Fourth Quarter 2022

Groundwater Data Analysis Report

TAYLOR WAY AND ALEXANDER AVENUE FILL AREA SITE
TACOMA, WASHINGTON

Cleanup Site ID: 4692

March 9, 2023

Prepared by:

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Prepared for:

GENERAL METALS OF TACOMA
GLENN SPRINGS HOLDINGS
CLEAN EARTH

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March 9, 2023

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1.0 Introduction

Dalton, Olmsted, and Fuglevand, Inc. (DOF) prepared this Fourth Quarter 2022 Groundwater Data Analysis Report for the Taylor Way and Alexander Avenue Fill Area (TWAAFA) Site (Figure 1) on behalf of Glenn Springs Holdings, Inc. (Occidental Chemical Corporation), General Metals of Tacoma (GMT), and Clean Earth Inc. (Clean Earth) formerly known as Stericycle Environmental Solutions, Inc. and Burlington Environmental (Burlington). These parties are among those identified in Agreed Order (AO) Number 14260 (issued December 4, 2020) by the Washington State Department of Ecology (Ecology) as potentially liable parties at the TWAAFA Site (each a "PLP", collectively, the "PLPs" or "AO parties"). The Port of Tacoma (Port) is also a PLP to the TWAAFA Site, identified by Ecology in Enforcement Order Number DE 19410 (issued December 4, 2020).

This Report was prepared to summarize the data collected and activities performed by AO and EO PLPs with respect to the TWAAFA Site groundwater monitoring program during the fourth quarter of 2022, in accordance with the Revised Groundwater Monitoring Plan (GWMP) (DOF, 2022a). The July 2020 Groundwater Monitoring Plan was revised in April 2022 to account for the installation of new monitoring wells and updated survey information at the TWAAFA Site. On October 13, 2022, the AO Parties received an email from Ecology that included comments on the first and second quarter Groundwater Data Analysis Reports. The AO parties responded to Ecology via letter dated November 3, 2022, and agreed to address Ecology's comments specific to the reports as part of the Third Quarter 2022 Groundwater Data Analysis Report and subsequent Fourth Quarter 2022 Groundwater Data Analysis Report (DOF, 2022b)

1.1 Background and Objective

The GWMP was designed to monitor the groundwater at the TWAAFA Site utilizing 55 groundwater monitoring wells, including monitoring wells installed as agreed to in the Data Gaps Work Plan (DGWP) (DOF, 2020). The monitoring wells and analyses required are summarized in Table 1. The monitoring wells are located at the TWAAFA Site to provide adequate information regarding (1) groundwater flow at the TWAAFA Site, (2) groundwater units underlying the TWAAFA Site; and (3) groundwater migrating off the TWAAFA Site and flowing to off-site, downgradient and cross-gradient locations.

The fourth quarter 2022 groundwater monitoring event was completed as the fourth of four planned events in 2022 to be conducted for the TWAAFA Site under the DGWP.

1.2 TWAAFA Site Description

As shown in Figure 2, the TWAAFA Site is composed of multiple parcels under ownership by different parties – the Port, Burlington, and Pierce County (owner of the former CleanCare parcels). During the fourth quarter 2022 groundwater monitoring event, wells located on Port parcels were monitored by the Port's consultant, Maul, Foster, and Alongi (MFA), and all other wells were monitored by DOF. MFA and DOF coordinated the monitoring event simultaneously and utilized the same laboratory as used for prior work conducted under the DGWP (DOF, 2020).

2.0 Methodology

During the fourth quarter 2022, DOF and the Port completed the following work related to groundwater monitoring in accordance with the GWMP:

- Measured groundwater levels and collected groundwater samples from the groundwater monitoring network wells within the TWAAFA Site;
- Submitted groundwater samples to an independent laboratory for analysis; and
- Reviewed laboratory analytical reports for data quality validation.

