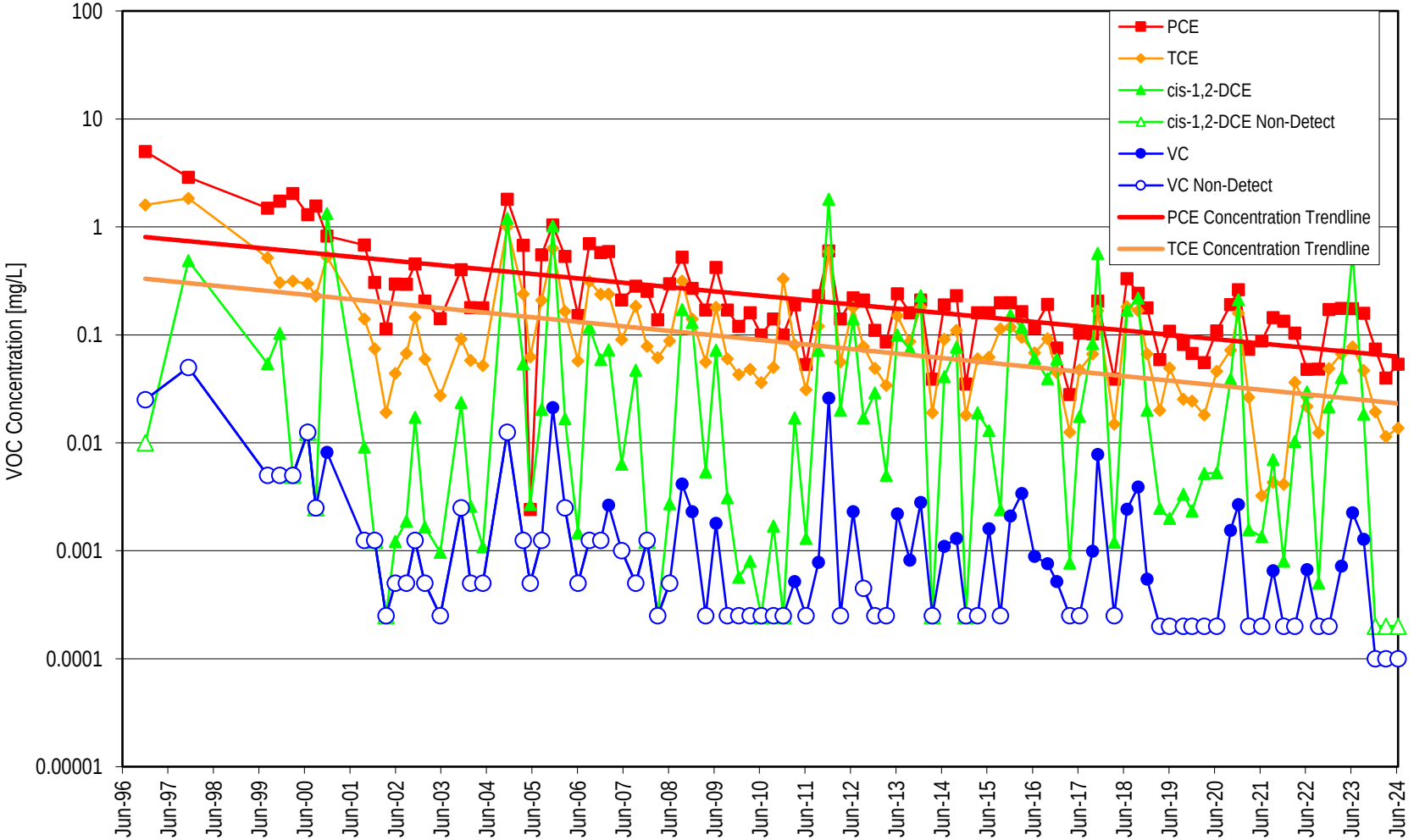
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VOC Concentrations in MW-8



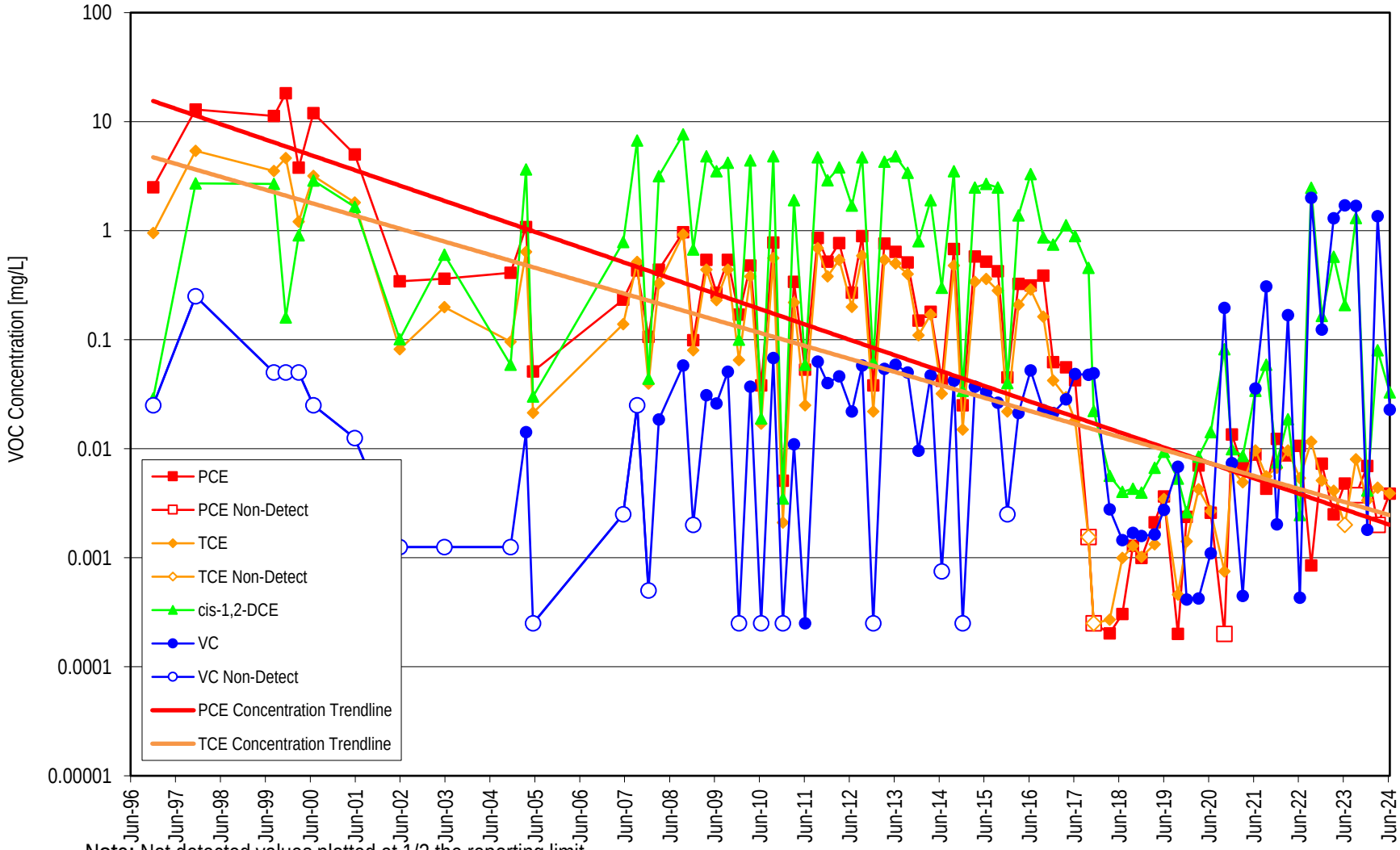
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VOC Concentrations in MW-9



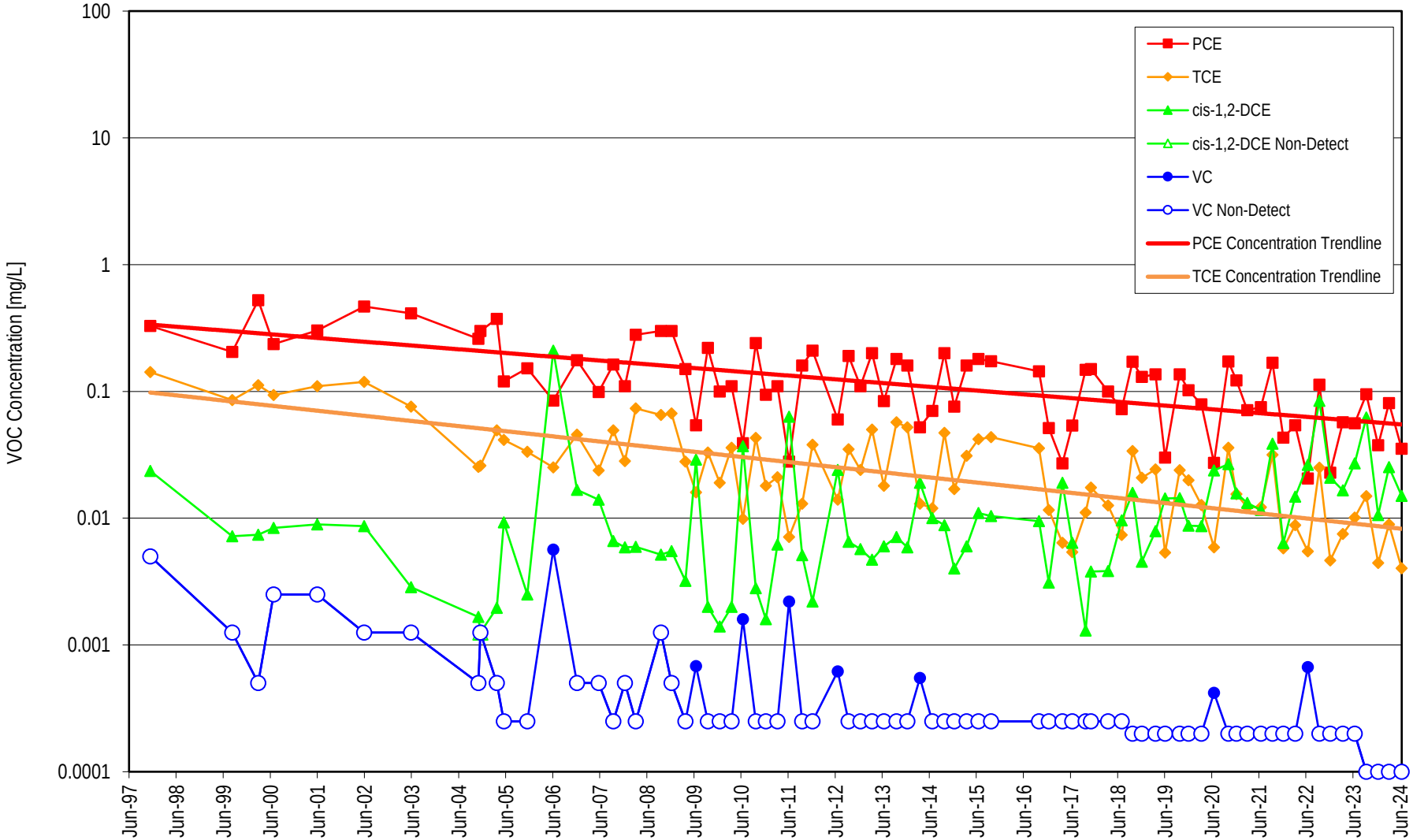
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VOC Concentrations in MW-12



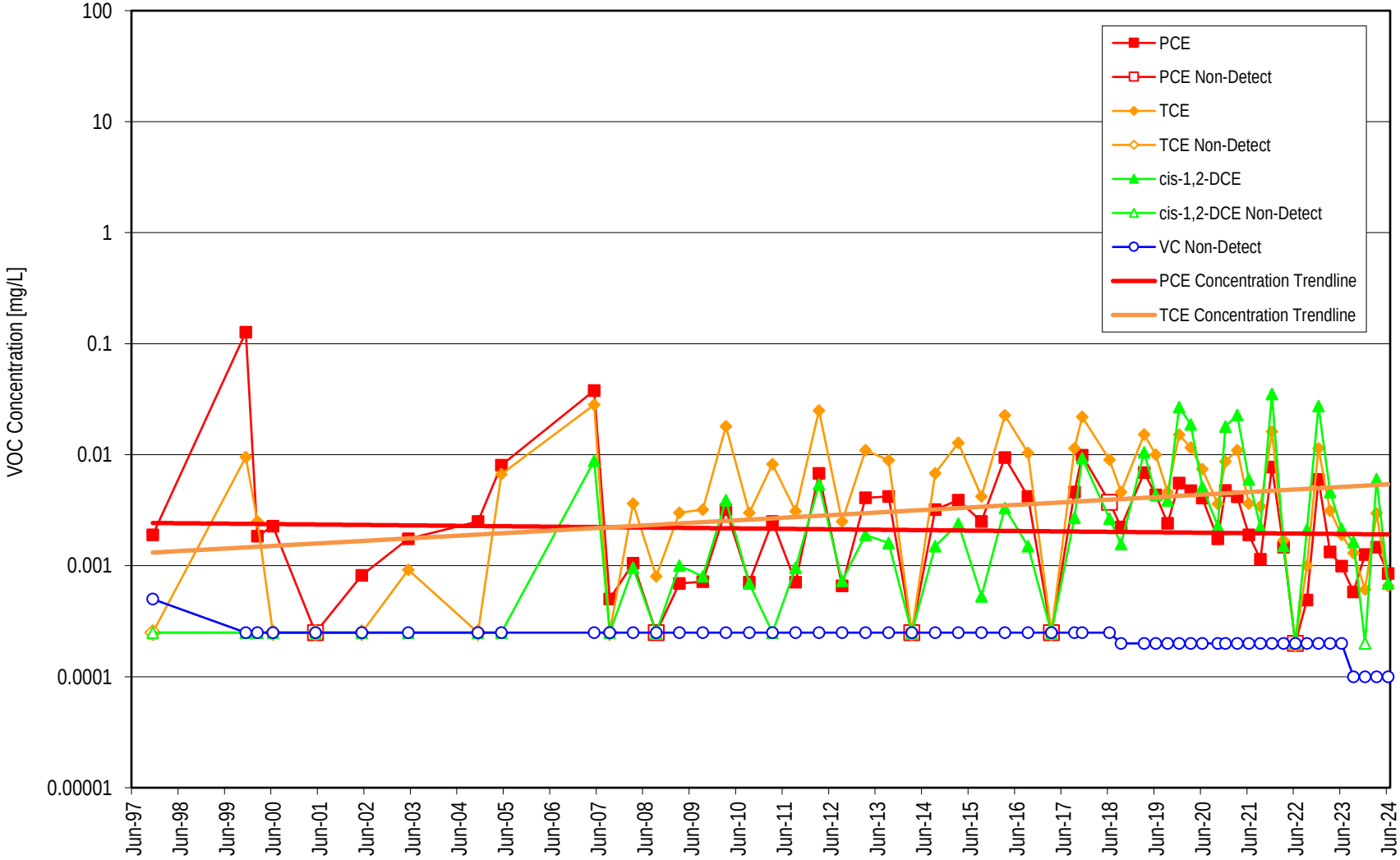
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VOC Concentrations in MW-16



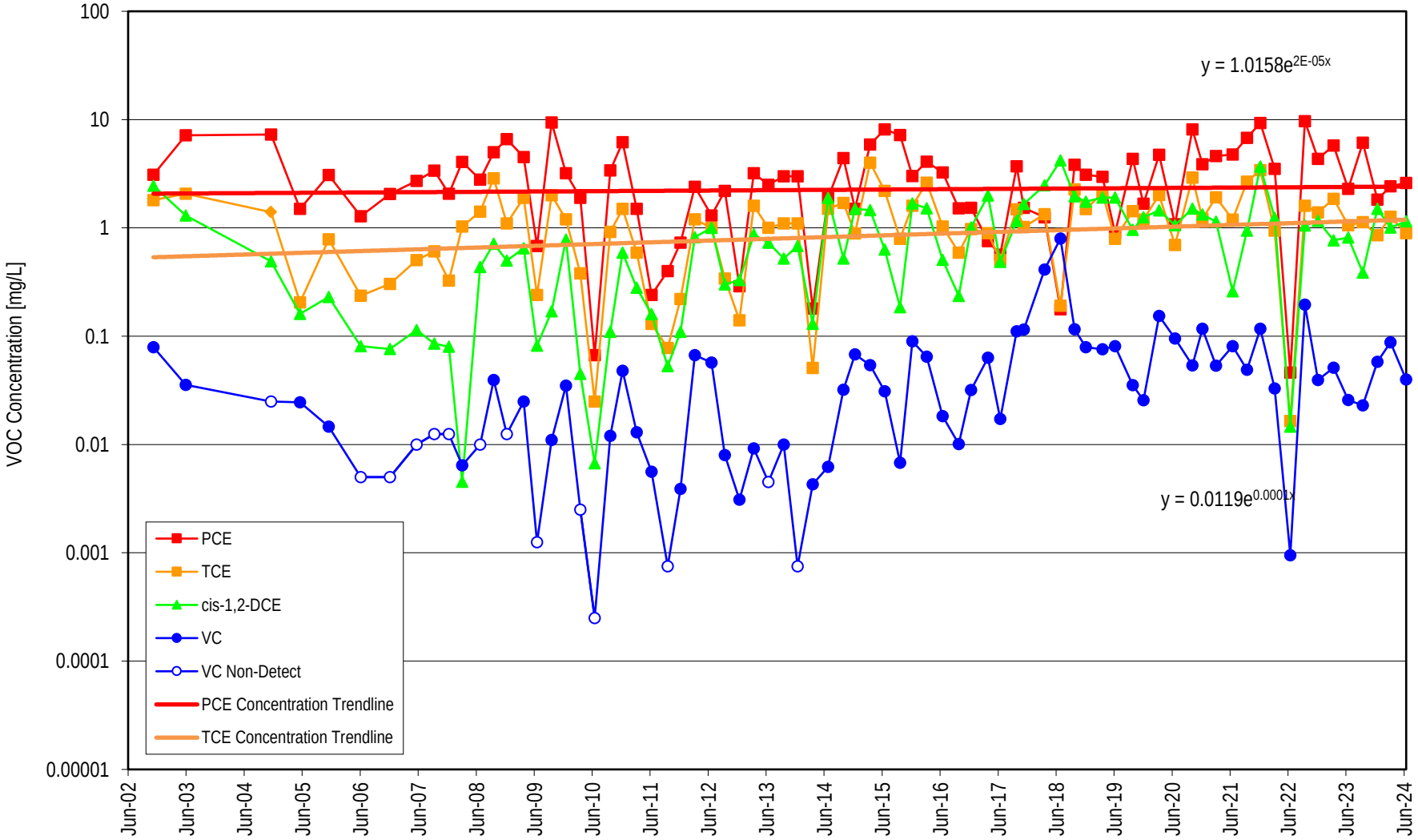
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VOC Concentrations in MW-17

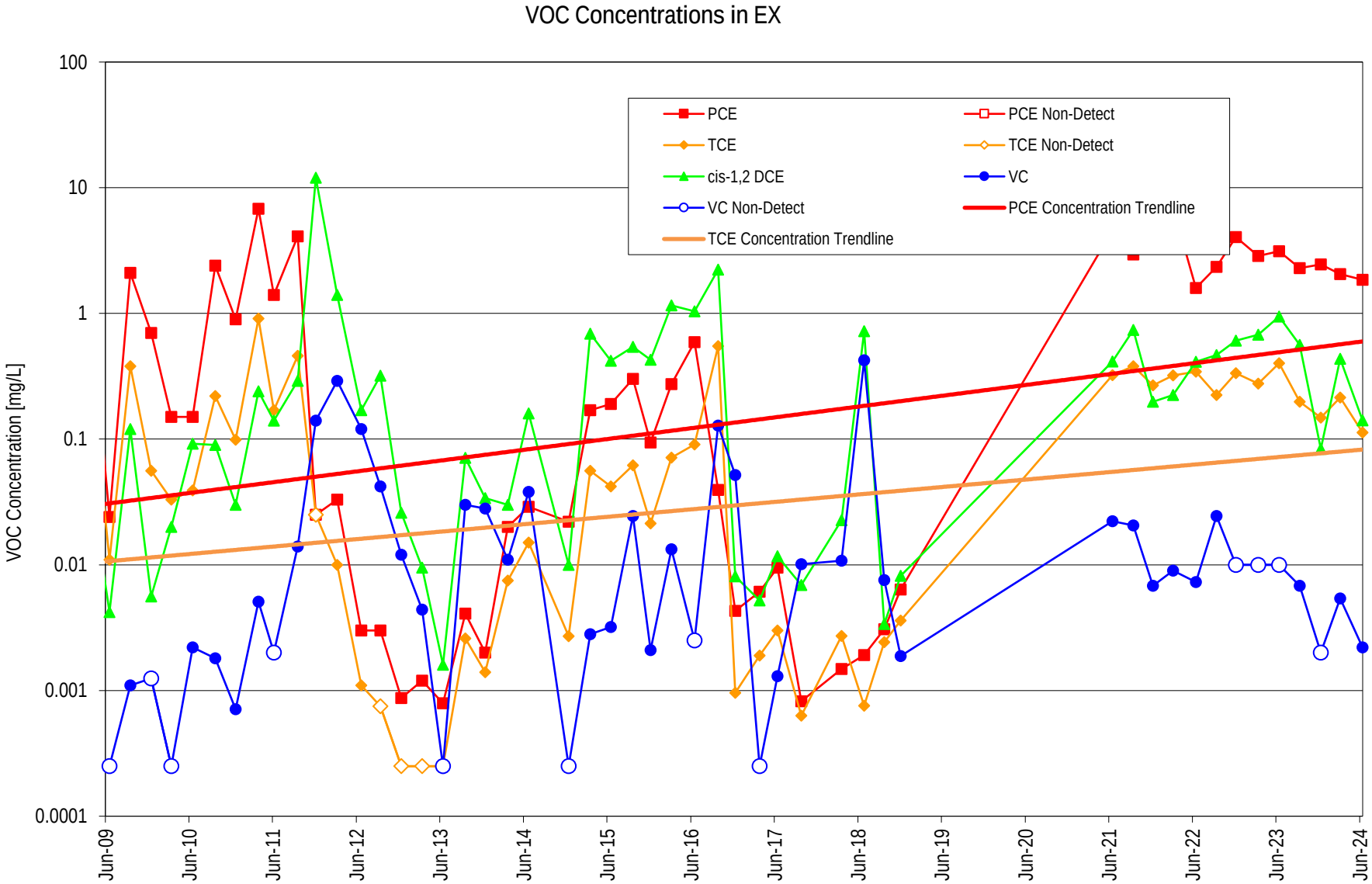


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VOC Concentrations in MW-19

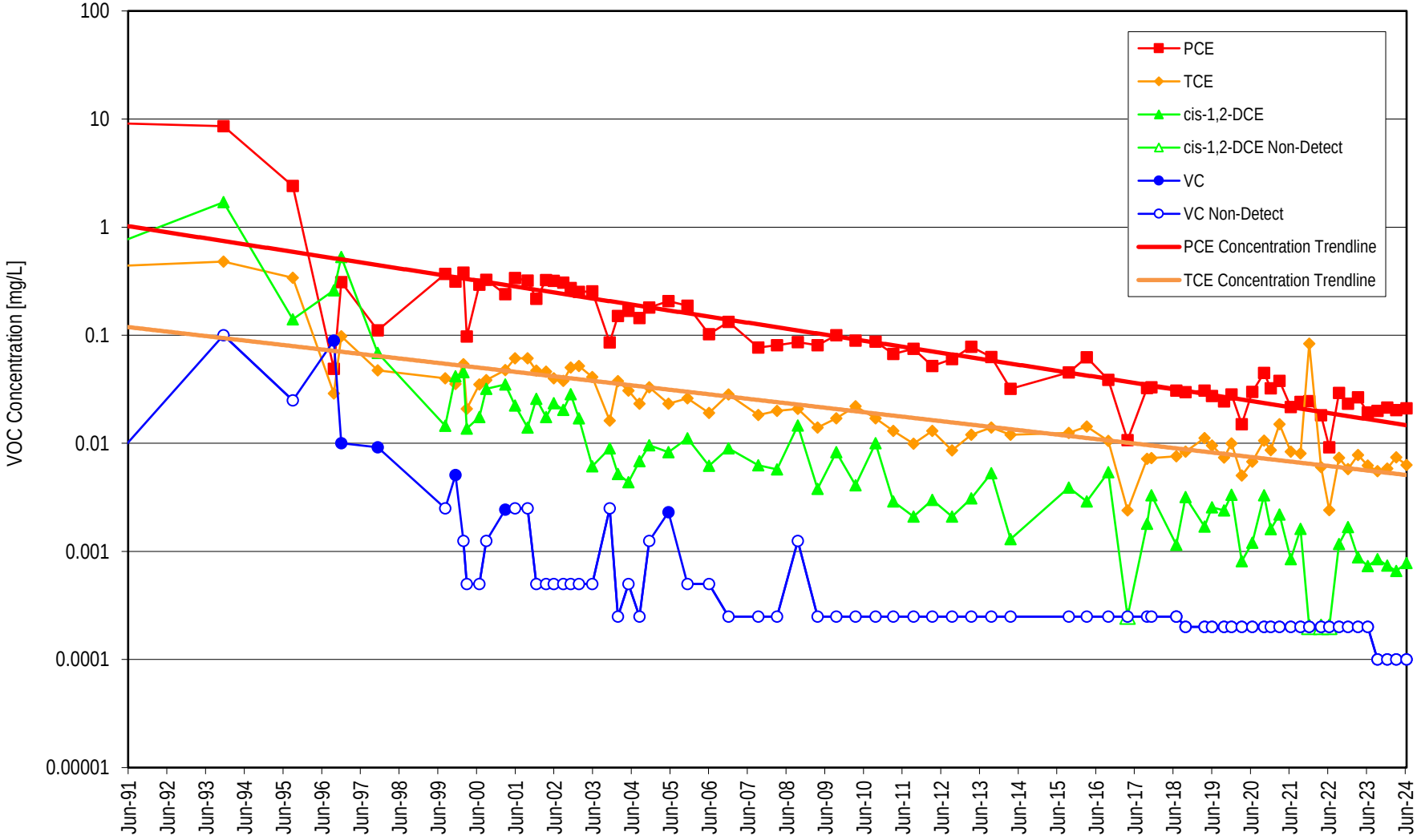


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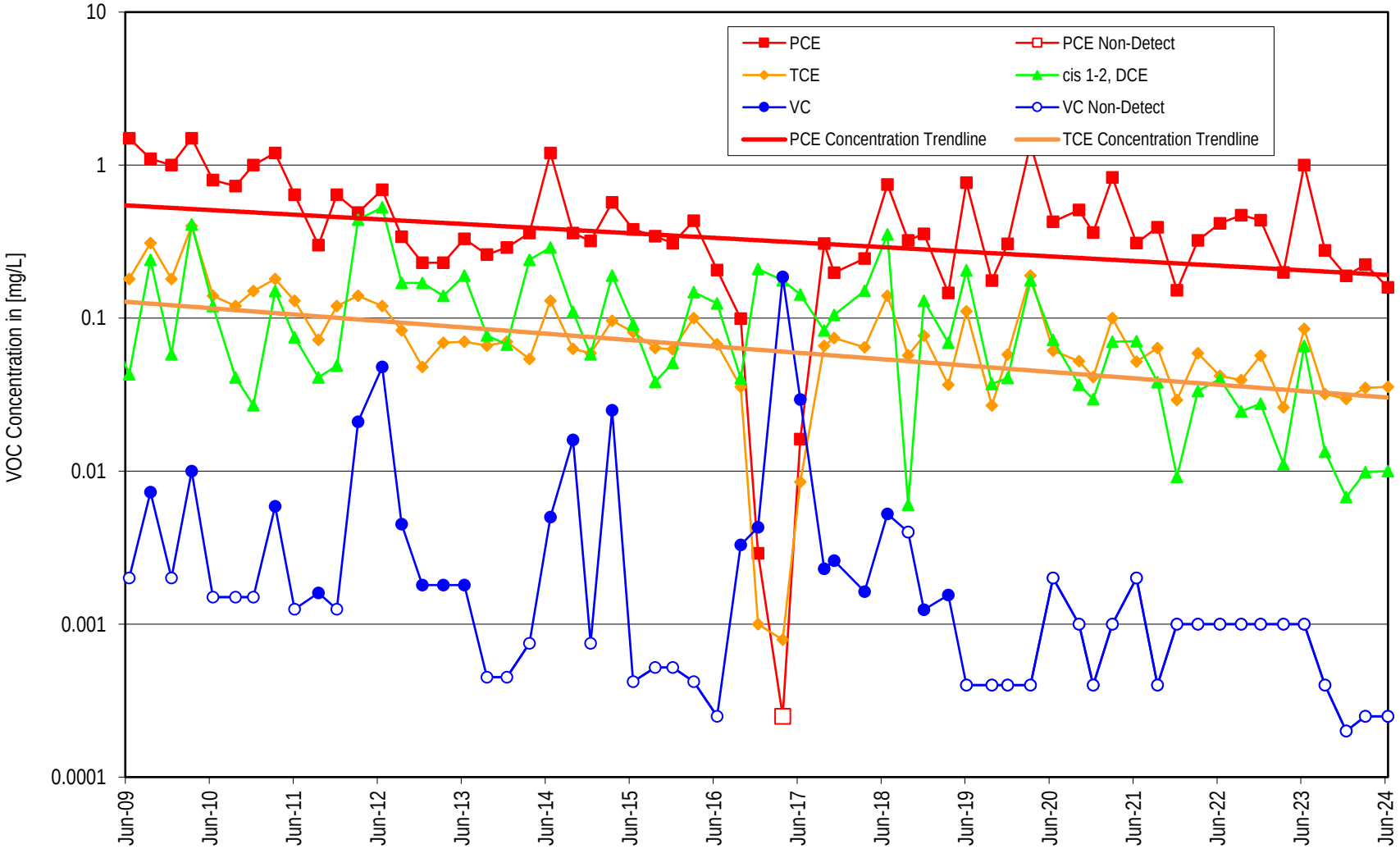
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VOC Concentrations in EW-1



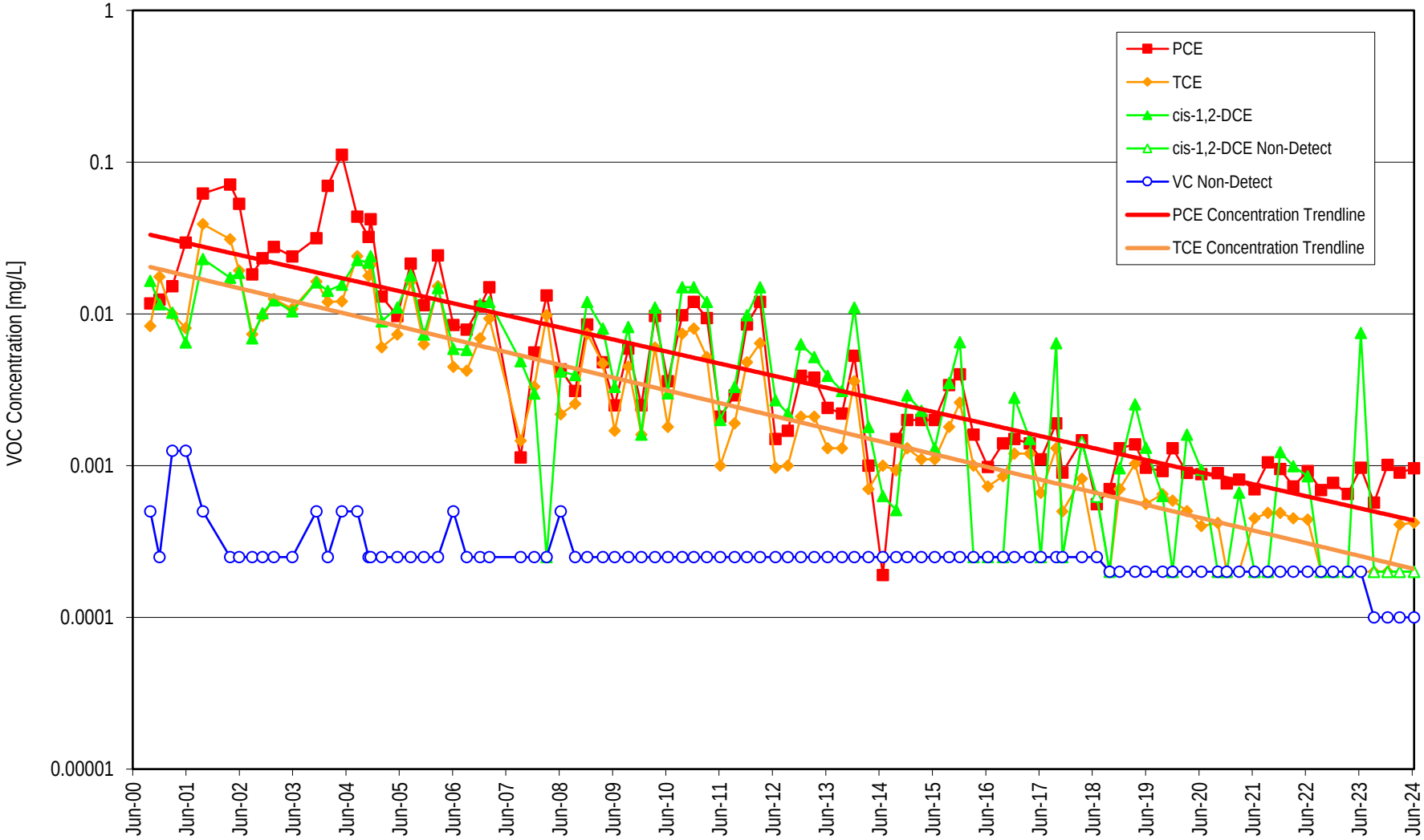
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VOC Concentrations in MP-1



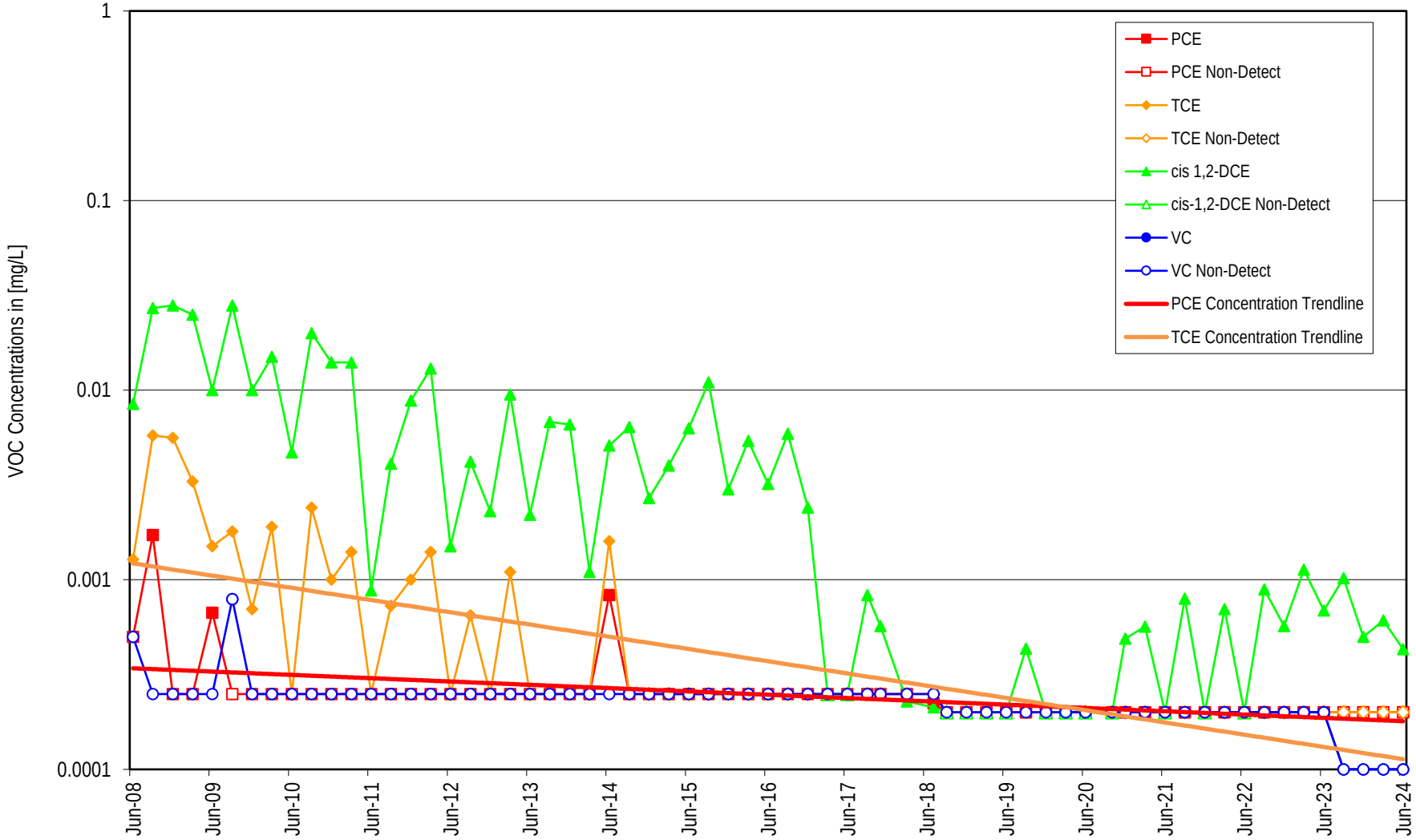
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VOC Concentrations in MW-18i



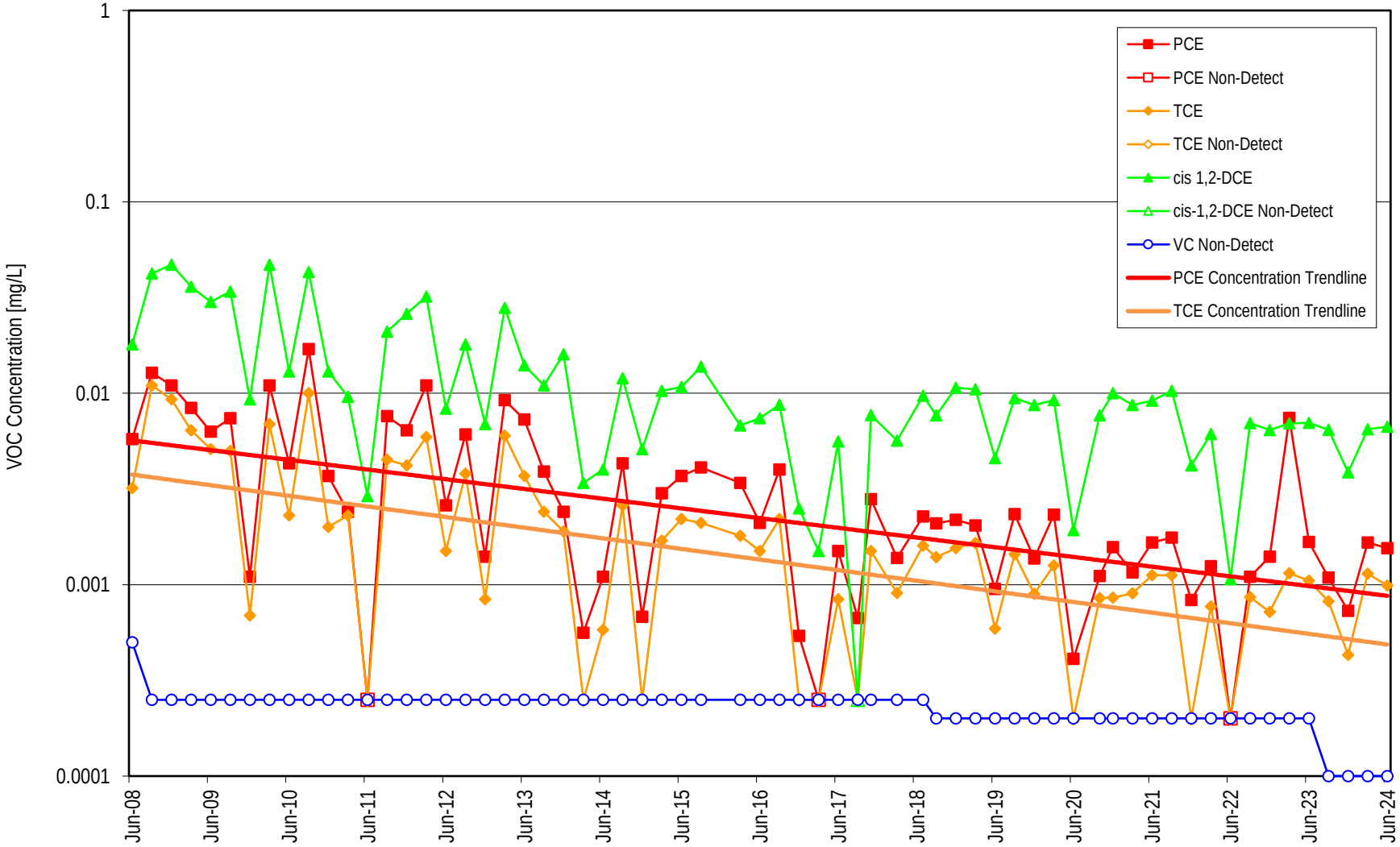
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VOC Concentrations in MW-19i



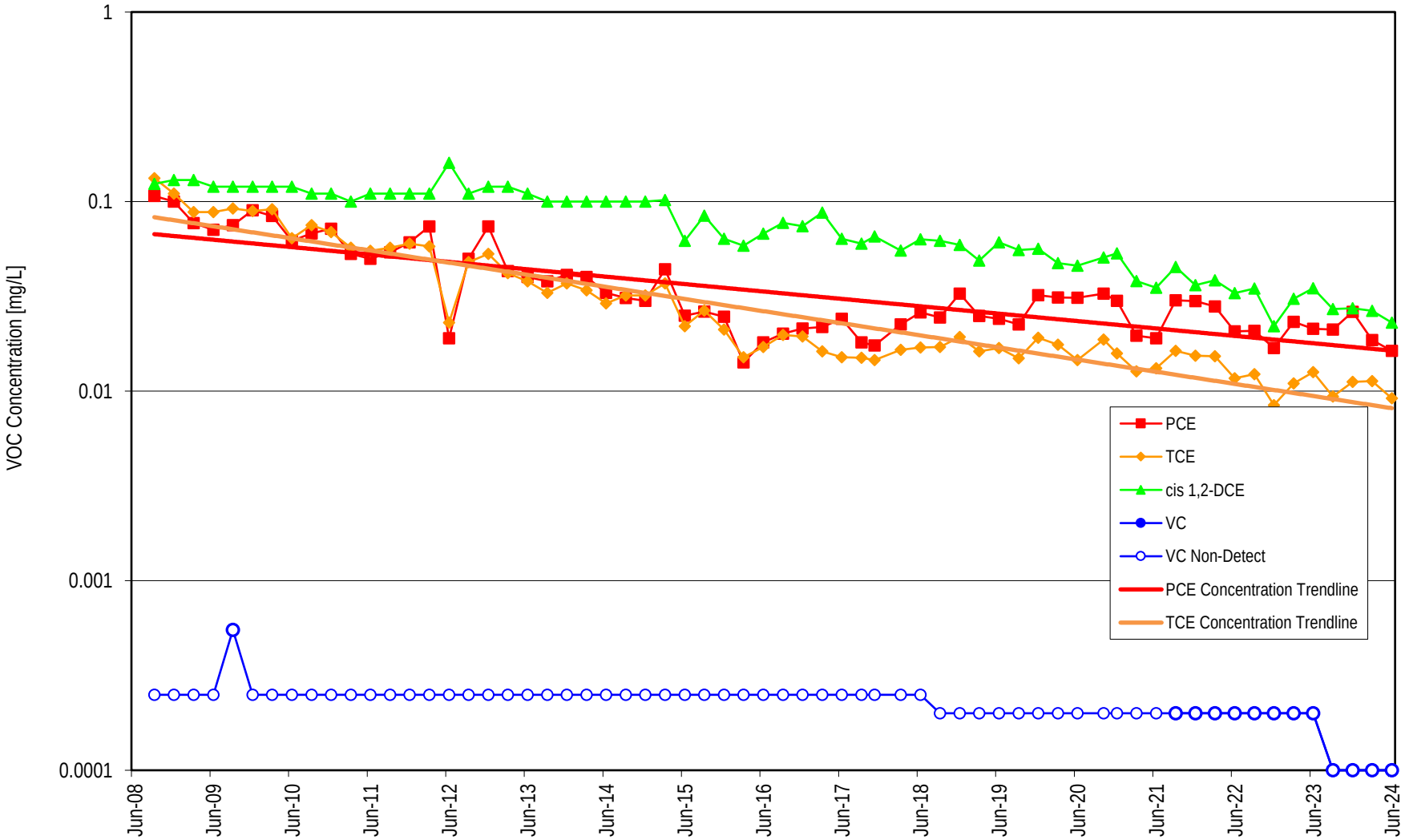
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VOC Concentrations in MW-20i