The monitoring well network at the TWAAFA Site is shown on Figure 2. Measurement of water levels and sampling of wells on the Port parcels was completed by MFA on behalf of the Port, in coordination with DOF. Measurement of water levels and sampling of wells on Burlington and the former CleanCare parcels was conducted by DOF on behalf of the AO parties.

2.1 Water Level Measurements

On December 5, 2022, DOF and MFA conducted a water level measuring event that consisted of gauging depth to water surface and depth to light non-aqueous phase liquid (LNAPL), if present, at all monitoring wells within the TWAAFA Site following the procedures described in the GWMP. All network monitoring wells were measured within a 12-hour period except for CCW-1A, which was dry during the event, and PZ-1, which was decommissioned on December 9, 2022 (Appendix C). Groundwater measurements and observations of LNAPL are summarized in Table 2.

Per Ecology's request (Ecology, 2022), the fourth quarter water level measuring event was coordinated with the water level measuring event performed by Emerald Services Inc. (Emerald) on the southeast adjacent property owned and operated by Emerald, a Safety-Kleen Company, in an effort to collect simultaneous measurements (Figure 3). This adjacent property is a cleanup site identified by Ecology as the Emerald Services Inc. Alexander Ave Site (referred to herein as the Emerald Site) and is located at 1825 Alexander Avenue (Ecology Cleanup ID 12490), as shown in Figure 2. Historically, monitoring wells at the Emerald Site had been measured in coordination with well monitoring at the TWAAFA Site, as discussed in the DGWP. DOF requested and Emerald provided the water level measurement data collected during their fourth quarter 2022 groundwater monitoring event for inclusion in this report (Table 2).

Figures 3 and 4 present the groundwater elevations measured during this event for the shallow and deep aquifers, respectively.

2.2 Groundwater Quality Sample Collection and Analysis

Groundwater samples were collected from 31 of 32 scheduled monitoring wells during the fourth quarter 2022 groundwater monitoring event (Table 1) from December 5 to 9, 2022. One well, CCW-1A, had insufficient water present within the screened interval to allow for sampling during this current monitoring event.

Samples were collected in accordance with the GWMP. Prior to sampling, groundwater purging was conducted at each well. During groundwater purging, water quality parameters were recorded, and once stabilization criteria were met, a groundwater sample was collected. Field forms documenting data collected during monitoring well sampling are included in Appendix A.

Groundwater samples were analyzed for the following constituents as shown on Table 1:

- Volatile organic compounds (VOCs).

- Semi-volatile organic compounds (SVOCs).
- Total petroleum hydrocarbons (TPHs) as gasoline-range organics (TPH-Gx), diesel-range organics (TPH-Dx), and lube oil. TPH-Dx was analyzed without silica gel cleanup.
- Polychlorinated biphenyls (PCBs) analyzed as individual Aroclors.
- Metals including arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, and manganese.
- In addition, Extractable Petroleum Hydrocarbons (EPH) and Volatile Petroleum Hydrocarbons (VPH) were analyzed at select wells.

Groundwater samples collected by DOF and MFA were submitted to Friedman and Bruya, Inc. (FBI) for chemical analysis. Laboratory analytical reports produced by FBI for the groundwater samples collected by DOF were submitted to data validation reviewers, QA/QC Solutions, LLC. MFA conducted an in-house independent review of the laboratory analytical reports on groundwater samples collected for the Port. Data validation reports are included along with the laboratory data reports in Appendix B.

2.3 Investigation-Derived Waste

The primary waste stream generated during the monitoring event was purged groundwater, which was containerized as it was generated. Groundwater was containerized in separate 55-gallon drums based on the parcel ownership and characterized. The Port manages purged groundwater generated from wells on Port-owned parcels whereas Clean Earth manages purged groundwater generated from wells on Burlington-owned parcels. DOF coordinates disposal of purged groundwater with Pierce County and Ecology for purged groundwater generated from wells on the former CleanCare parcels.

3.0 Results

This section presents the results of data collected during the fourth quarter 2022 groundwater monitoring event.