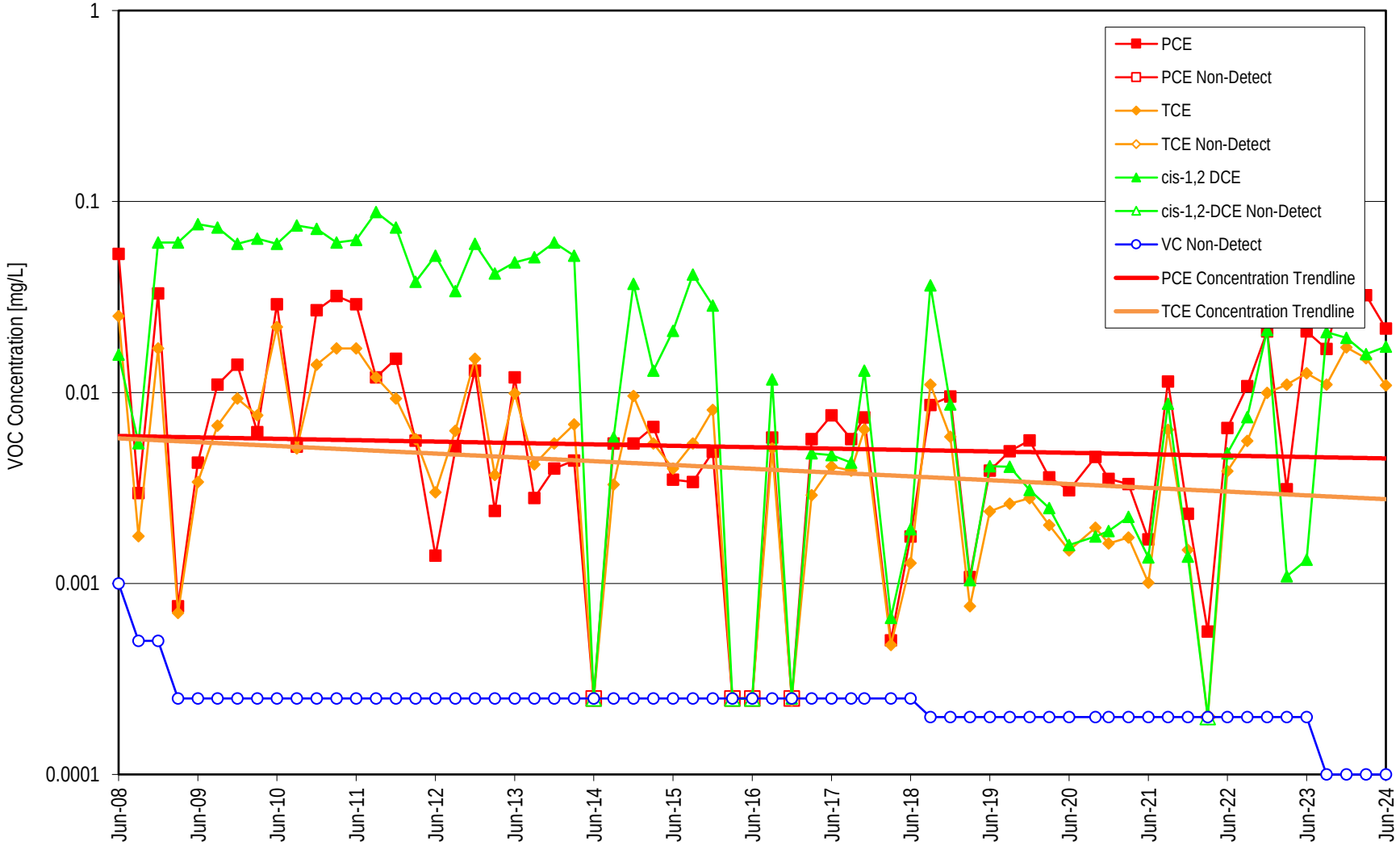
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VOC Concentrations in MW-21i-40



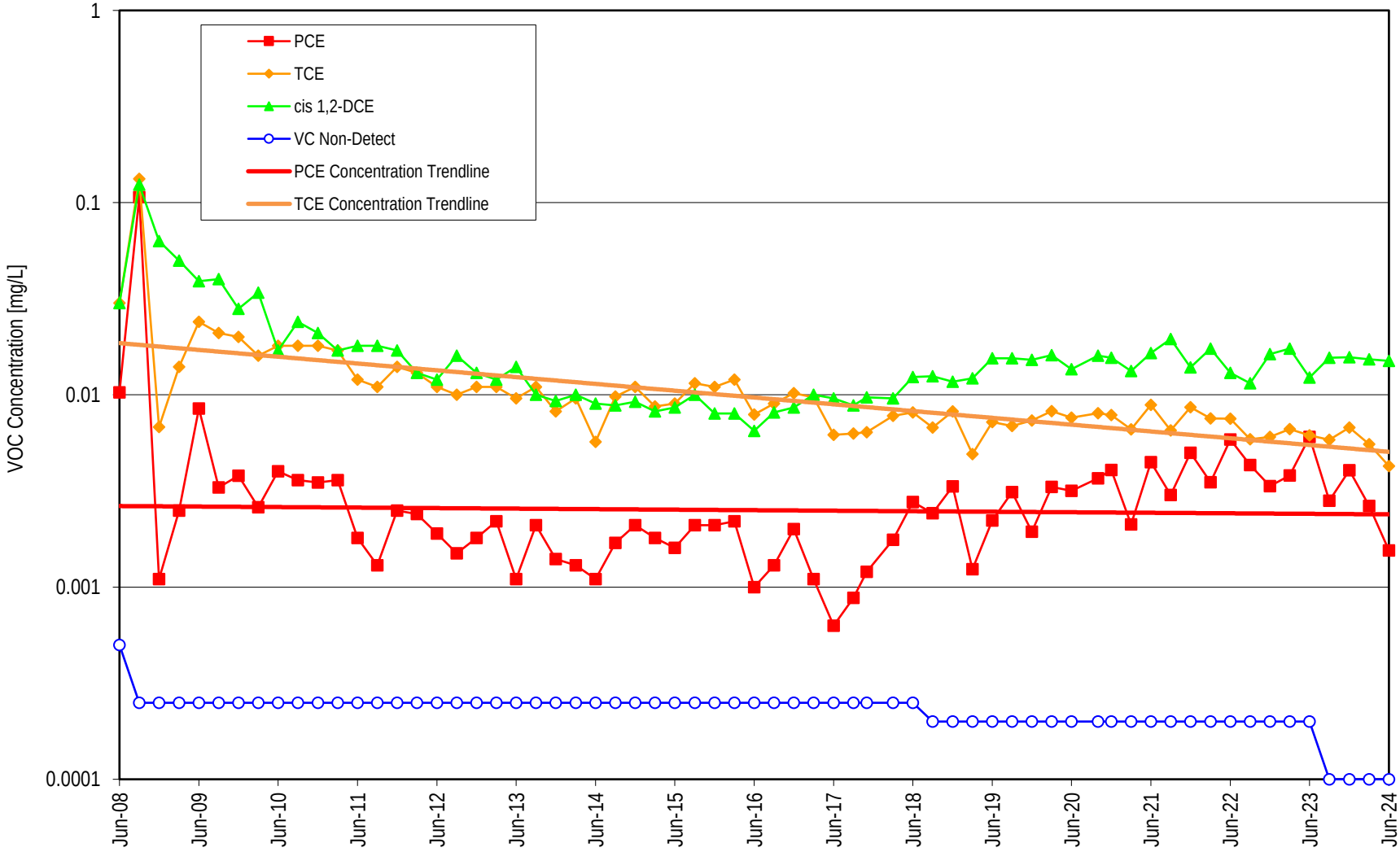
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VOC Concentrations in MW-21i-105

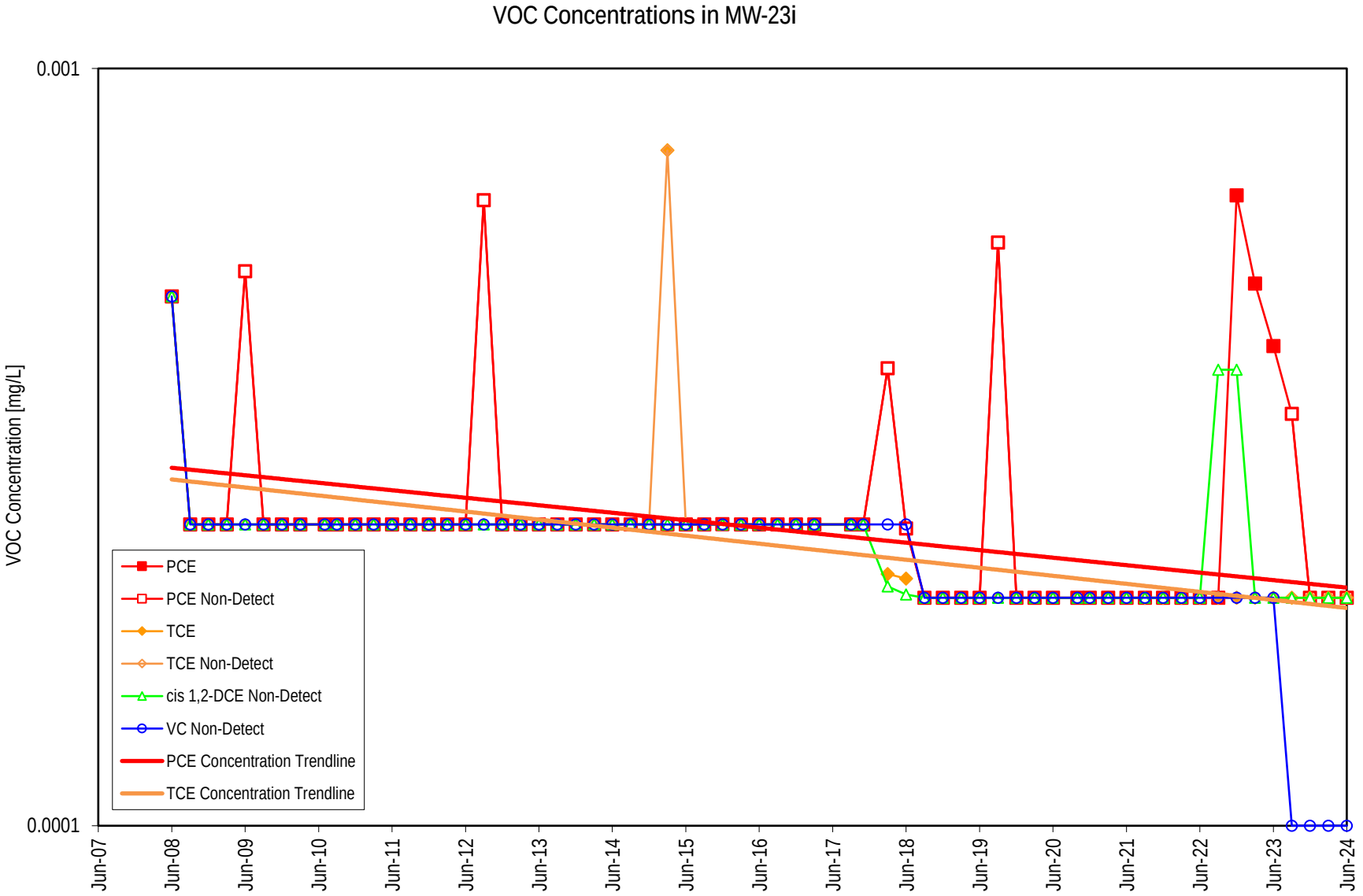


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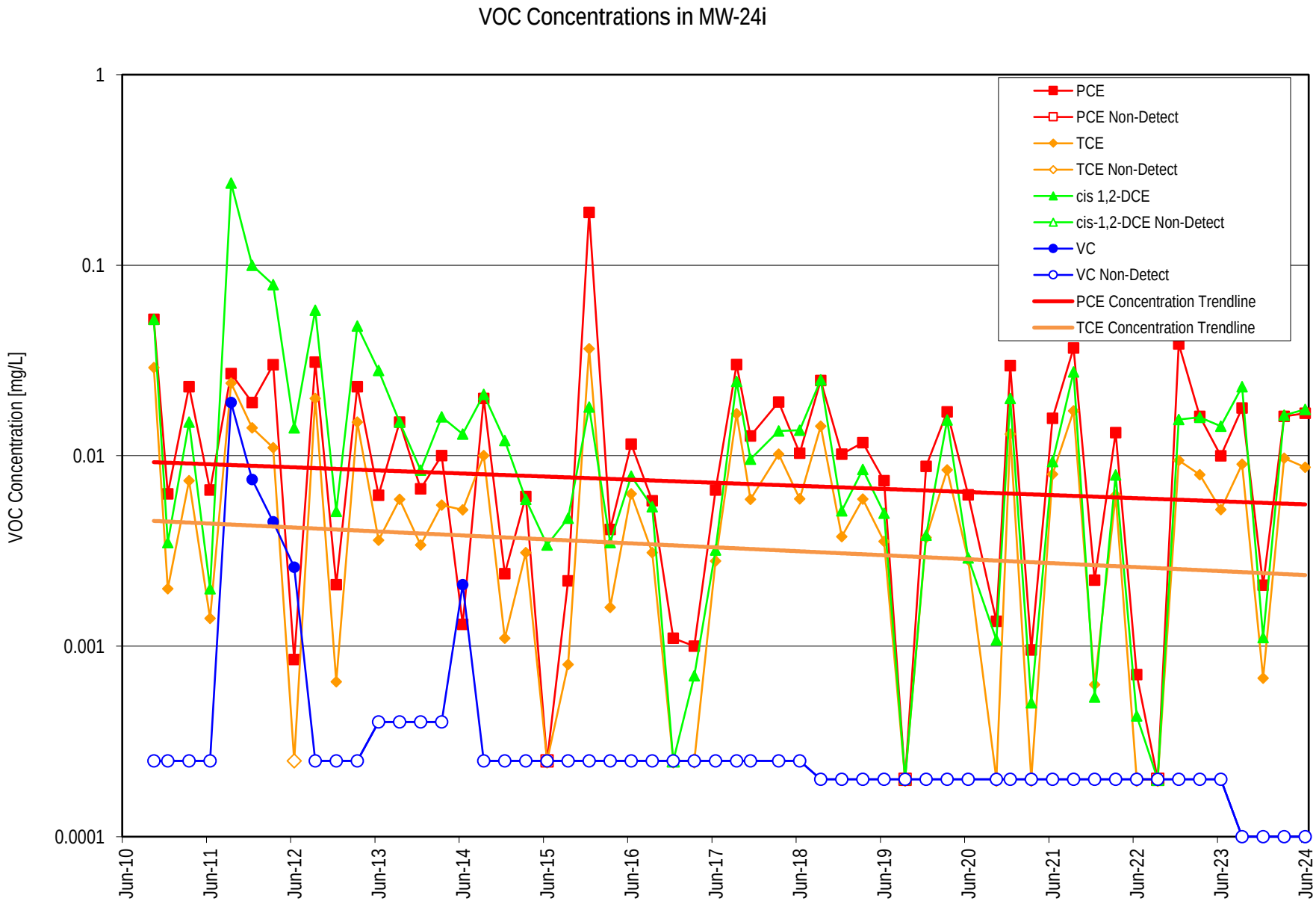
VOC Concentrations in MW-22i



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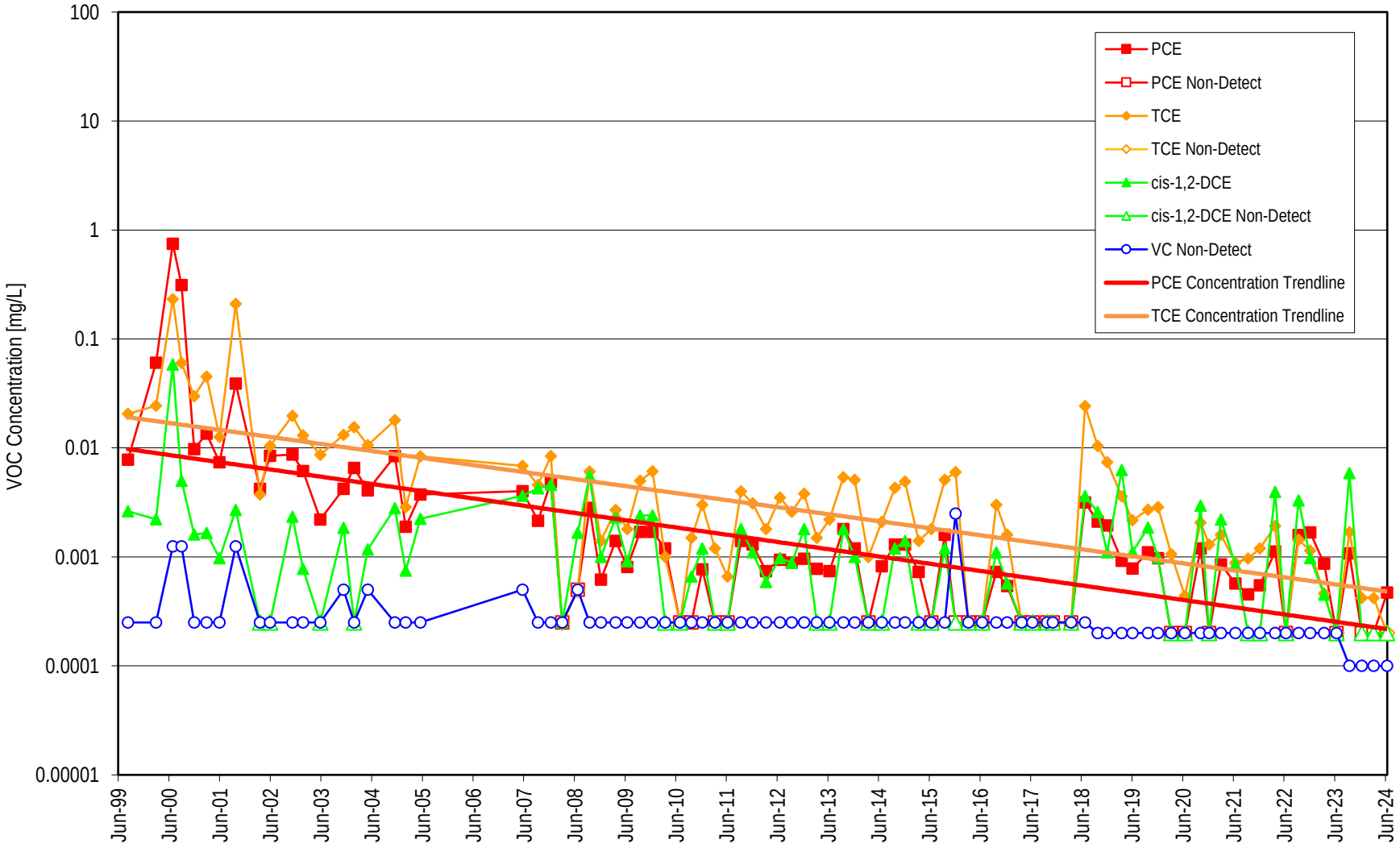


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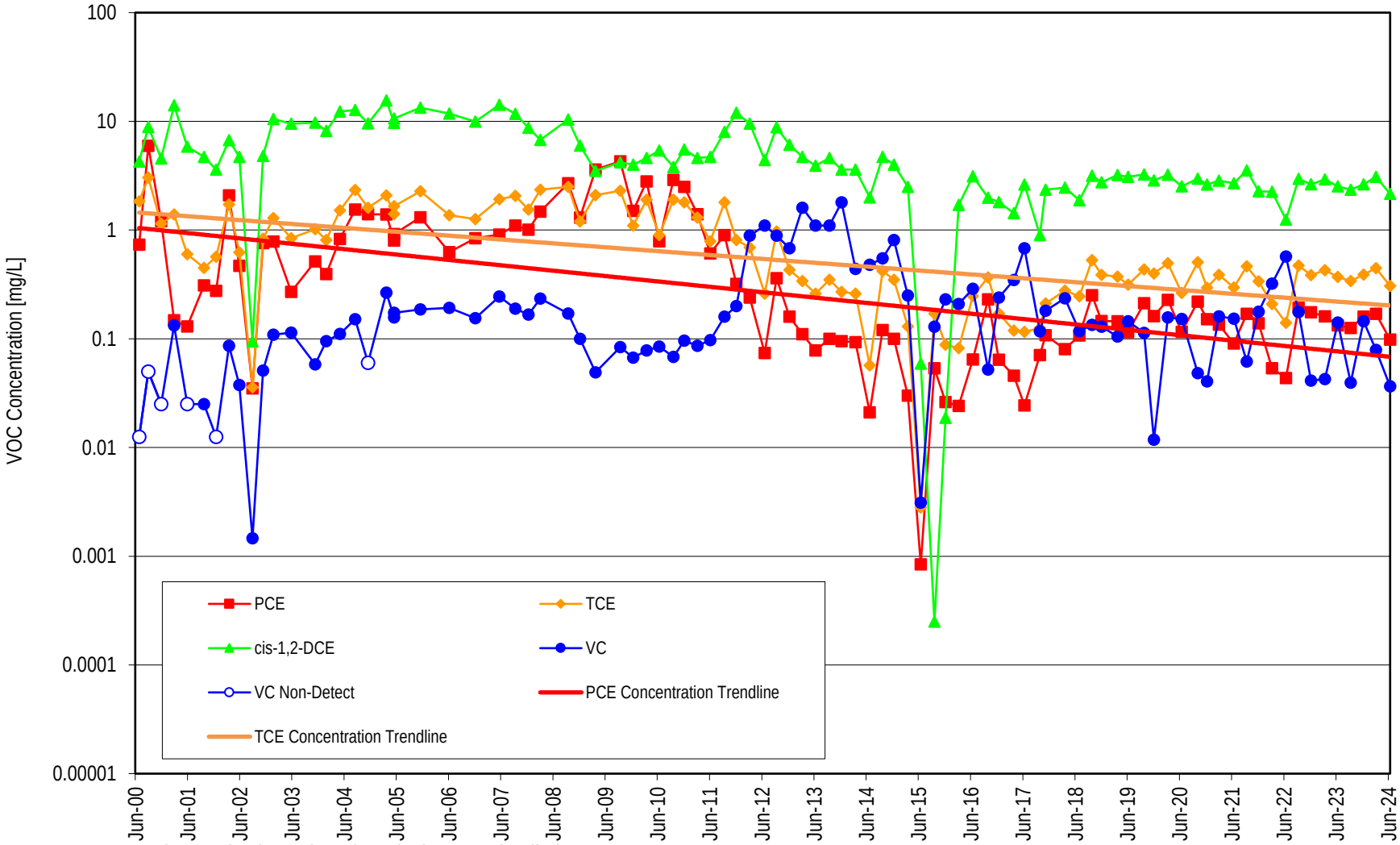
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VOC Concentrations in S-1



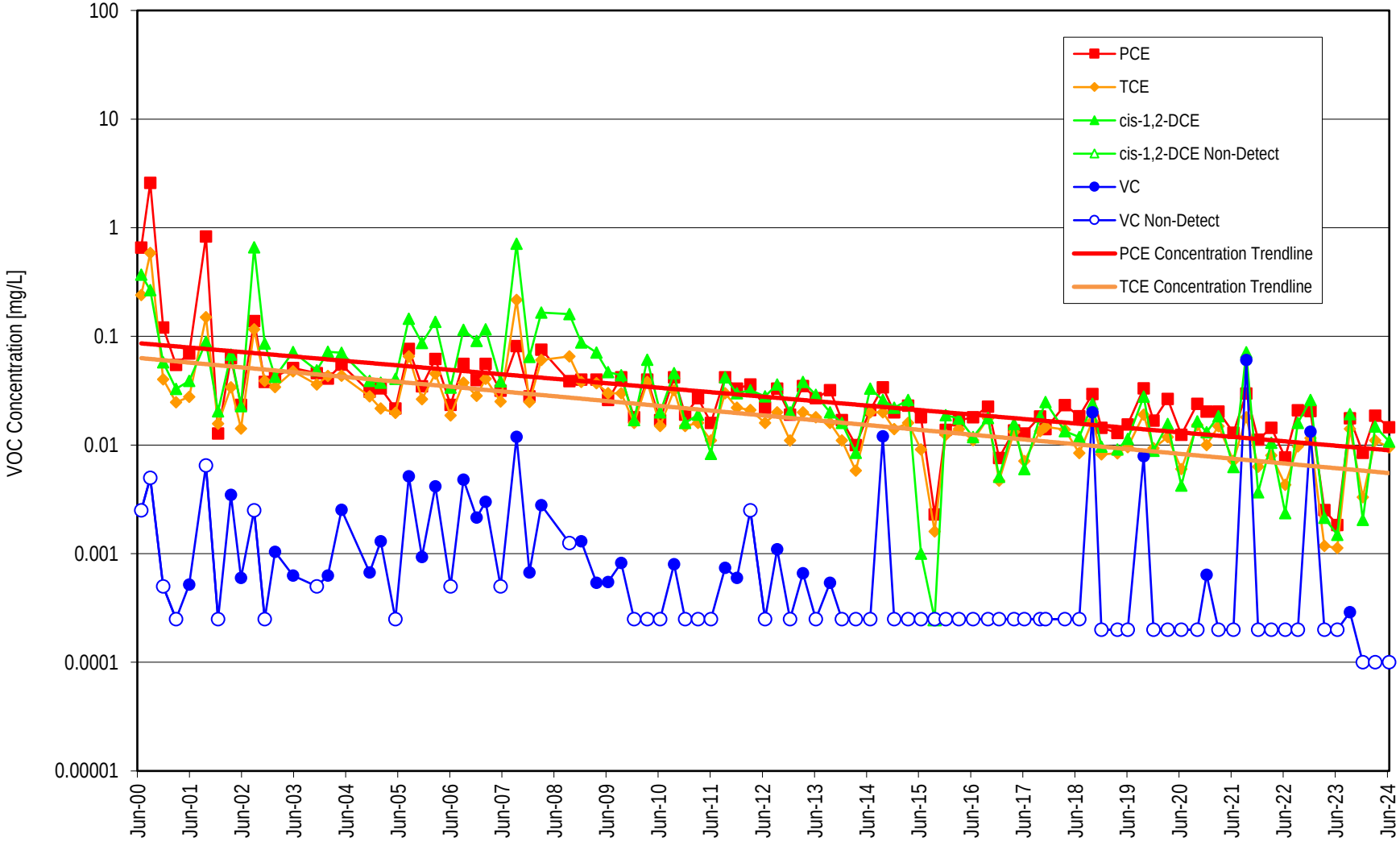
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VOC Concentrations in MGMS1-43



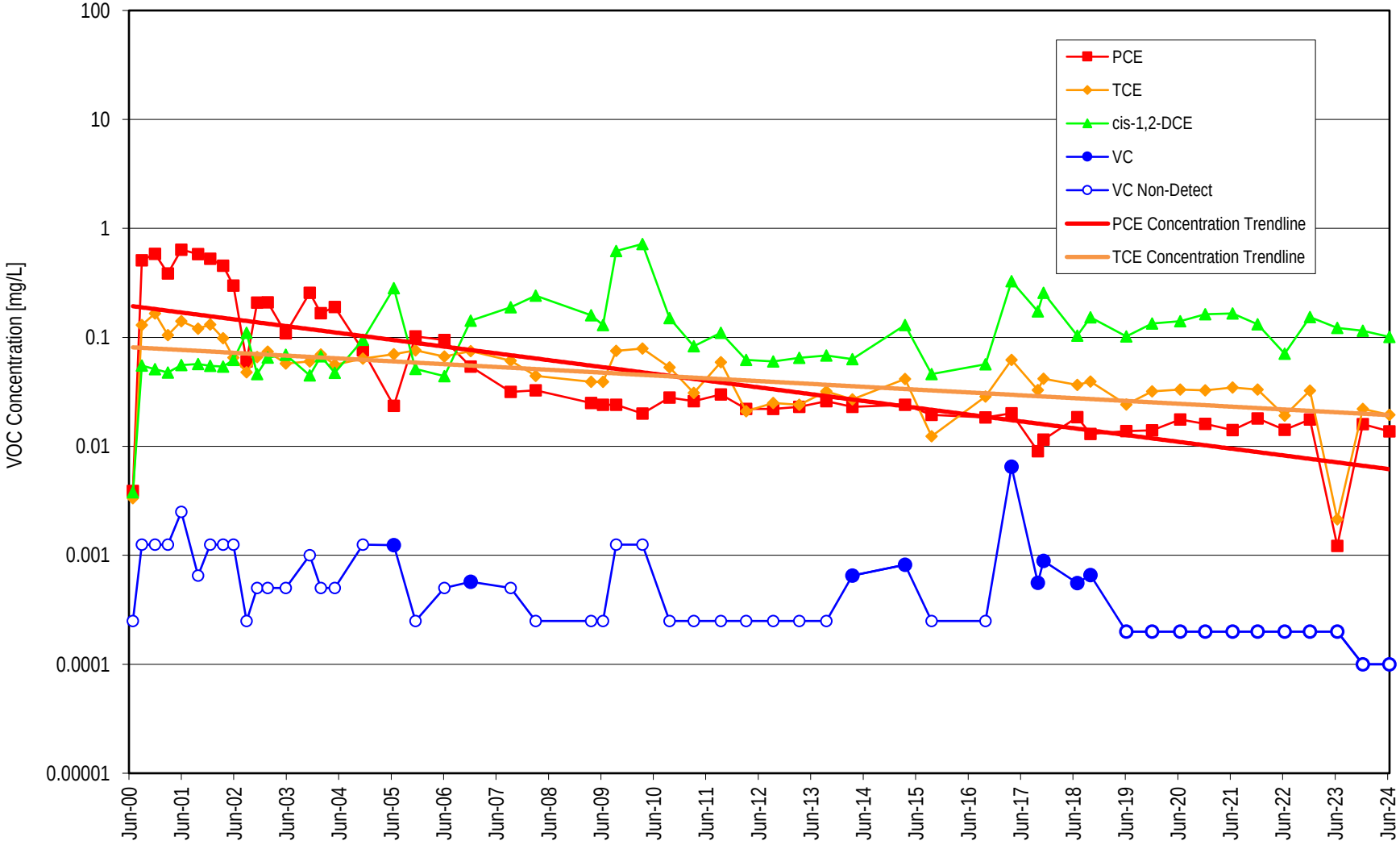
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VOC Concentrations in MGMS1-60



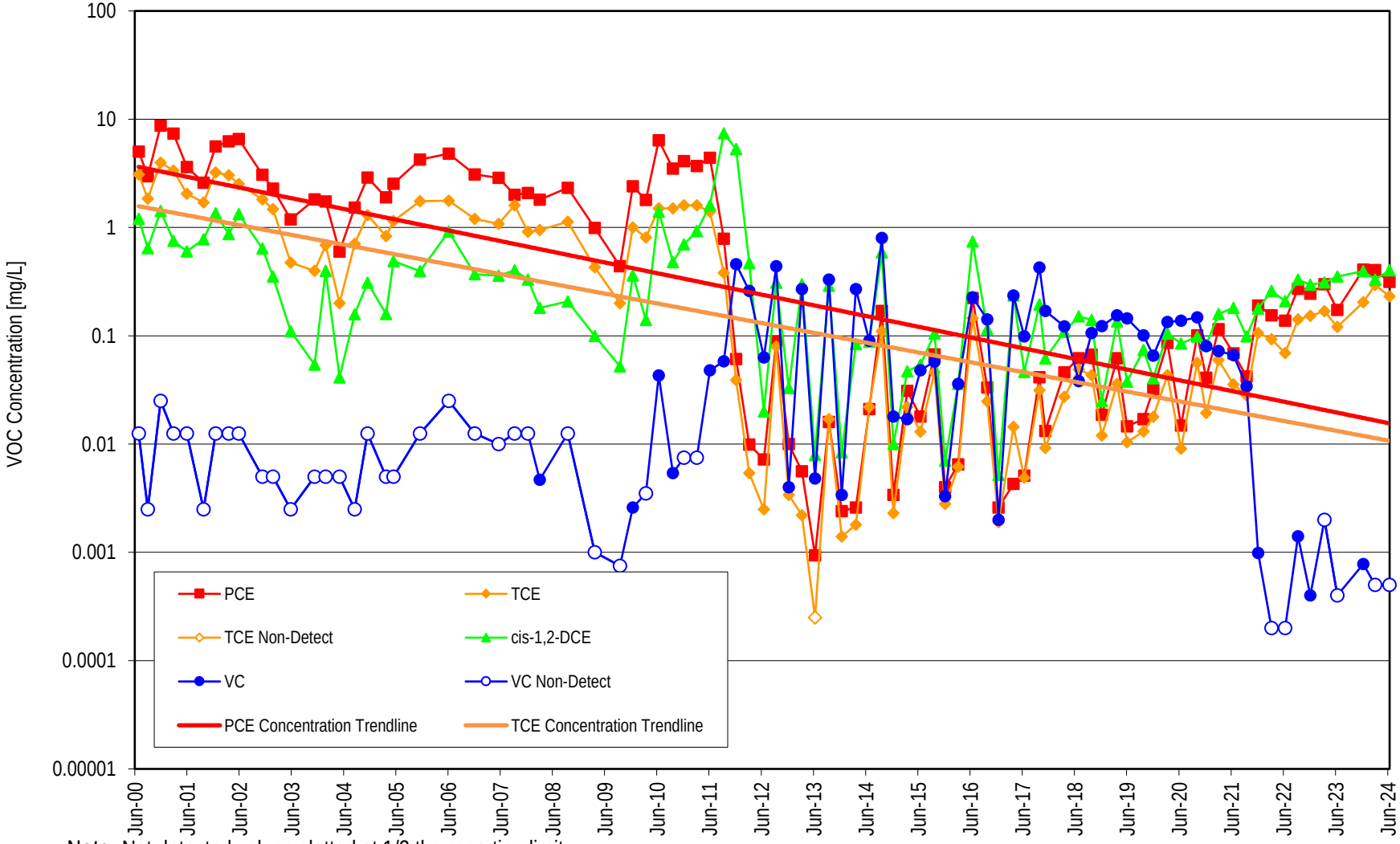
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VOC Concentrations in MGMS1-110



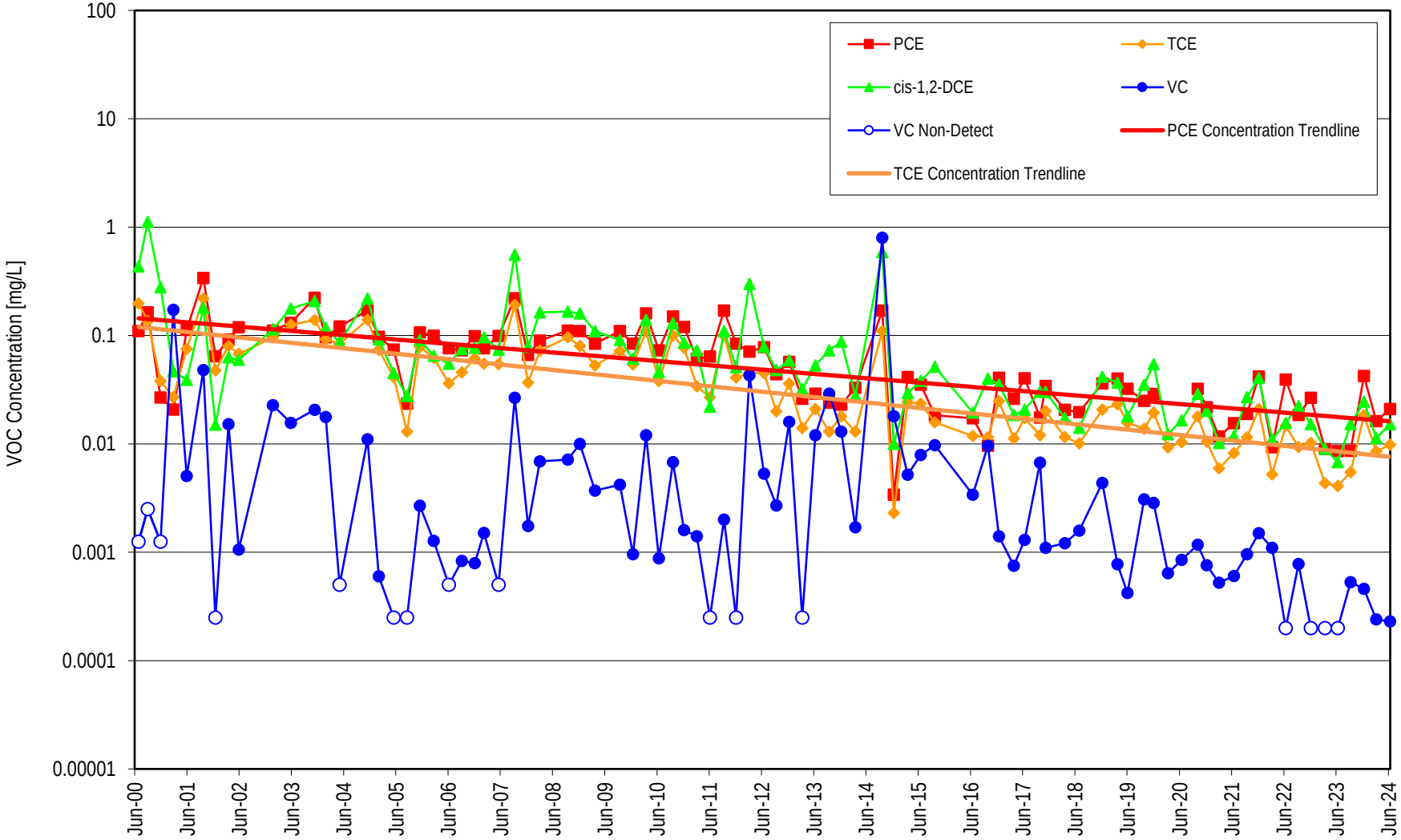
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VOC Concentrations in MGMS2-40



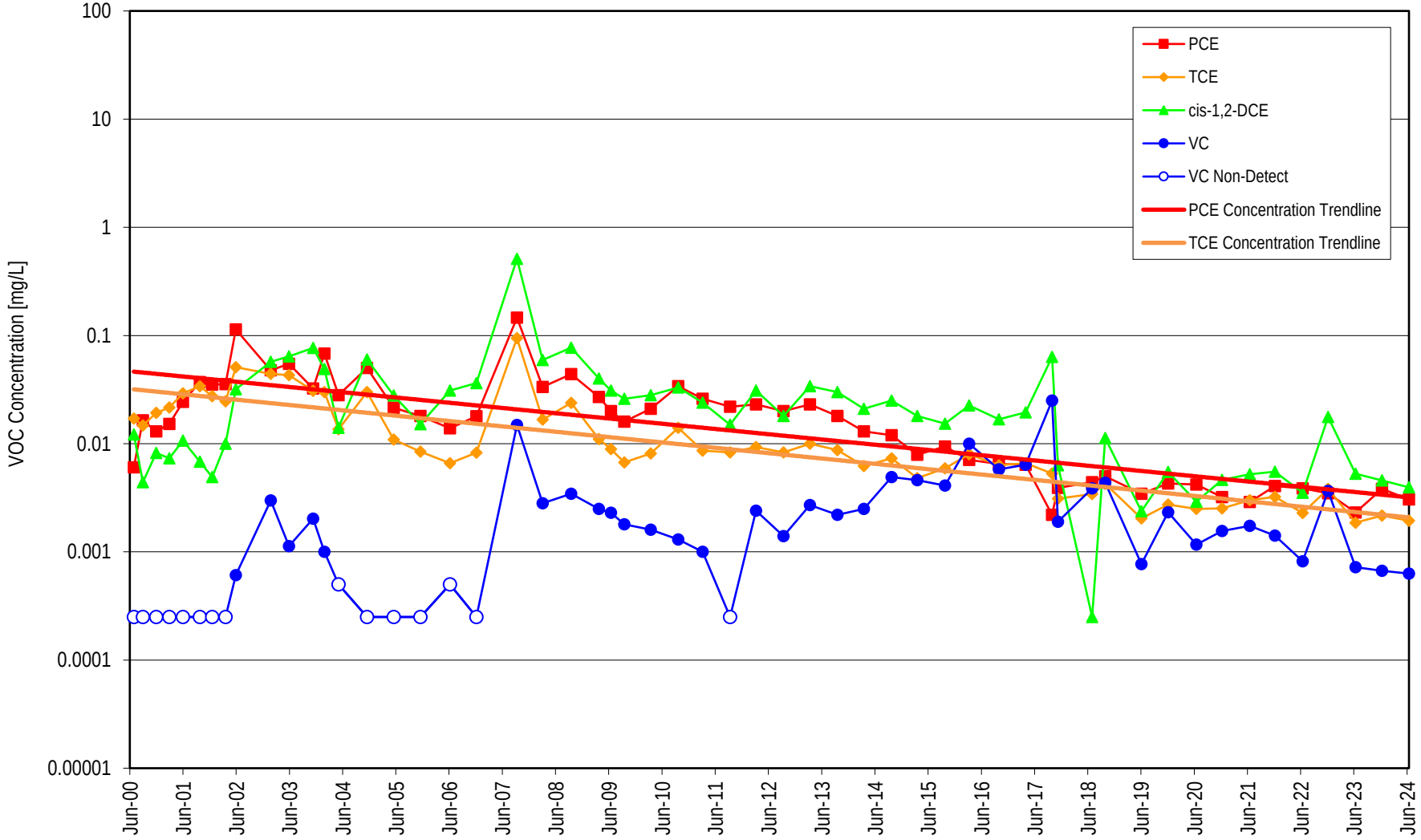
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VOC Concentrations in MGMS2-60



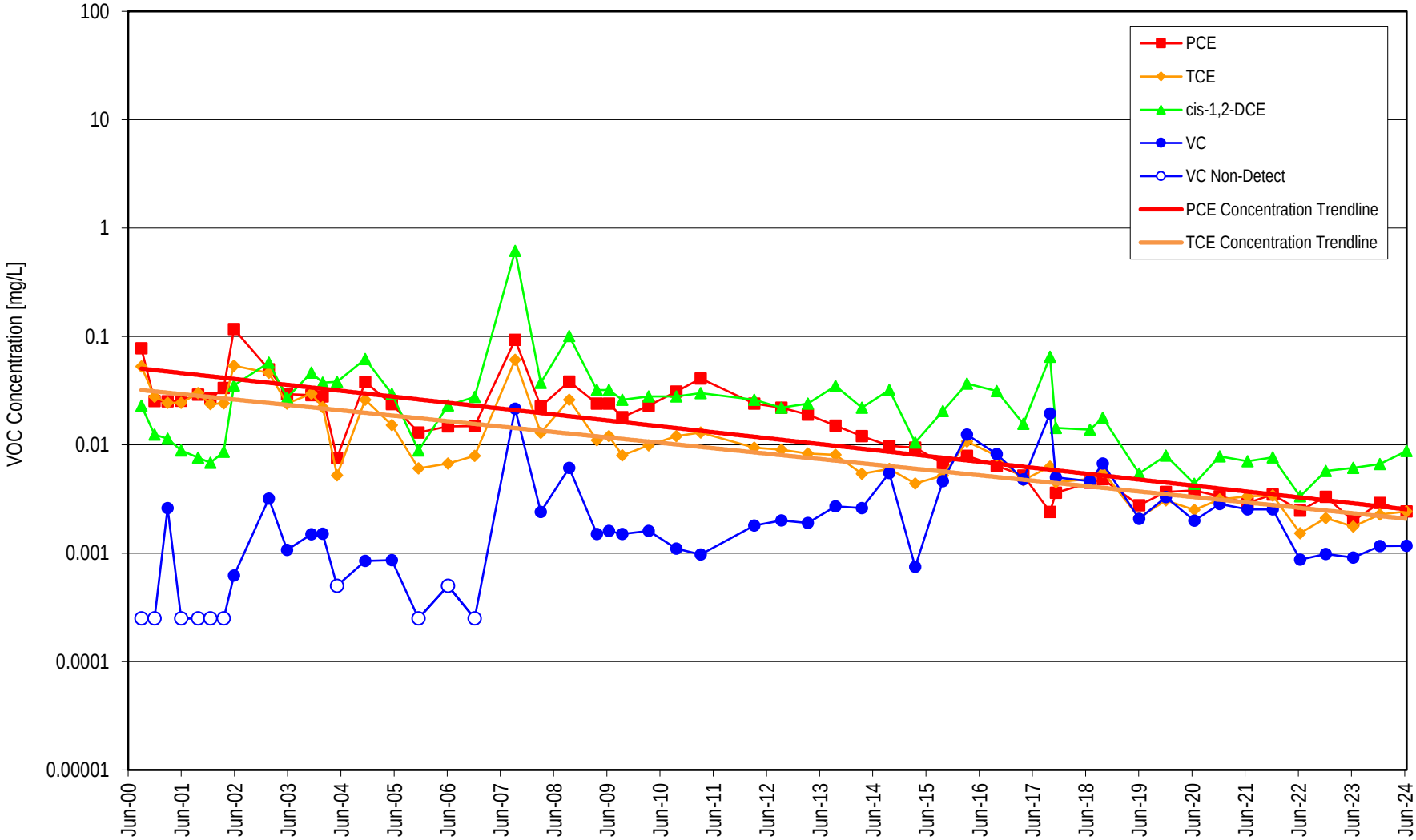
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VOC Concentrations in MGMS2-110

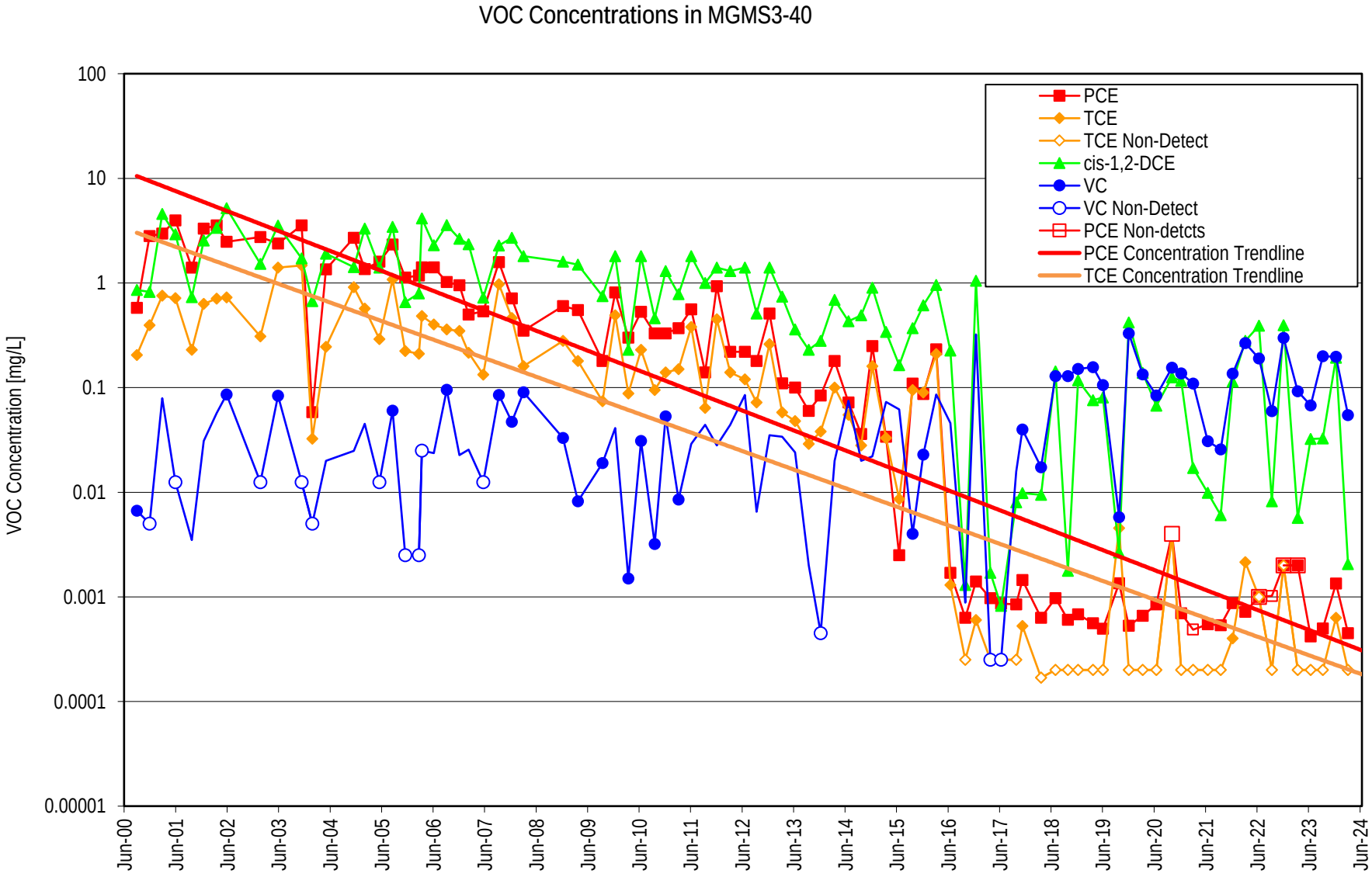


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VOC Concentrations in MGMS2-132

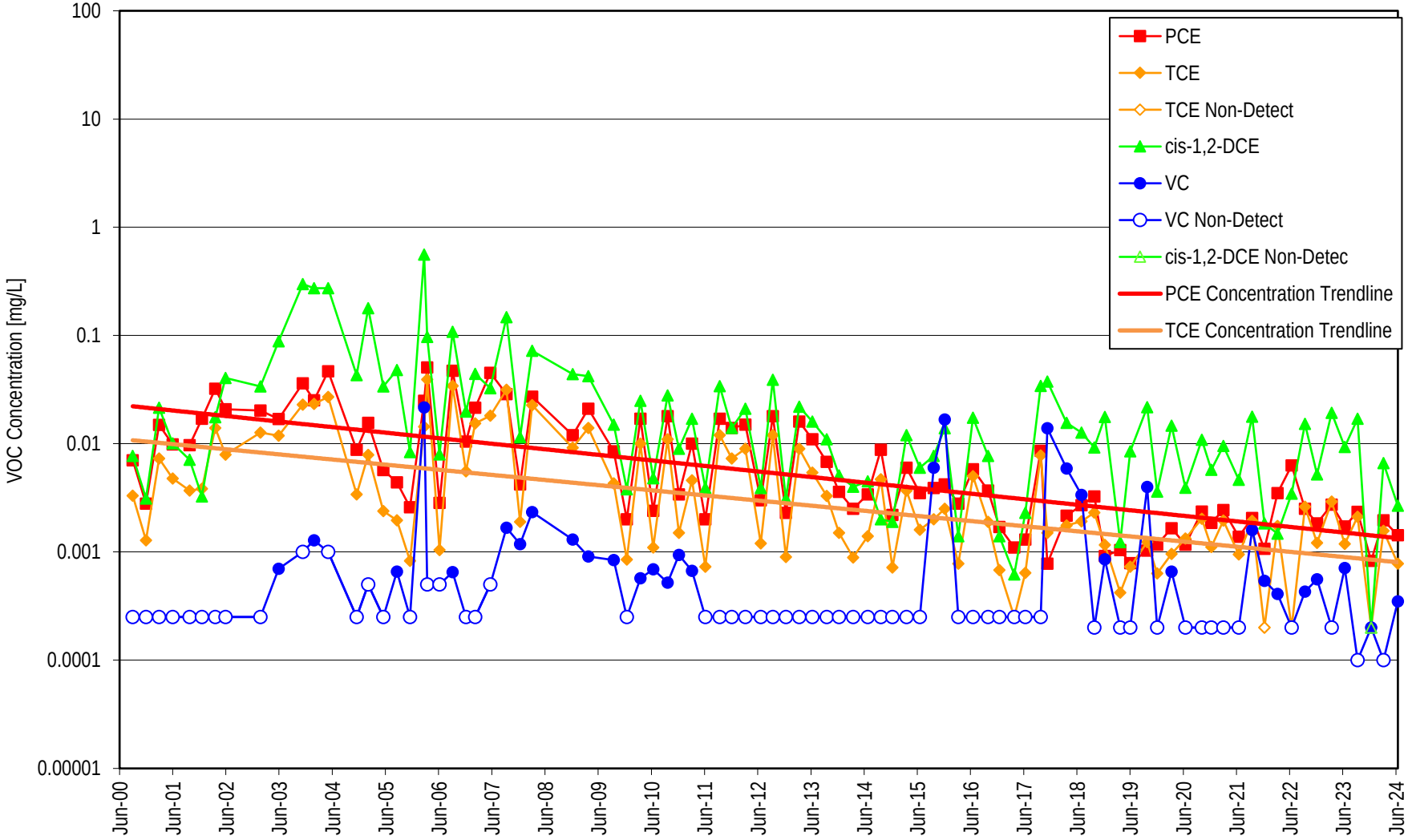


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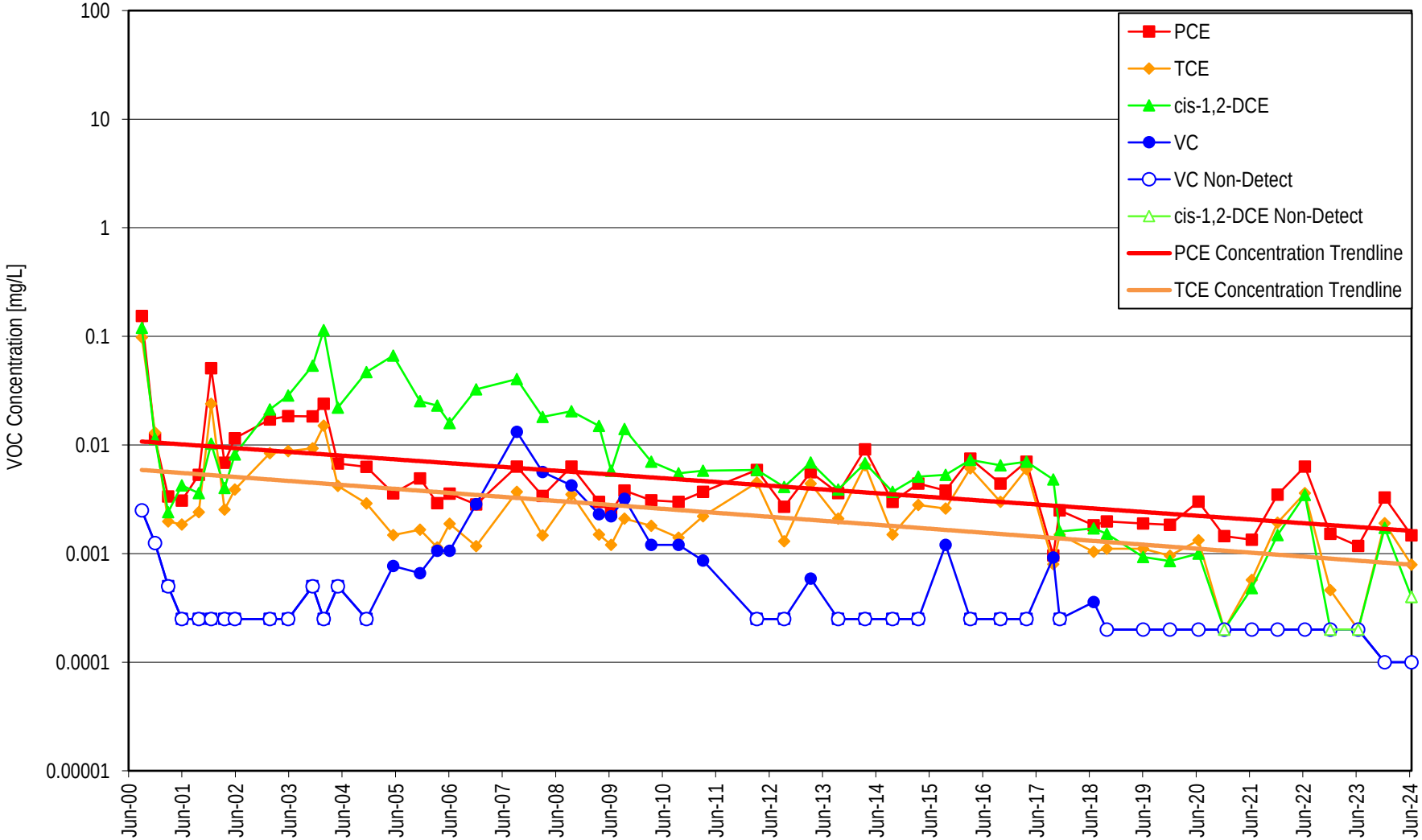
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VOC Concentrations in MGMS3-60



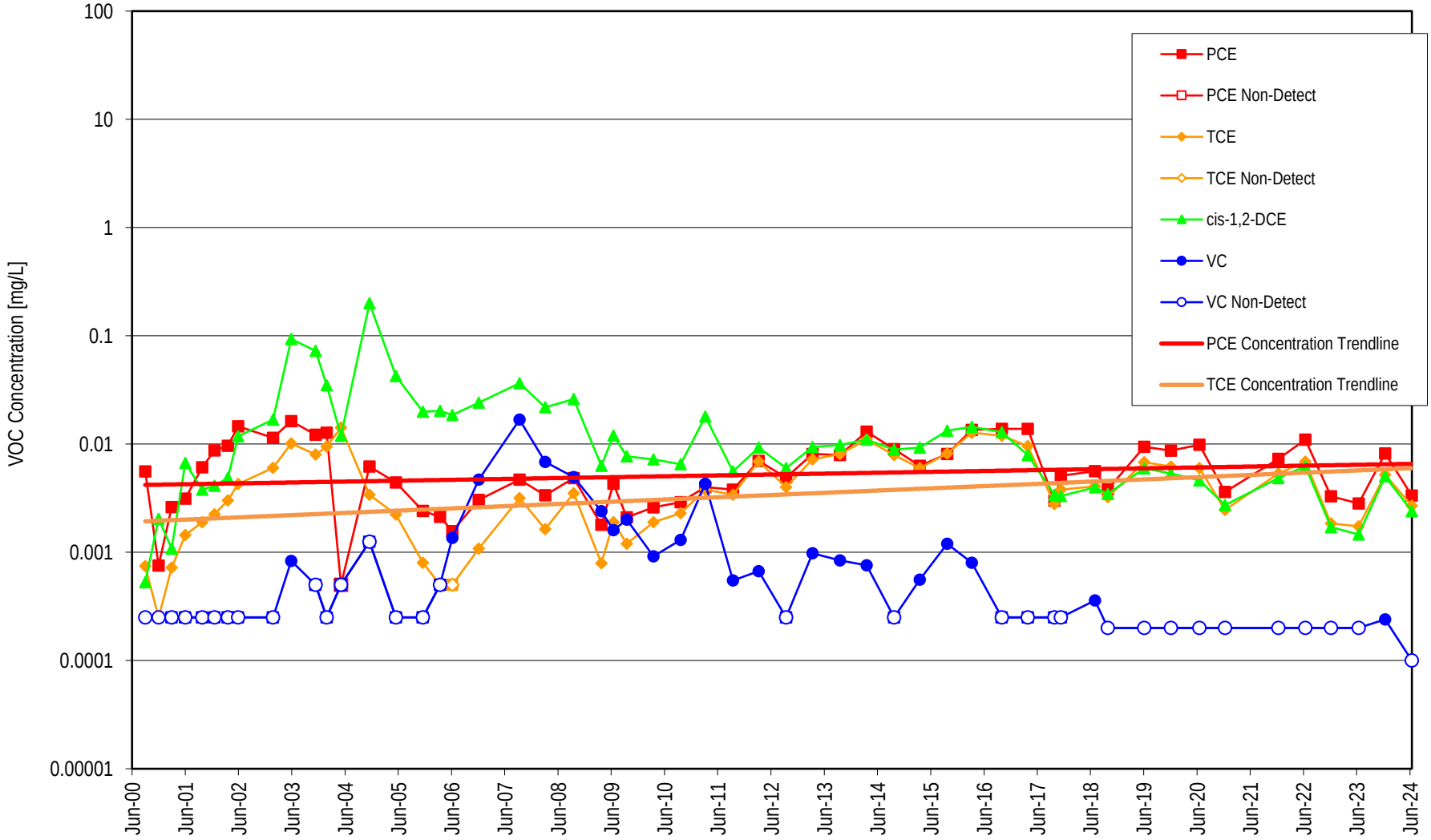
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VOC Concentrations in MGMS3-101



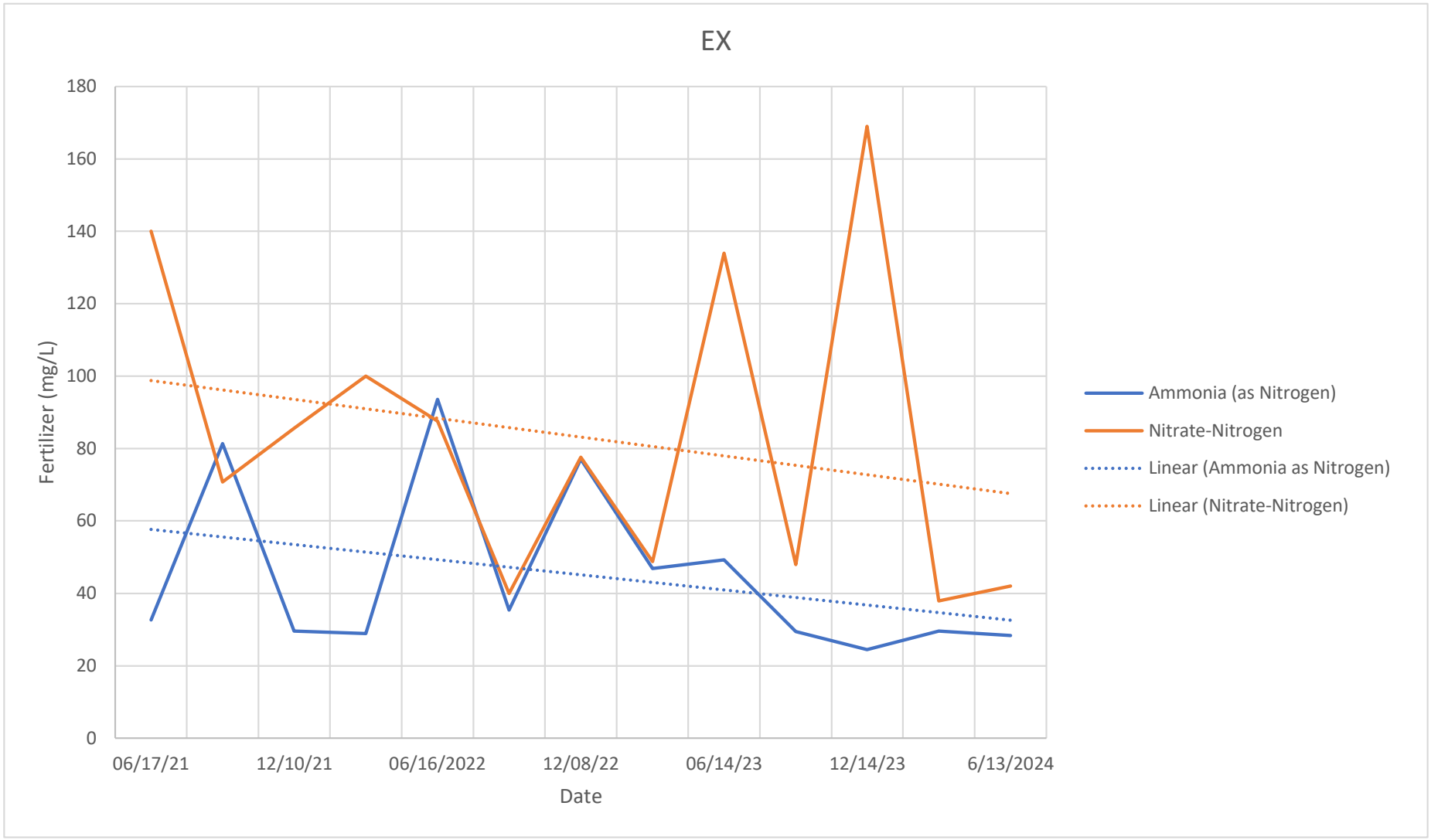
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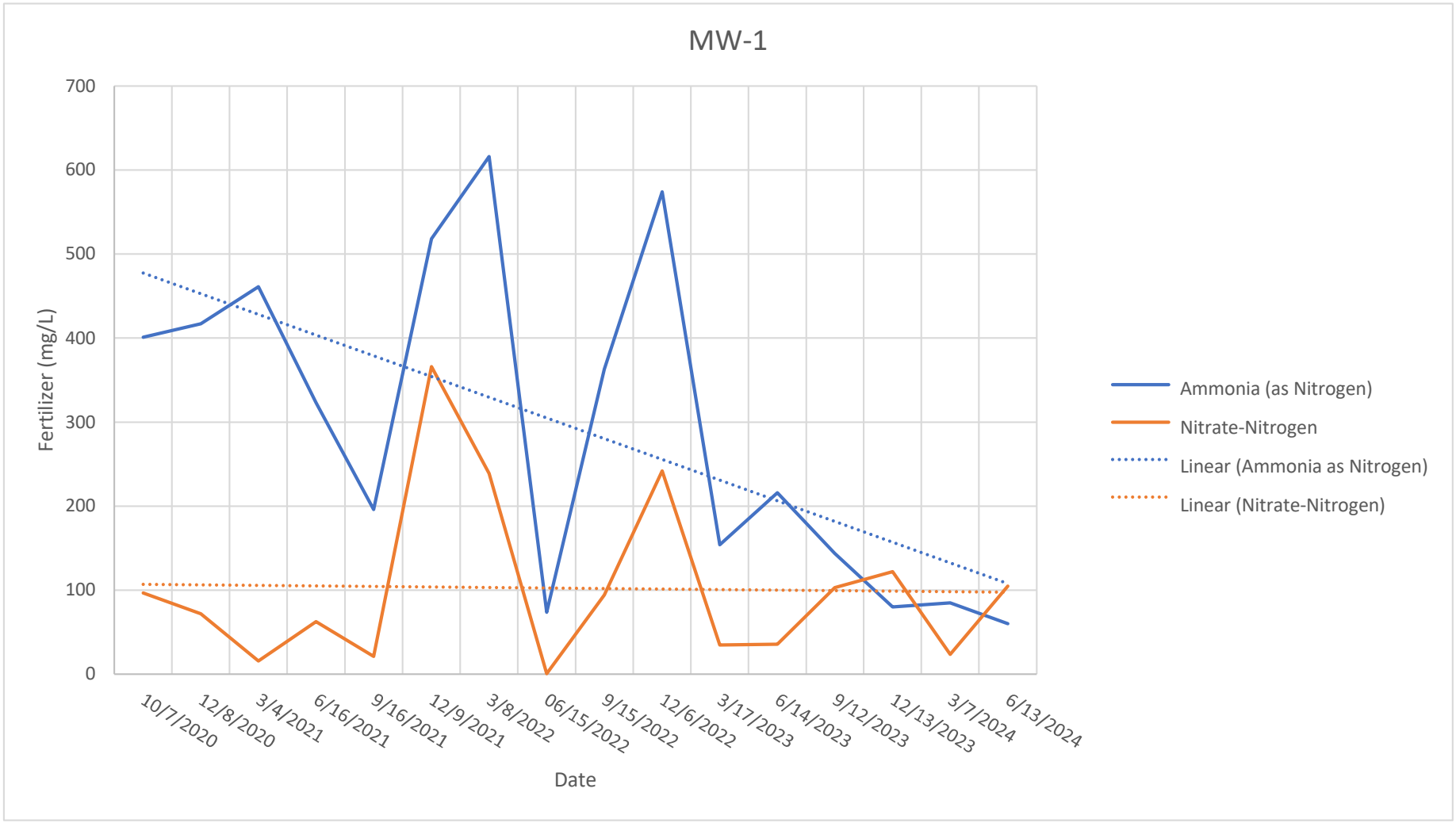
VOC Concentrations in MGMS3-132

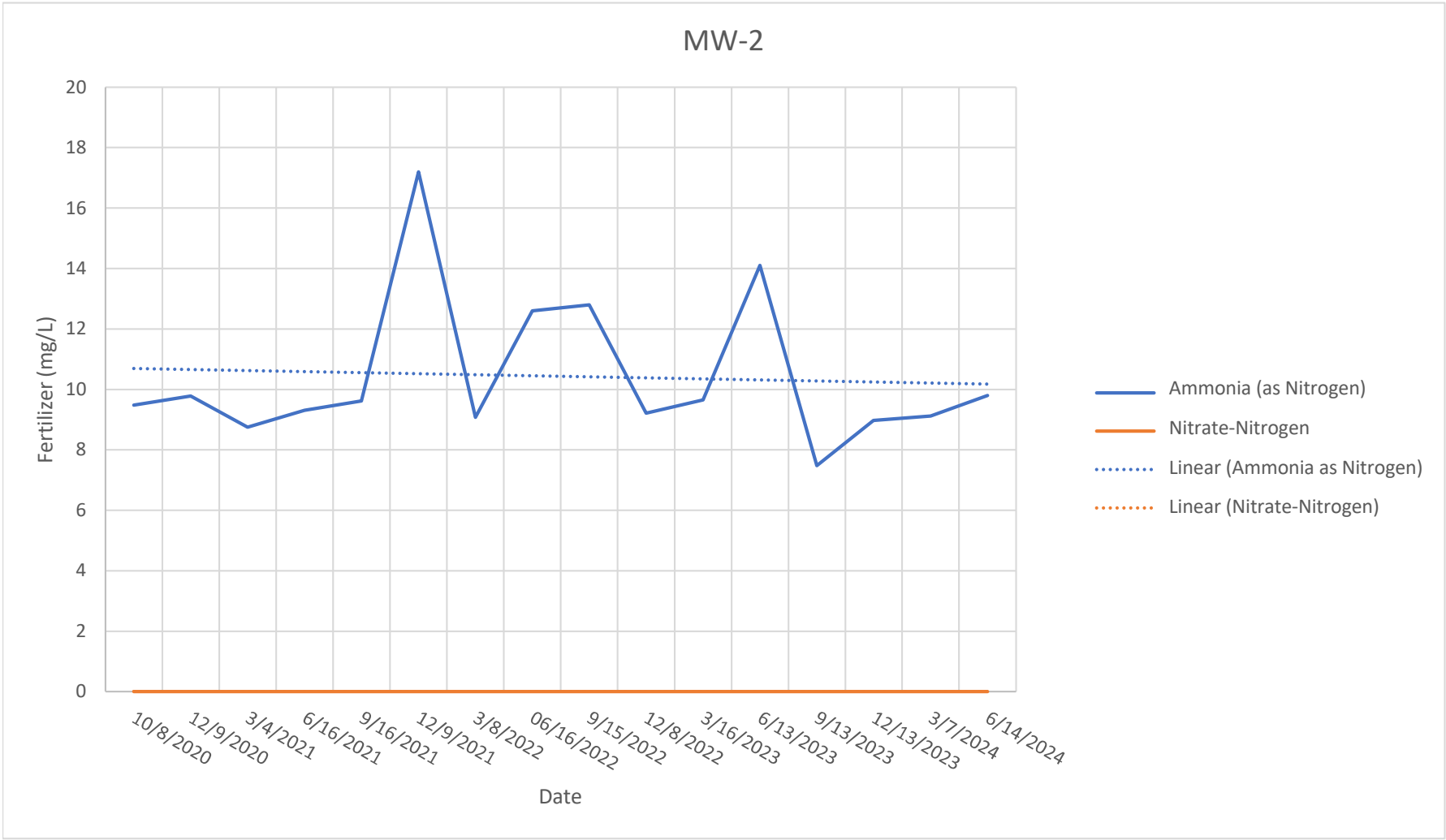


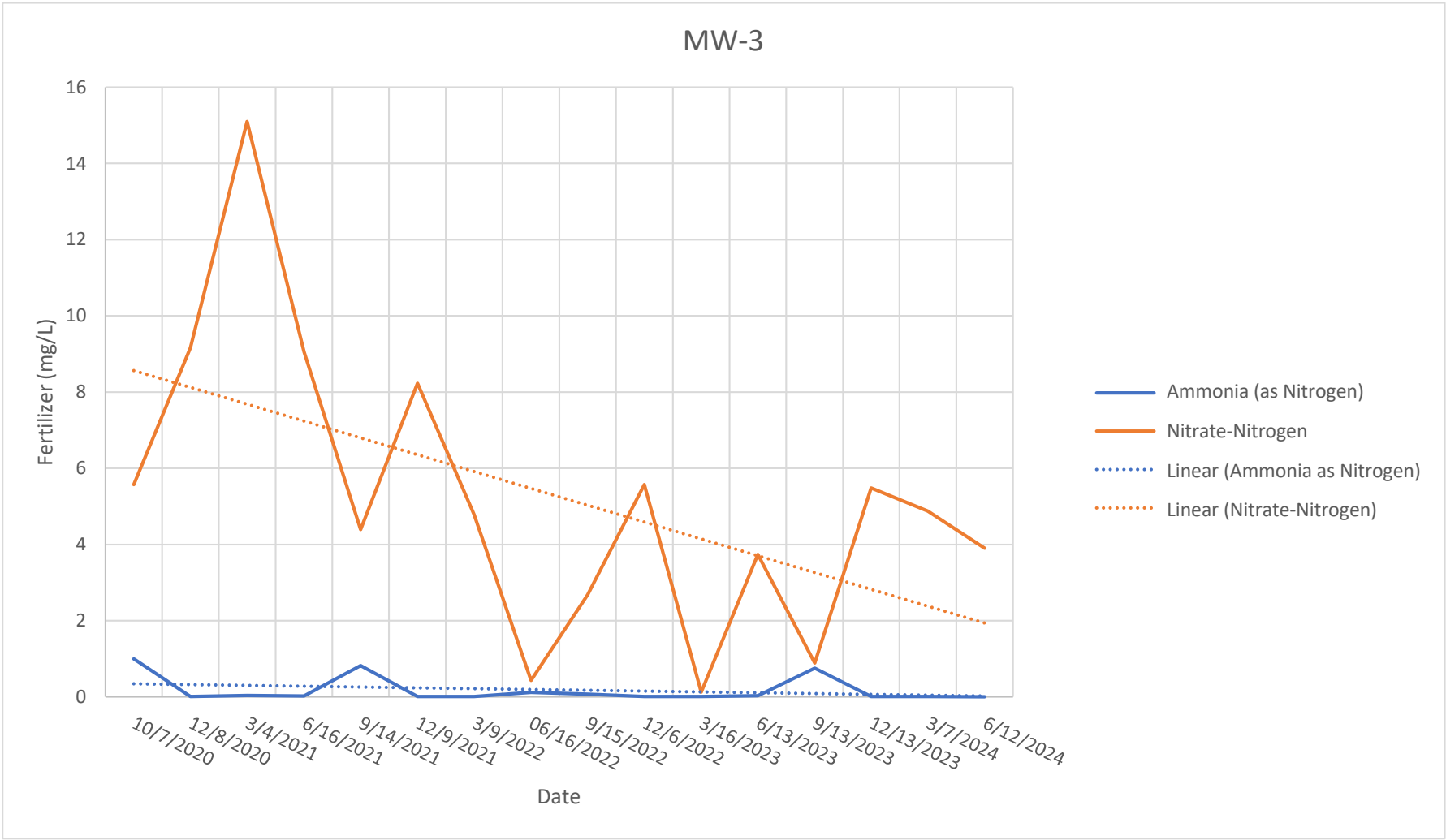
Note: Not detected values plotted at 1/2 the reporting limit.

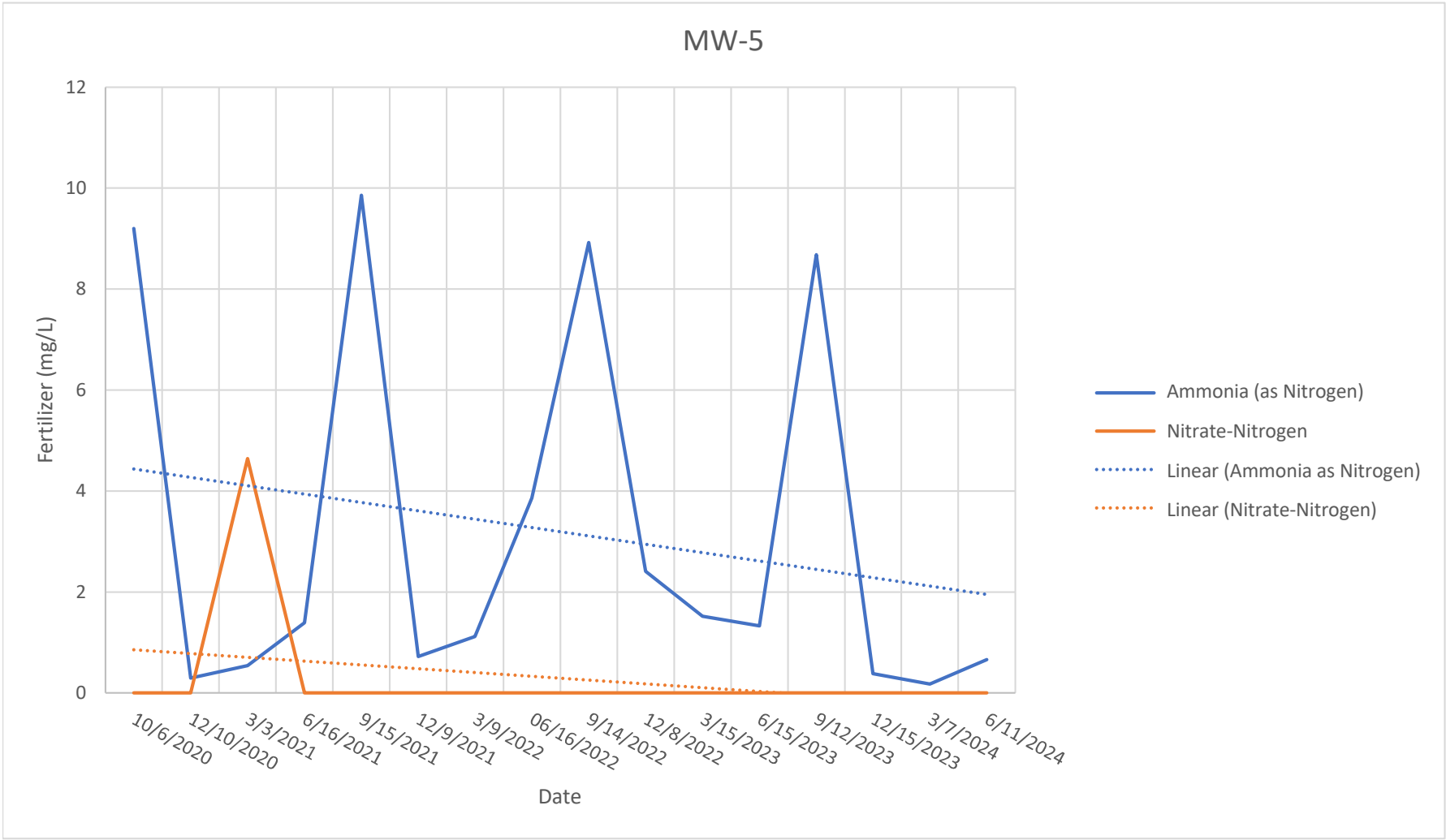
APPENDIX E
Nitrate and Ammonia Trend Plots

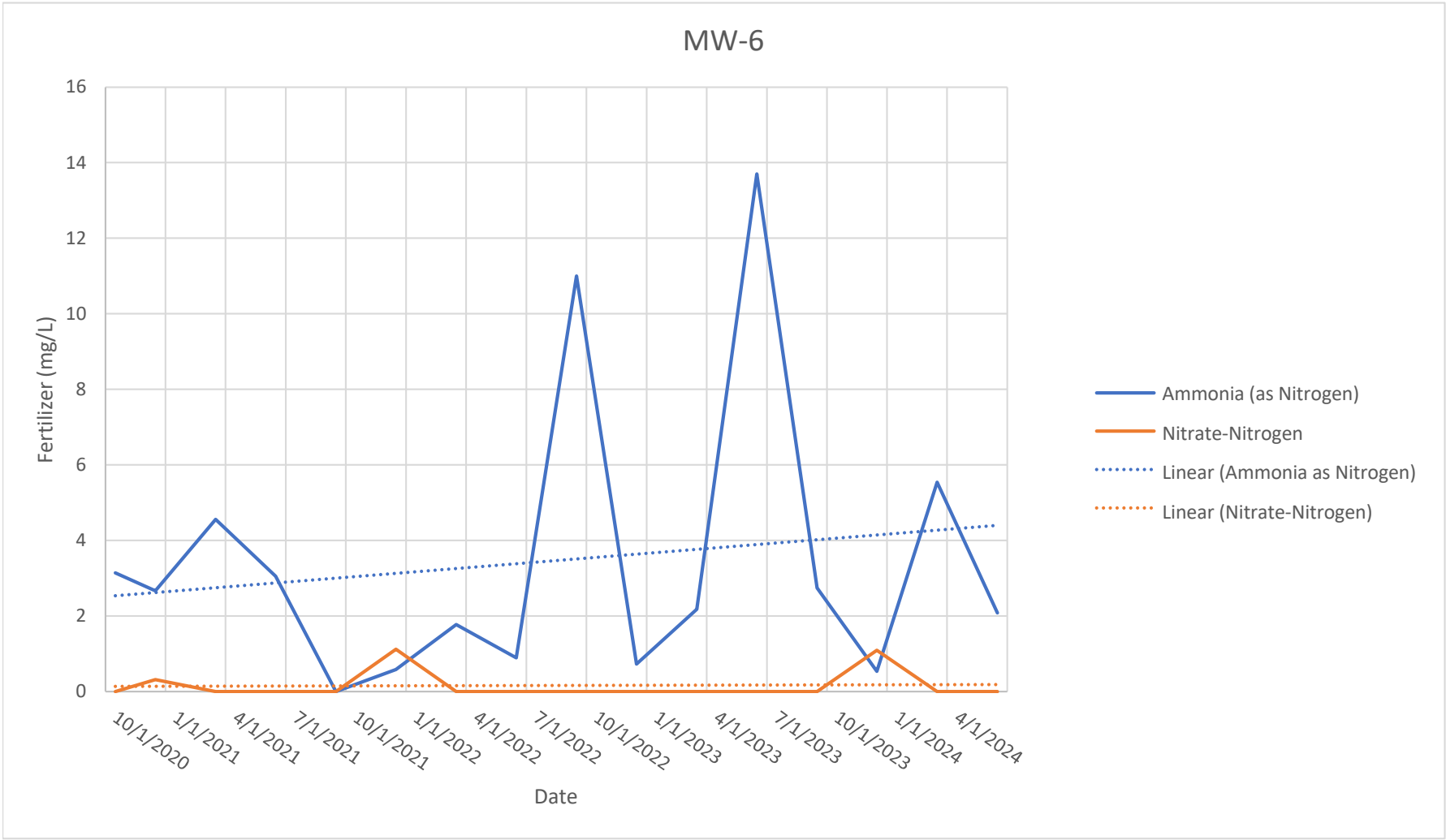

EX
180
160
140
120
100
80
60
40
20
0
Fertilizer (mg/L)
06/17/21
12/10/21
06/16/2022
12/08/22
06/14/23
12/14/23
6/13/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

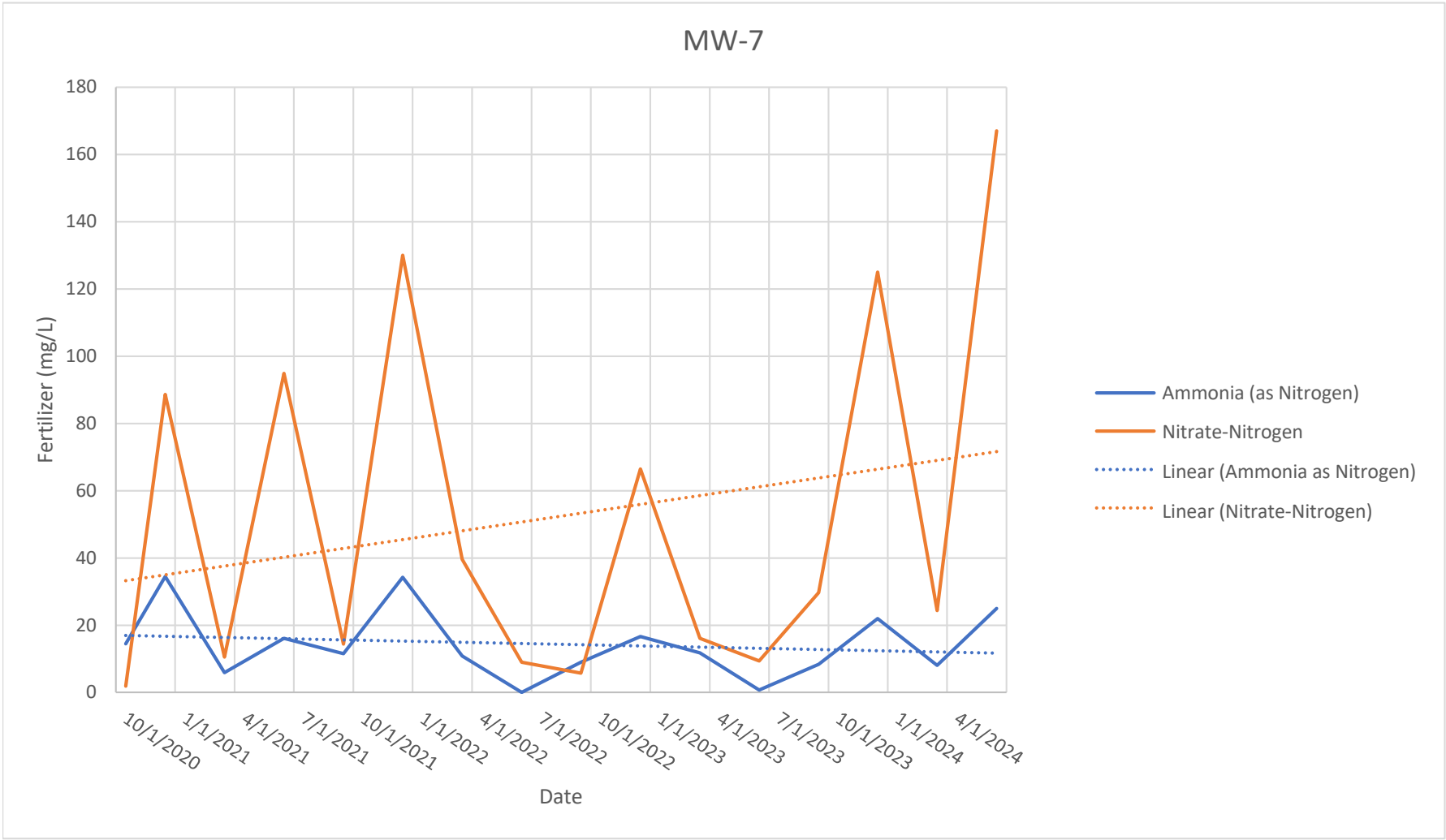

MW-1
Fertilizer (mg/L)
700
600
500
400
300
200
100
0
10/7/2020
12/8/2020
3/4/2021
6/16/2021
9/16/2021
12/9/2021
3/8/2022
06/15/2022
9/15/2022
12/6/2022
3/17/2023
6/14/2023
9/12/2023
12/13/2023
3/7/2024
6/13/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

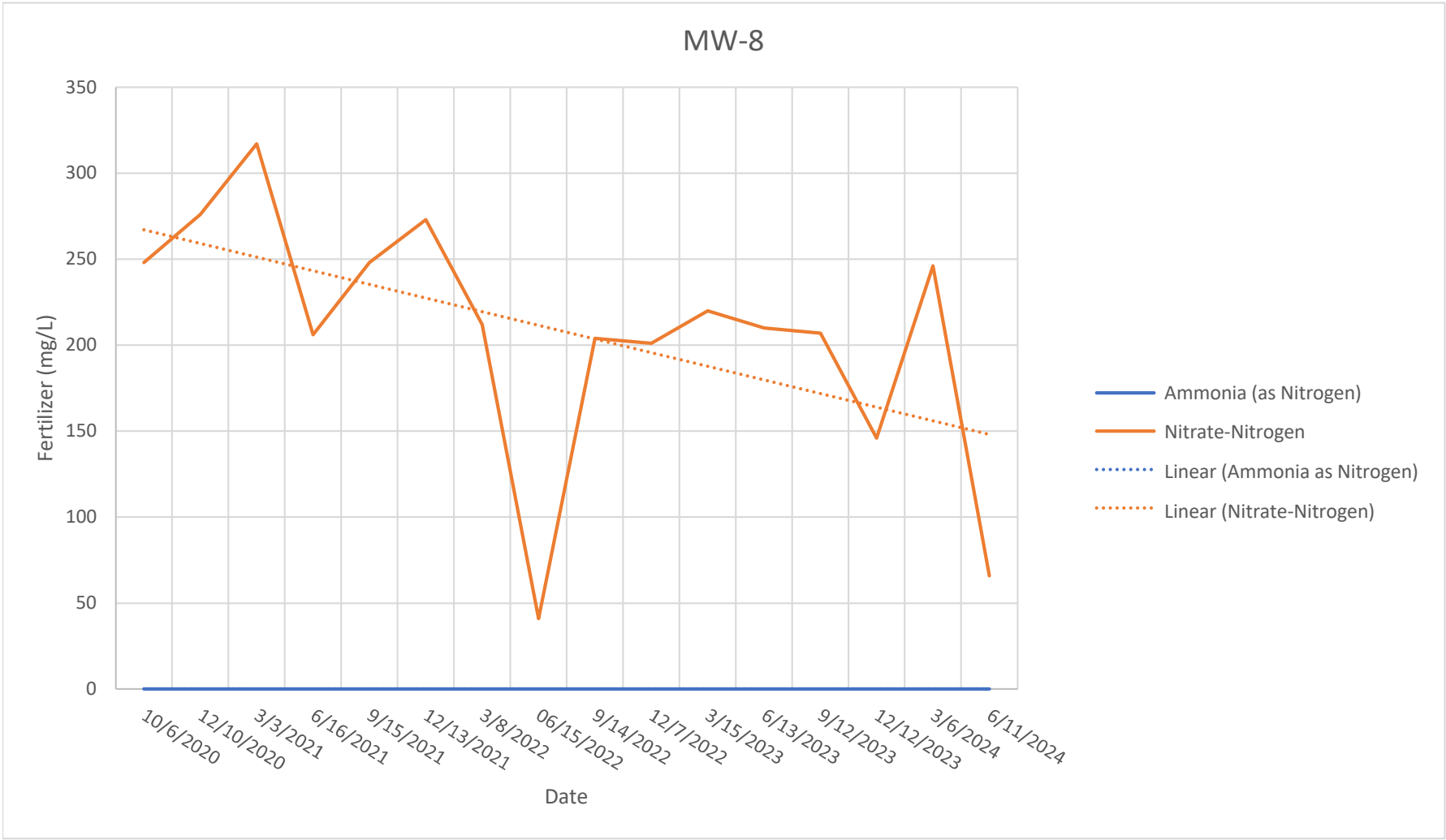

MW-2
Fertilizer (mg/L)
20
18
16
14
12
10
8
6
4
2
0
10/8/2020
12/9/2020
3/4/2021
6/16/2021
9/16/2021
12/9/2021
3/8/2022
06/16/2022
9/15/2022
12/8/2022
3/16/2023
6/13/2023
9/13/2023
12/13/2023
3/7/2024
6/14/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

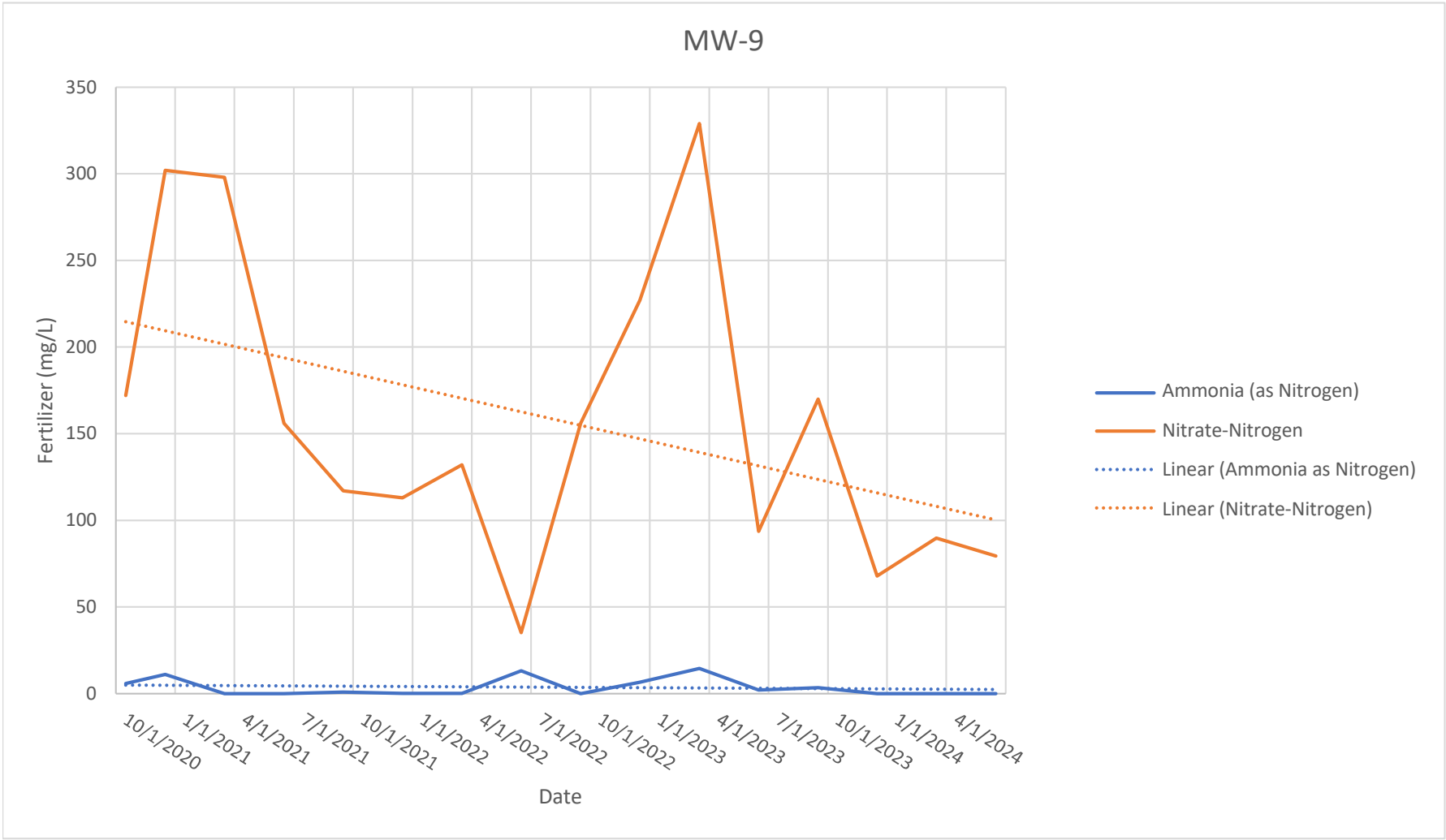

MW-3
Fertilizer (mg/L)
16
14
12
10
8
6
4
2
0
10/7/2020
12/8/2020
3/4/2021
6/16/2021
9/14/2021
12/9/2021
3/9/2022
06/16/2022
9/15/2022
12/6/2022
3/16/2023
6/13/2023
9/13/2023
12/13/2023
3/7/2024
6/12/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