3.1 Groundwater Elevations

Depth to water measurements were converted to elevation using survey data and mapped to determine hydraulic gradient for both the shallow and deep aquifers. Groundwater elevations for the shallow and deep aquifers from the fourth quarter 2022 monitoring event are provided in Table 2 and illustrated on Figures 3 and 4, respectively. LNAPL was recorded only at CTMW-9 (0.01 ft). As noted in Section 2, groundwater elevation contours presented incorporate groundwater elevations recorded at wells located on the adjacent Emerald Site, measured by Emerald. Groundwater contours interpolated beyond the TWAAFA Site and data-set boundaries represent an expression of trends suggested in the data based on geostatistical gridding.

Potentiometric surface elevation contours for the shallow aquifer are consistent with historically reported observations, exhibited by a generally radial outflow from a central mound beneath the Burlington parcels. This same pattern appears to be present even when compared to seasonal differences in overall groundwater elevations on the order of three feet. For this event, groundwater elevations also showed a slightly higher elevation in the south-central portion of the TWAAFA Site in the vicinity of monitoring well CTMW-14, similar to the second quarter of 2022. Where well clusters

included multiple wells screened within the shallow aquifer, as is the case with several of the "CCW" well clusters on the former CleanCare parcels, the "B" interval measurements were used for mapping groundwater elevations as their screen depths are more consistent with wells across the TWAAFA Site.

The deep aquifer displayed a generally flat hydraulic gradient, which is consistent with historical observations.

3.2 Quality Assurance/Quality Control (QA/QC) Discussion

Analytical data quality review was conducted on all groundwater samples collected during this monitoring event and analyzed and reported by FBI as specified in the Quality Assurance Project Plan (QAPP) (DOF, 2020). The data validation reports were completed by QA/QC solutions for DOF-collected samples on Burlington and former CleanCare parcels and by MFA for MFA-collected samples on Port parcels. Analytical reports and associated data validation reports are included in Appendix B.

Hold times, initial and continuing calibrations, method blanks, surrogate recoveries, laboratory duplicate results, field duplicate results, matrix spike/matrix spike duplicate results, and reporting limits were reviewed to assess compliance with applicable methods and project requirements. Qualified data were deemed to be of acceptable quality for their intended use, with the appropriate final data qualifiers assigned, except for results that were rejected due to insufficient surrogate recovery. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, as well as data qualifiers assigned by the reviewer during validation.

In several instances, results for TPH diesel range and motor oil range were qualified as 'NJ,' defined as a *tentatively identified compound*, because the sample chromatographic pattern did not resemble the fuel standard used for quantitation. As summarized in the data validation memorandum (Appendix B), the NJ qualifier was assigned based on a variety of factors. In a January 26, 2023 comment letter on the Data Gaps Data Report, Ecology required that data flagged "x" by the laboratory shall not be qualified with "NJ" in future report tables or EIM data submittals (Ecology, 2023). The data tables in this report therefore reflect that requirement. The data validator's use of "NJ" was intended to draw the attention of the data user to more critically consider the use of these data (not reject it). We anticipate addressing these types of considerations as part of the Remedial Investigation/Feasibility Study (RI/FS) in collaboration with Ecology and with consideration for Ecology guidance documents.

3.3 Groundwater Chemistry Analytical Results

Validated analytical results of groundwater samples collected during the fourth quarter 2022 monitoring event at the TWAAFA Site are included in Tables 3 through 7.

Screening levels used in this report for comparison of analytical results were those identified in the 2020 DGWP (DOF, 2020). These screening levels were based on levels developed in the 2005 Burlington RI Report and also applied in the Port's 2006 1514 Taylor Way RI. These screening levels were site-specific screening levels developed under Ecology's Model Toxics Control Act (MTCA) in consideration of the conceptual model identifying non-potable groundwater and industrial/commercial use. After Ecology's review of the Draft DGWP, Ecology requested that several screening levels be revised to default table values available in Ecology's Cleanup Levels and Risk Calculation (CLARC) tables. Ecology's requested changes to the screening levels were implemented in the Final 2020 DGWP. In addition, Ecology's lowest

current MTCA Method A or B Groundwater Screening Levels are included in Tables 3 through 7 as a reference for analytes that did not have a screening level included in the DGWP.

Analytical results of the fourth quarter 2022 groundwater monitoring event are summarized below and select frequently detected constituents are shown on Figures 5 through 16.

Summary of TPH, EPH, and VPH analytical results (Table 3)

- TPH-Gx was detected at concentrations above its respective DGWP screening level in shallow wells located on the former CleanCare parcels (CCW-2A, CCW-2B, CCW-5B and CCW-7B). The highest concentration of TPH-Gx (4,600 micrograms per liter [µg/L]) was detected at CCW-2B, which is centrally located on the former CleanCare parcels. Concentrations were below their respective DGWP screening level in all deep wells and all other shallow wells analyzed for TPH-Gx. TPH-Gx concentrations are illustrated on Figures 5 and 6.
- TPH-Dx and oil range hydrocarbons were detected above their respective DGWP screening levels in select wells throughout the TWAAFA Site when analyzed without silica gel cleanup. The highest concentrations of TPH-Dx and oil range hydrocarbons were in the shallow aquifer (20,000 J+ µg/L at MW-1). TPH-Dx concentrations are illustrated on Figures 7 and 8.
- EPH and VPH were sampled at wells CCW-3A, CCW-5B, CCW-8B, MW-1, TWA-1, and TWA-6D. EPH was detected at all wells sampled, except TWA-6D, at concentrations ranging from 40 µg/L (CW-8B) to 370 µg/L (MW-1). VPH was detected at all wells sampled, except TWA-1 and TWA-6D, at concentrations ranging from 54 µg/L to 200 µg/L (CCW-5B). The EPH and VPH detections were all in the shallow aquifer. No DGWP screening levels are assigned to EPH or VPH.

Summary of VOCs analytical results (Table 4)

- Select VOCs were detected at concentrations above their respective DGWP screening level: benzene (CCW-2A, CCW-2B, CCW-3A, CCW-3B, CCW-5B, CCW-6B, CCW-7B, CCW-7C, MW-1, and MW-4), cis-1,2-dichloroethene (CCW-2A), toluene (CCW-2B), and vinyl chloride (CCW-2A, CCW-2B, CCW-3A, CCW-3B, CCW-5B, and MW-4). Benzene and vinyl chloride concentrations are illustrated on Figures 9 through 12.
- The highest concentrations of VOCs were detected in samples collected from the former CleanCare parcel in the shallow aquifer (CCW-2A and CCW-2B) which included benzene (89 µg/L), toluene (180 µg/L), cis-1,2-Dichloroethene (220 µg/L), and vinyl chloride (31 µg/L).

Summary of SVOCs analytical results (Table 5)

- Several SVOCs were detected above laboratory reporting limits at generally low concentrations.
- Only 1,4 dichlorobenzene was detected above its respective DGWP screening level of 10 µg/L at CCW-2B (37 µg/L) in the shallow aquifer.

Summary of metals analytical results (Table 6)

- Metals detected above their respective DGWP screening levels included arsenic, chromium, copper, lead, manganese, nickel, and zinc. Concentrations of two of the most widely detected metals (arsenic and copper) are illustrated on Figures 13 through 16.
- Where detected, arsenic concentrations ranged from 1.02 (MW-1) to 996 µg/L (CCW-2B). Of the 31 wells sampled, 15 sample locations recorded concentrations that exceeded the DGWP

screening level of 5 µg/L for arsenic. Arsenic concentrations were highest on the former CleanCare parcels in samples collected in the shallow aquifer.