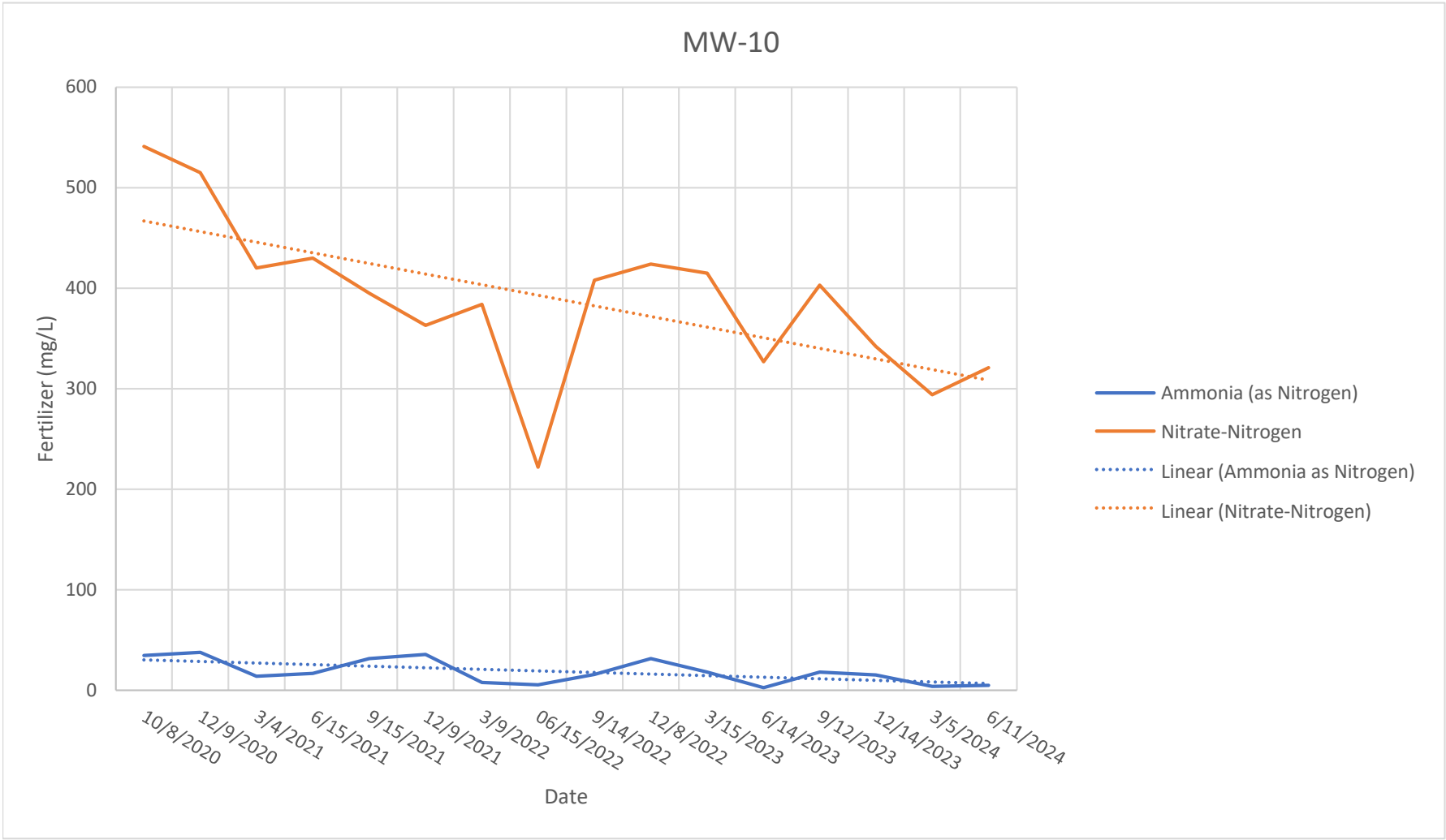

MW-5
Fertilizer (mg/L)
12
10
8
6
4
2
0
10/6/2020
12/10/2020
3/3/2021
6/16/2021
9/15/2021
12/9/2021
3/9/2022
06/16/2022
9/14/2022
12/8/2022
3/15/2023
6/15/2023
9/12/2023
12/15/2023
3/7/2024
6/11/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

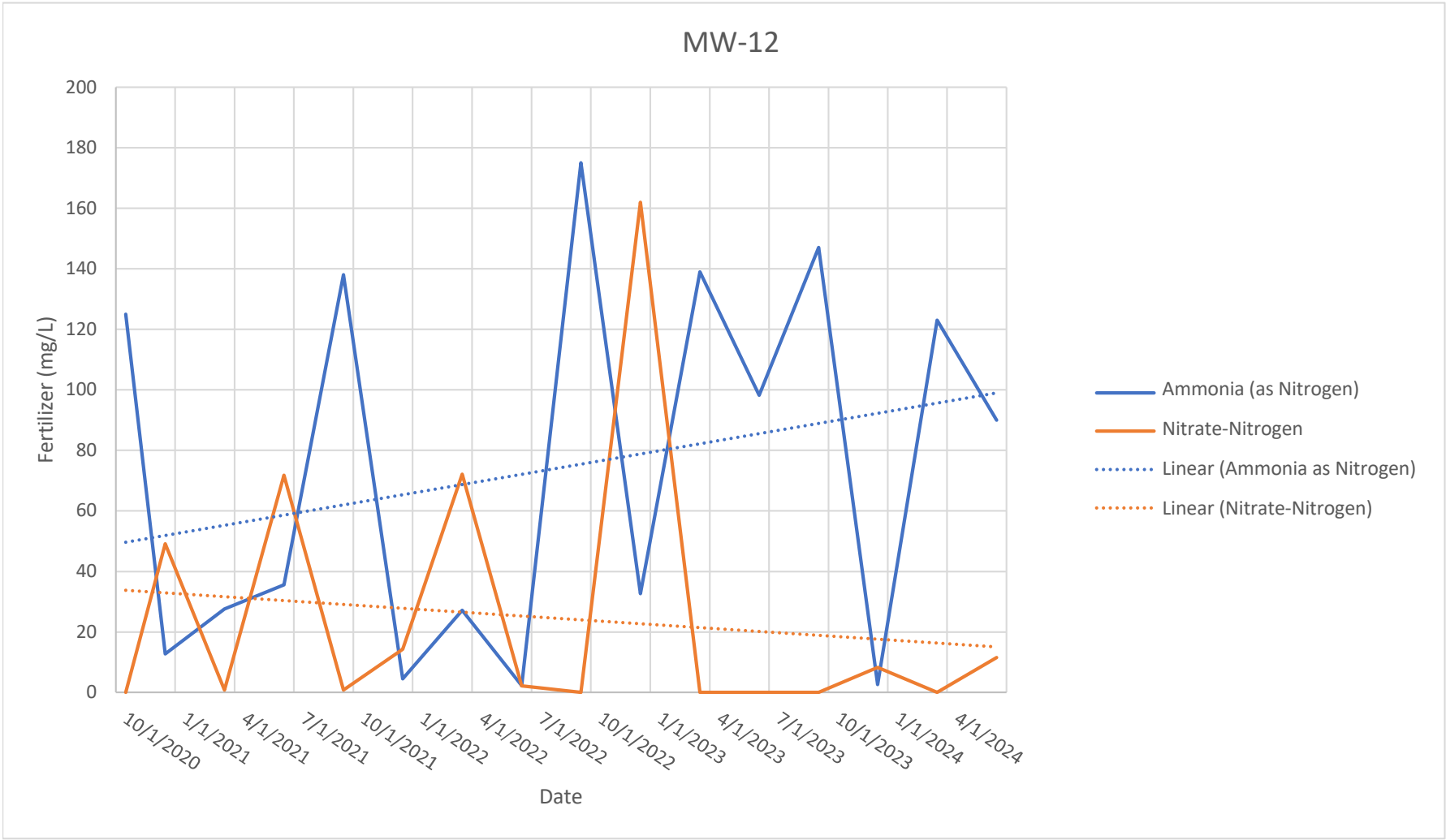

MW-6
Fertilizer (mg/L)
16
14
12
10
8
6
4
2
0
10/1/2020
1/1/2021
4/1/2021
7/1/2021
10/1/2021
1/1/2022
4/1/2022
7/1/2022
10/1/2022
1/1/2023
4/1/2023
7/1/2023
10/1/2023
1/1/2024
4/1/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

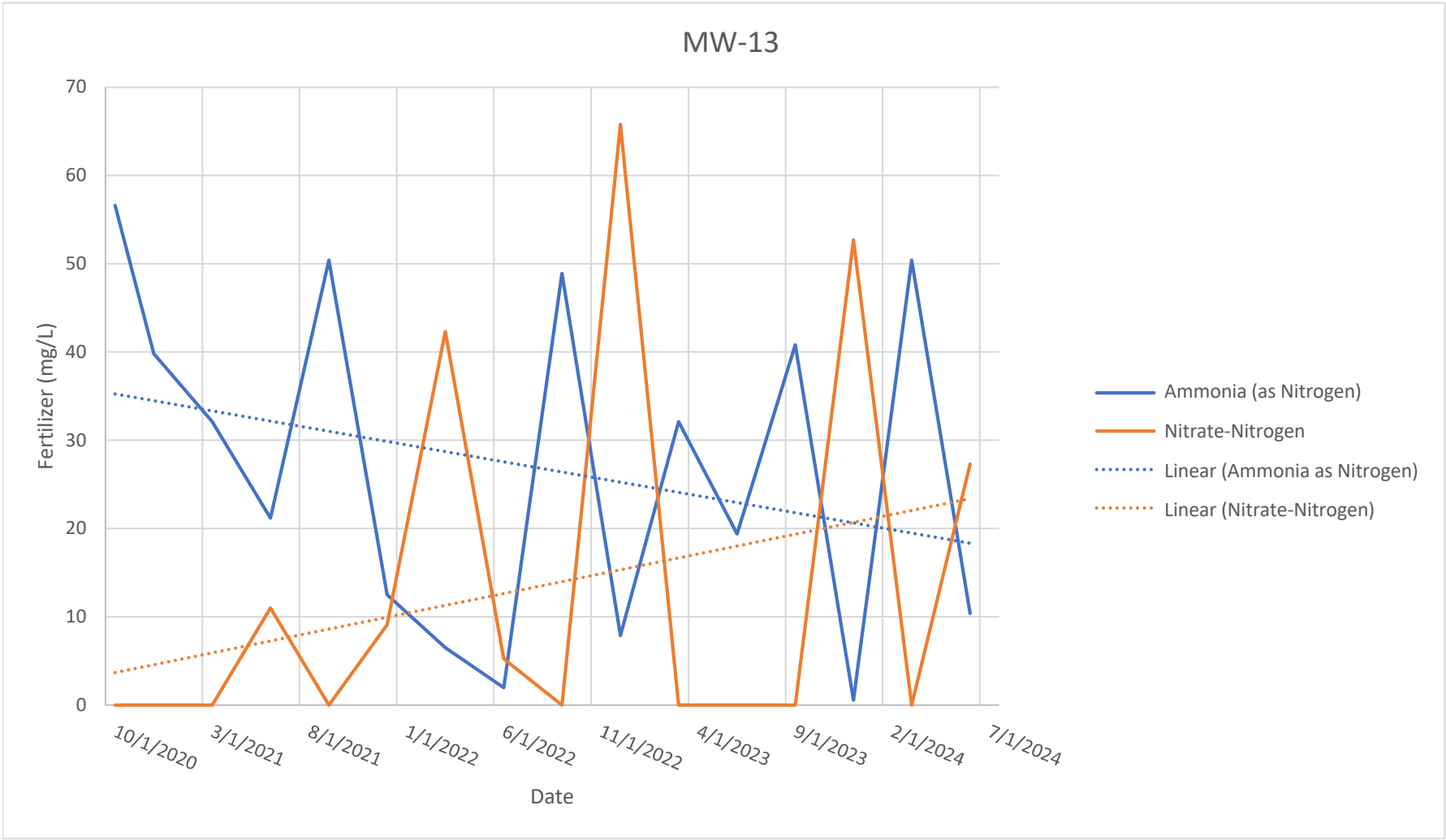

MW-7
Fertilizer (mg/L)
180
160
140
120
100
80
60
40
20
0
10/1/2020
1/1/2021
4/1/2021
7/1/2021
10/1/2021
1/1/2022
4/1/2022
7/1/2022
10/1/2022
1/1/2023
4/1/2023
7/1/2023
10/1/2023
1/1/2024
4/1/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

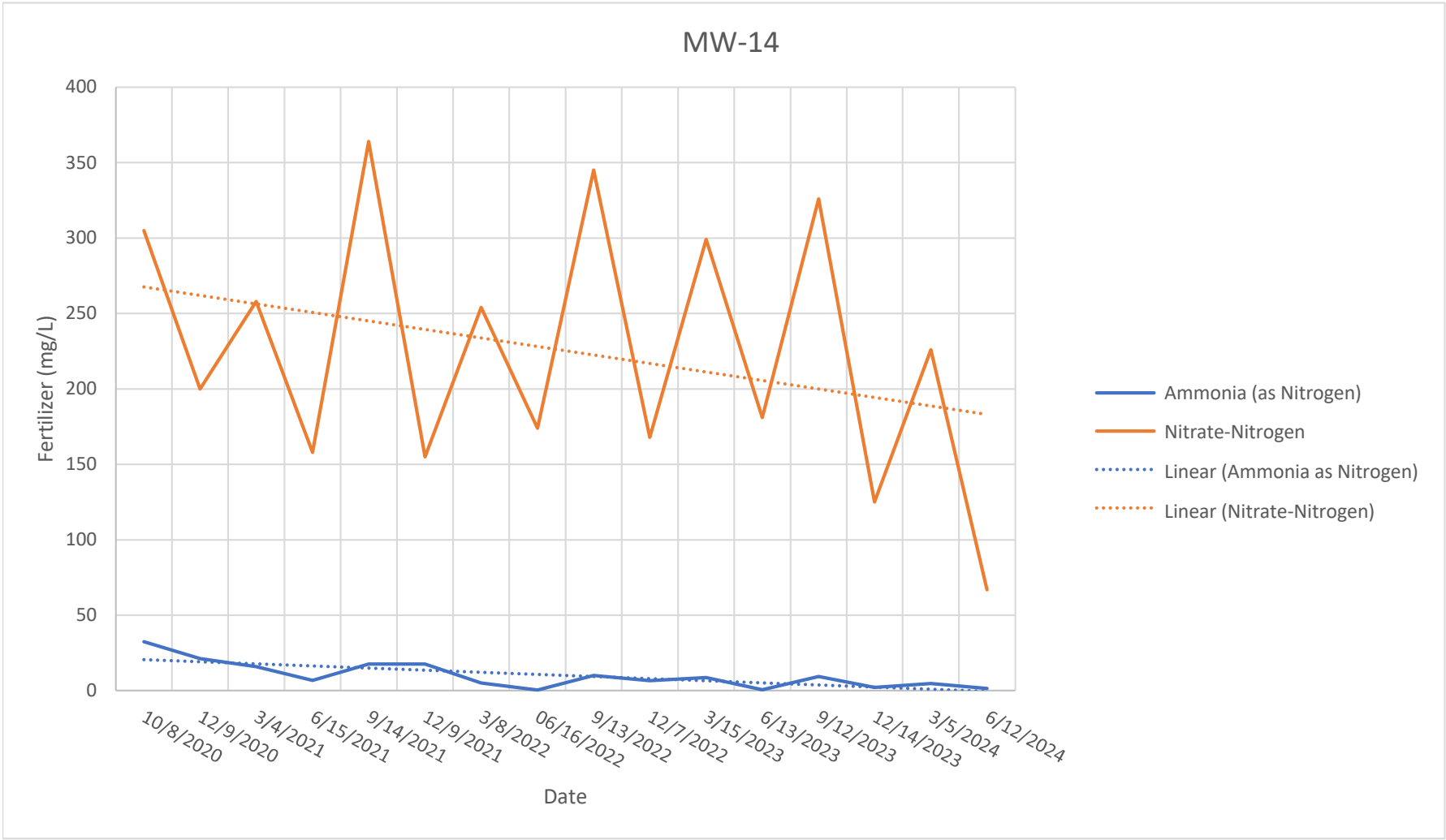

MW-8
Fertilizer (mg/L)
350
300
250
200
150
100
50
0
10/6/2020
12/10/2020
3/3/2021
6/16/2021
9/15/2021
12/13/2021
3/8/2022
06/15/2022
9/14/2022
12/7/2022
3/15/2023
6/13/2023
9/12/2023
12/12/2023
3/6/2024
6/11/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

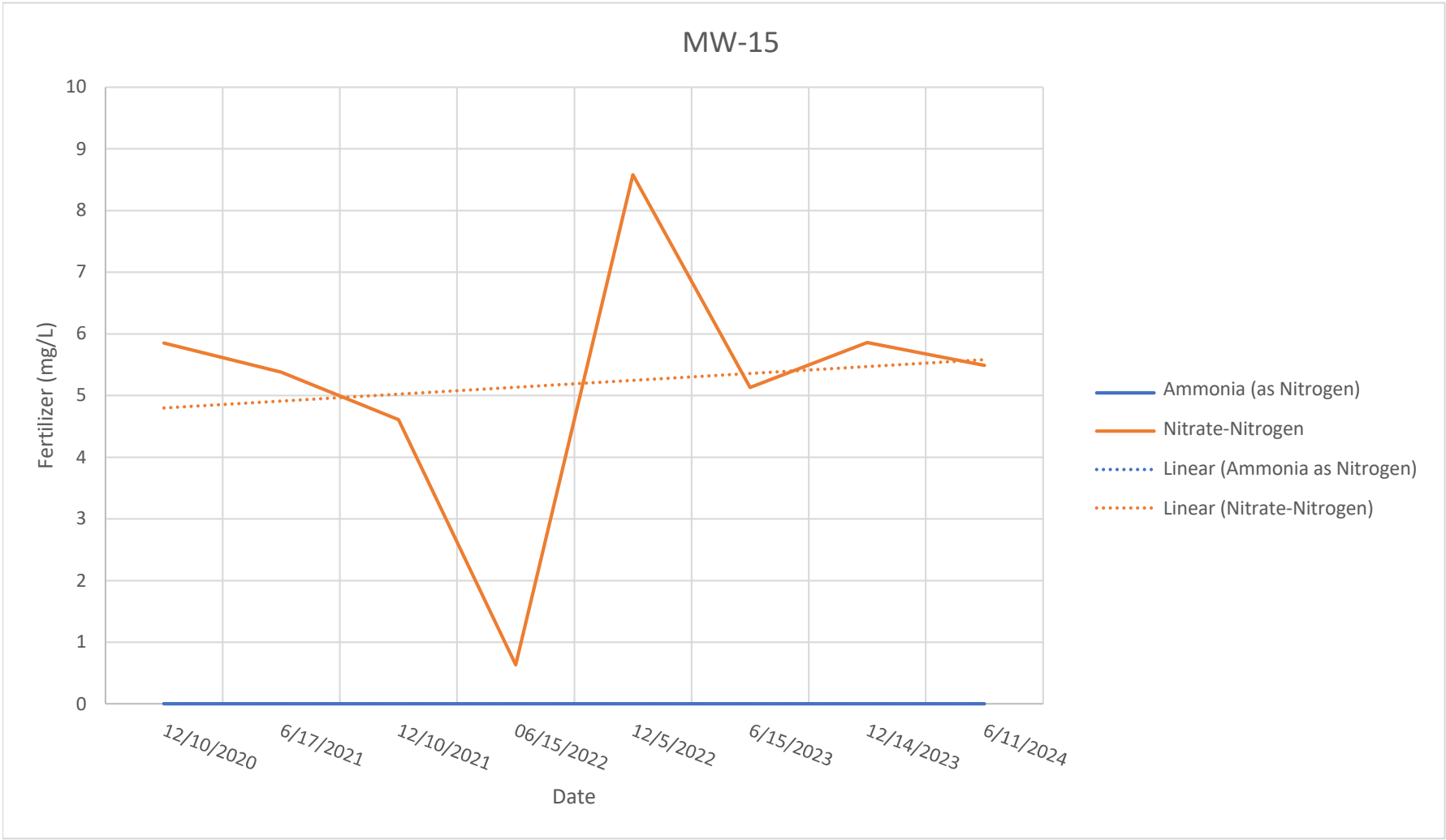

MW-9
Fertilizer (mg/L)
350
300
250
200
150
100
50
0
10/1/2020
1/1/2021
4/1/2021
7/1/2021
10/1/2021
1/1/2022
4/1/2022
7/1/2022
10/1/2022
1/1/2023
4/1/2023
7/1/2023
10/1/2023
1/1/2024
4/1/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

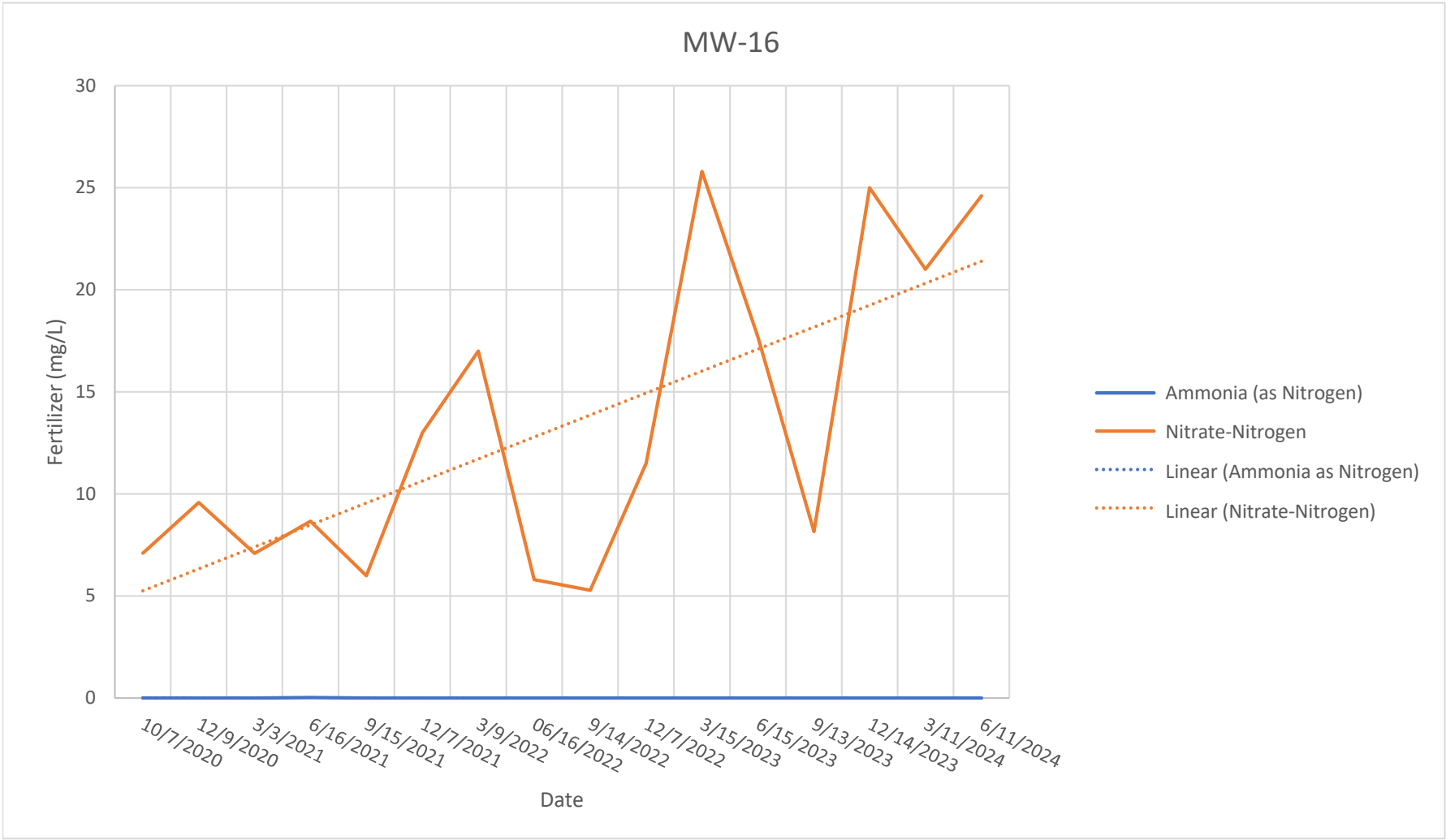

MW-10
600
500
400
300
200
100
0
Fertilizer (mg/L)
10/8/2020
12/9/2020
3/4/2021
6/15/2021
9/15/2021
12/9/2021
3/9/2022
06/15/2022
9/14/2022
12/8/2022
3/15/2023
6/14/2023
9/12/2023
12/14/2023
3/5/2024
6/11/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

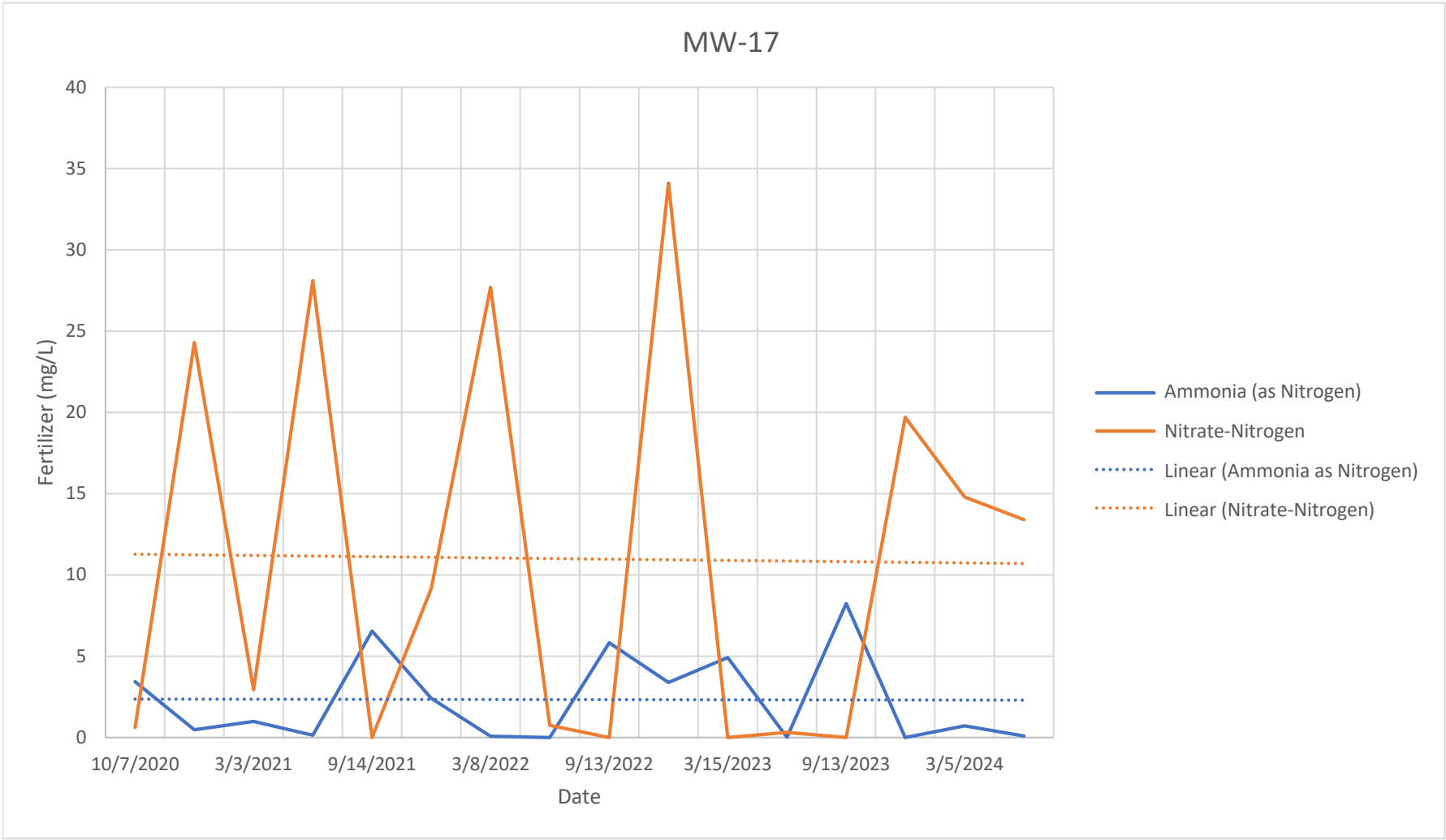

MW-12
Fertilizer (mg/L)
200
180
160
140
120
100
80
60
40
20
0
10/1/2020
1/1/2021
4/1/2021
7/1/2021
10/1/2021
1/1/2022
4/1/2022
7/1/2022
10/1/2022
1/1/2023
4/1/2023
7/1/2023
10/1/2023
1/1/2024
4/1/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

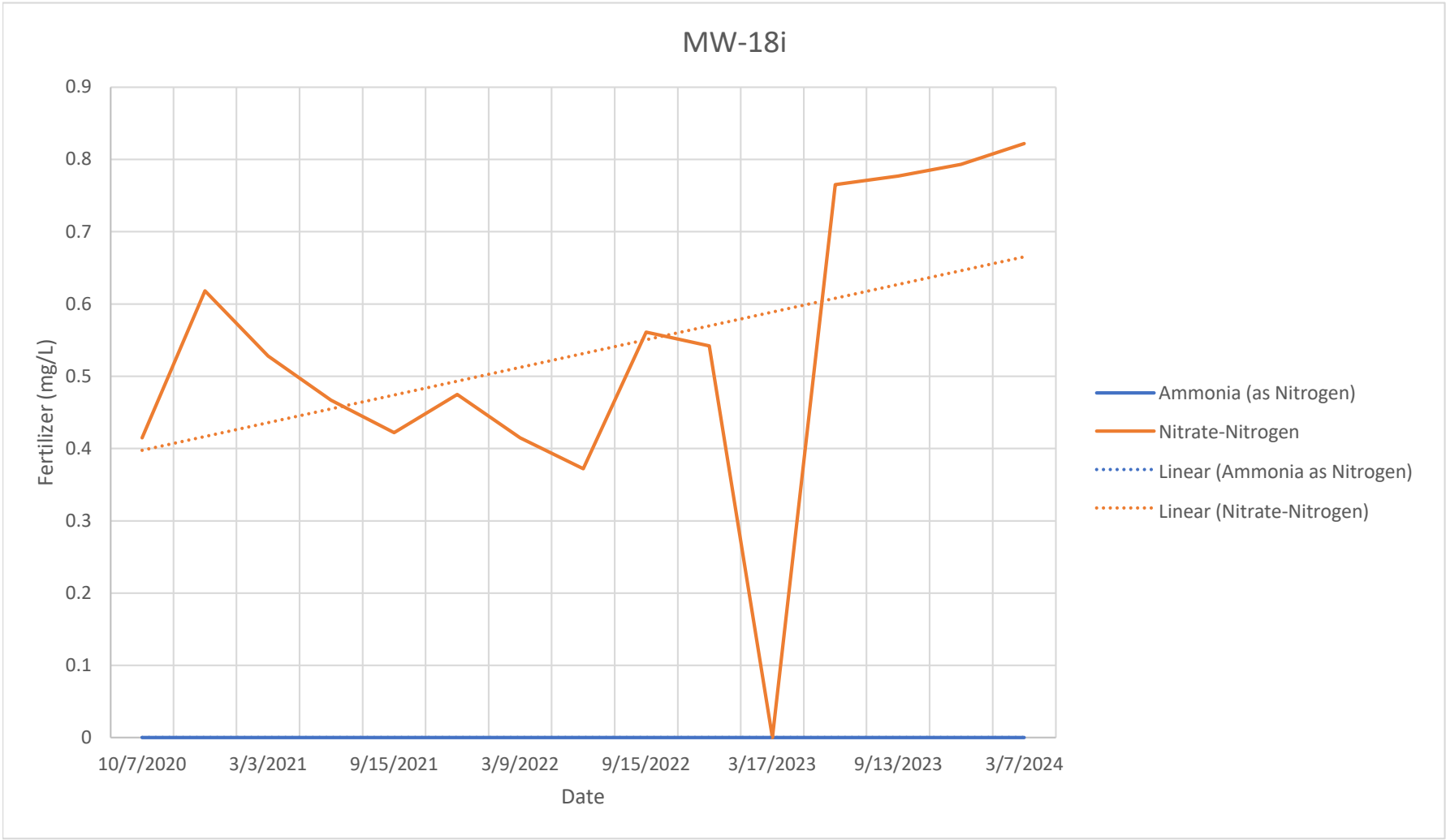

MW-13
Fertilizer (mg/L)
70
60
50
40
30
20
10
0
10/1/2020
3/1/2021
8/1/2021
1/1/2022
6/1/2022
11/1/2022
4/1/2023
9/1/2023
2/1/2024
7/1/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

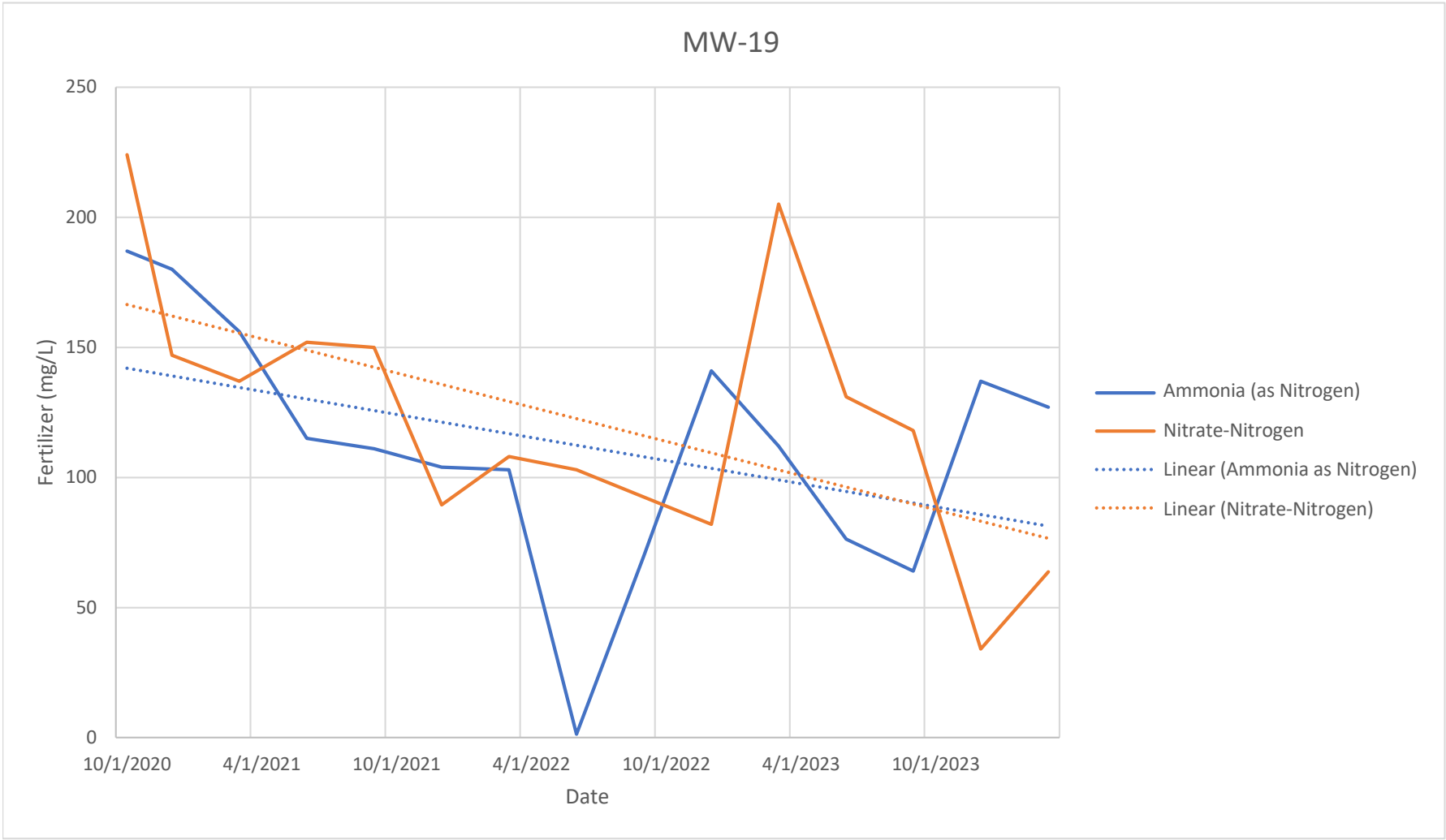

MW-14
Fertilizer (mg/L)
400
350
300
250
200
150
100
50
0
10/8/2020
12/9/2020
3/4/2021
6/15/2021
9/14/2021
12/9/2021
3/8/2022
06/16/2022
9/13/2022
12/7/2022
3/15/2023
6/13/2023
9/12/2023
12/14/2023
3/5/2024
6/12/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

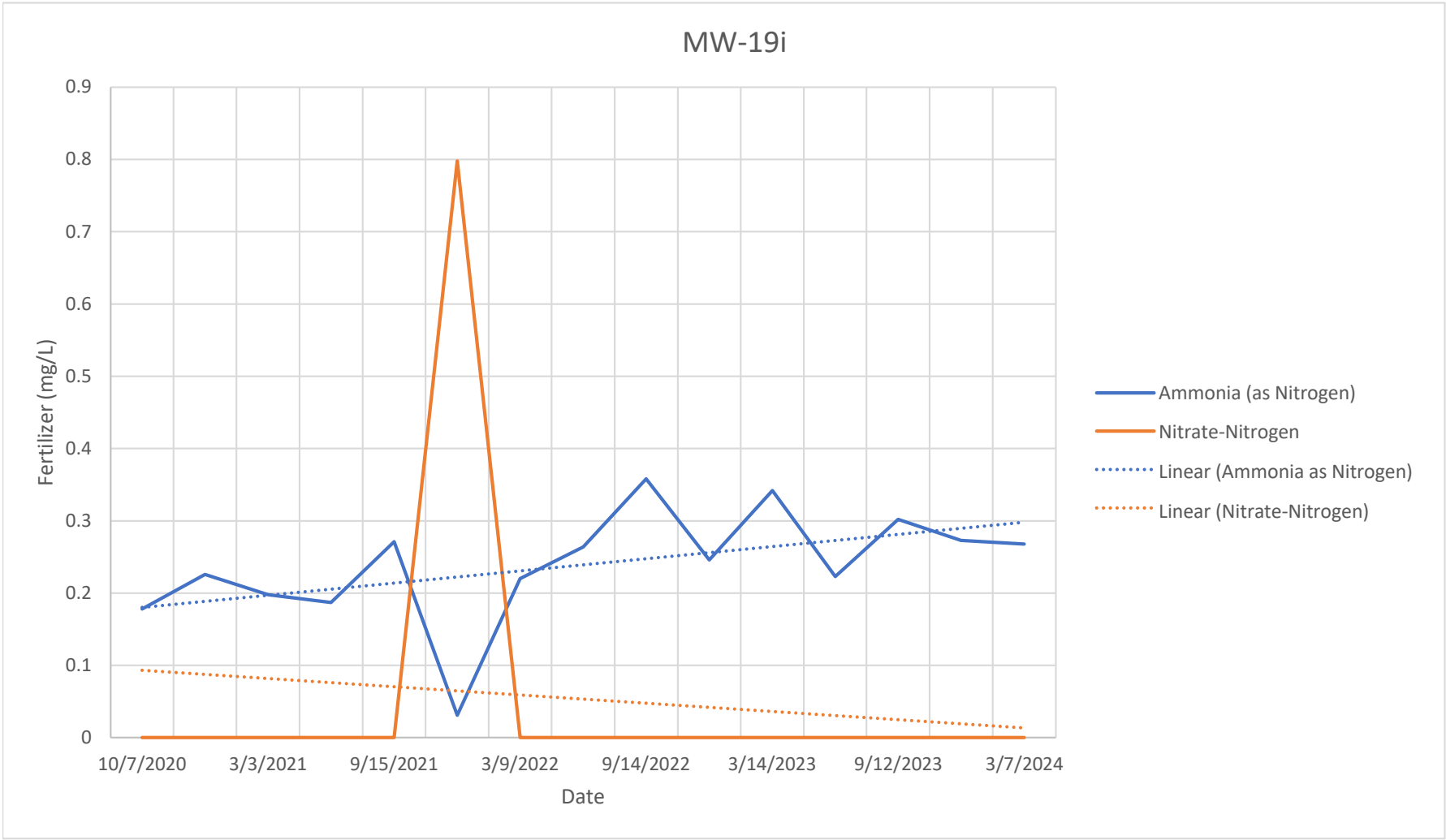

MW-15
Fertilizer (mg/L)
10
9
8
7
6
5
4
3
2
1
0
12/10/2020
6/17/2021
12/10/2021
06/15/2022
12/5/2022
6/15/2023
12/14/2023
6/11/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

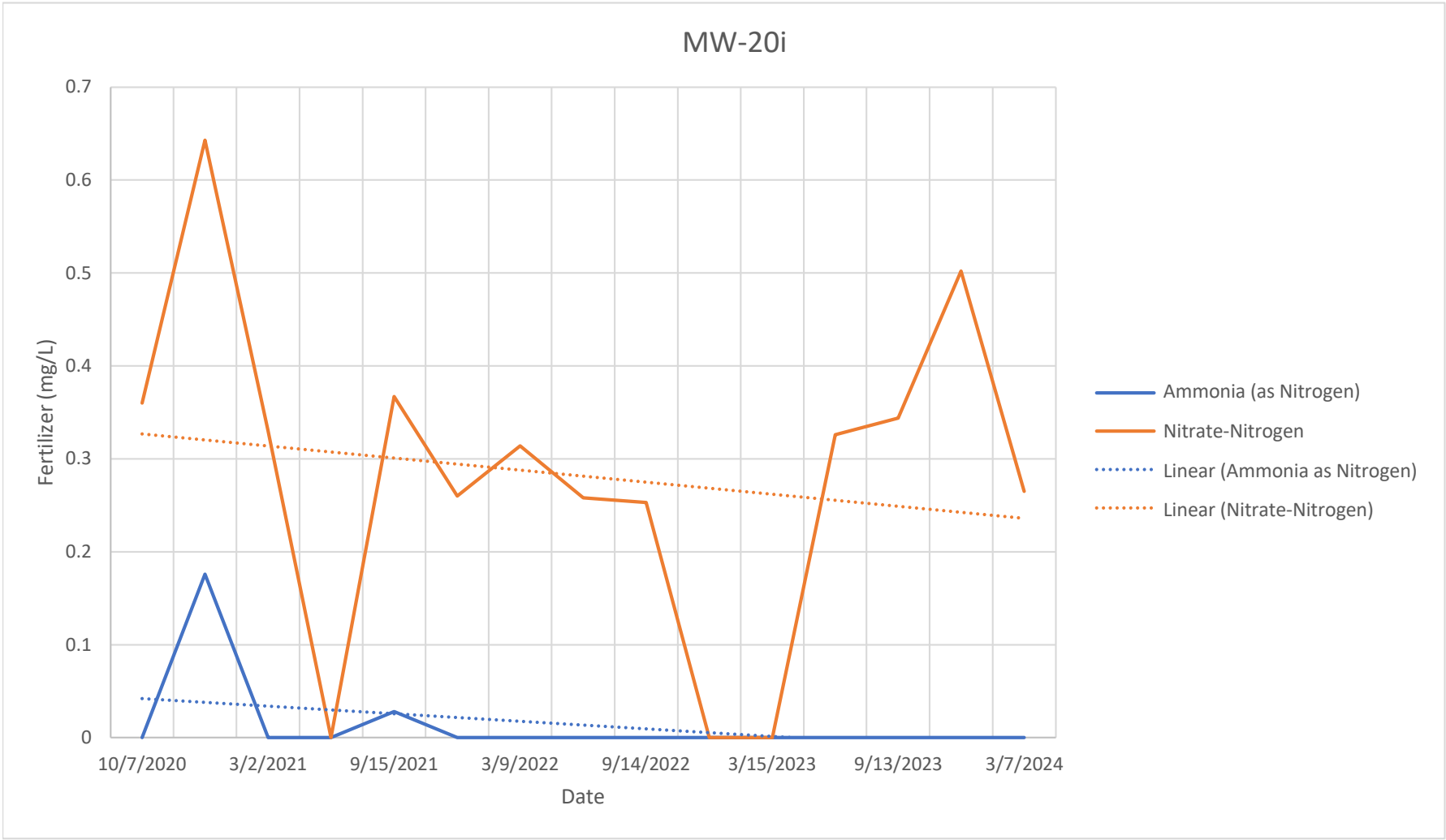

MW-16
30
25
20
15
10
5
0
Fertilizer (mg/L)
10/7/2020
12/9/2020
3/3/2021
6/16/2021
9/15/2021
12/7/2021
3/9/2022
06/16/2022
9/14/2022
12/7/2022
3/15/2023
6/15/2023
9/13/2023
12/14/2023
3/11/2024
6/11/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