- Where detected, chromium concentrations ranged from 1J+ (MW-1) to 29.2 µg/L (TWA-6D). Of the 31 wells sampled, only two samples (CCW-6C and TWA-6D) exceeded the DGWP screening level of 11 µg/L for chromium. Chromium was detected in deep aquifer wells located in the central and southwest areas of the TWAAFA Site.
- Where detected, copper concentrations ranged from 2.82 (TWA-5D) to 67.3 µg/L (CCW-6B). Of the 31 wells sampled, results from eight sample locations exceeded the DGWP screening level of 2.4 µg/L for copper. Copper concentrations were highest in the shallow aquifer and were detected primarily on the former CleanCare parcels.
- Where detected, lead concentrations ranged from 3.88 (CCW-2A) to 133 µg/L (CCW-6B). Of the 31 wells sampled, only two sample locations (CCW-6B and CCW-7B) exceeded the DGWP screening level of 8.1 µg/L for lead. Lead was only detected in the shallow aquifer wells and detections were limited to the former CleanCare parcels.
- Manganese was detected throughout the TWAAFA Site at concentrations ranging from 70.4 µg/L (TWA-10D) to 1,340 µg/L (CCW-3C). Of the 31 wells sampled, all sample results except at three wells (CCW-3A, TWA-9D, and TWA-10D) exceeded the DGWP screening level of 100 µg/L for manganese. Manganese was detected in shallow and deep aquifer wells with concentrations highest in the north-central area of the TWAAFA Site.
- Where detected, nickel concentrations ranged from 1.28 µg/L (CCW-6C) to 143 µg/L (CCW-3A). Of the 31 wells sampled, detected nickel concentrations exceeded the DGWP screening level of 10 µg/L in two sample locations (CCW-3A and TWA-3) in the shallow aquifer.
- Where detected, zinc concentrations ranged from 5.13 (TWA-1) to 1,450 µg/L (CCW-6B). Of the 31 wells sampled, three sample locations (CCW-3A, CCW-6B, and CCW-7B) exceeded the DGWP screening level of 81 µg/L for zinc. Zinc concentrations were highest in the shallow aquifer on the former CleanCare parcels.

Summary of PCBs analytical results (Table 7)

- PCBs were detected above laboratory reporting limits only in samples from shallow aquifer wells located at the former CleanCare parcels (CCW-3A and MW-4), ranging from 0.024 µg/L (Aroclor 1260) to 0.072 µg/L (Aroclor 1242). Only the Aroclor-1260 detection in CCW-3A and MW-4 exceeded its respective DGWP screening level of 0.00607 µg/L.

4.0 Conclusions

The fourth quarter 2022 groundwater monitoring event at the TWAAFA Site was completed successfully following the objectives set forth in the DGWP (DOF, 2020) and procedures outlined in the GWMP.

The observed groundwater flow patterns during this monitoring event (derived from field measurements) were similar to those observed during the past three quarterly groundwater monitoring events. LNAPL was recorded at CTMW-9 (0.1 ft) only. TPH, metals, and limited VOCs, SVOCs, and PCBs exceeded their respective DGWP screening levels in select sampled wells. Similar to the previous quarterly groundwater monitoring events, the highest detected concentrations of compounds that exceeded their respective DGWP screening levels were generally in wells screened in the shallow aquifer and on the former CleanCare parcels.

5.0 Upcoming Schedule

In accordance with the GWMP under the AO, four quarters of groundwater monitoring events were to be completed at the TWAAFA Site in 2022. As of the date of this report, all four quarters of groundwater monitoring events have been completed and no additional groundwater monitoring events are scheduled at this time. DOF anticipates discussing findings from the data gaps work conducted to date under the AO with Ecology during the second quarter 2023 with respect to data gaps fulfillment in preparation for the RI/FS.

6.0 References

DOF, 2020. Final Data Gaps Work Plan, TWAAFA Site, Tacoma, Washington. July.

DOF, 2022a. Revised Groundwater Monitoring Plan, TWAAFA Site, Tacoma, Washington. April.

DOF, 2022b. Memo, Subject: Ecology October 13, 2022 email regarding "Comments on TWAAFA reports and request for a work plan" November 3, 2022.

Ecology, 2022. Email, *Ecology comments on first and second quarter 2022 groundwater monitoring reports and the recent sub-slab vapor sampling results from the Former Potter Property.* October 13, 2022.

Ecology, 2023. Letter, Re: Comments on Data Gaps Data Report. January 26,2023.

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Tables

Table 1
Groundwater Monitoring Schedule
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

Well ID	Water Levels	Analyses								
		VOCs by 8260B	VOCs by 8260B w/SIM	TPH-Diesel by NWTPH-Dx[1]	TPH-Gasoline by NWTPH-Gx	Total Metals[2] by 6020 & Mercury by 1631E	SVOCs by 8270	cPAHS only by 8270	1,4-Dioxane by 8260	PCBs by 8082
CCW-1A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-1B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-1C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-2A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-2B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-2C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-3A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-3B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-3C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-4C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-5B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-5C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-6B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-6C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-7B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CCW-7C	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
CCW-8B	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
MW-1[3]	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
MW-4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
SB-1A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
SB-2A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
SB-3A	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
CTMW-1	1,2,3,4	--	--	--	--	--	--	--	--	--
CTMW-5	1,2,3,4	2	2	2	--	2	--			--
CTMW-7	**1,2,3,4**	**2**	**2**	**2**		**2**	**--**	**2**	**2**	**--**
CTMW-8	1,2,3,4	2	2	2	--	2	--	--	--	--
CTMW-9	**1,2,3,4**	**2**	**2**	**2**		**2**	**--**		**2**	**--**
CTMW-10[3]	1,2,3,4	--	--	--	--	--	--	--	--	--
CTMW-11R2	1,2,3,4	2	2	2	--	2	--	--	--	--
CTMW-12	**1,2,3,4**	**2**	**2**	**2**		**2**	**--**	**2**		**--**
CTMW-14	1,2,3,4	2	2	2	--	2	--	2		--
CTMW-15	1,2,3,4	2	2	2	--	2	--	2	2	--
CTMW-17	1,2,3,4	2	2	2	--	2	--		2	--
CTMW-17D	**1,2,3,4**	**2**	**2**	**2**		**2**	**--**			**--**
CTMW-18	1,2,3,4	2	2	2	2	2	--			--

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		VOCs by 8260B	VOCs by 8260B w/SIM	TPH-Diesel by NWTPH-Dx[1]	TPH-Gasoline by NWTPH-Gx	Total Metals[2] by 6020 & Mercury by 1631E	SVOCs by 8270	cPAHS only by 8270	1,4-Dioxane by 8260	PCBs by 8082
CTMW-20	1,2,3,4	2	2	2	2	2	--			--
CTMW-23R	1,2,3,4	2	2	2	--	2	--			--
CTMW-24	1,2,3,4	2	2	2	--	2	--	2		--
CTMW-24D	**1,2,3,4**	**2**	**2**	**2**	**--**	**2**	**--**			**--**
CTMW-25D	**1,2,3,4**	**2**	**2**	**2**	**--**	**2**	**--**	**2**	**2**	**--**
PZ-1 [3]	1,2,3,4	--	--	--	--	--	--	--	--	--
PZ-5	1,2,3,4	--	--	--	--	--	--	--	--	--
PZ-7	1,2,3,4	--	--	--	--	--	--	--	--	--
PZ-8	1,2,3,4	--	--	--	--	--	--	--	--	--
PZ-9	1,2,3,4	--	--	--	--	--	--	--	--	--
TWA-1	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
TWA-2	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
TWA-3	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4	--	1,2,3,4	1,2,3,4
TWA-4D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**--**	**2**	**2**	**--**
TWA-5D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
TWA-6D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
TWA-7D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**--**	**2**	**2**	**--**
TWA-8D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
TWA-9D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**
TWA-10D	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**1,2,3,4**	**--**	**1,2,3,4**	**1,2,3,4**

Notes
1. Will be analyzed with and without silica gel cleanup during the first sampling event and sample prep methods assessed in cooperation with Ecology for future events.
2. Metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc, and Manganese
3. Wells that historically had LNAPL.
4. Additional wells installed as agreed to in Data Gaps Work Plan (DOF, 2020): TWA-1, TWA-2, TWA-3, TWA-4D, TWA-7D, TWA-8D, TWA-9D, TWA-10D

Bold font indicates well is screened in deep aquifer

Gray shading indicates wells on the Port of Tacoma property and monitored by the Port's consultant

Abbreviations

1,2,3,4 = sampling to occur in first, second, third, and/or fourth quarter.