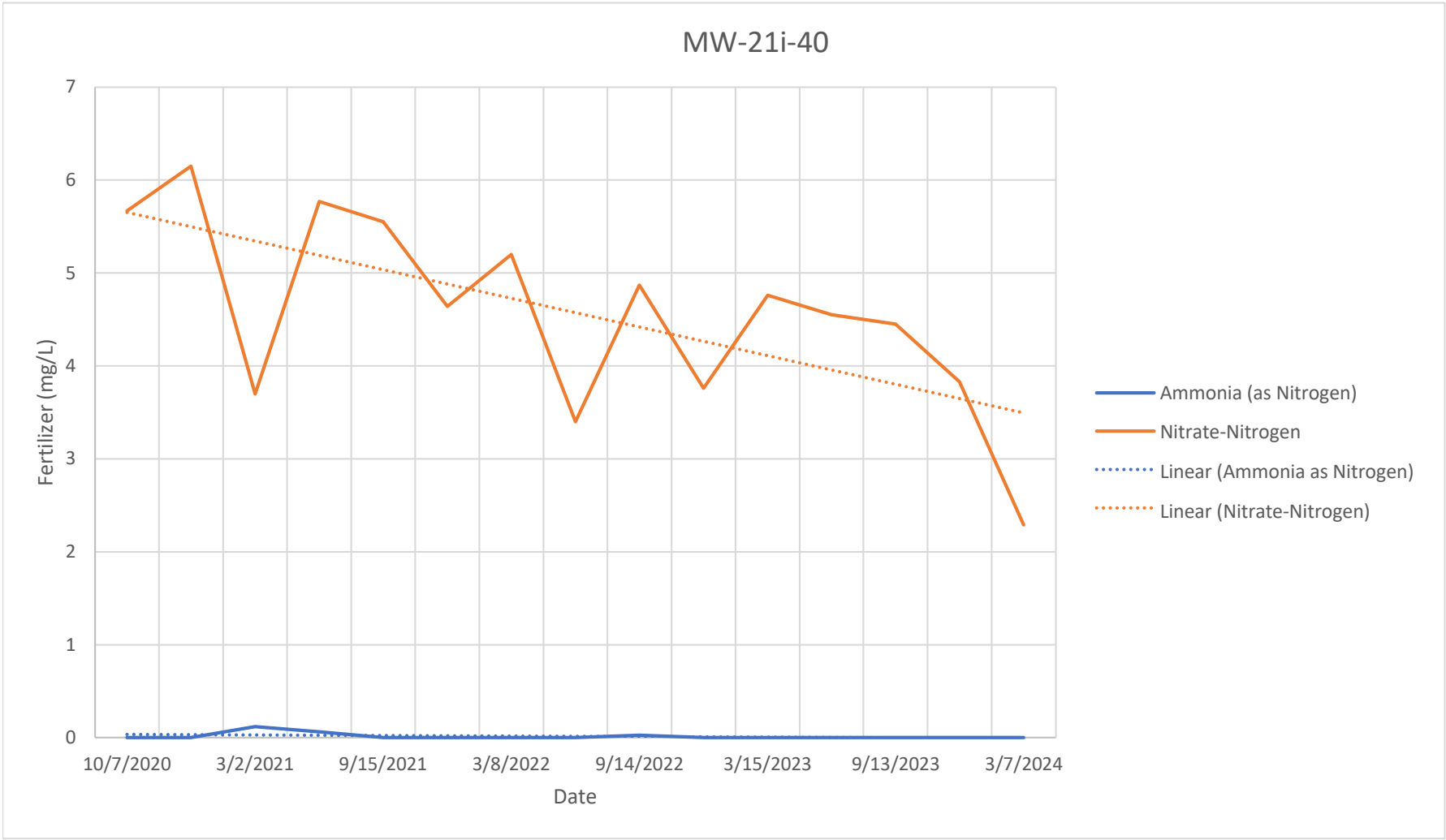

MW-17
Fertilizer (mg/L)
40
35
30
25
20
15
10
5
0
10/7/2020
3/3/2021
9/14/2021
3/8/2022
9/13/2022
3/15/2023
9/13/2023
3/5/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

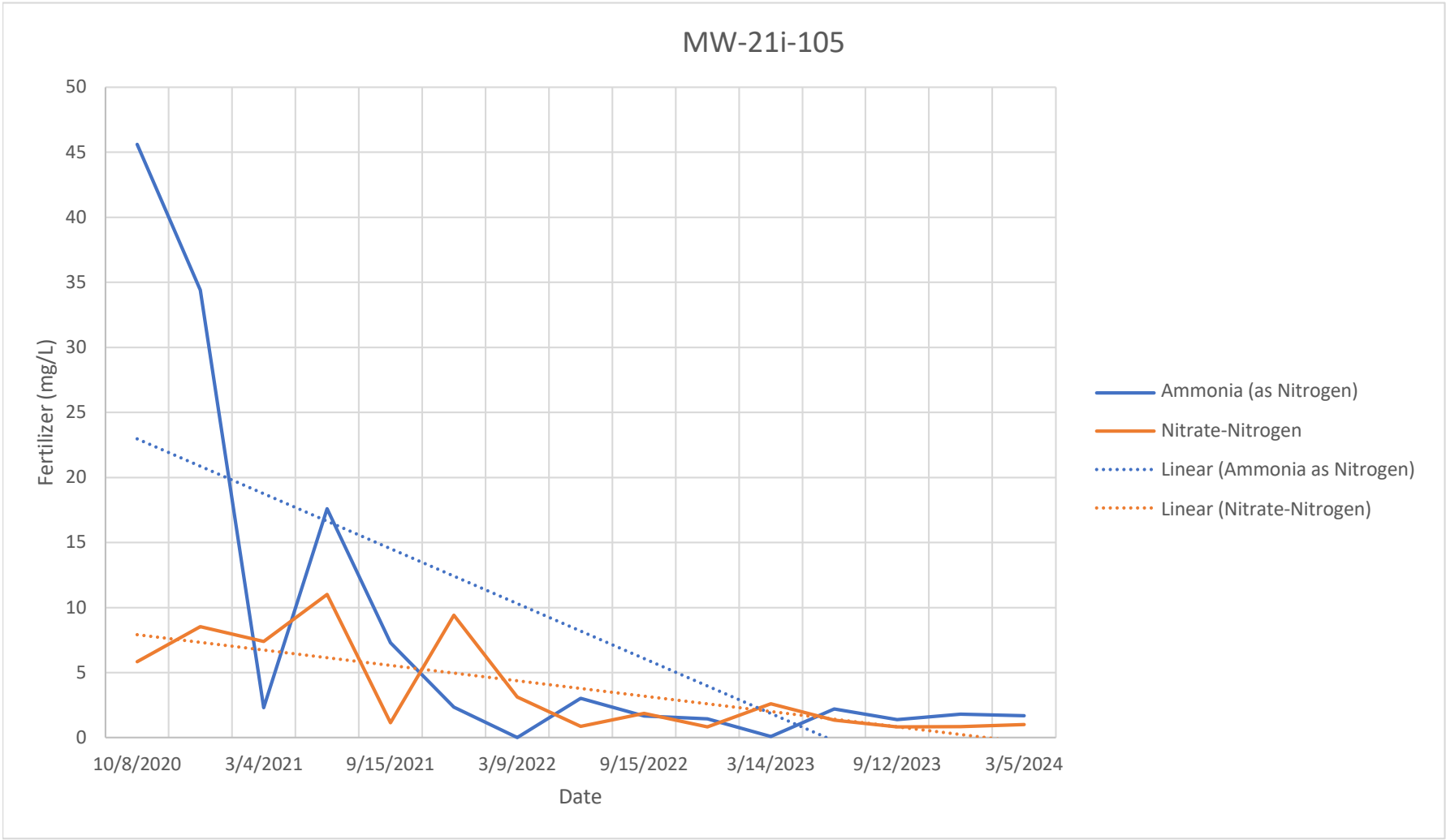

MW-18i
Fertilizer (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/7/2020
3/3/2021
9/15/2021
3/9/2022
9/15/2022
3/17/2023
9/13/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

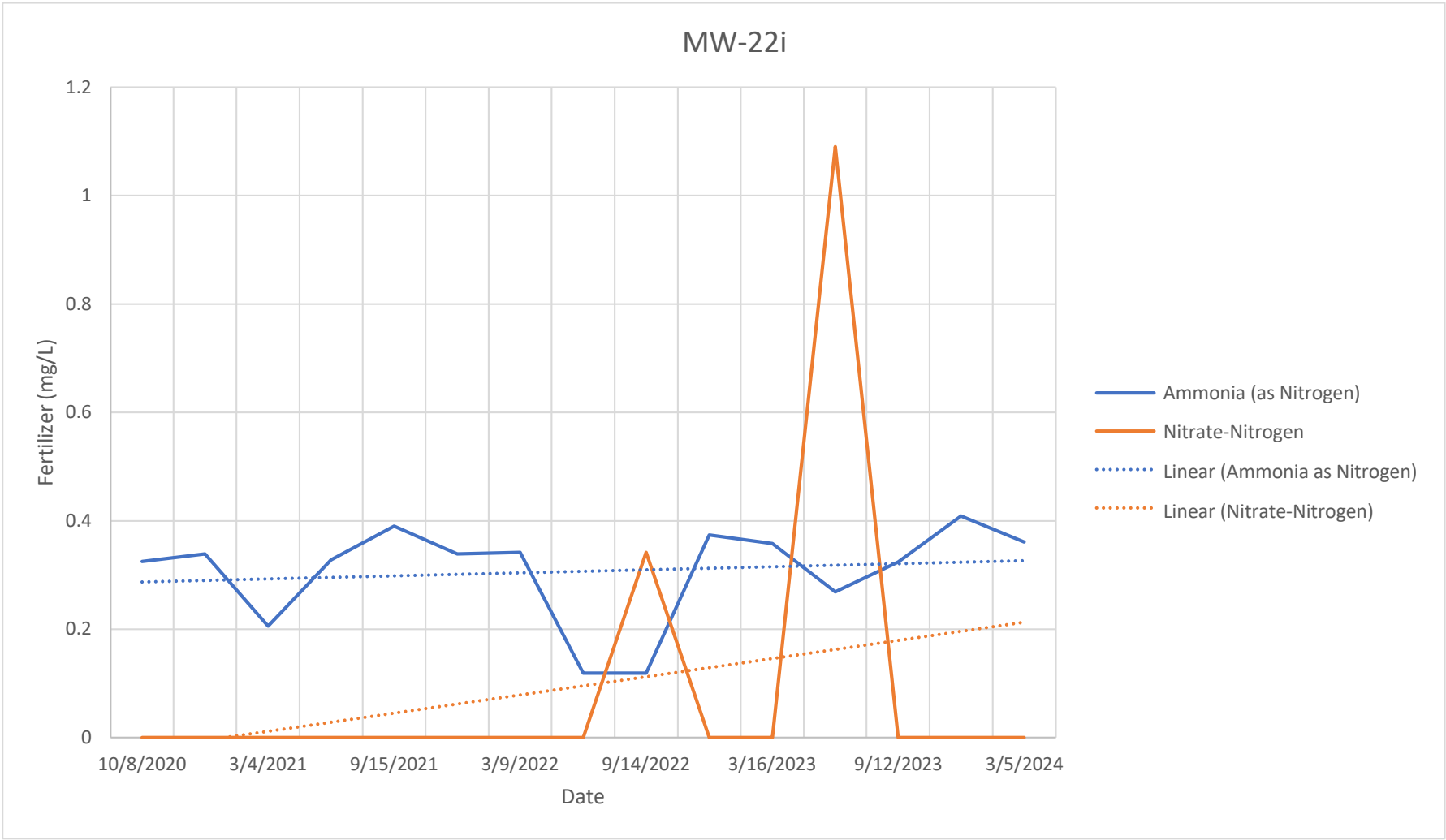

MW-19
250
200
150
100
50
0
Fertilizer (mg/L)
10/1/2020
4/1/2021
10/1/2021
4/1/2022
10/1/2022
4/1/2023
10/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

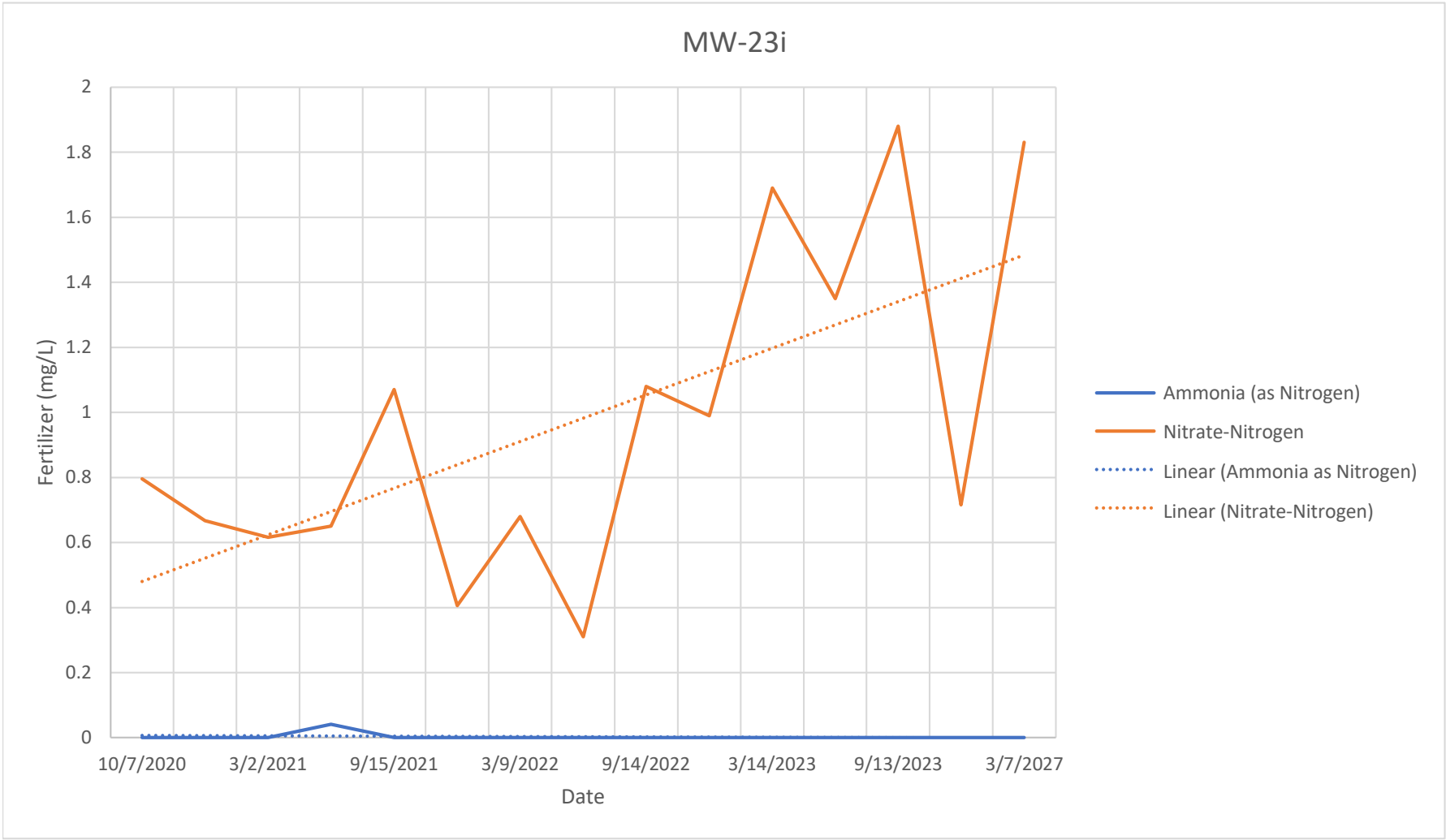

MW-19i
Fertilizer (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/7/2020
3/3/2021
9/15/2021
3/9/2022
9/14/2022
3/14/2023
9/12/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

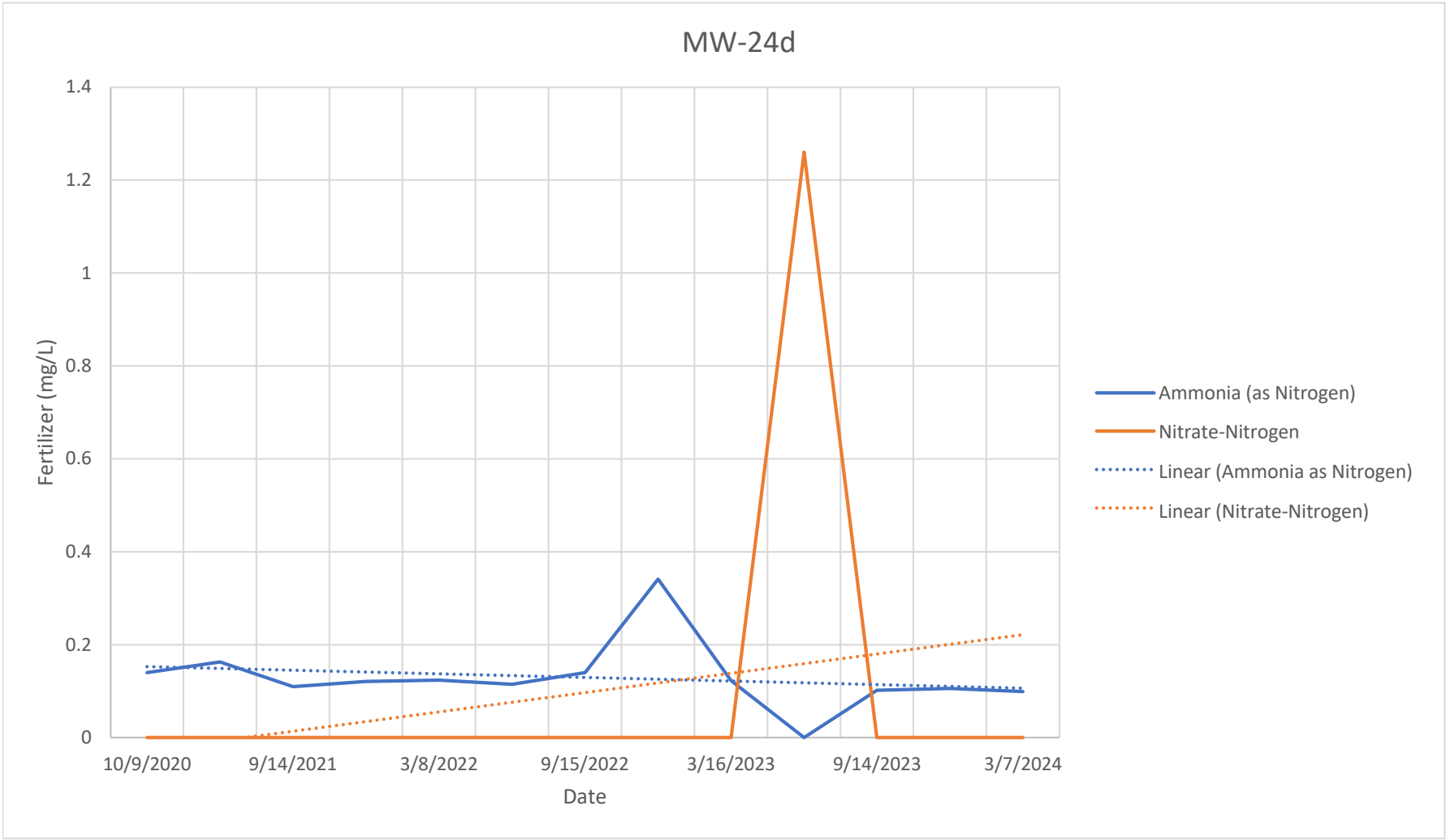

MW-20i
Fertilizer (mg/L)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/7/2020
3/2/2021
9/15/2021
3/9/2022
9/14/2022
3/15/2023
9/13/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

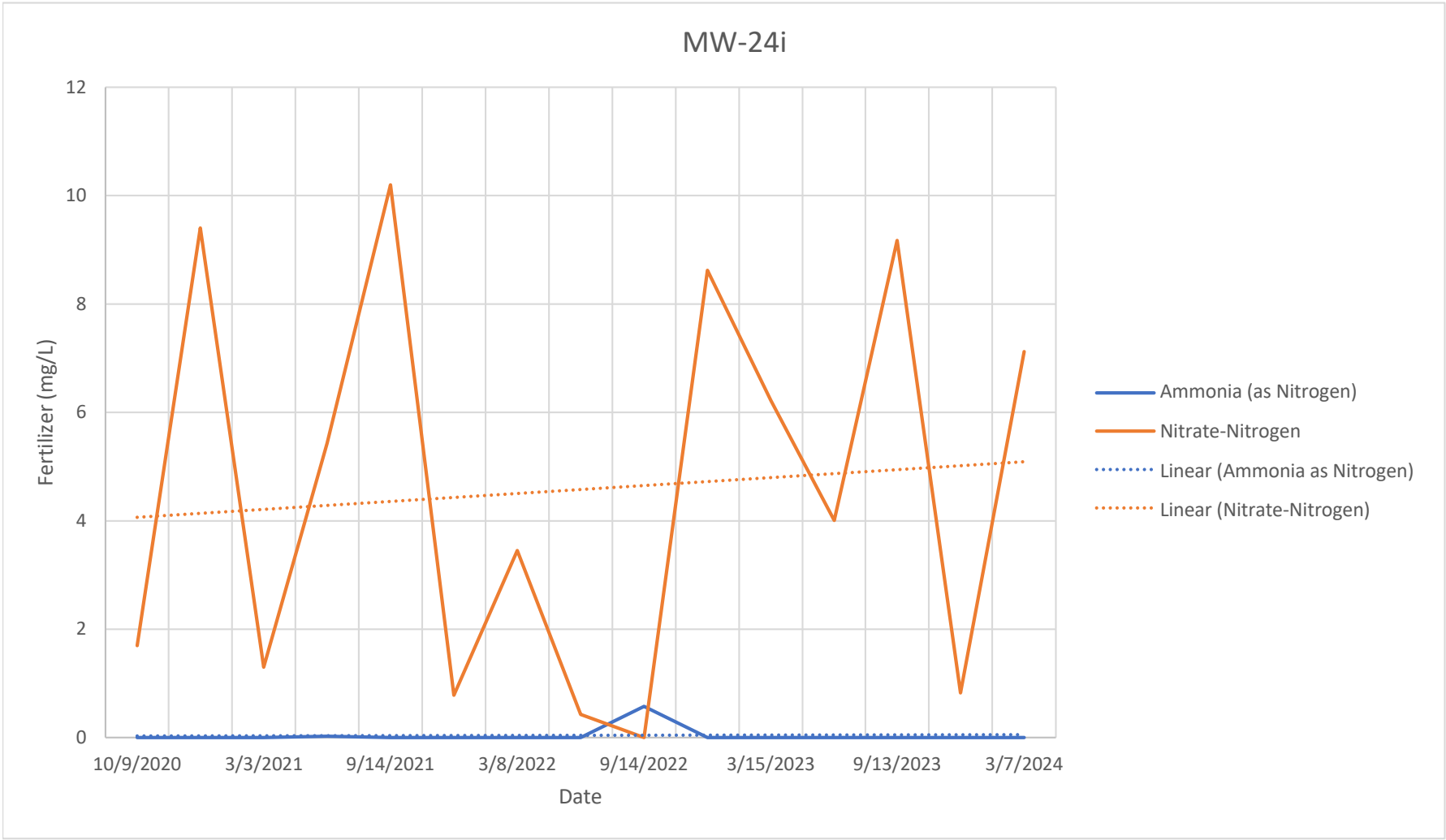

MW-21i-40
Fertilizer (mg/L)
0
1
2
3
4
5
6
7
10/7/2020
3/2/2021
9/15/2021
3/8/2022
9/14/2022
3/15/2023
9/13/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

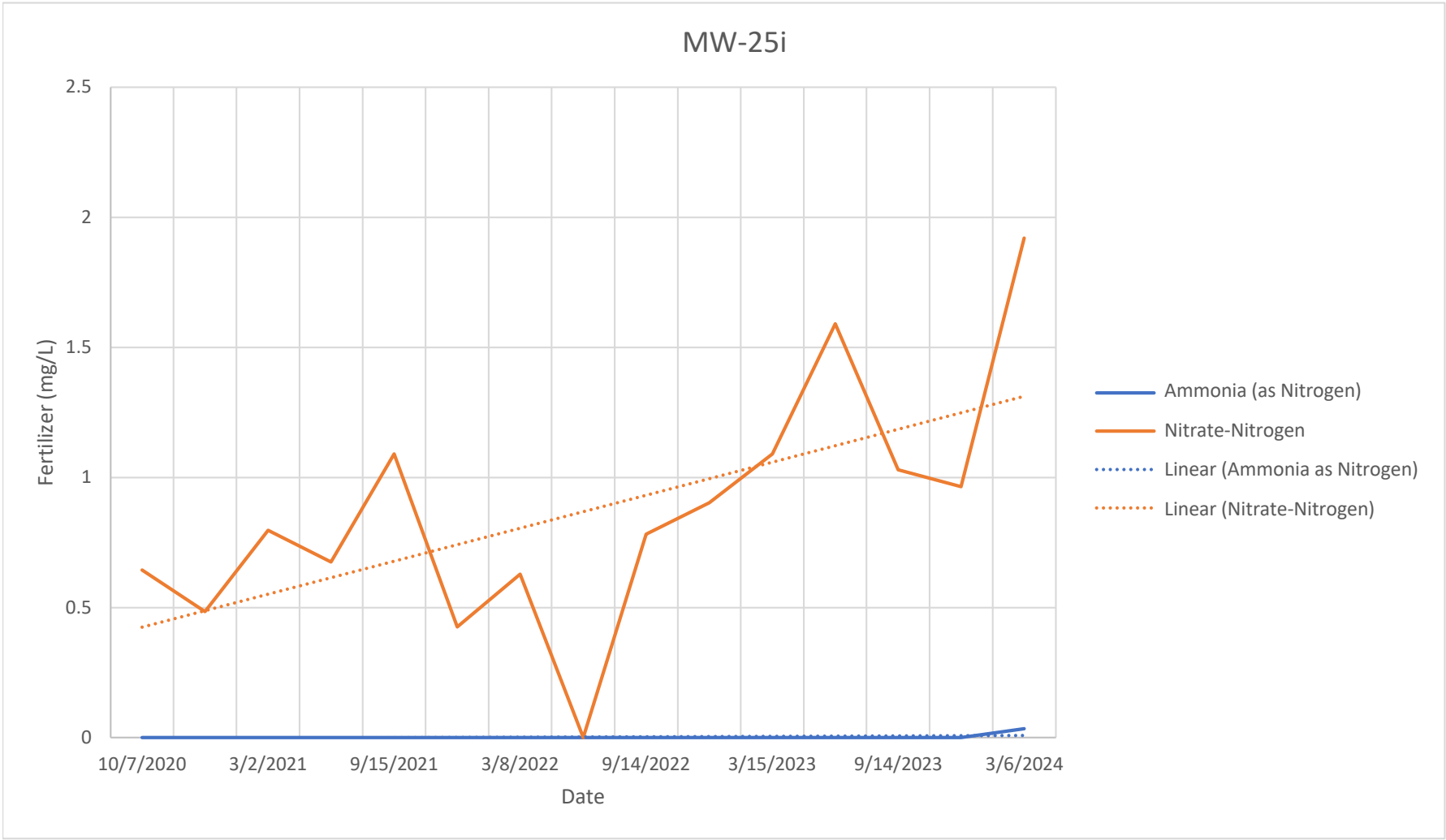

MW-21i-105
Fertilizer (mg/L)
50
45
40
35
30
25
20
15
10
5
0
10/8/2020
3/4/2021
9/15/2021
3/9/2022
9/15/2022
3/14/2023
9/12/2023
3/5/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

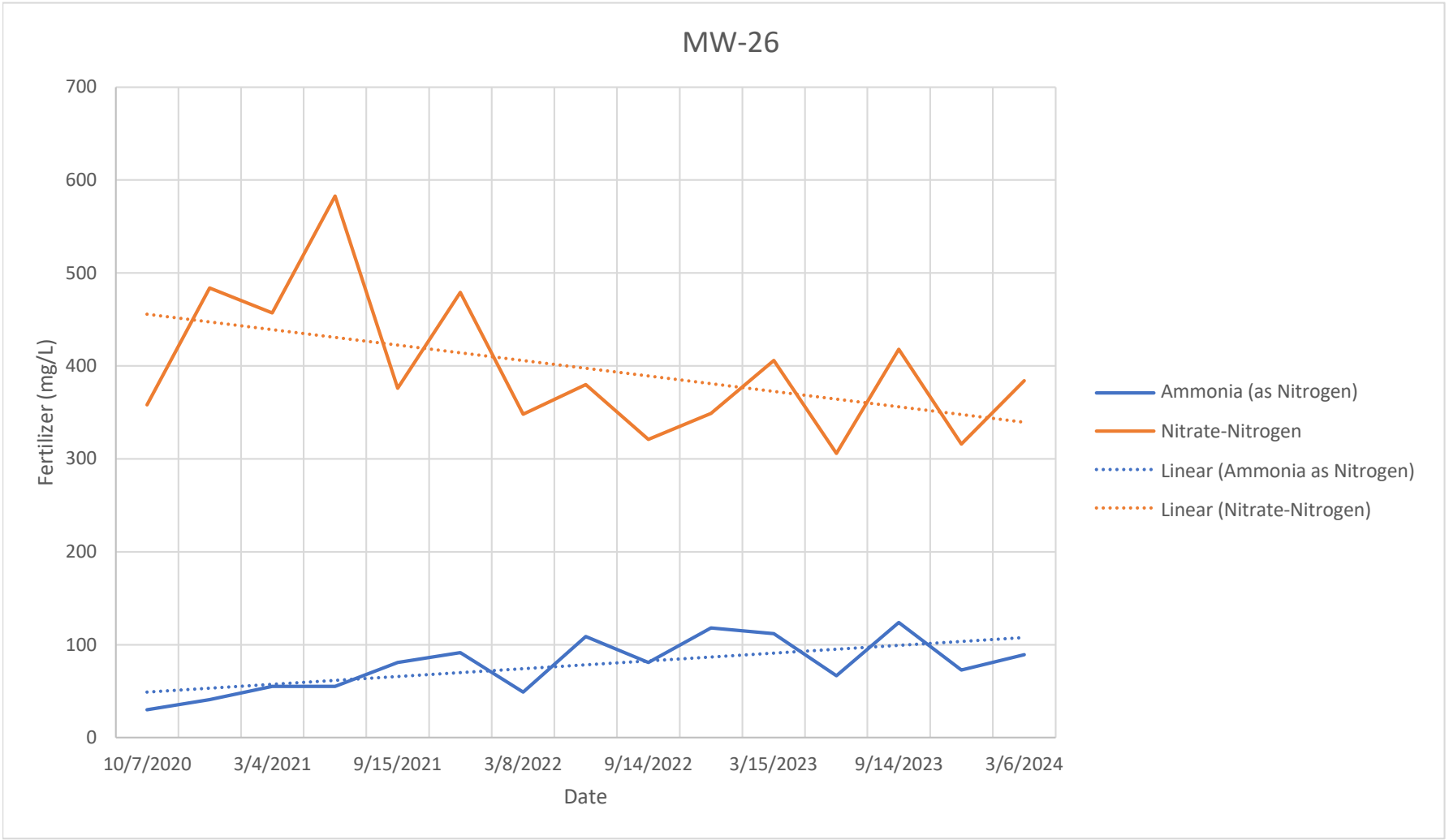

MW-22i
1.2
1
0.8
0.6
0.4
0.2
0
Fertilizer (mg/L)
10/8/2020
3/4/2021
9/15/2021
3/9/2022
9/14/2022
3/16/2023
9/12/2023
3/5/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

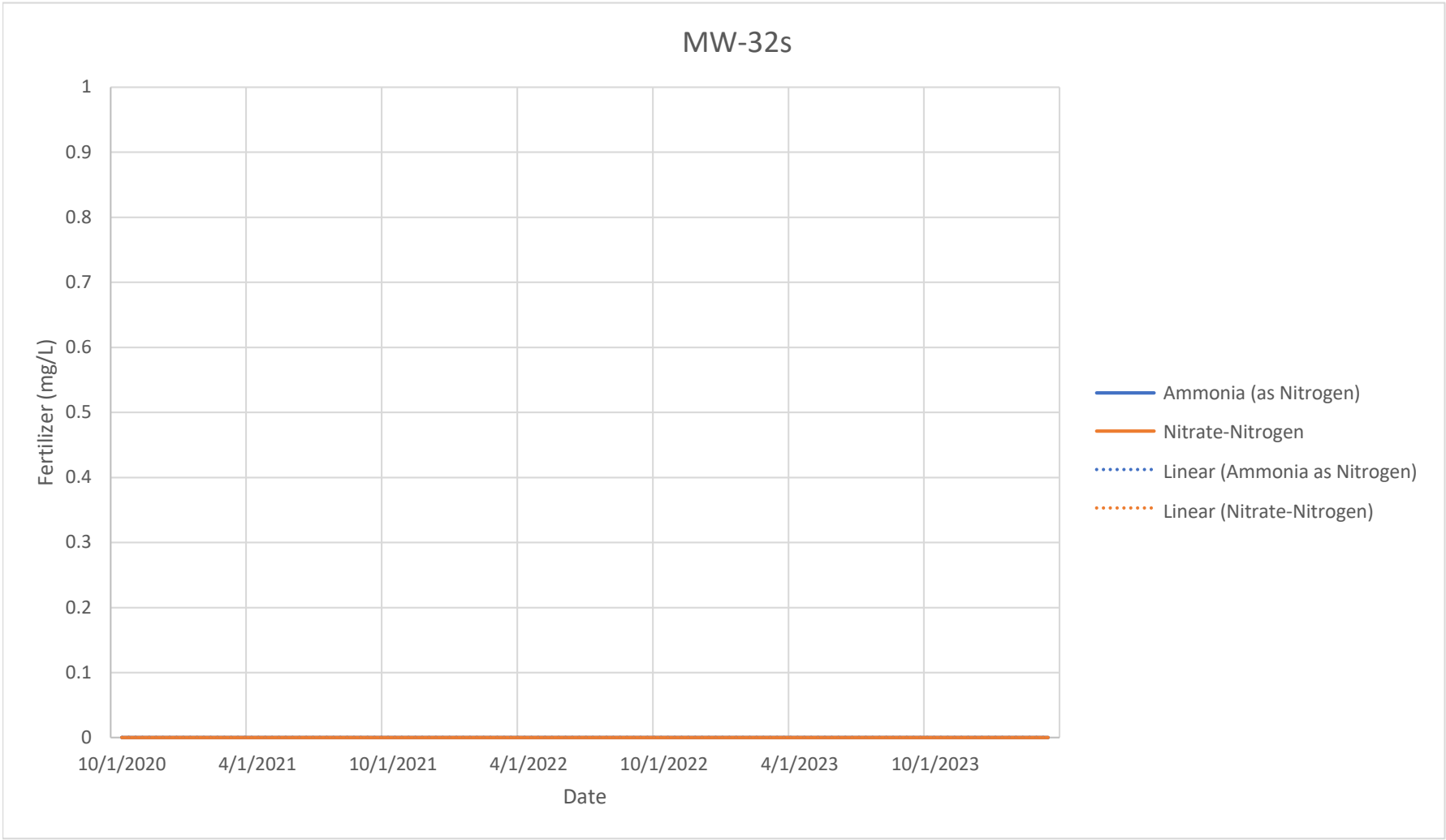

MW-23i
Fertilizer (mg/L)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/7/2020
3/2/2021
9/15/2021
3/9/2022
9/14/2022
3/14/2023
9/13/2023
3/7/2027
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

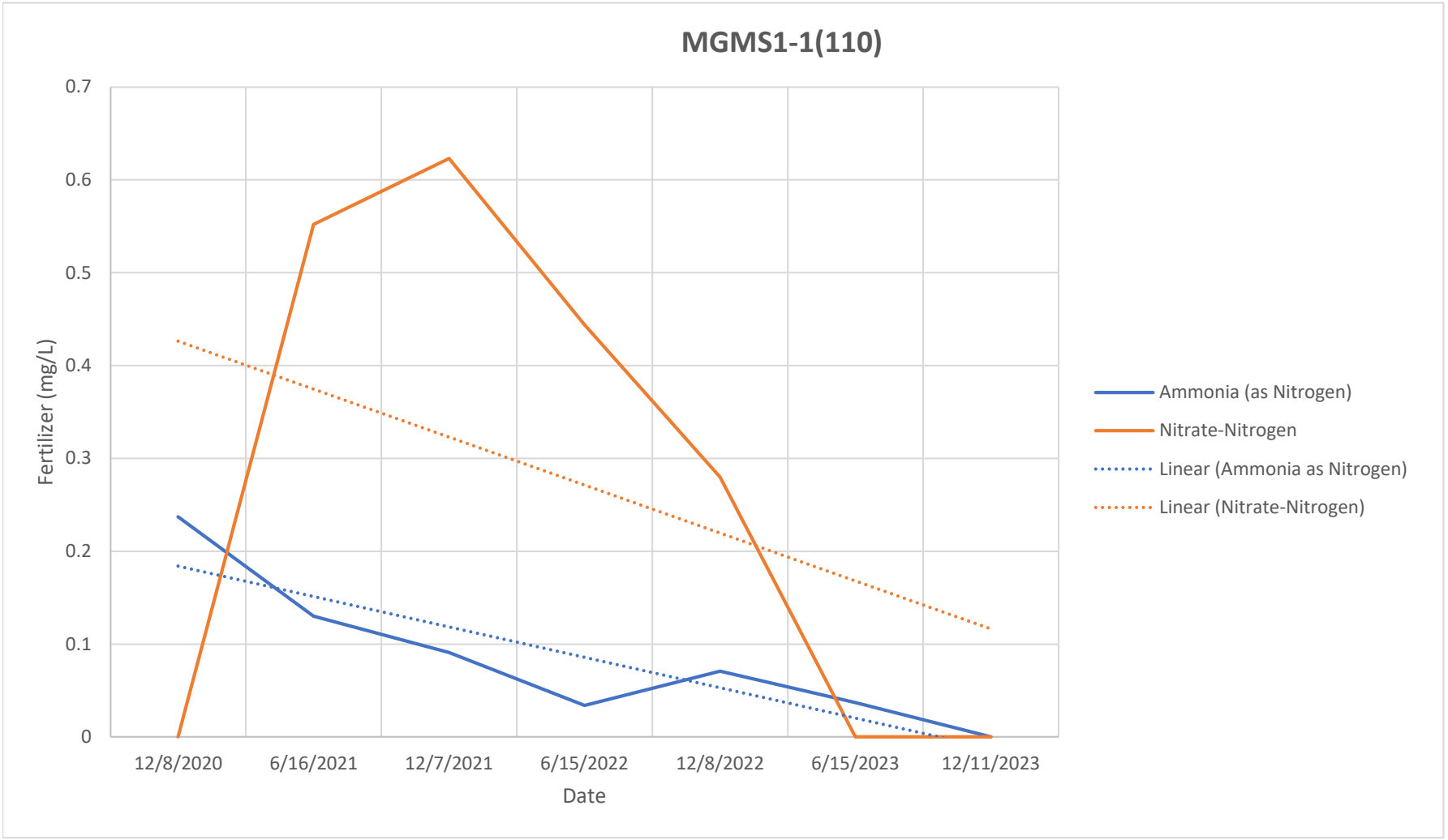

MW-24d
Fertilizer (mg/L)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/9/2020
9/14/2021
3/8/2022
9/15/2022
3/16/2023
9/14/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

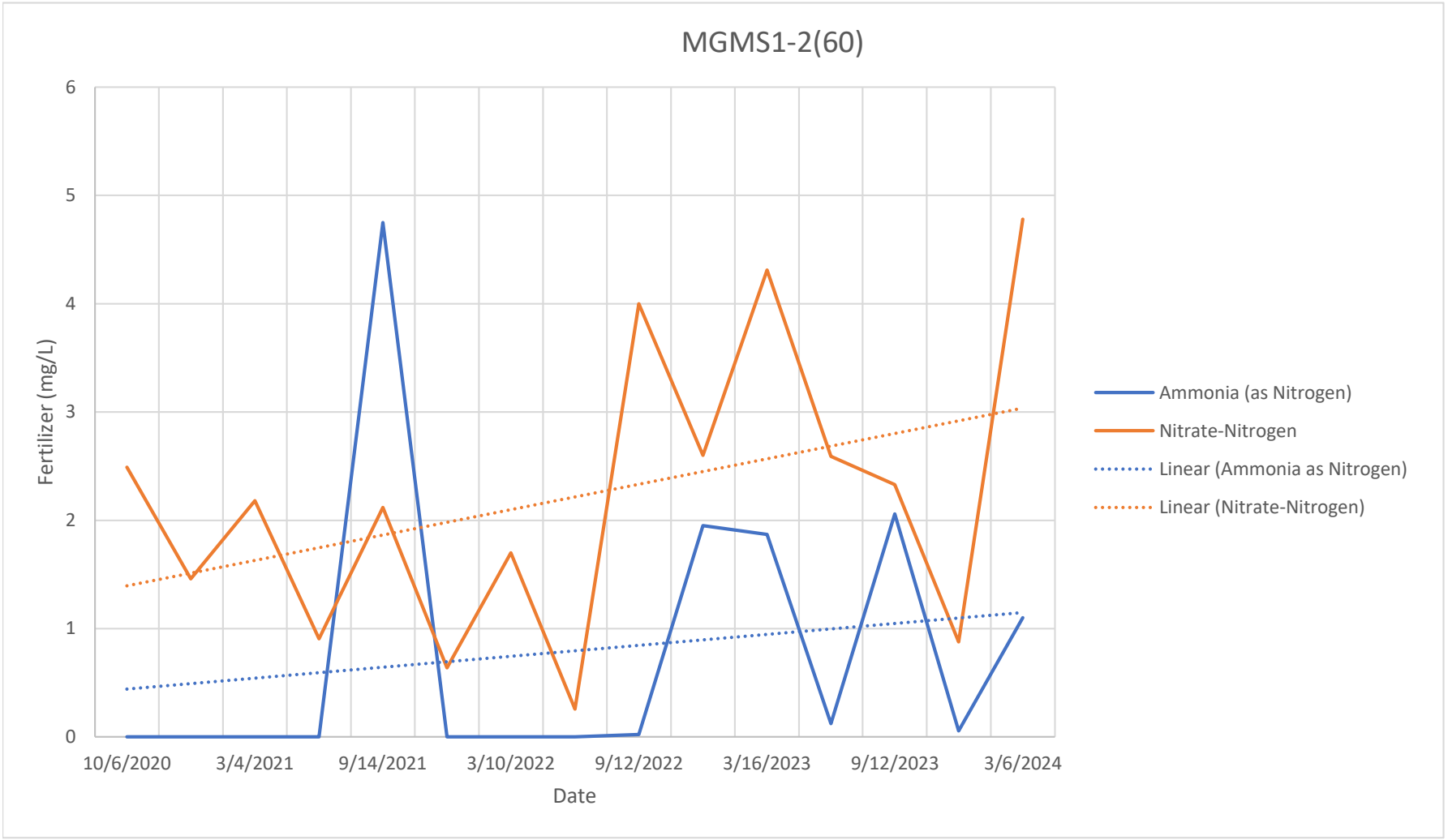

MW-24i
Fertilizer (mg/L)
12
10
8
6
4
2
0
10/9/2020
3/3/2021
9/14/2021
3/8/2022
9/14/2022
3/15/2023
9/13/2023
3/7/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

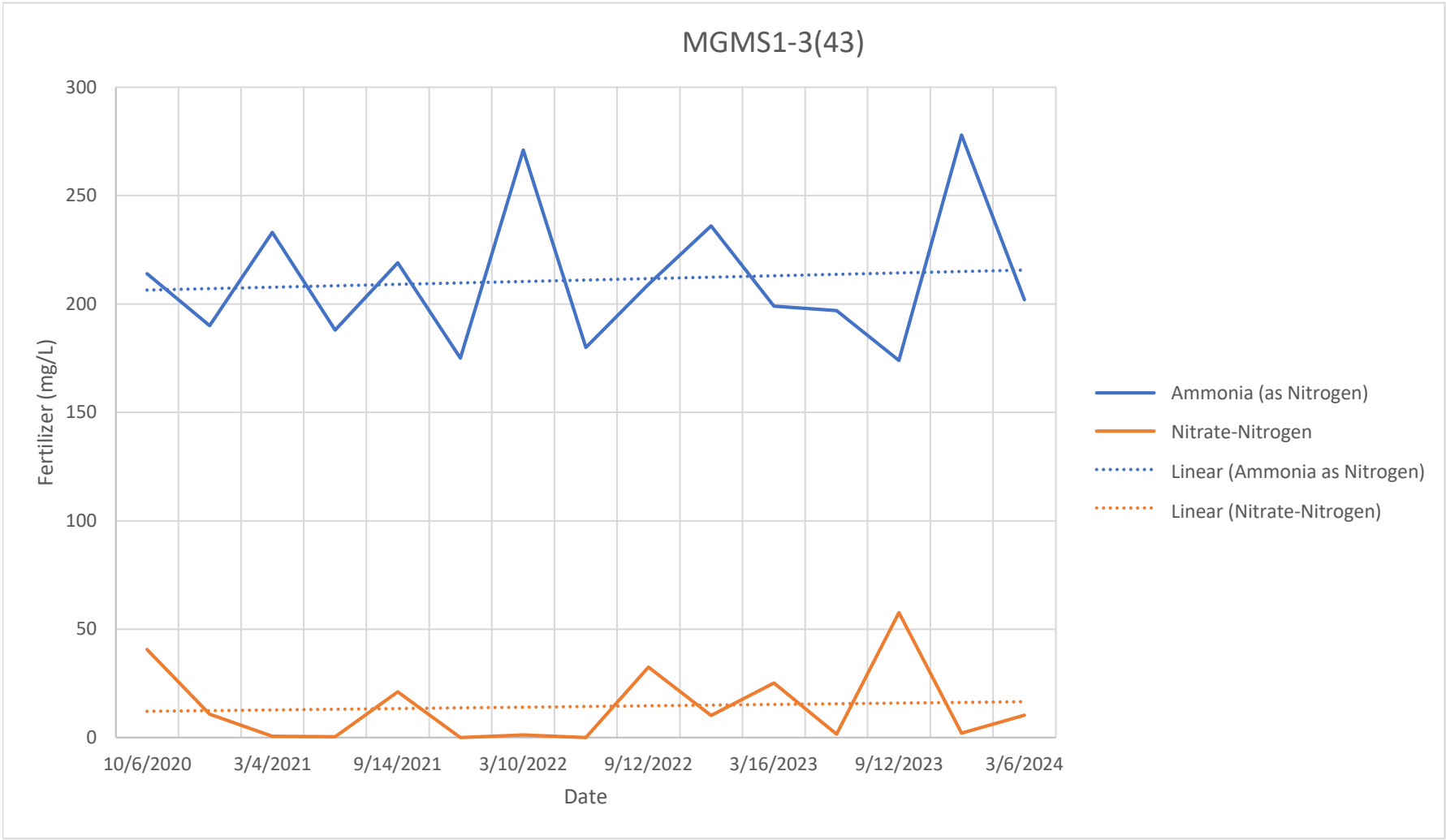

MW-25i
Fertilizer (mg/L)
2.5
2
1.5
1
0.5
0
10/7/2020
3/2/2021
9/15/2021
3/8/2022
9/14/2022
3/15/2023
9/14/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

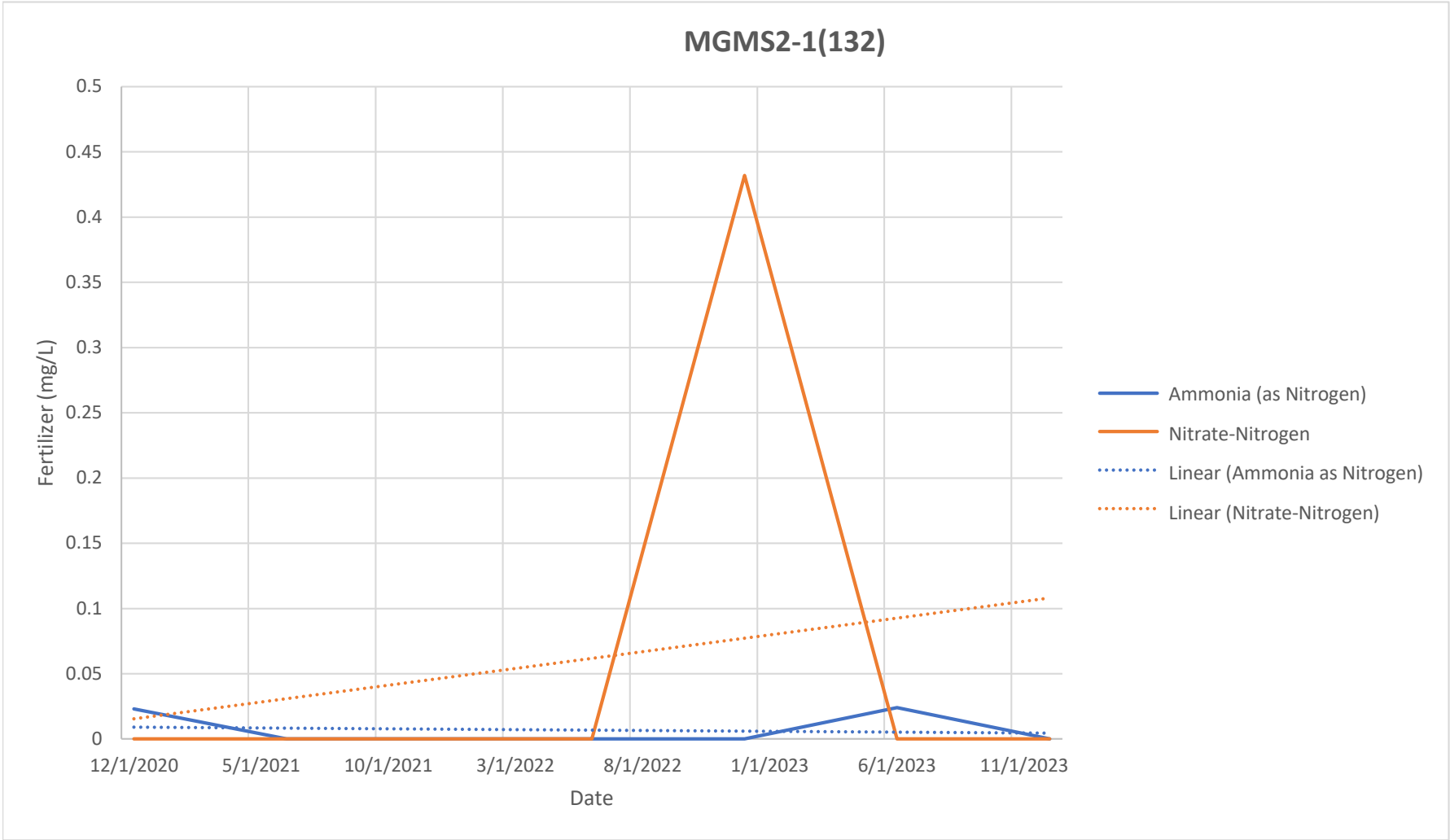

MW-26
Fertilizer (mg/L)
700
600
500
400
300
200
100
0
10/7/2020
3/4/2021
9/15/2021
3/8/2022
9/14/2022
3/15/2023
9/14/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

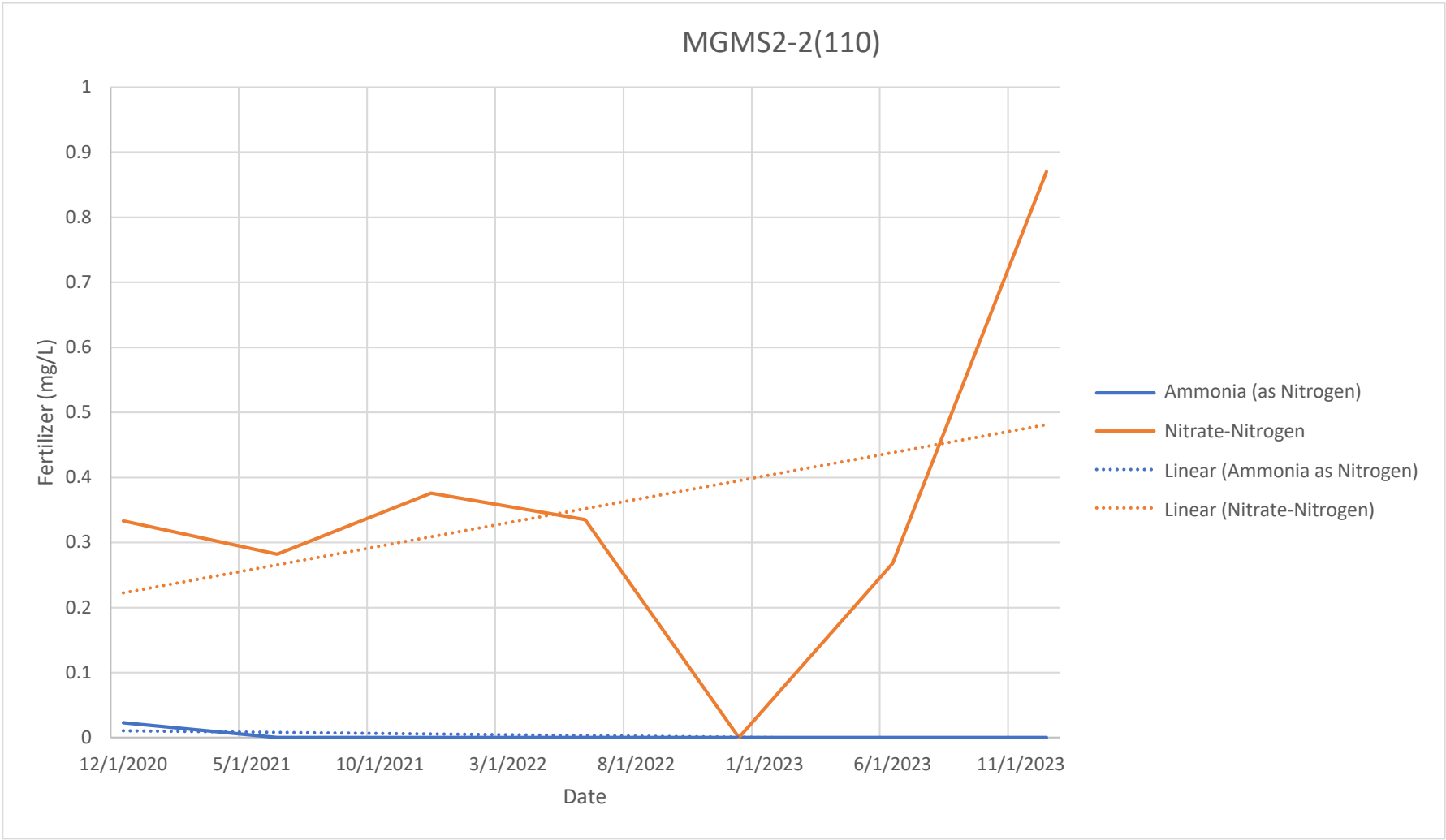

MW-32s
Fertilizer (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/1/2020
4/1/2021
10/1/2021
4/1/2022
10/1/2022
4/1/2023
10/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

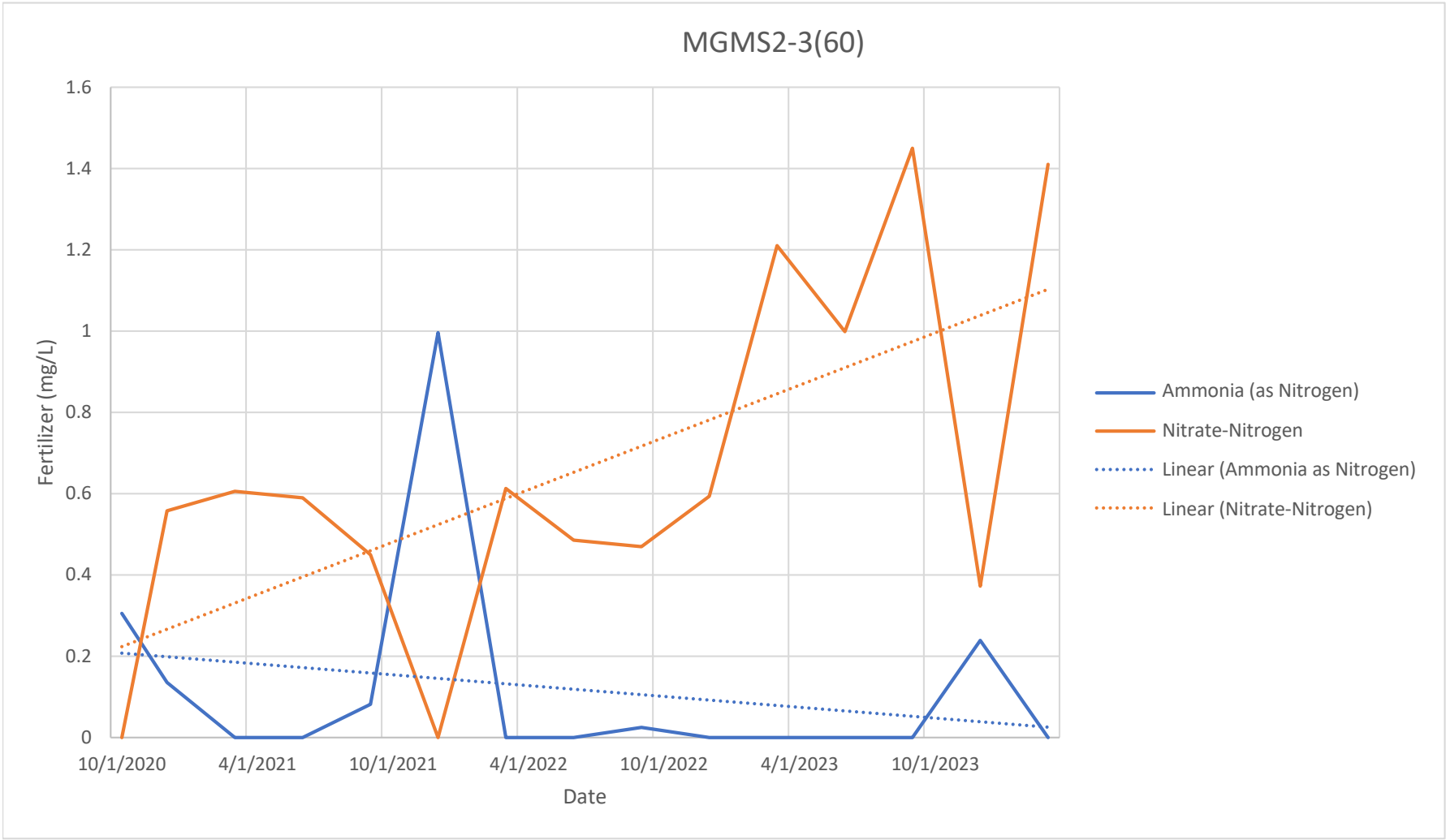

MGMS1-1(110)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Fertilizer (mg/L)
12/8/2020
6/16/2021
12/7/2021
6/15/2022
12/8/2022
6/15/2023
12/11/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

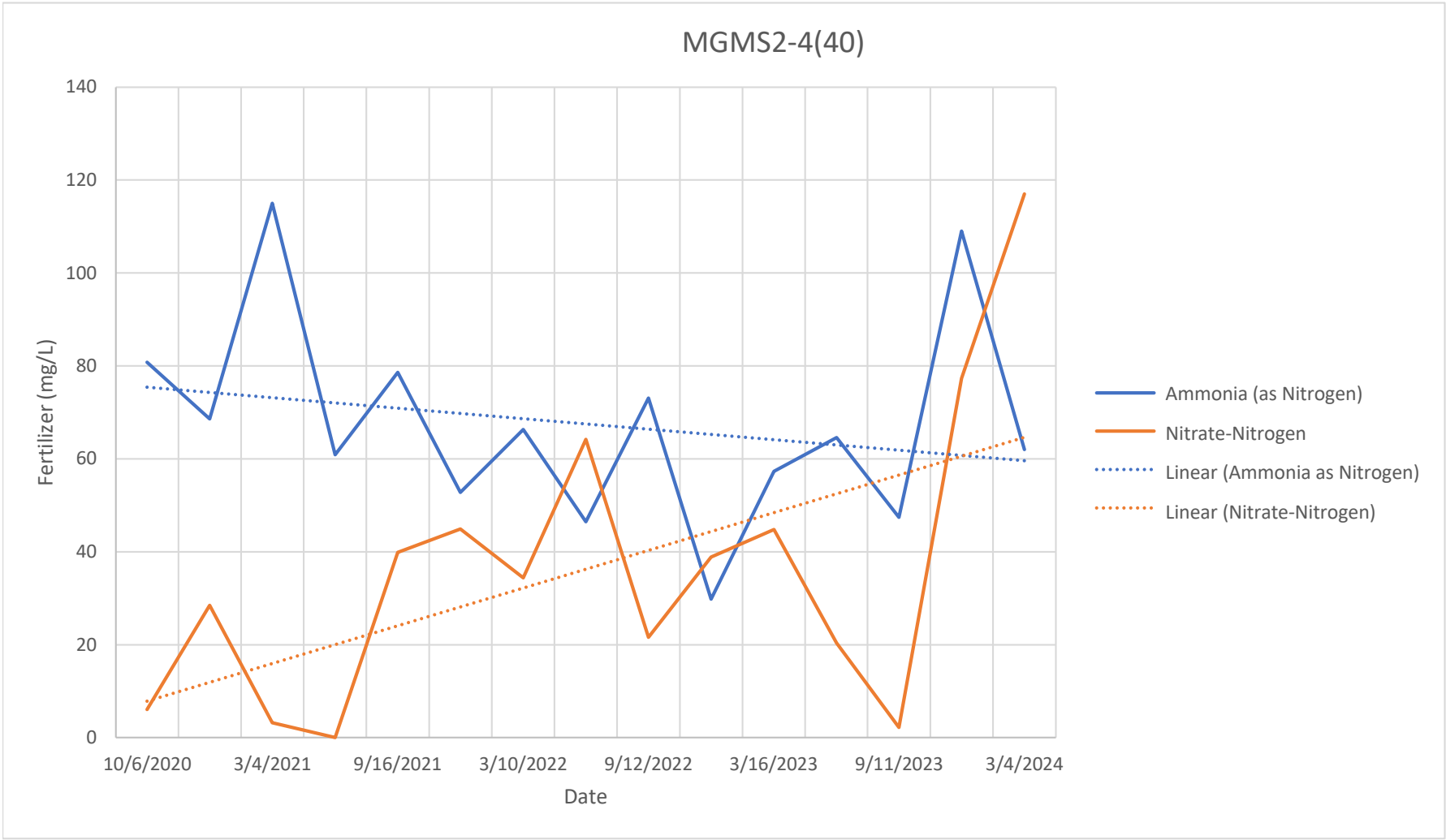

MGMS1-2(60)
Fertilizer (mg/L)
6
5
4
3
2
1
0
10/6/2020
3/4/2021
9/14/2021
3/10/2022
9/12/2022
3/16/2023
9/12/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

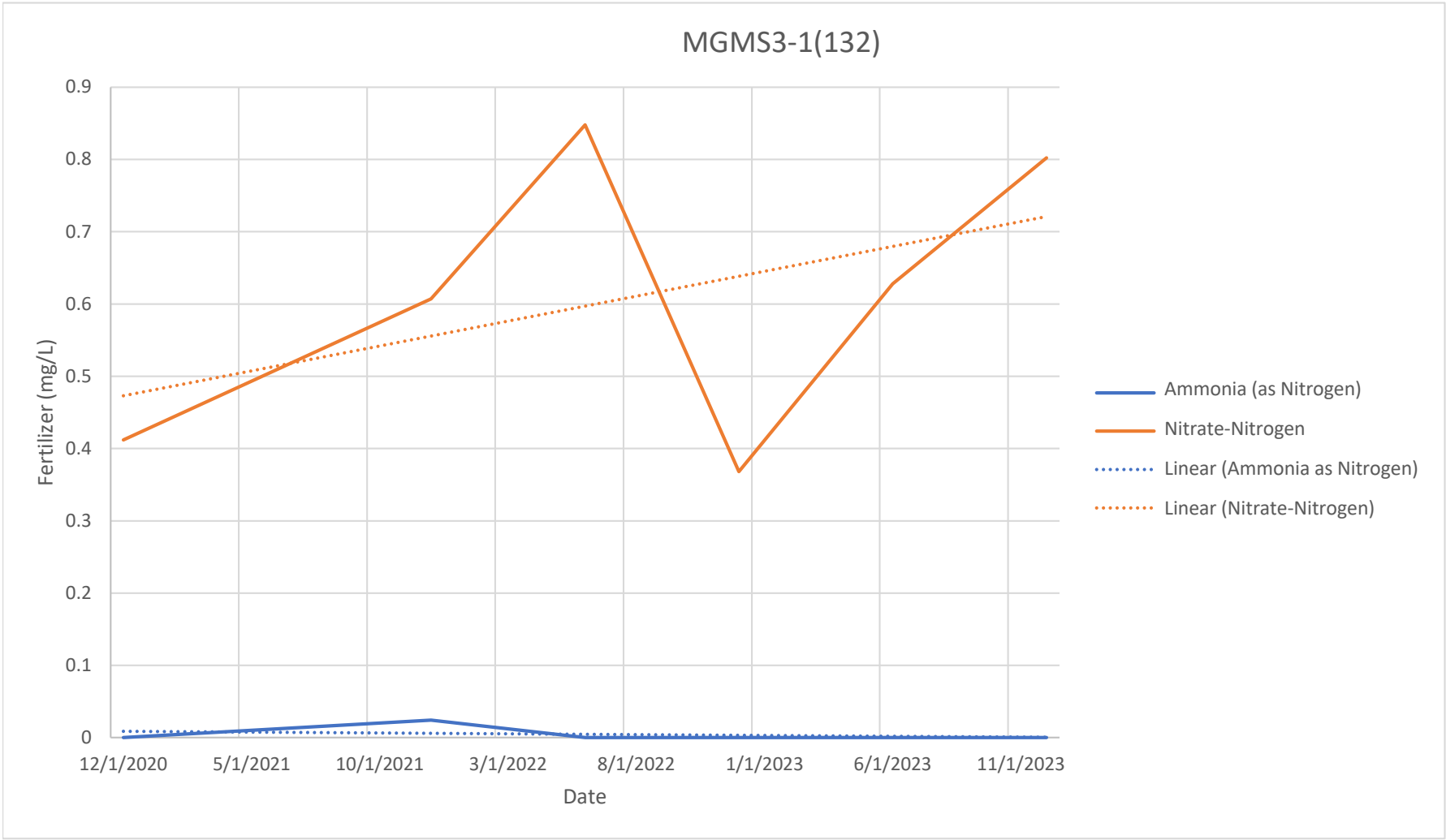

MGMS1-3(43)
300
250
200
150
100
50
0
Fertilizer (mg/L)
10/6/2020
3/4/2021
9/14/2021
3/10/2022
9/12/2022
3/16/2023
9/12/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

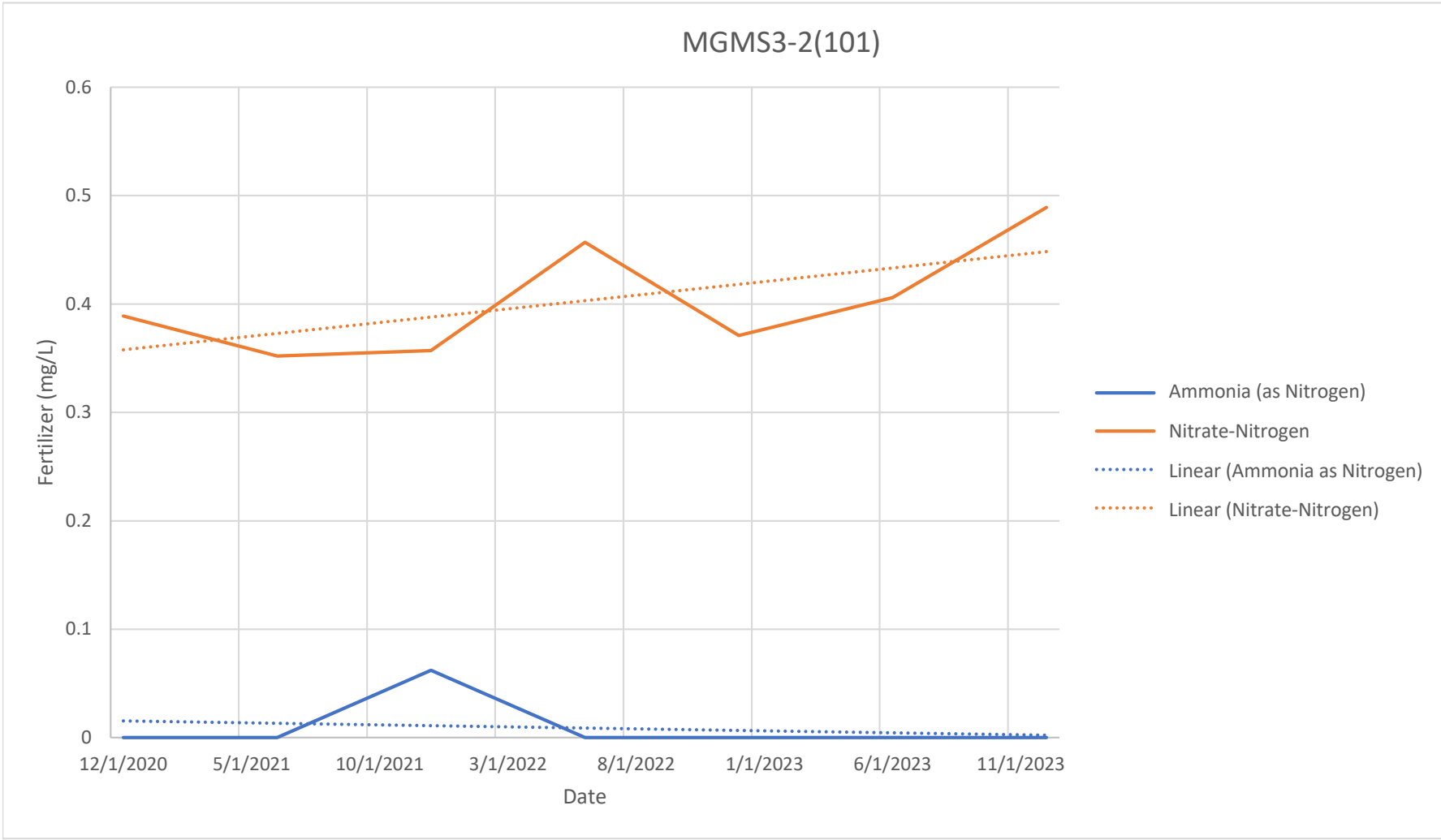

MGMS2-1(132)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Fertilizer (mg/L)
12/1/2020
5/1/2021
10/1/2021
3/1/2022
8/1/2022
1/1/2023
6/1/2023
11/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

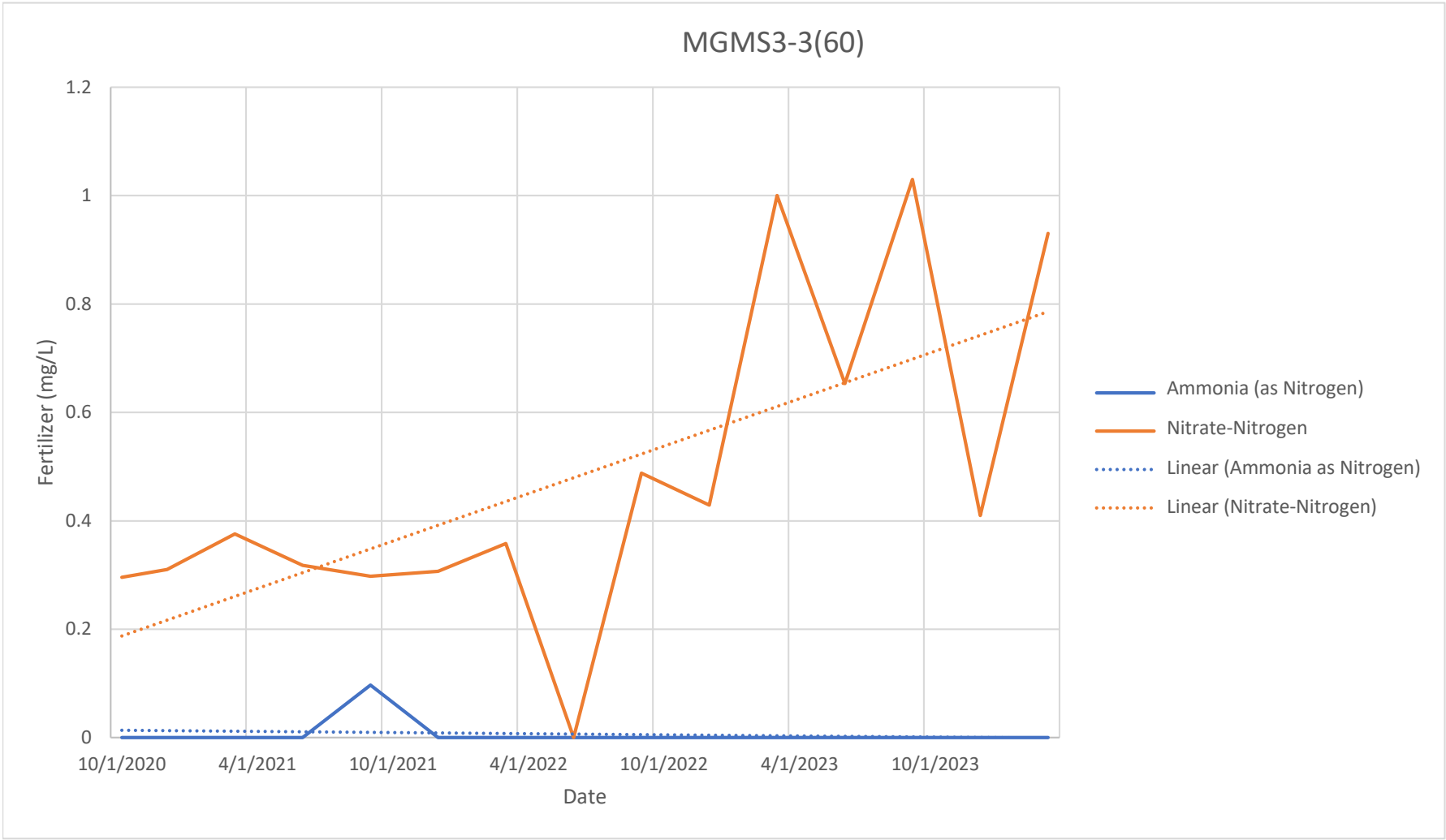

MGMS2-2(110)
Fertilizer (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
12/1/2020
5/1/2021
10/1/2021
3/1/2022
8/1/2022
1/1/2023
6/1/2023
11/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

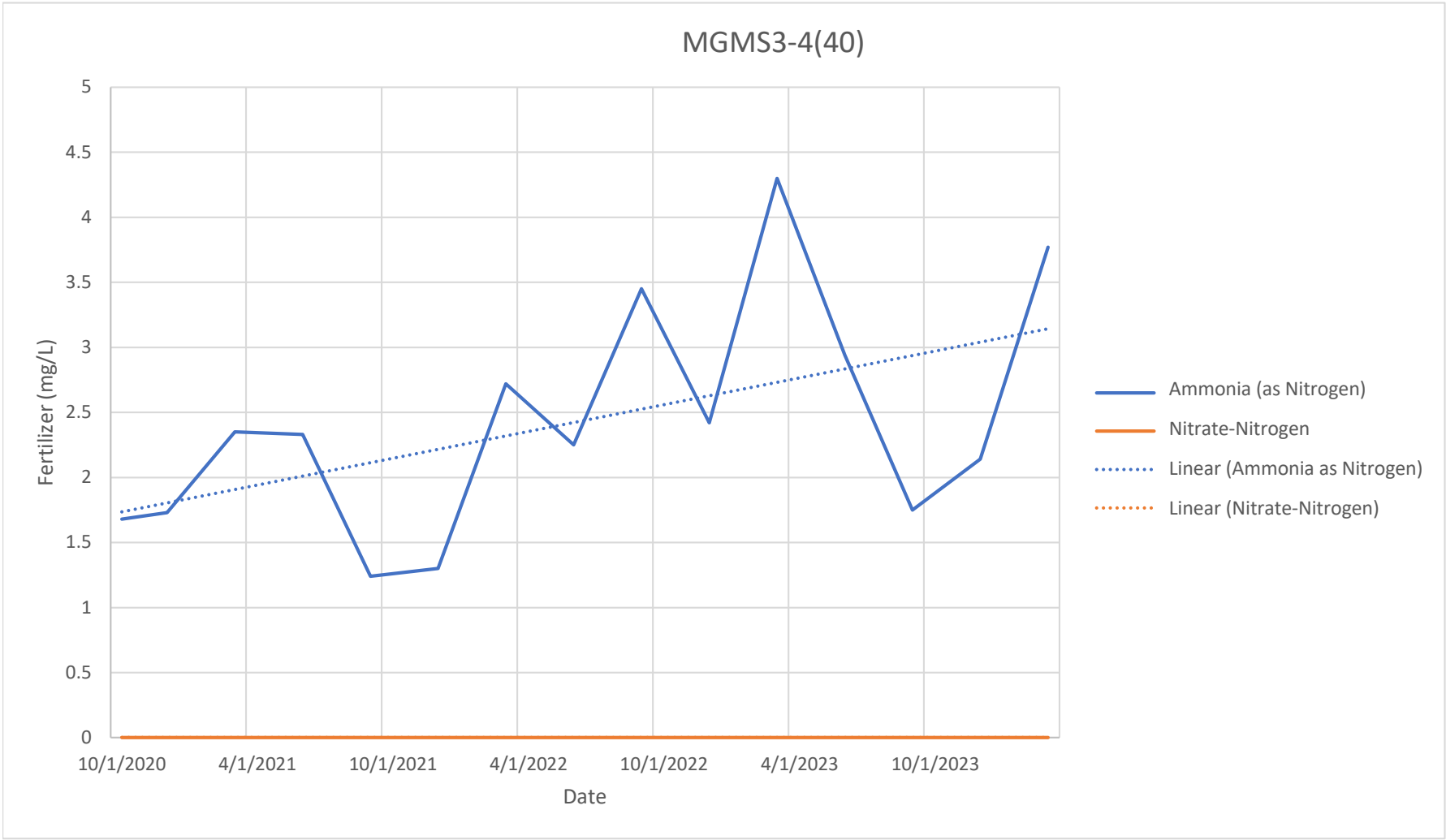

MGMS2-3(60)
Fertilizer (mg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/1/2020
4/1/2021
10/1/2021
4/1/2022
10/1/2022
4/1/2023
10/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

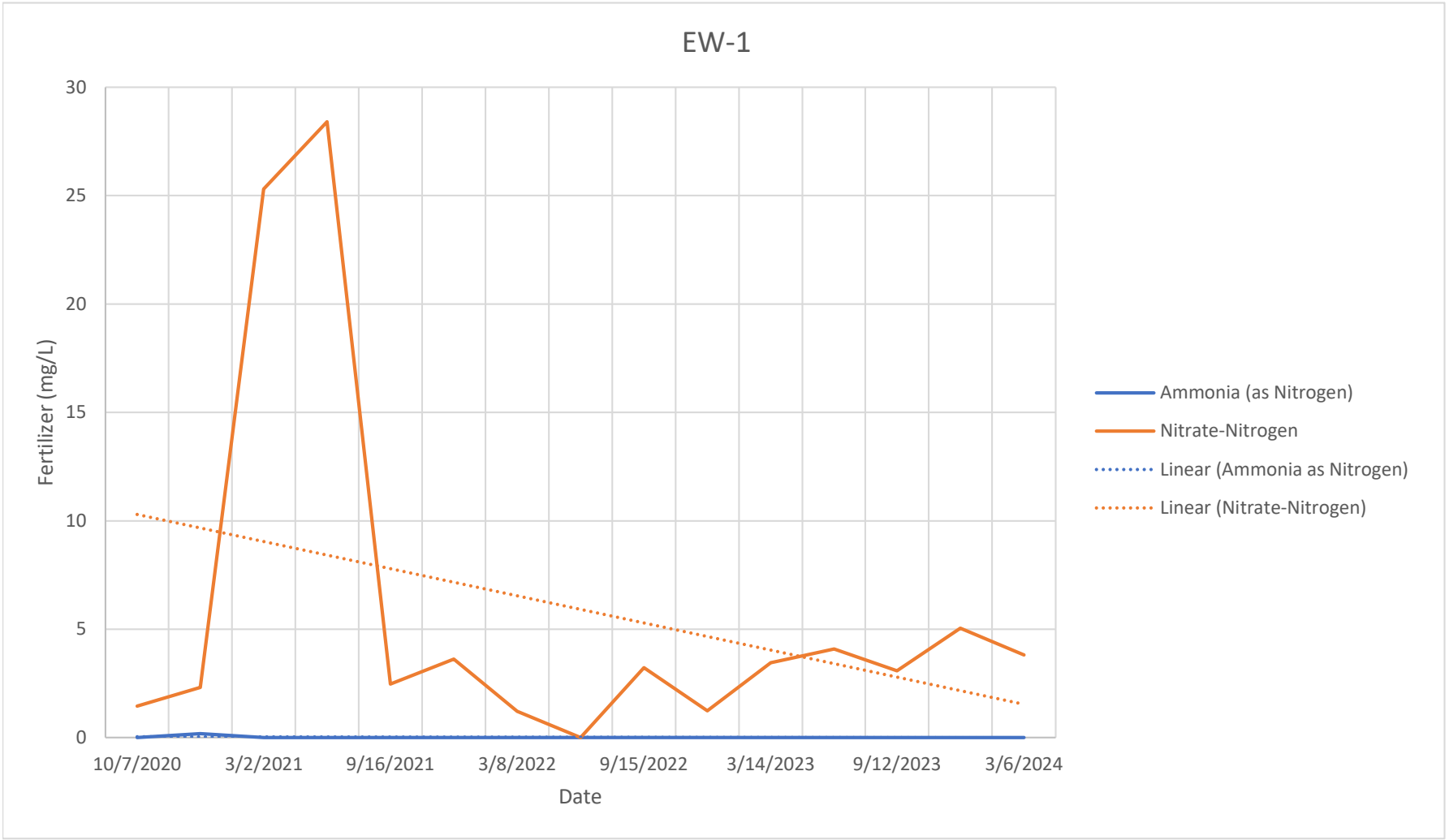

MGMS2-4(40)
Fertilizer (mg/L)
140
120
100
80
60
40
20
0
10/6/2020
3/4/2021
9/16/2021
3/10/2022
9/12/2022
3/16/2023
9/11/2023
3/4/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

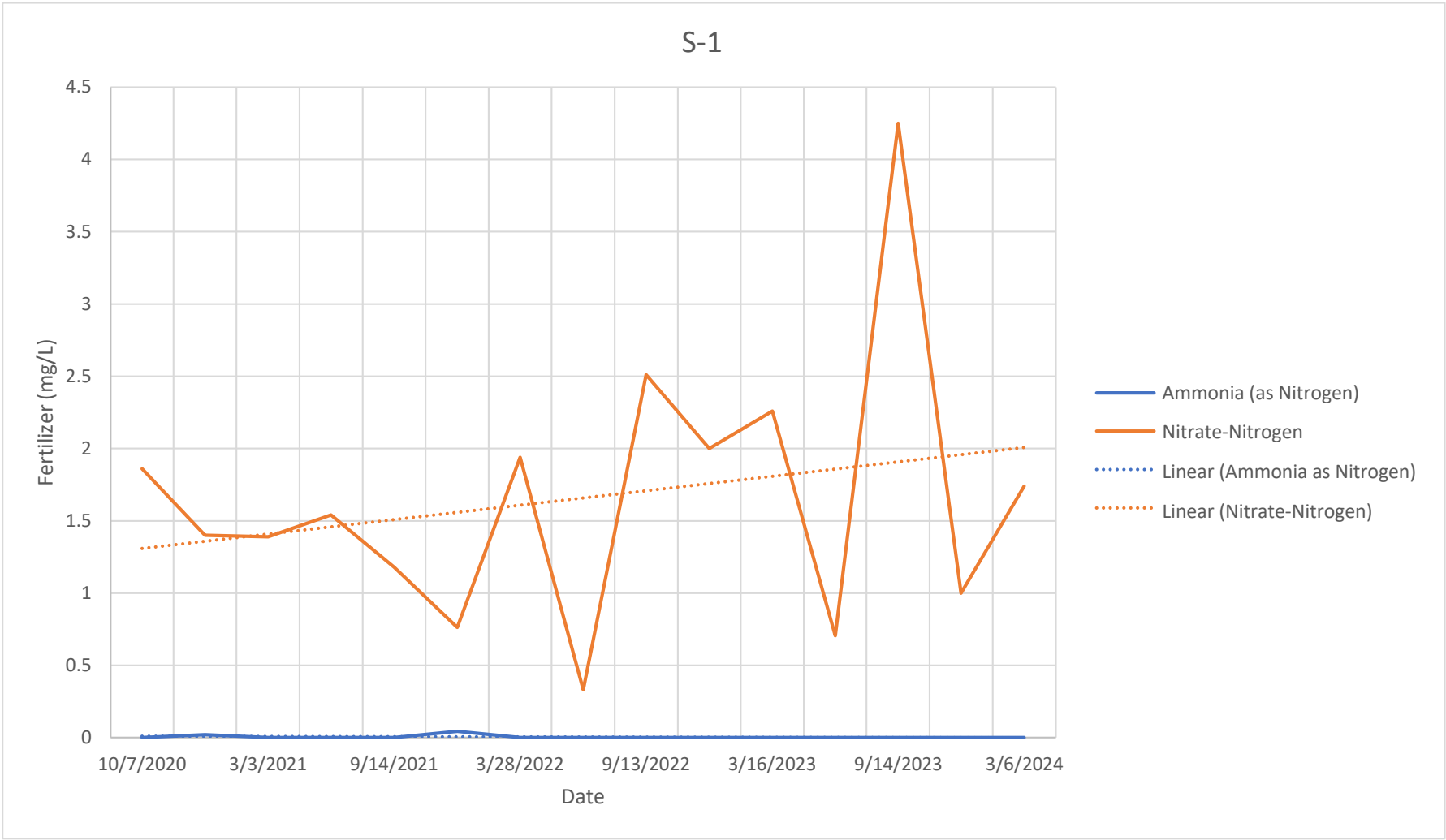

MGMS3-1(132)
Fertilizer (mg/L)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
12/1/2020
5/1/2021
10/1/2021
3/1/2022
8/1/2022
1/1/2023
6/1/2023
11/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

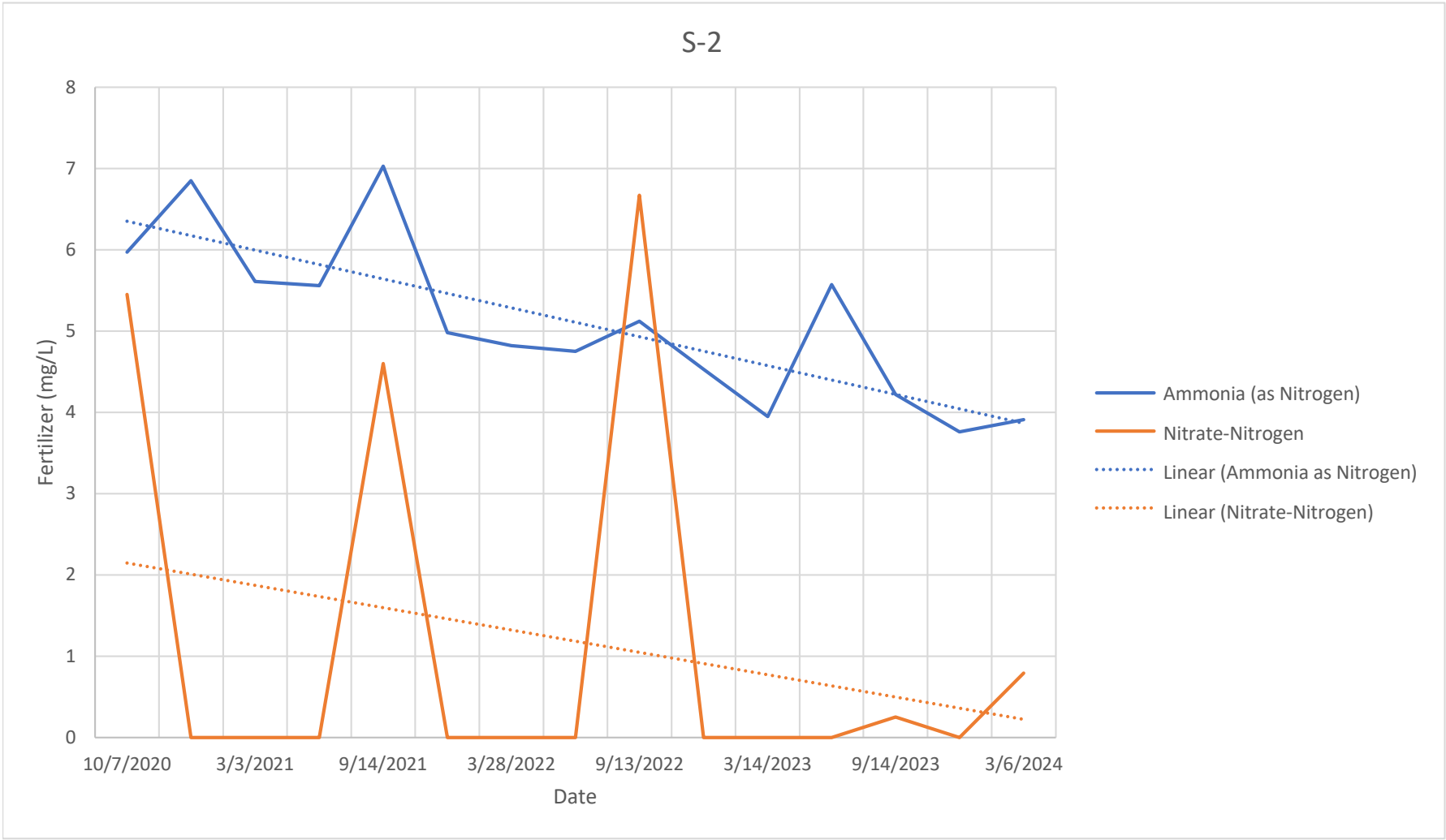

MGMS3-2(101)
0.6
0.5
0.4
0.3
0.2
0.1
0
Fertilizer (mg/L)
12/1/2020
5/1/2021
10/1/2021
3/1/2022
8/1/2022
1/1/2023
6/1/2023
11/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)


MGMS3-3(60)
1.2
1
0.8
0.6
0.4
0.2
0
Fertilizer (mg/L)
10/1/2020
4/1/2021
10/1/2021
4/1/2022
10/1/2022
4/1/2023
10/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

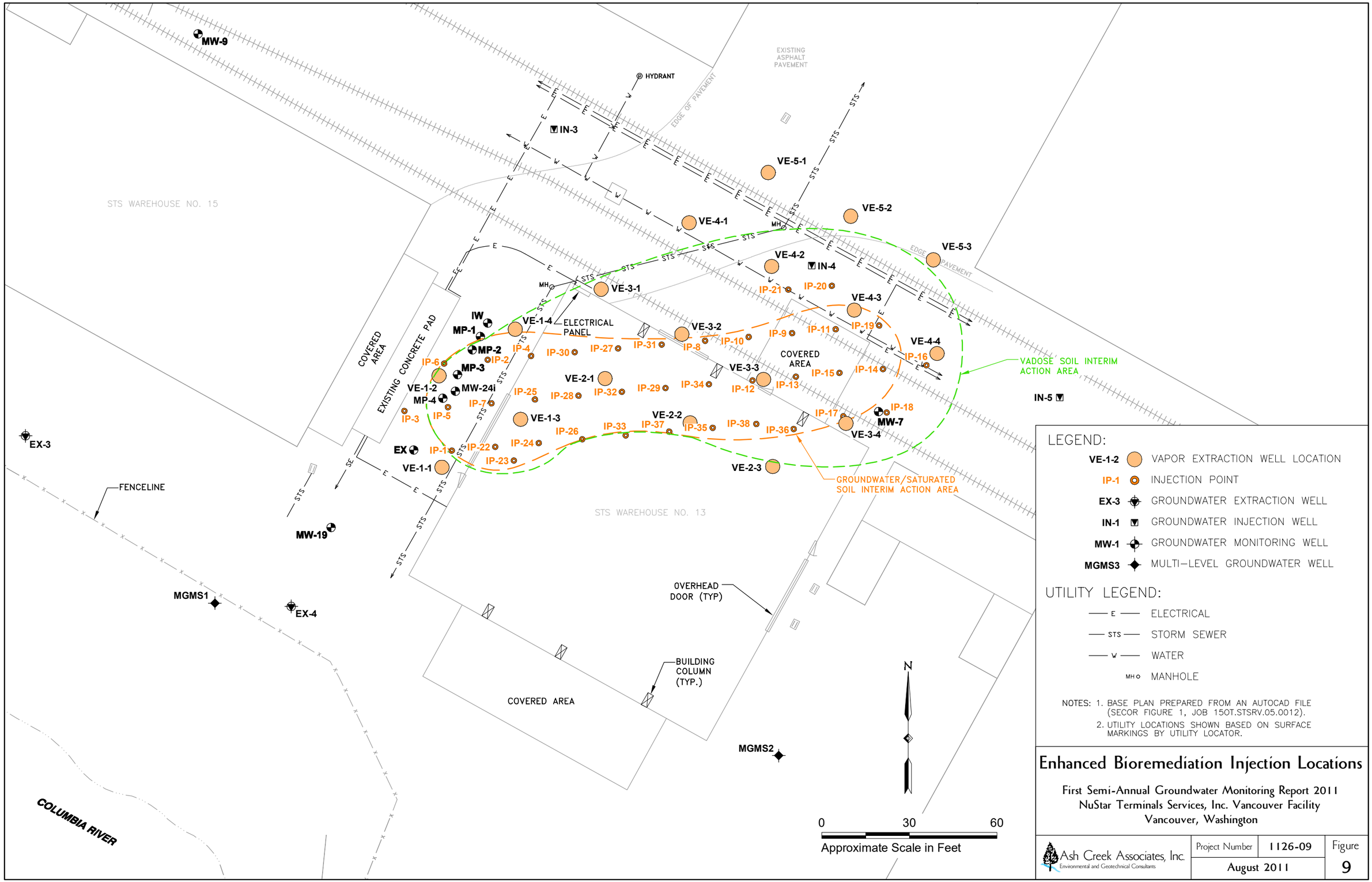

MGMS3-4(40)
Fertilizer (mg/L)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
10/1/2020
4/1/2021
10/1/2021
4/1/2022
10/1/2022
4/1/2023
10/1/2023
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)


EW-1
30
25
20
15
10
5
0
Fertilizer (mg/L)
10/7/2020
3/2/2021
9/16/2021
3/8/2022
9/15/2022
3/14/2023
9/12/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)


S-1
Fertilizer (mg/L)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
10/7/2020
3/3/2021
9/14/2021
3/28/2022
9/13/2022
3/16/2023
9/14/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)


S-2
Fertilizer (mg/L)
8
7
6
5
4
3
2
1
0
10/7/2020
3/3/2021
9/14/2021
3/28/2022
9/13/2022
3/14/2023
9/14/2023
3/6/2024
Date
Ammonia (as Nitrogen)
Nitrate-Nitrogen
Linear (Ammonia as Nitrogen)
Linear (Nitrate-Nitrogen)

APPENDIX F
2008—SVE and Bioremediation Injection Layout and Mass Removal Chart



LEGEND:

- VE-1-2 — VAPOR EXTRACTION WELL LOCATION
- IP-1 — INJECTION POINT
- EX-3 — GROUNDWATER EXTRACTION WELL
- IN-1 — GROUNDWATER INJECTION WELL
- MW-1 — GROUNDWATER MONITORING WELL
- MGMS3 — MULTI-LEVEL GROUNDWATER WELL

UTILITY LEGEND:

- E — ELECTRICAL
- STS — STORM SEWER
- W — WATER
- MH — MANHOLE

NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.

Enhanced Bioremediation Injection Locations

First Semi-Annual Groundwater Monitoring Report 2011
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1126-09	Figure
August 2011		9

SOIL VAPOR EXTRACTION SYSTEM
(SEE FIGURES 7 and 8)

ELECTRICAL SERVICE
INSTALLED FROM EXISTING
BUILDING SERVICE

VAPOR EXTRACTION
PIPING IN TRENCH
(TYPICAL OF 5
ZONES).

WELL VAULT INSTALLED
AT EACH WELLHEAD
(TYPICAL OF 18).

VADOSE SOIL INTERIM
ACTION AREA

SOIL VAPOR
EXTRACTION WELL
(TYPICAL OF 18;
NUMBER REPRESENTS
MANIFOLD ZONE).

IN-1
IN-2
IN-3
IN-4
IN-5
MW-9
MW-13
EX-3
MW-19
EX-4
MGMS1
EX-5
MW-12
MGMS2
MW-7
MW-24i
MP-1
MP-2
MP-3
MP4
IW
EX
VE-1-1
VE-1-2
VE-1-3
VE-1-4
VE-2-1
VE-2-2
VE-2-3
VE-3-1
VE-3-2
VE-3-3
VE-3-4
VE-4-1
VE-4-2
VE-4-3
VE-4-4
VE-5-1
VE-5-2
VE-5-3
STS WAREHOUSE NO. 15
STS WAREHOUSE NO. 13
COVERED AREA
EXISTING CONCRETE PAD
ELECTRICAL PANEL
COVERED AREA
EXISTING ASPHALT PAVEMENT
EDGE OF PAVEMENT
EDGE OF GRAVEL
HYDRANT
OVERHEAD DOOR (TYP)
BUILDING COLUMN (TYP.)
COVERED AREA
COLUMBIA RIVER

N

0 40 80
Approximate Scale in Feet

LEGEND:

VE-1-2	VAPOR EXTRACTION WELL LOCATION
EX-3	GROUNDWATER EXTRACTION WELL
IN-1	GROUNDWATER INJECTION WELL
MW-1	GROUNDWATER MONITORING WELL
MGMS3	MULTI-LEVEL GROUNDWATER WELL

UTILITY LEGEND:

E	ELECTRICAL
SS	STORM SEWER
W	WATER
MH	MANHOLE

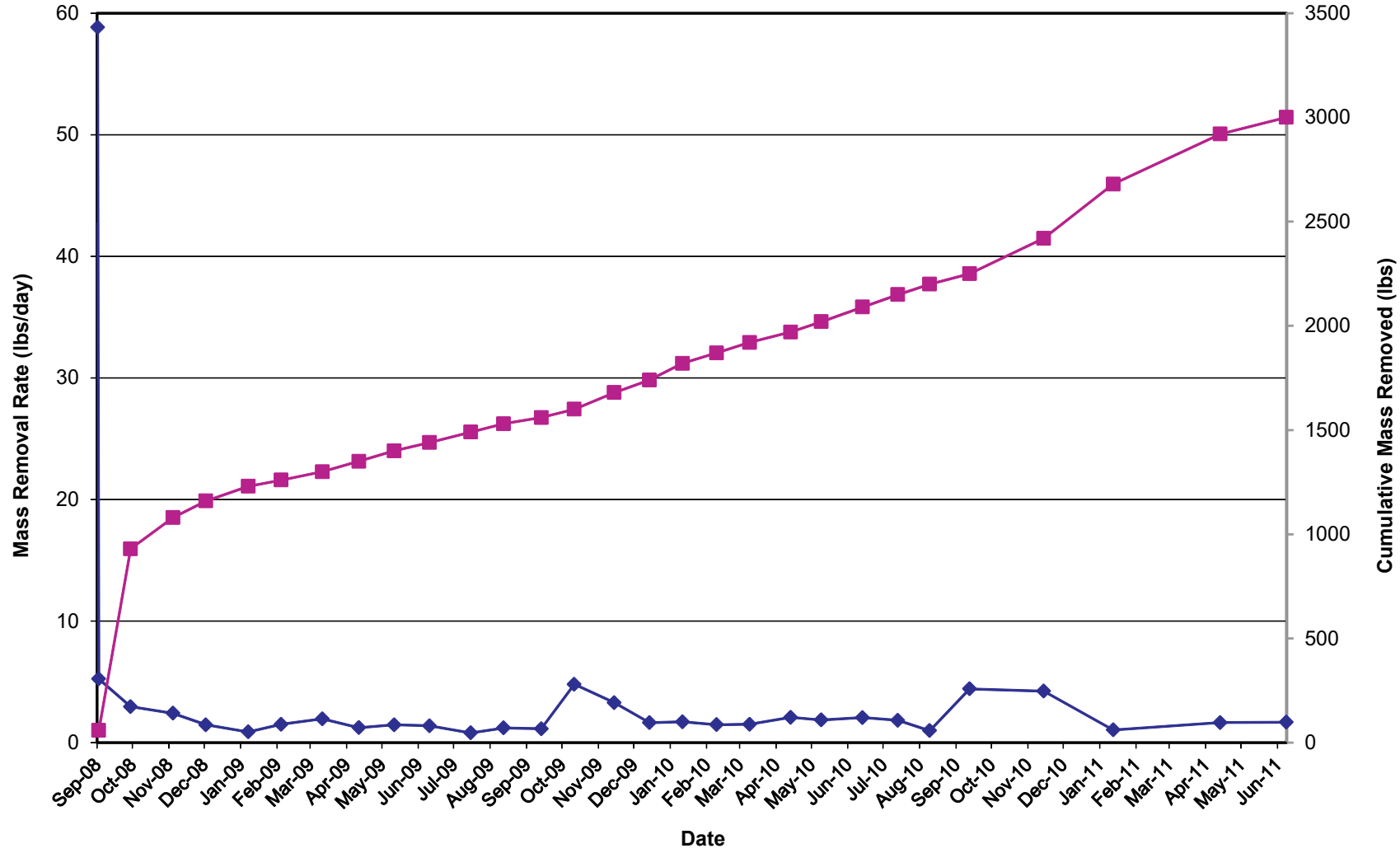
NOTES:
1. BASE PLAN PREPARED FROM AN AUTOCAD FILE (SECOR FIGURE 1, JOB 150T.STSRV.05.0012).
2. UTILITY LOCATIONS SHOWN BASED ON SURFACE MARKINGS BY UTILITY LOCATOR.
3. INJECTION LOCATIONS BASED ON FIELD MEASUREMENTS TO EXISTING SITE STRUCTURES.

Soil Vapor Extraction System Site Plan

First Semi-Annual Groundwater Monitoring Report 2011
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1126-09	Figure
August 2011		10



Legend:

Removal Rate (lbs/day)

Cumulative Mass Removal

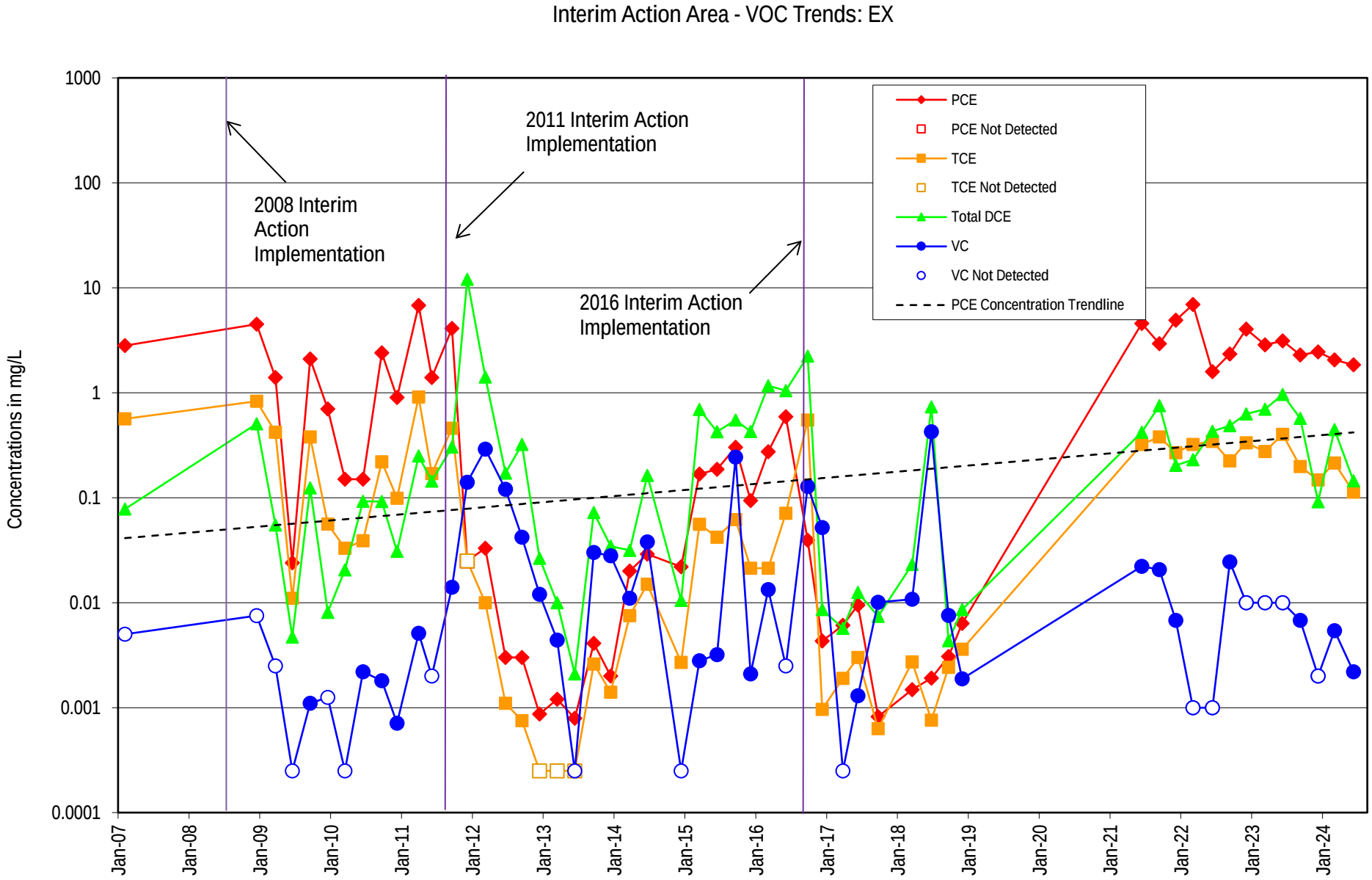
2008 SVE System - VOC Mass Removal

Second Semi-Annual Groundwater Monitoring Report 2011
NuStar Terminals Services, Inc. Vancouver Facility
Vancouver, Washington

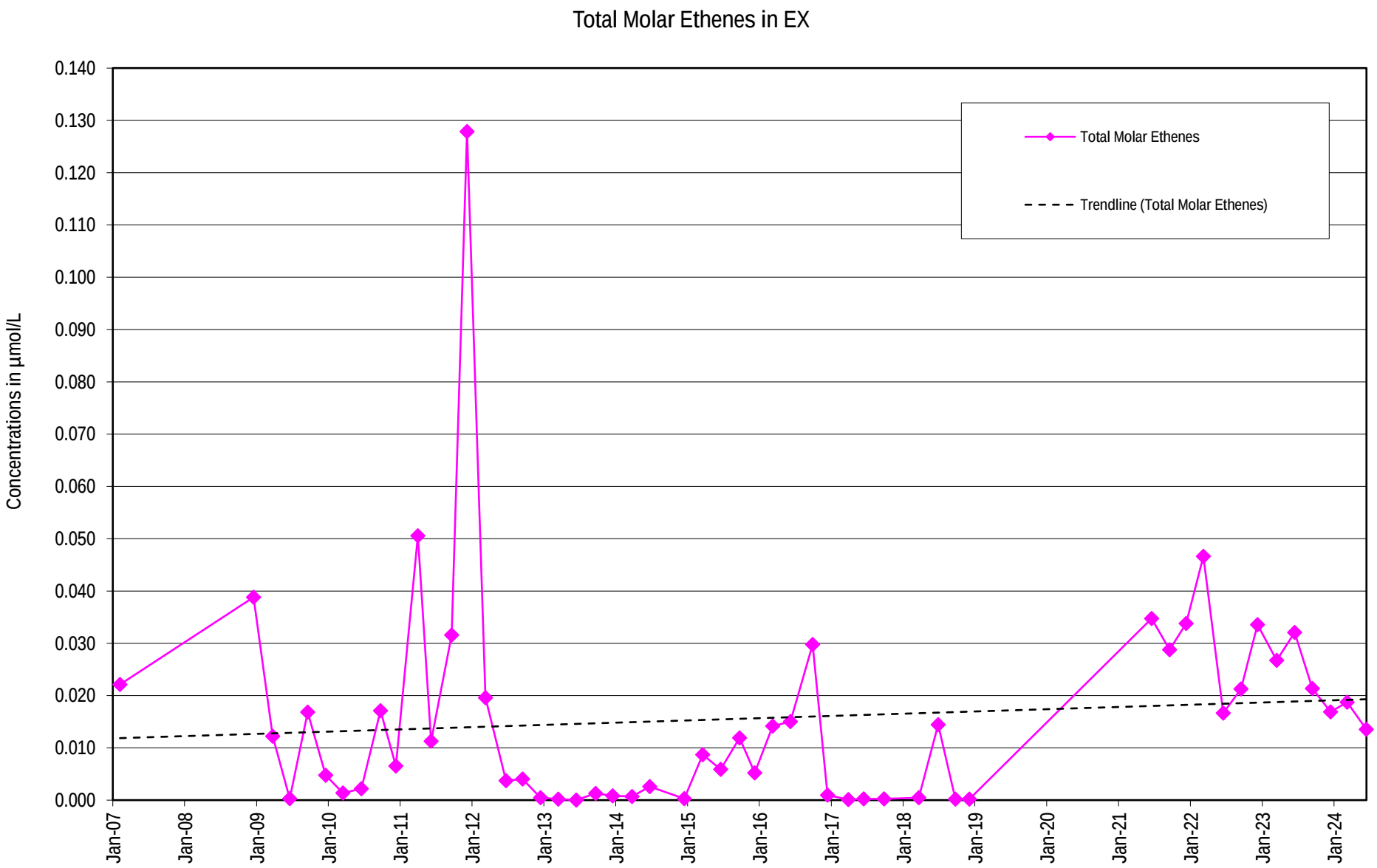
Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number	1126-09	Figure
January 2012		11

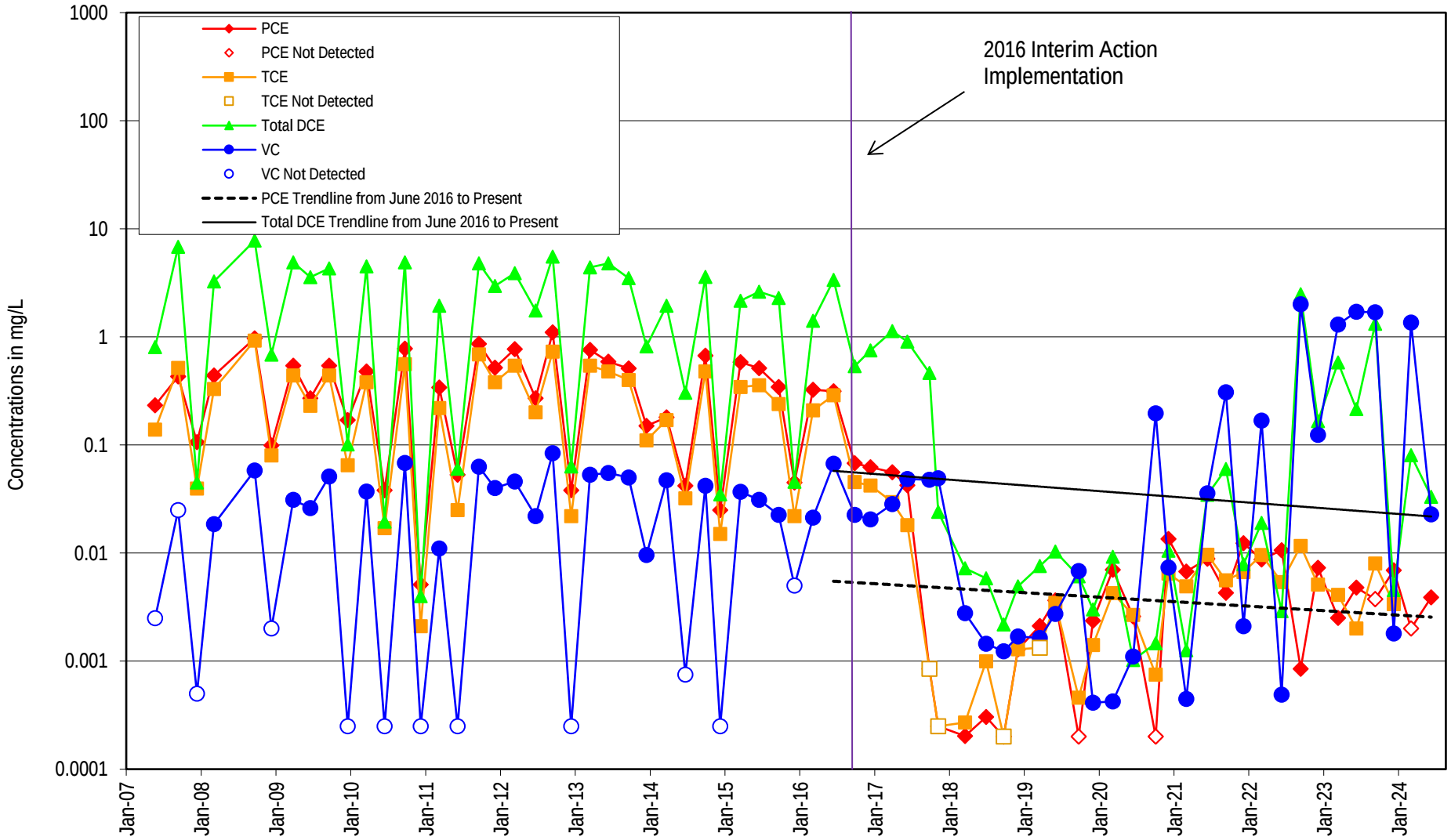
APPENDIX G
Molar Concentration Trend Plots—Interim Action Wells



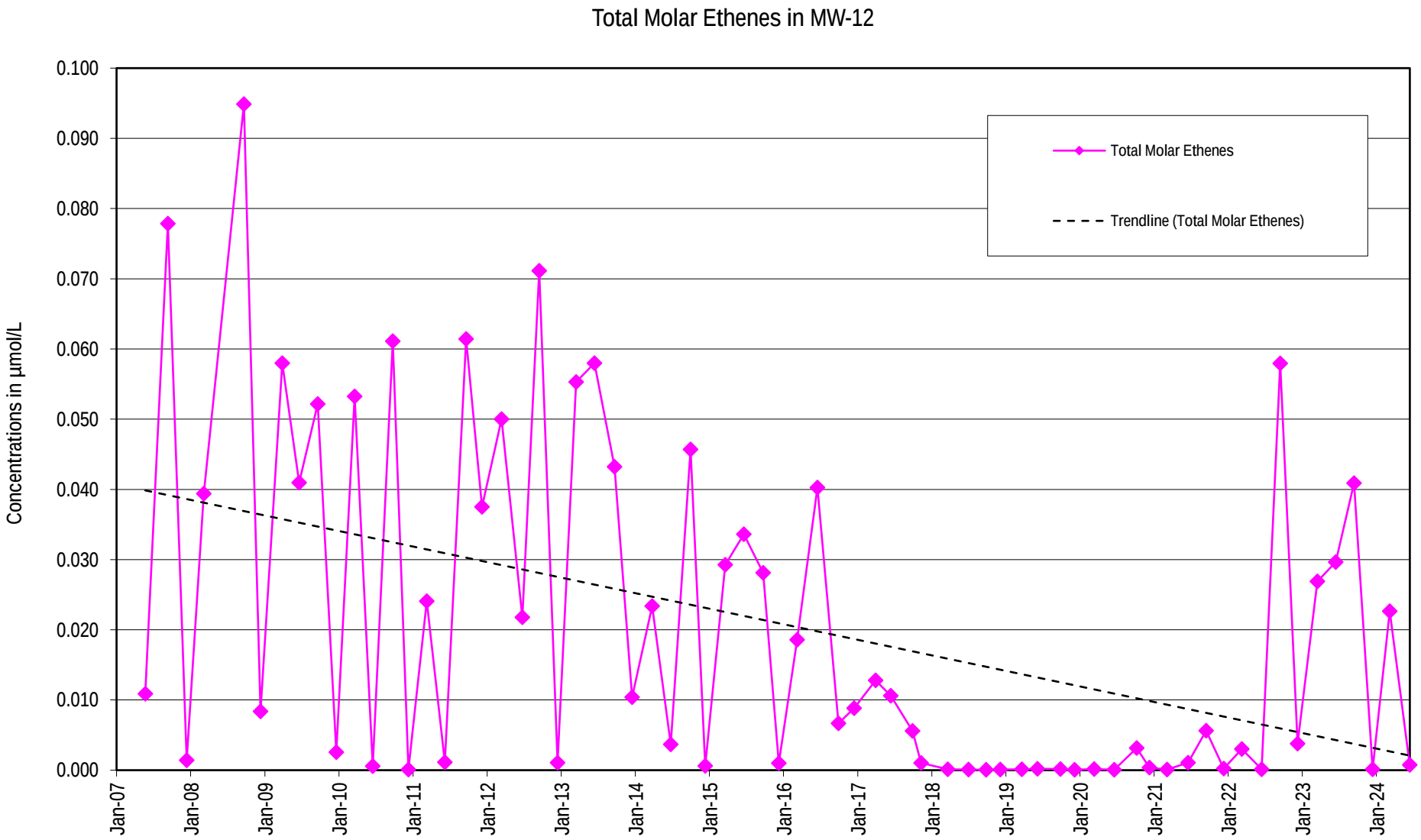
Note: Not detected values plotted at 1/2 the reporting limit.

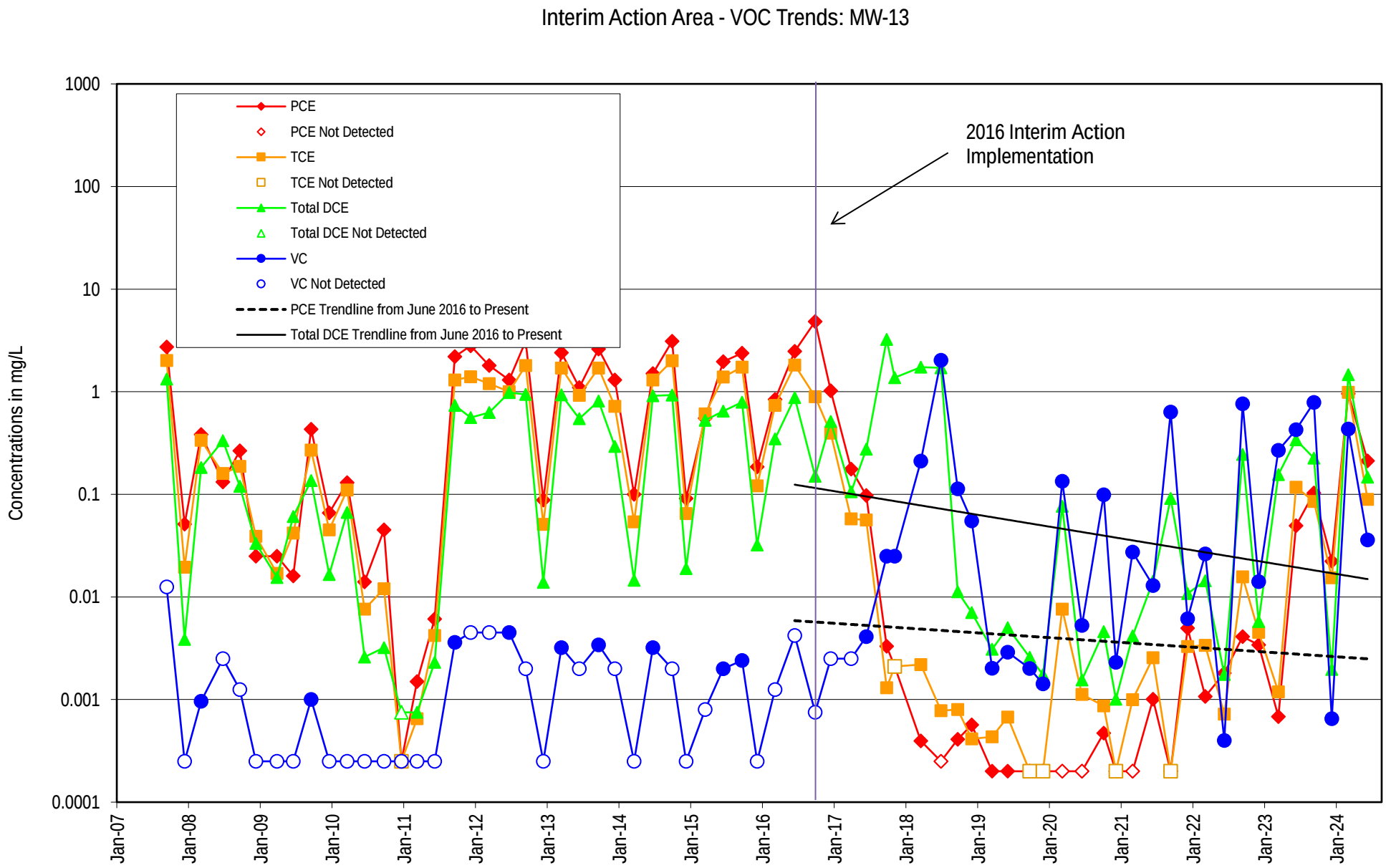

Total Molar Ethenes in EX
Concentrations in µmol/L
0.140
0.130
0.120
0.110
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)

Interim Action Area - VOC Trends: MW-12

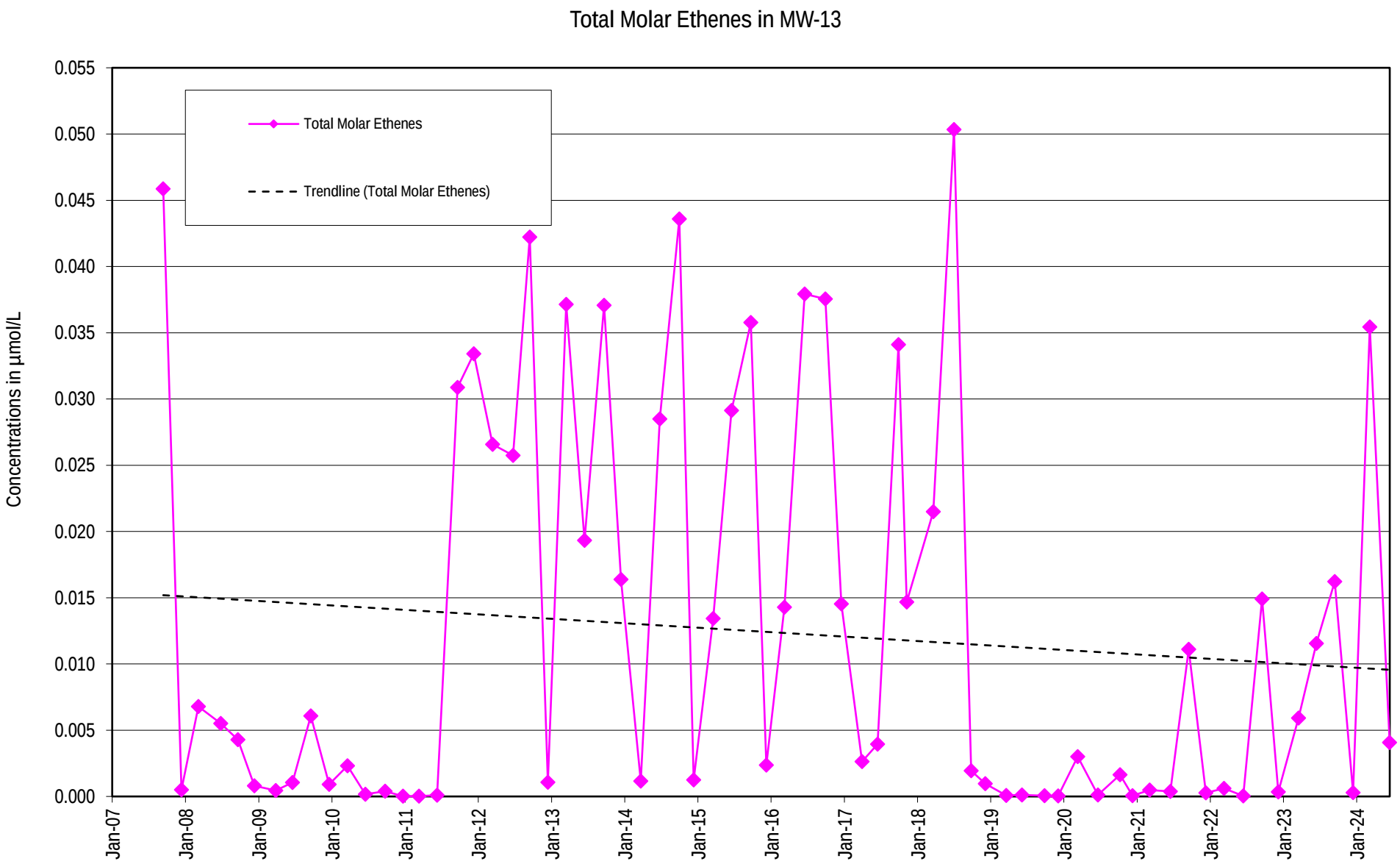


Note: Not detected values plotted at 1/2 the reporting limit.

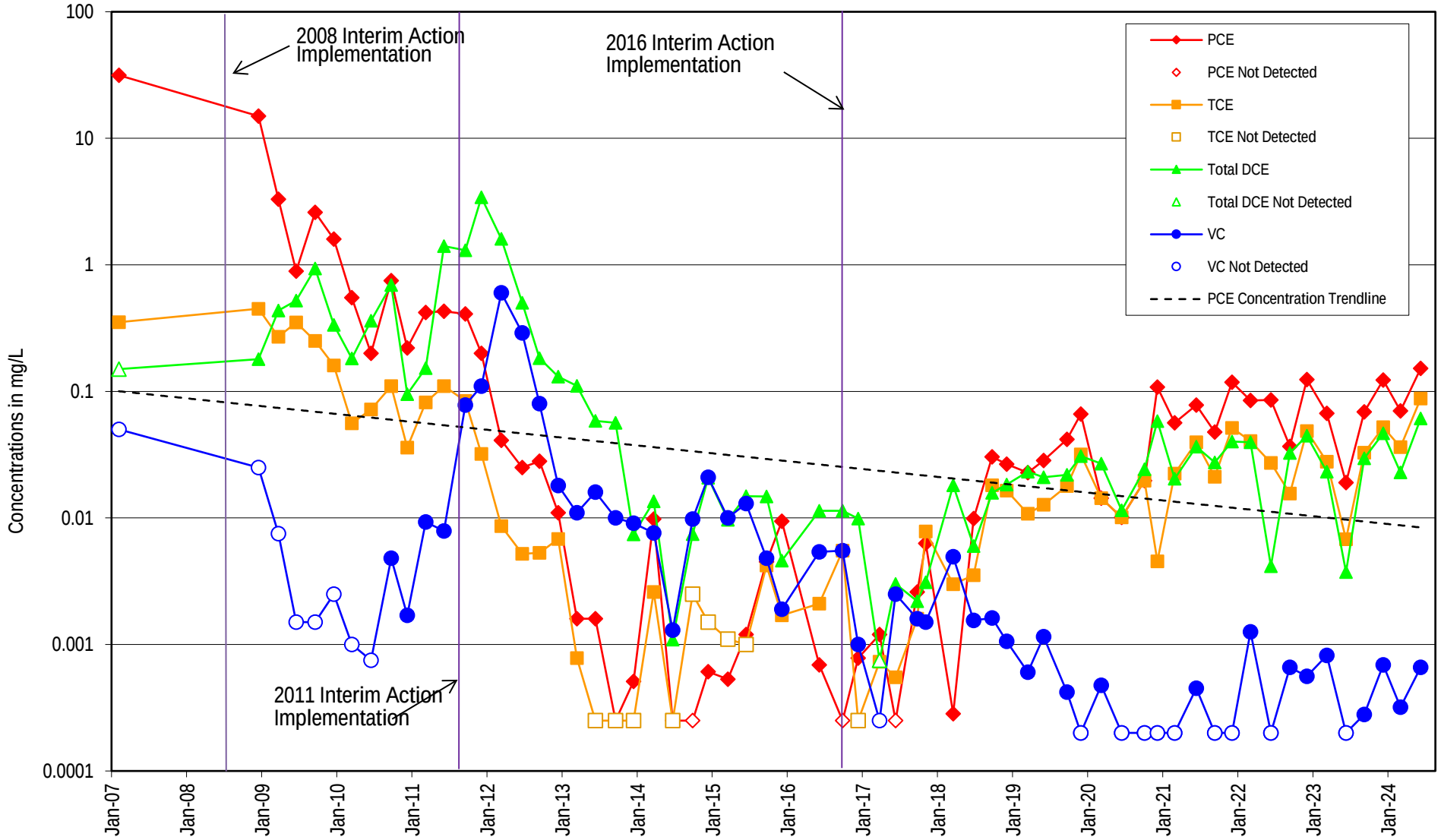

Total Molar Ethenes in MW-12
Concentrations in µmol/L
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)



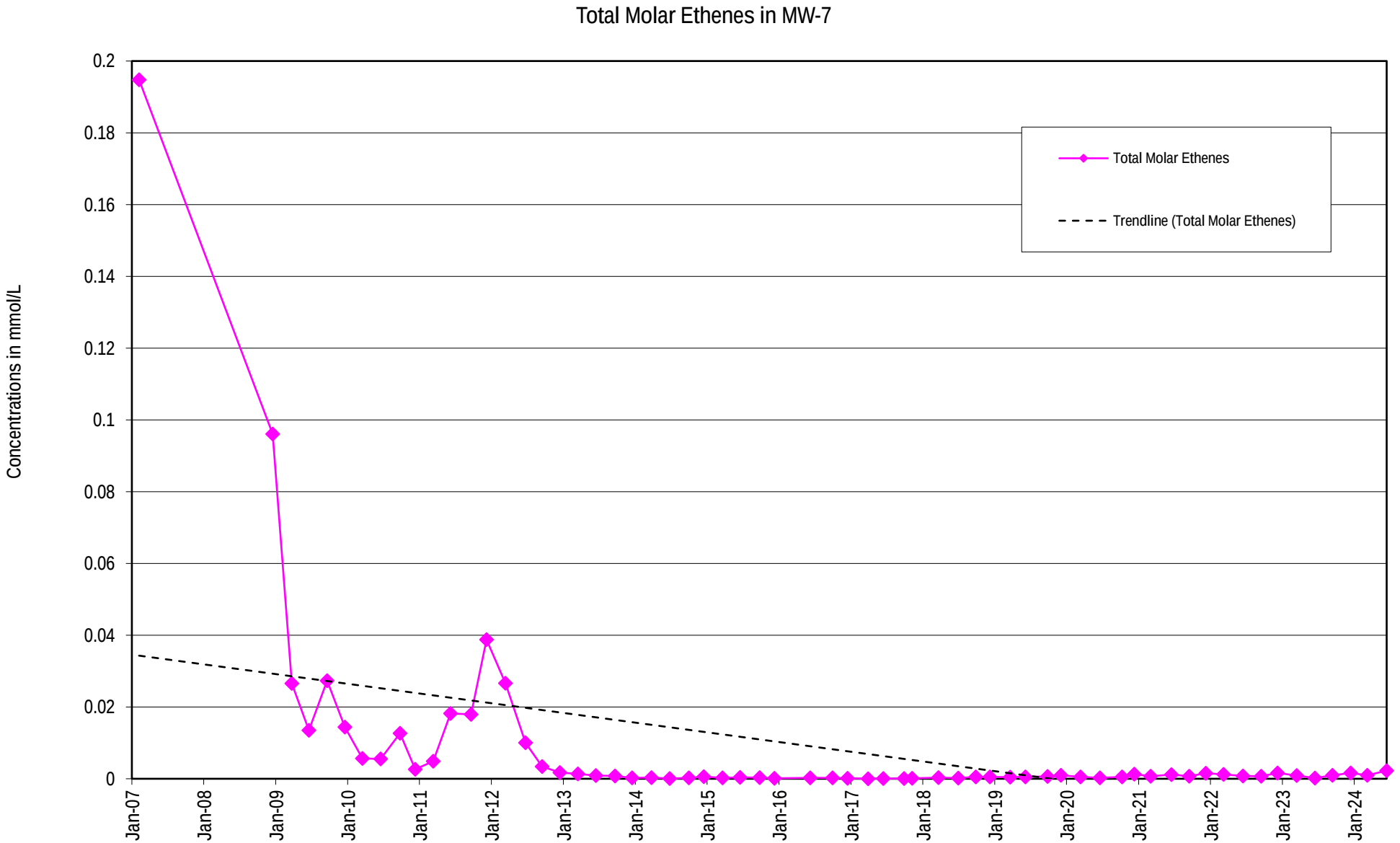
Note: Not detected values plotted at 1/2 the reporting limit.

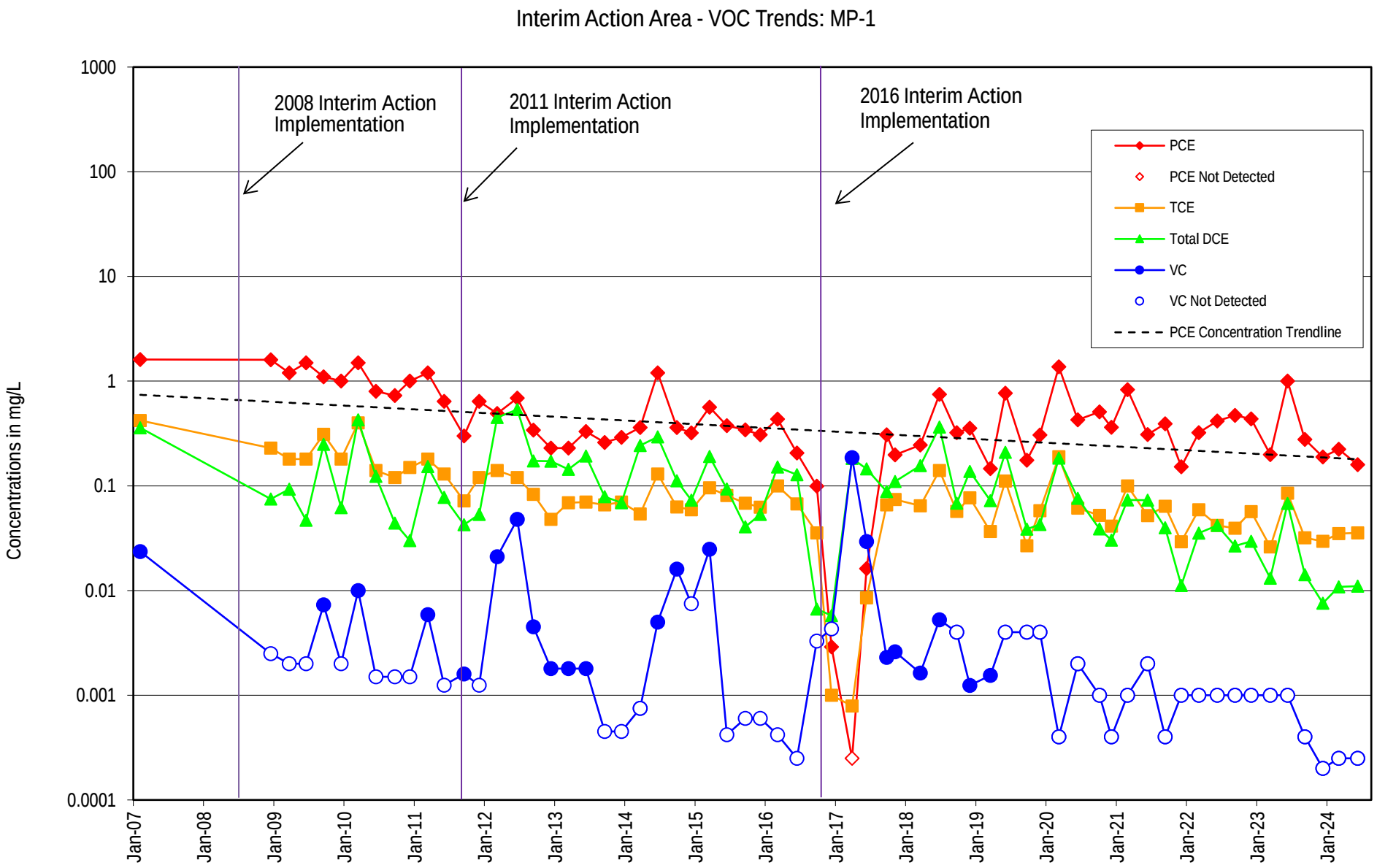

Total Molar Ethenes in MW-13
Total Molar Ethenes
Trendline (Total Molar Ethenes)
Concentrations in µmol/L
0.055
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

Interim Action Area - VOC Trends: MW-7

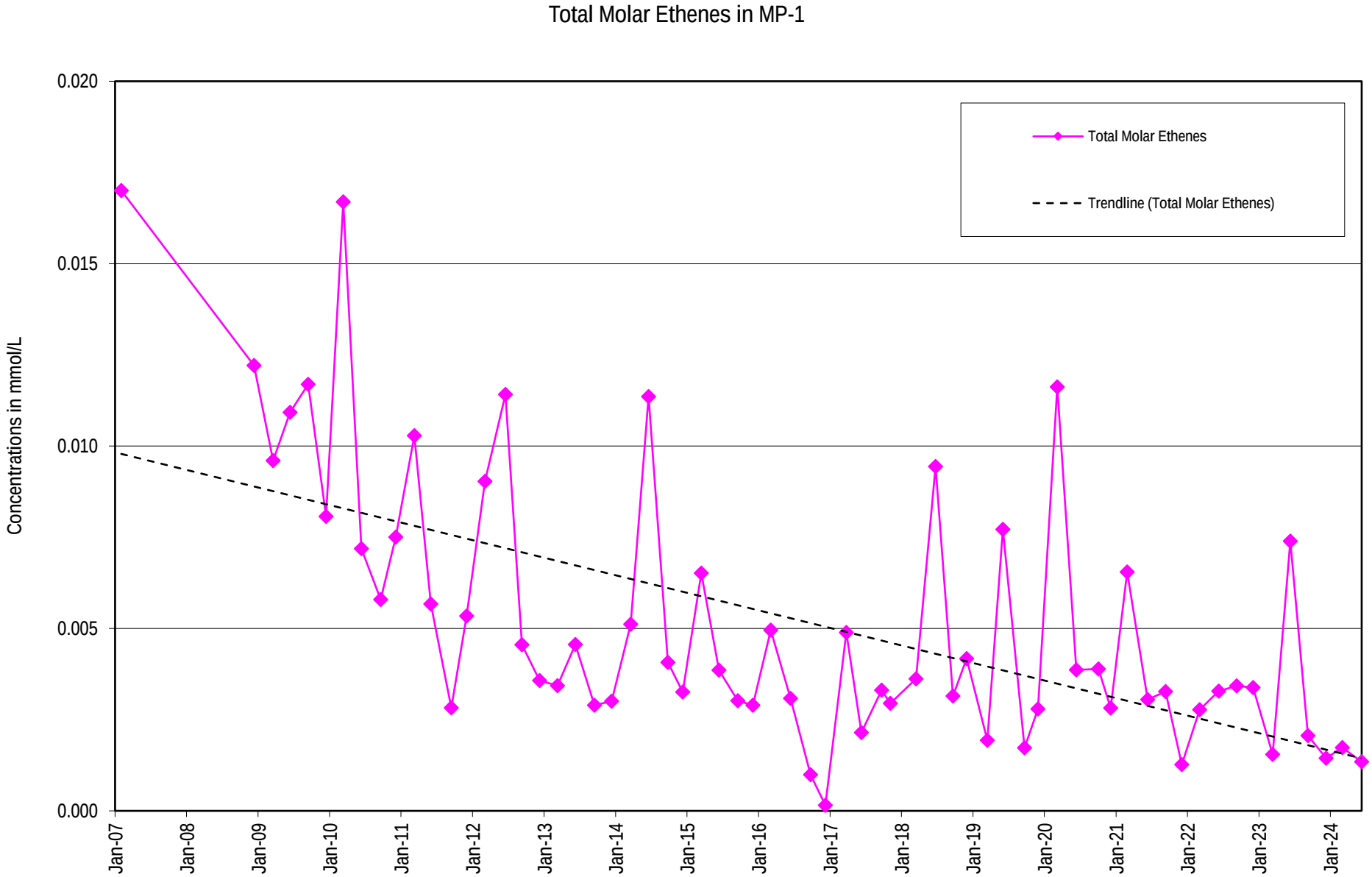


Notes: Not detected values plotted at 1/2 the reporting limit.

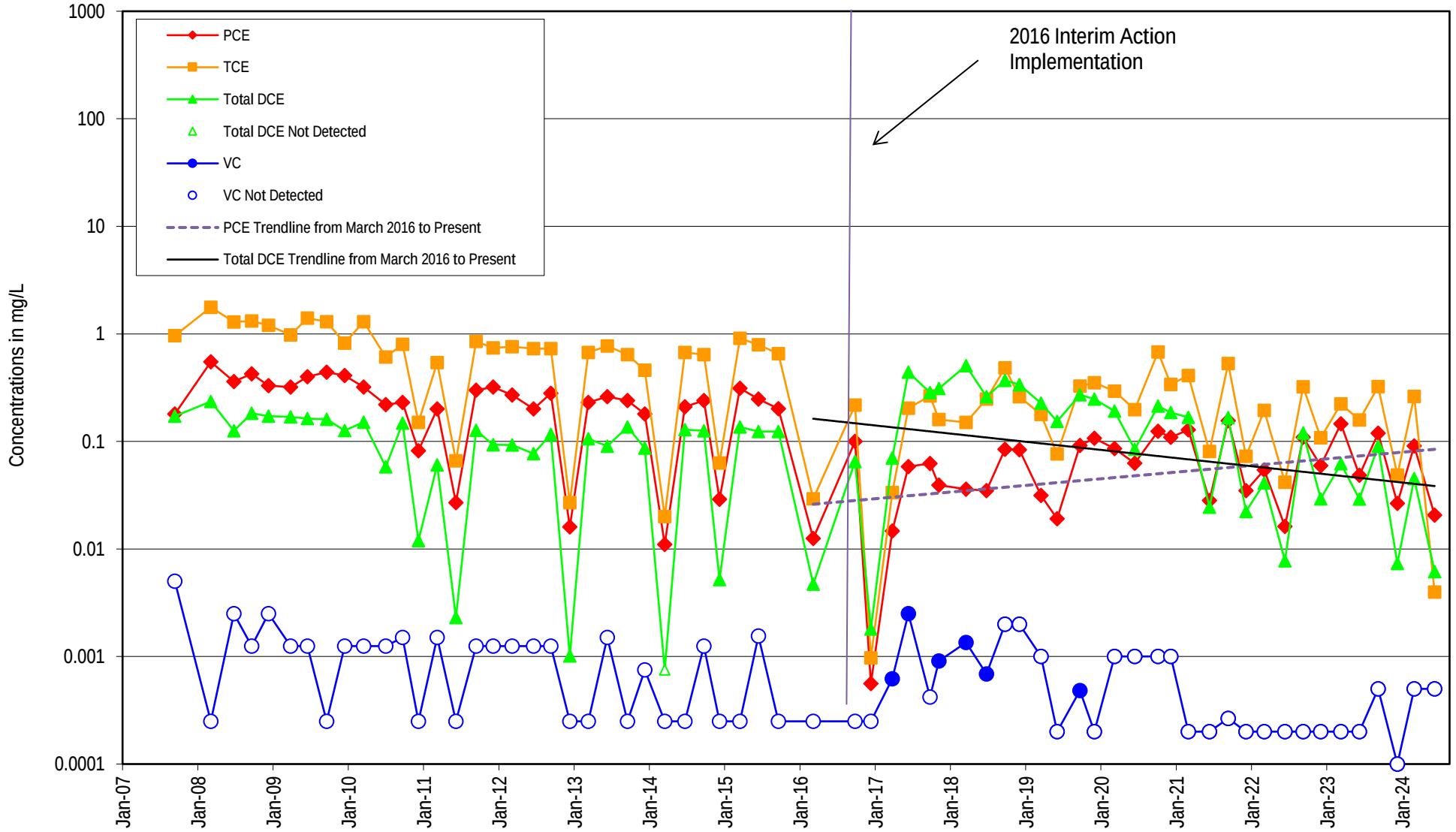

Total Molar Ethenes in MW-7
Concentrations in mmol/L
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)



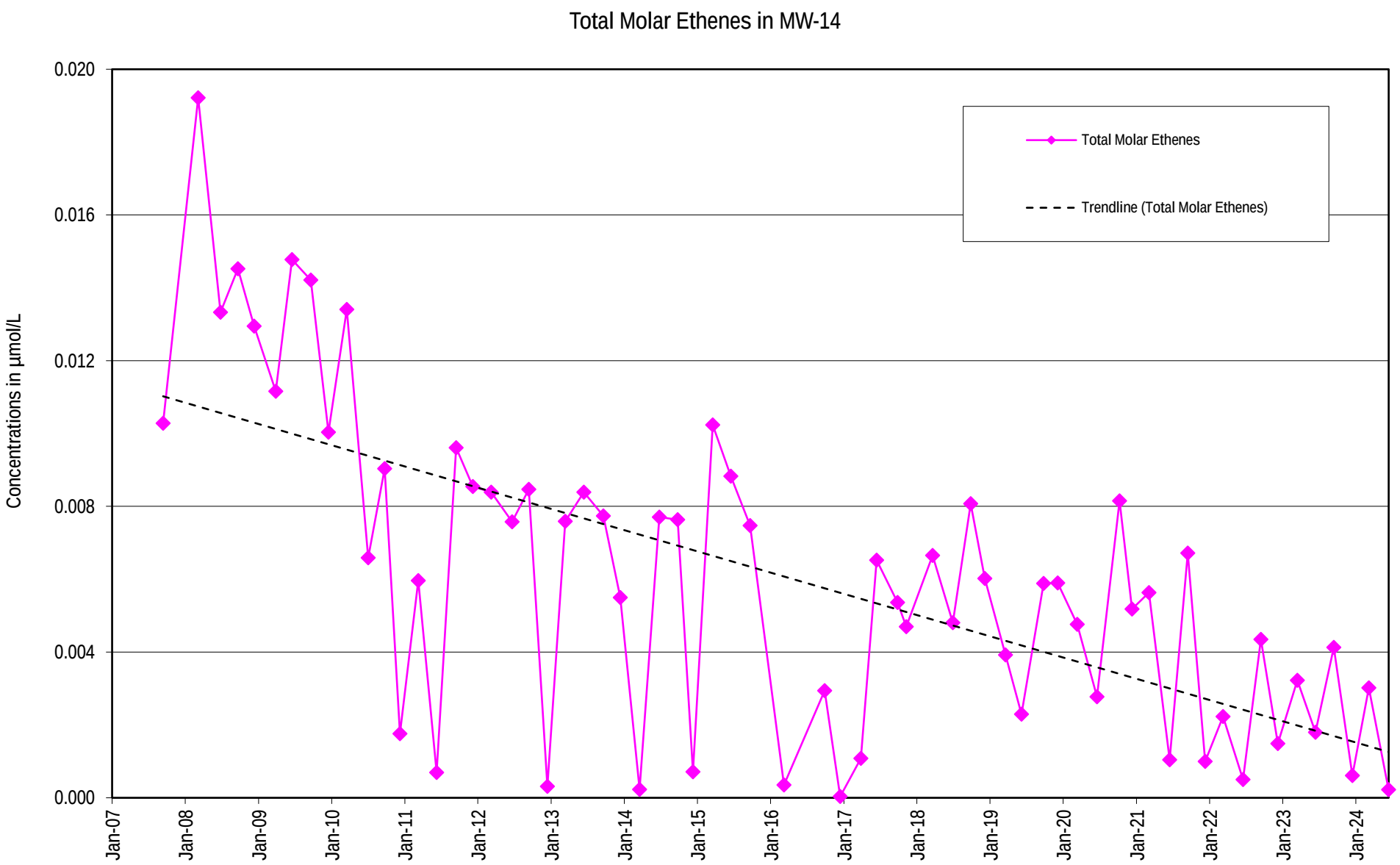
Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MP-1
Concentrations in mmol/L
0.020
0.015
0.010
0.005
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)

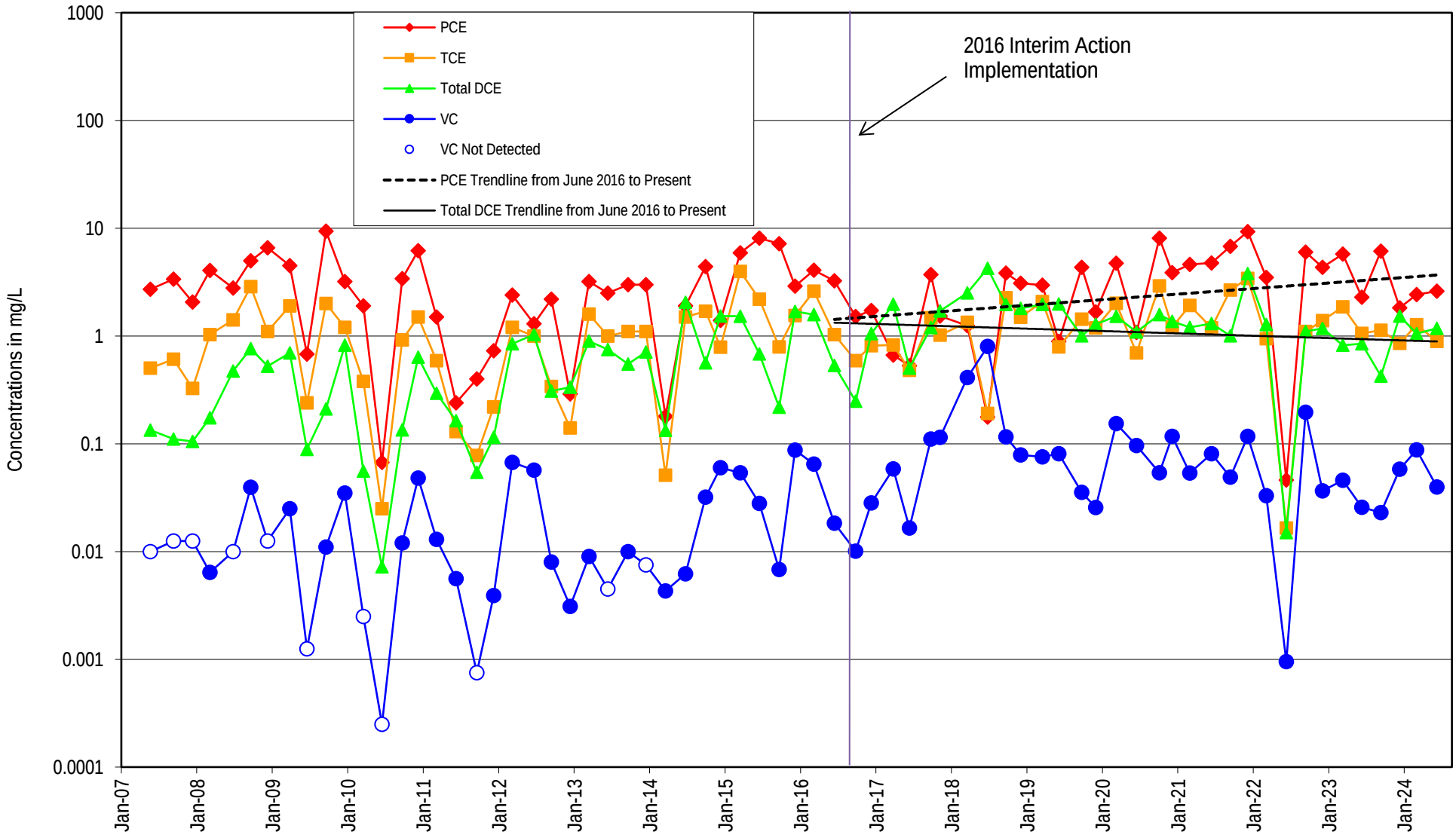
Interim Action Area - VOC Trends: MW-14



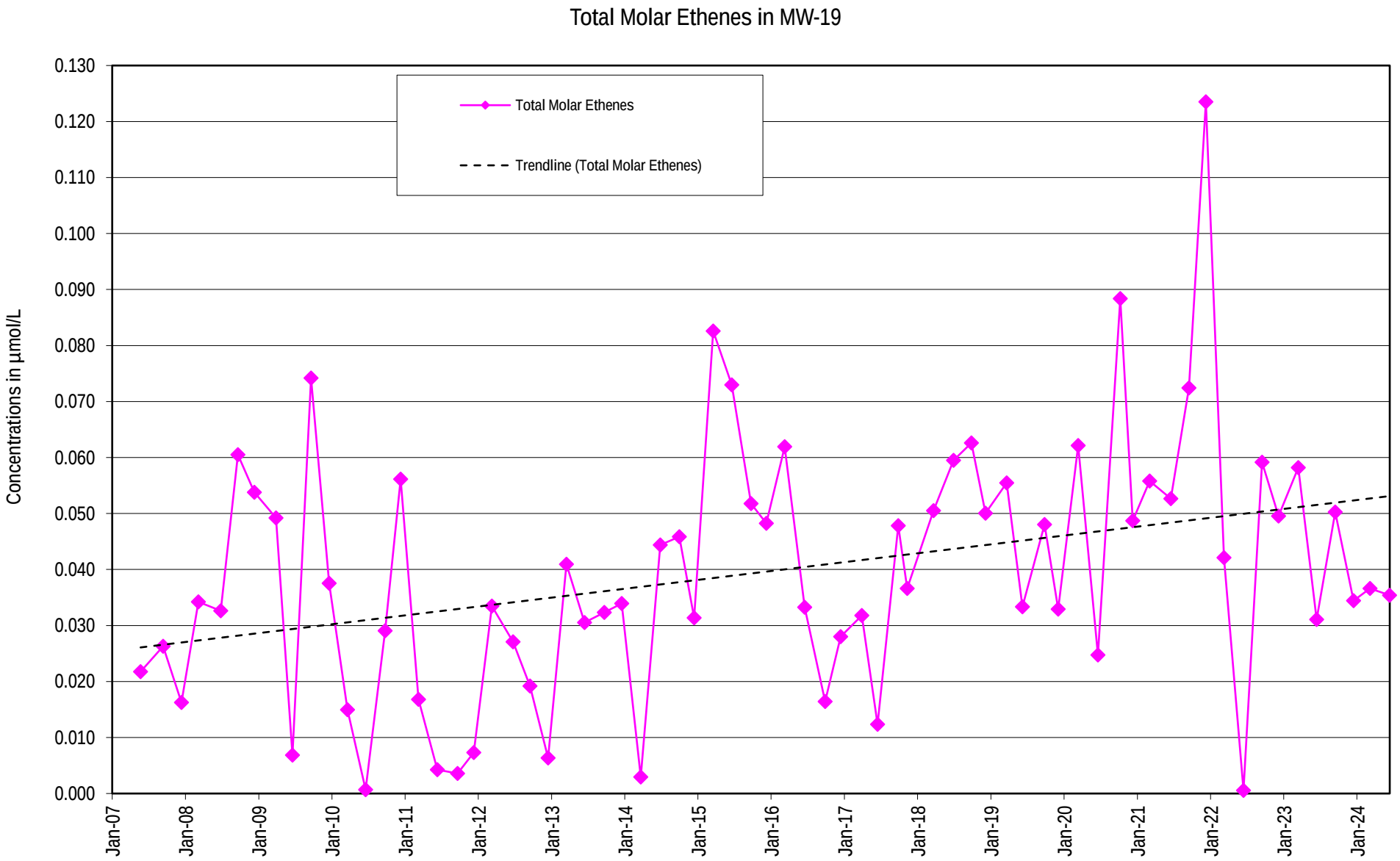
Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MW-14
Concentrations in µmol/L
0.020
0.016
0.012
0.008
0.004
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)

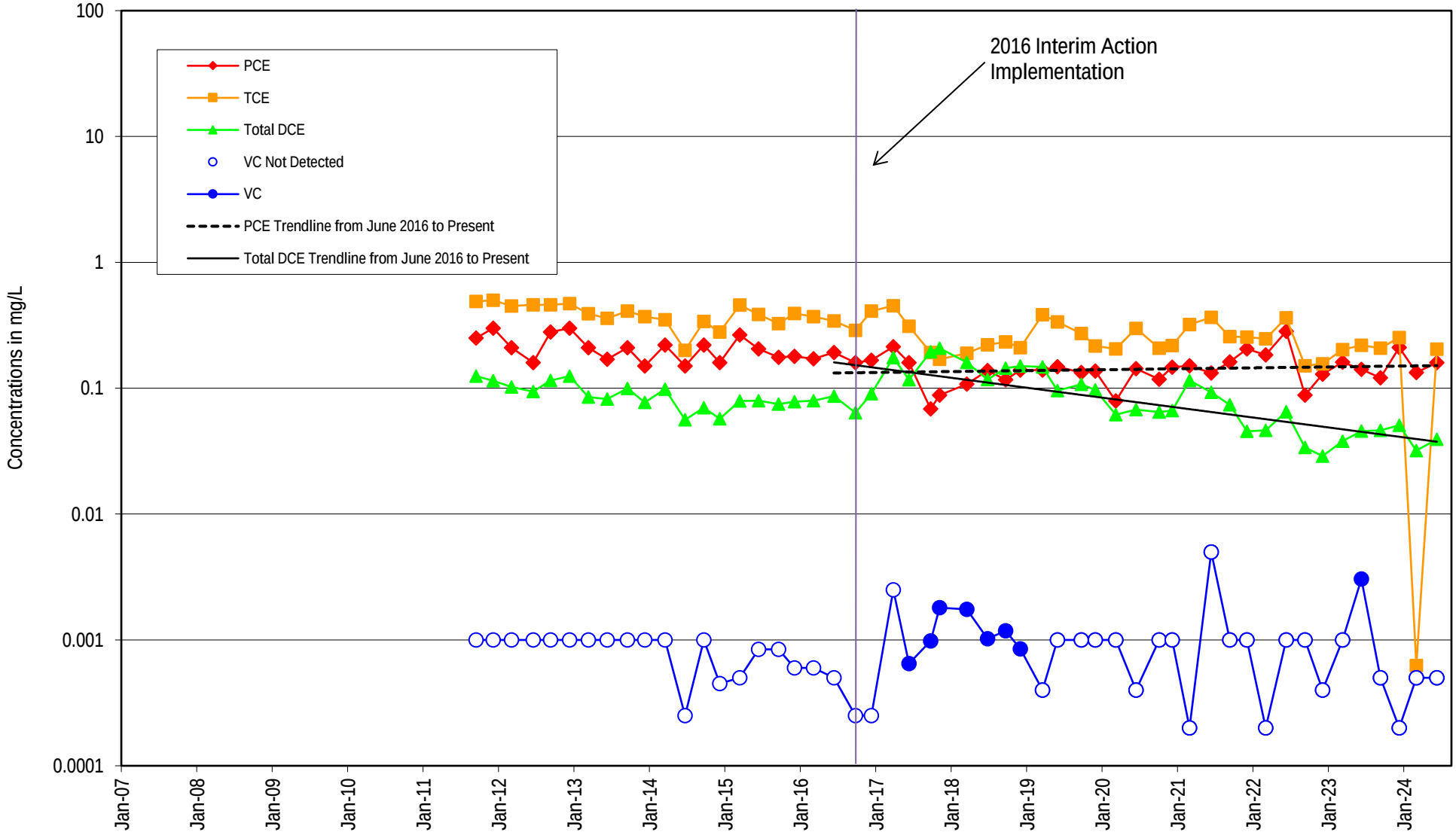
Interim Action Area - VOC Trends: MW-19



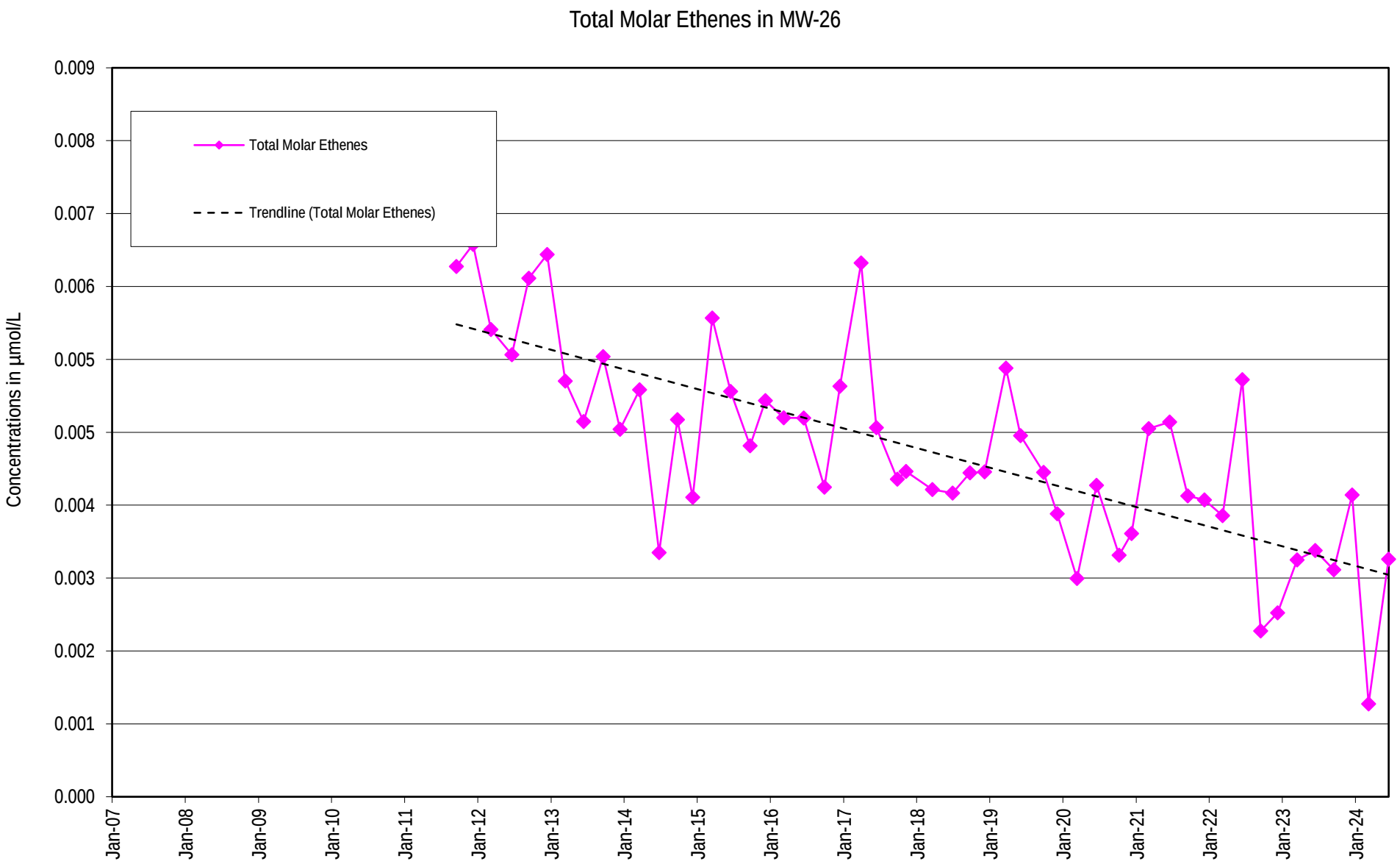
Note: Not detected values plotted at 1/2 the reporting limit.

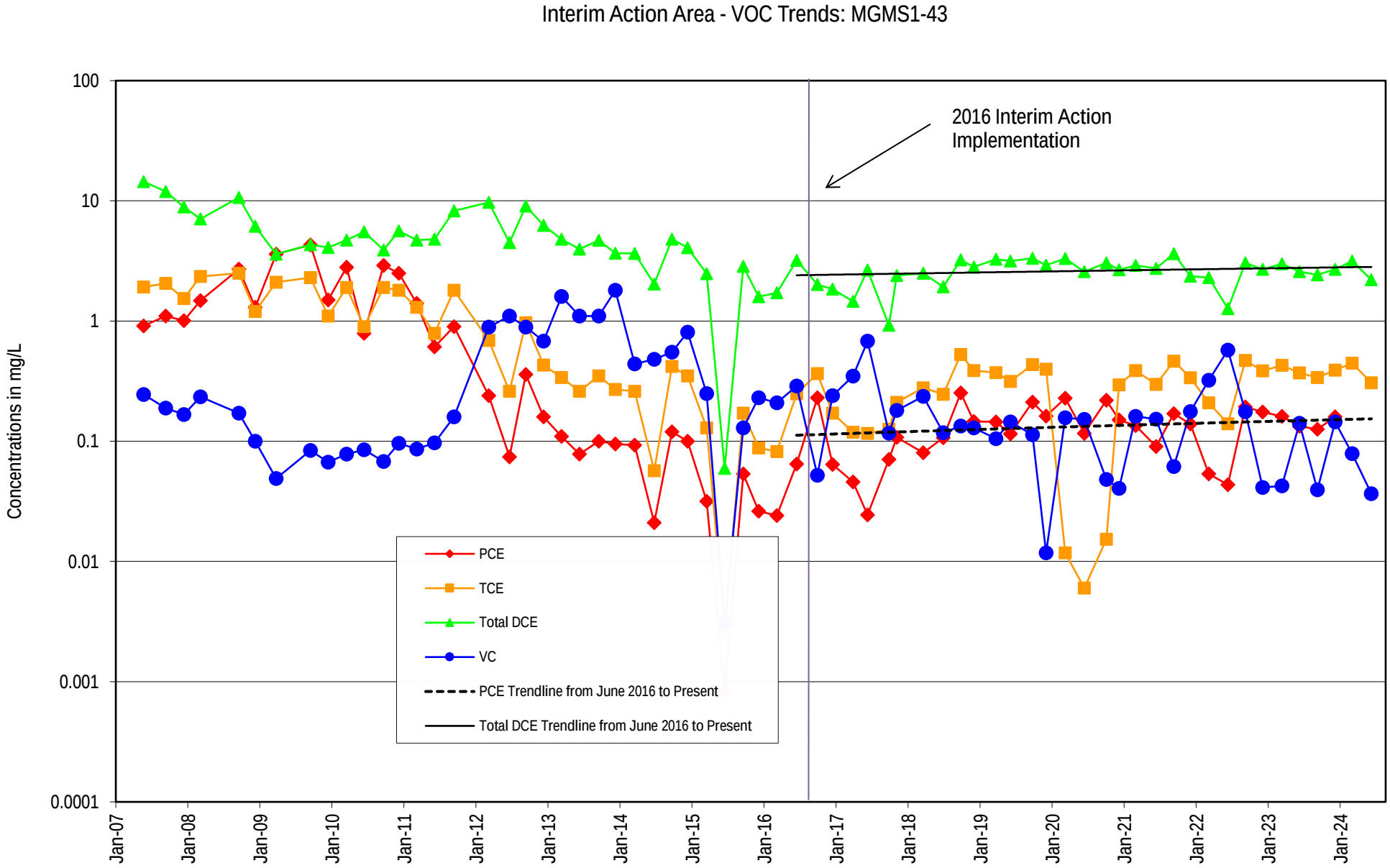

Total Molar Ethenes in MW-19
Total Molar Ethenes
Trendline (Total Molar Ethenes)
Concentrations in µmol/L
0.130
0.120
0.110
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

Interim Action Area - VOC Trends: MW-26

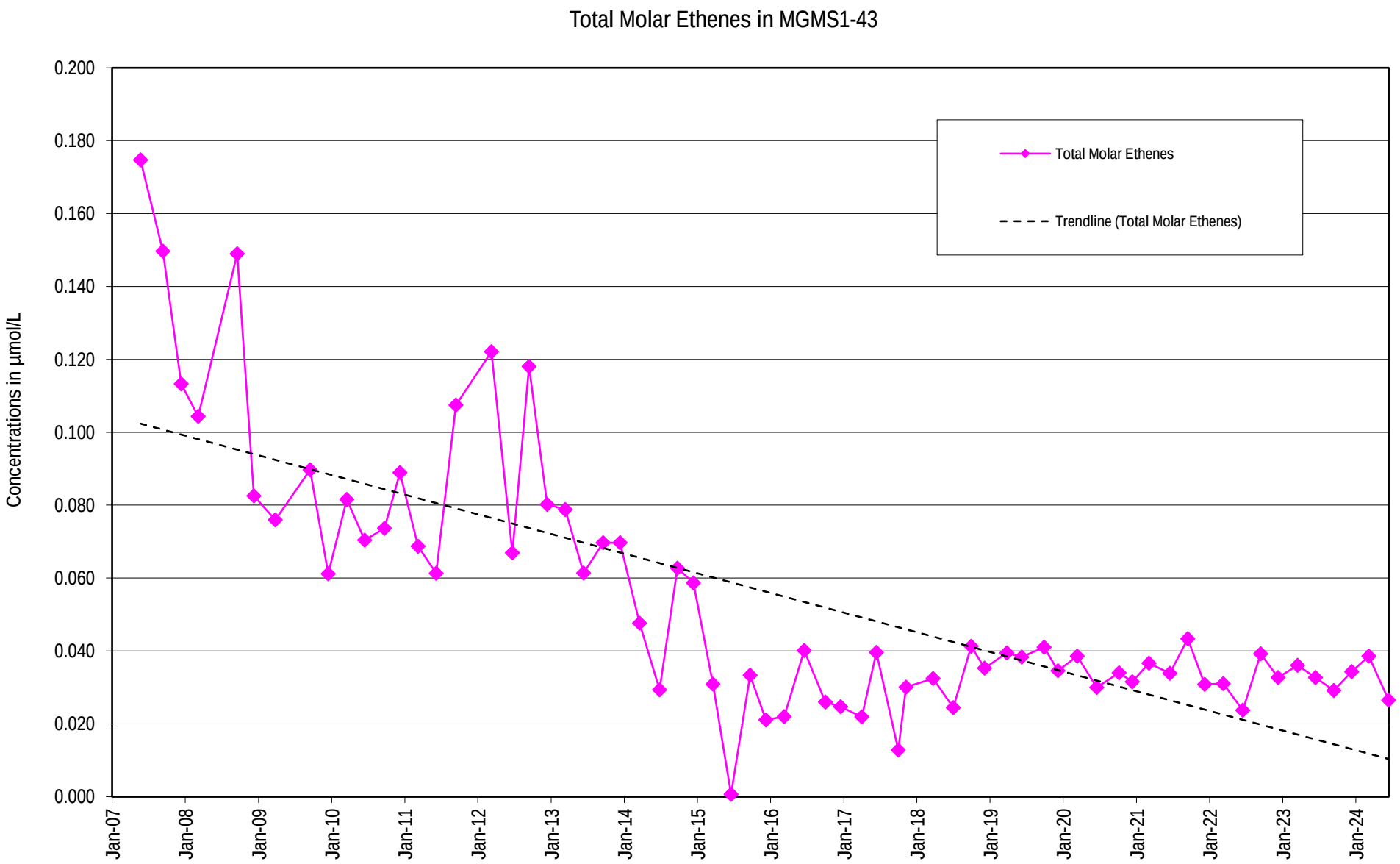


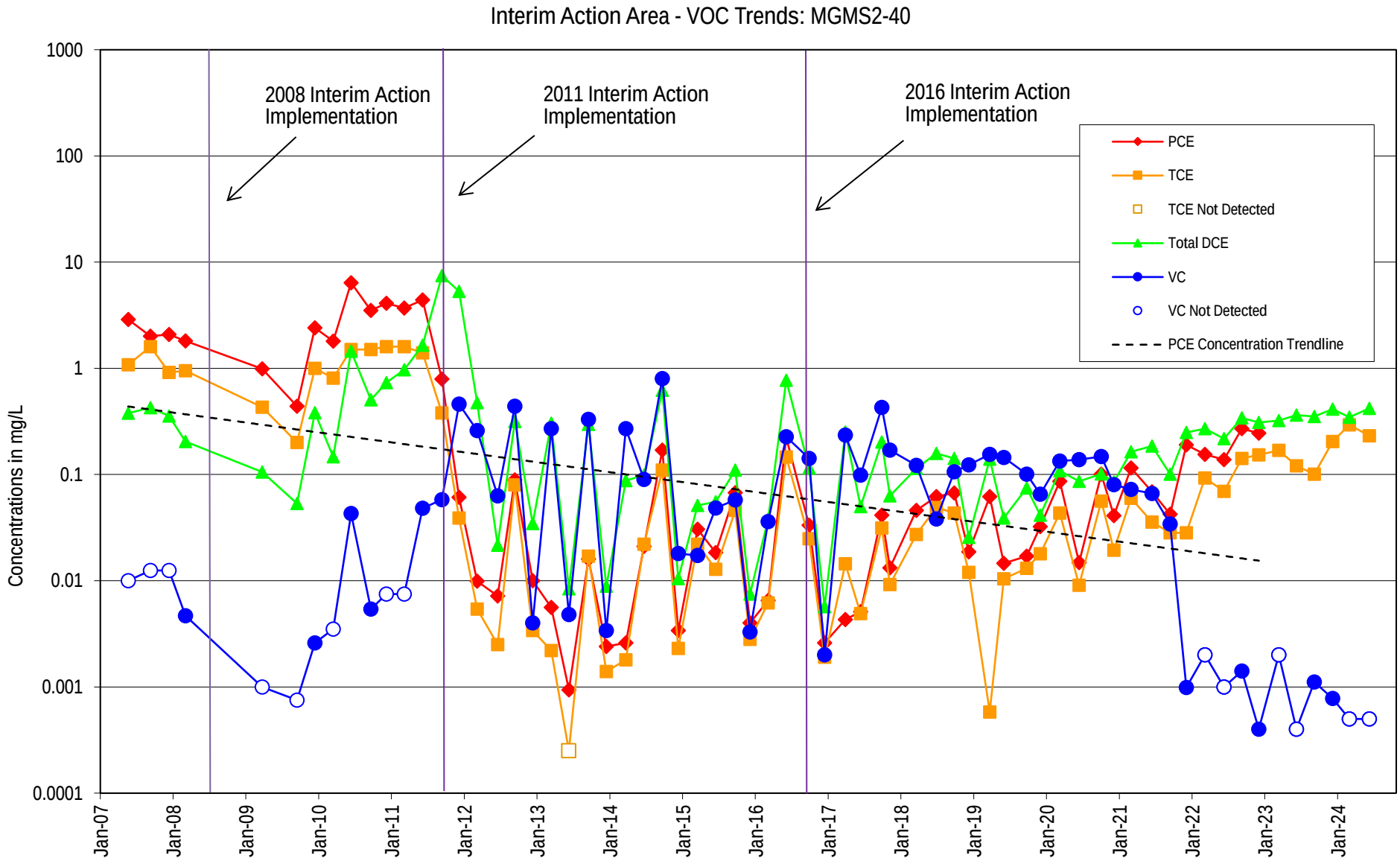
Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MW-26
Total Molar Ethenes
Trendline (Total Molar Ethenes)
Concentrations in µmol/L
0.009
0.008
0.007
0.006
0.005
0.005
0.004
0.003
0.002
0.001
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

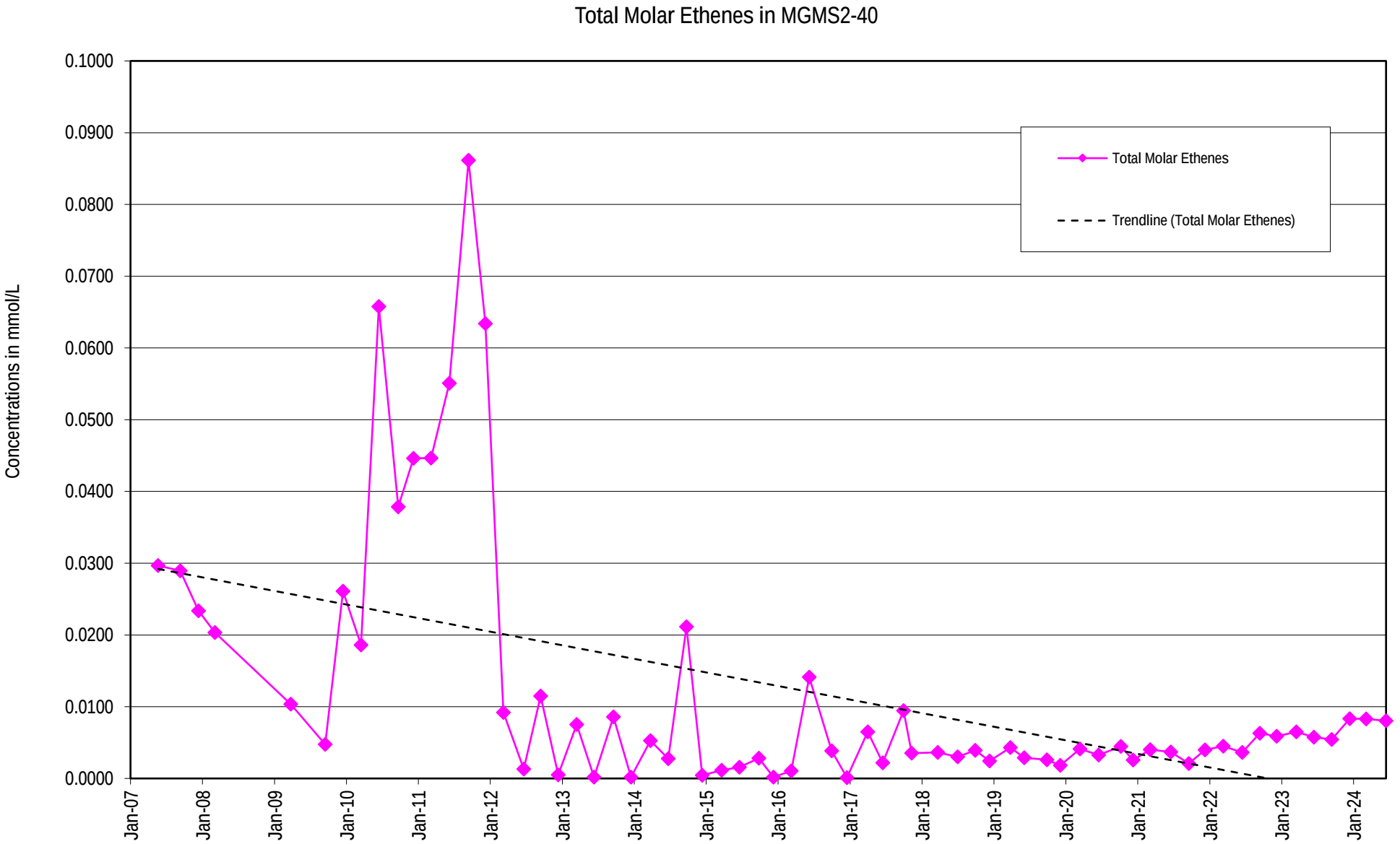


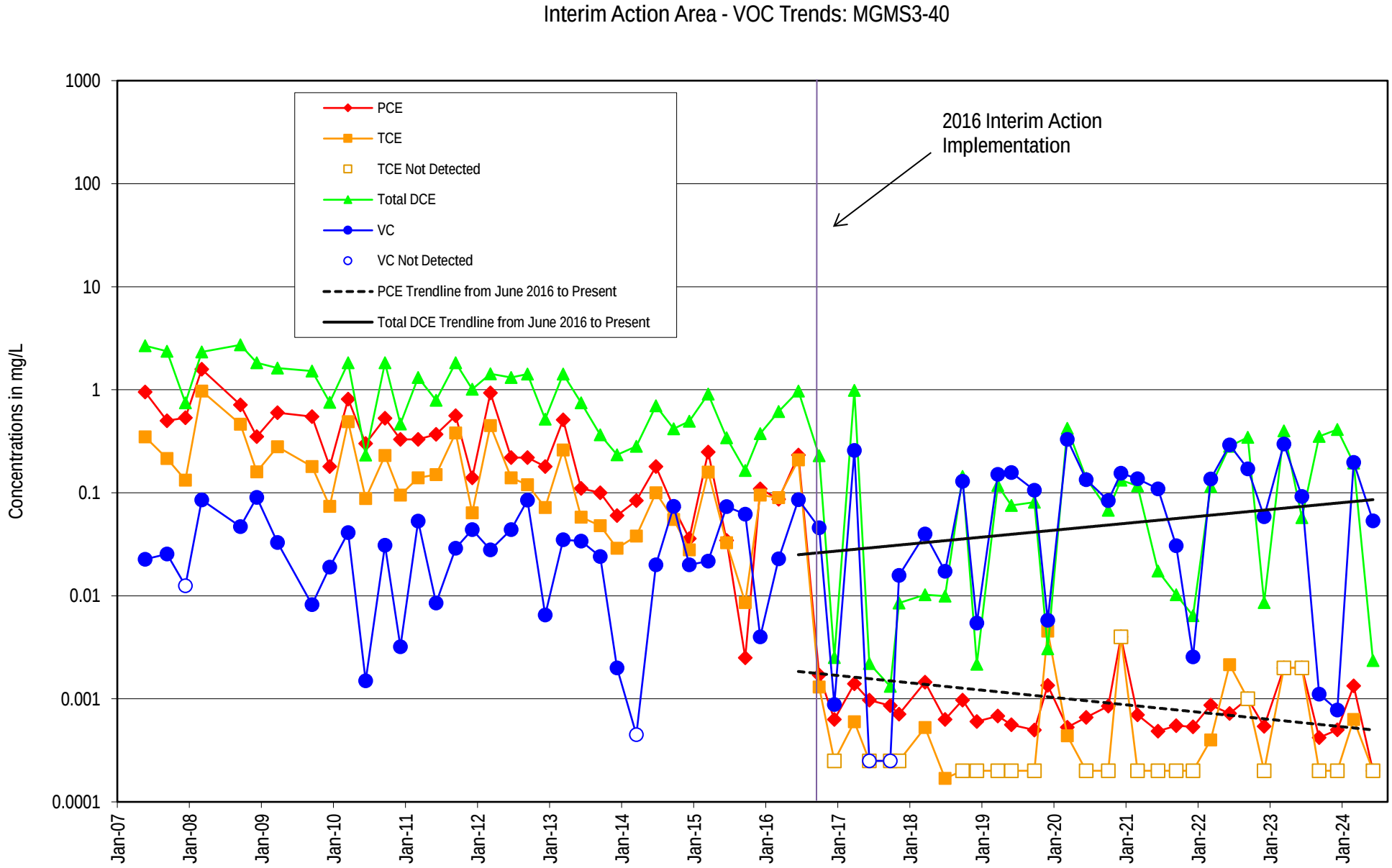
Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MGMS1-43
Concentrations in µmol/L
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)

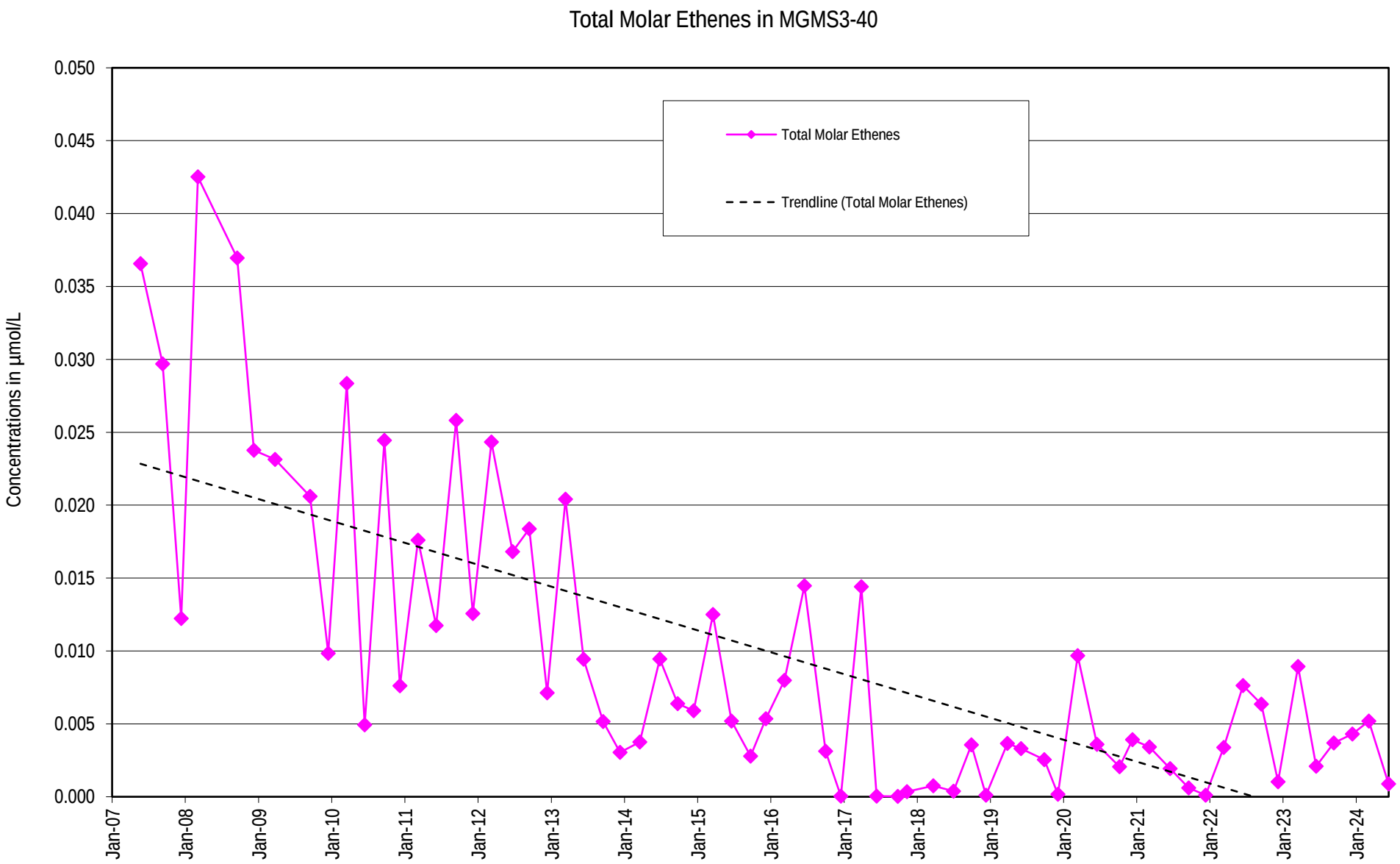


Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MGMS2-40
Concentrations in mmol/L
0.1000
0.0900
0.0800
0.0700
0.0600
0.0500
0.0400
0.0300
0.0200
0.0100
0.0000
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Total Molar Ethenes
Trendline (Total Molar Ethenes)



Note: Not detected values plotted at 1/2 the reporting limit.


Total Molar Ethenes in MGMS3-40
Concentrations in µmol/L
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Total Molar Ethenes
Trendline (Total Molar Ethenes)
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24

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