-- = Sampling not required

VOC = volatile organic compound

TPH = total petroleum hydrocarbon

SVOC = semi-volatile organic compound

cPAH = carcinogenic polycyclic aromatic hydrocarbon

PCB = polychlorinated biphenyl

LNAPL = light non-aqueous phase liquid

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Table 2
Groundwater Elevation Data
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

Well ID	Date	Depth to LNAPL(ft)	Depth to Water (ft)	Water Surface Elevation (ft)	Top of Casing Elevaton NAVD 88 (ft)
CCW-1A[1]	12/5/2022	--	--	--	15.81
CCW-1B	12/5/2022	--	4.63	10.67	15.30
CCW-1C	**12/5/2022**	**--**	**9.94**	**6.20**	**16.14**
CCW-2A	12/5/2022	--	2.80	12.54	15.34
CCW-2B	12/5/2022	--	2.89	12.35	15.24
CCW-2C	**12/5/2022**	**--**	**8.90**	**6.28**	**15.18**
CCW-3A	12/5/2022	--	4.61	12.26	16.87
CCW-3B	12/5/2022	--	4.65	12.58	17.23
CCW-3C	**12/5/2022**	**--**	**12.44**	**6.36**	**18.80**
CCW-4C	**12/5/2022**	**--**	**10.58**	**6.26**	**16.84**
CCW-5B	12/5/2022	--	3.09	12.65	15.74
CCW-5C	**12/5/2022**	**--**	**9.12**	**6.40**	**15.52**
CCW-6B	12/5/2022	--	2.39	13.04	15.43
CCW-6C	**12/5/2022**	**--**	**8.82**	**6.43**	**15.25**
CCW-7B	12/5/2022	--	2.30	12.73	15.03
CCW-7C	**12/5/2022**	**--**	**8.80**	**6.38**	**15.18**
CCW-8B	12/5/2022	--	4.86	11.58	16.44
MW-1	12/5/2022	--	2.04	12.03	14.07
MW-4	12/5/2022	--	6.30	12.92	19.22
SB-1A	12/5/2022	--	5.41	10.05	15.46
SB-2A	12/5/2022	--	5.33	9.70	15.03
SB-3A	12/5/2022	--	4.46	12.24	16.70
CTMW-1	12/5/2022	--	5.13	11.42	16.55
CTMW-5	12/5/2022	--	4.85	12.37	17.22
CTMW-7	**12/5/2022**	**--**	**11.82**	**6.51**	**18.33**
CTMW-8	12/5/2022	--	5.43	12.48	17.91
CTMW-9	**12/5/2022**	**11.51**	**11.52**	**5.98**	**17.50**
CTMW-10	12/5/2022	--	2.78	13.14	15.92
CTMW-11R2	12/5/2022	--	7.58	13.19	20.77
CTMW-12	**12/5/2022**	**--**	**15.34**	**6.07**	**21.41**
CTMW-14	12/5/2022	--	2.33	13.92	16.25
CTMW-15	12/5/2022	--	5.54	10.86	16.40
CTMW-17	12/5/2022	--	7.28	15.16	22.44
CTMW-17D	**12/5/2022**	**--**	**13.55**	**6.21**	**19.76**
CTMW-18	12/5/2022	--	8.33	14.17	22.50

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Table 2
Groundwater Elevation Data
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

Well ID	Date	Depth to LNAPL(ft)	Depth to Water (ft)	Water Surface Elevation (ft)	Top of Casing Elevaton NAVD 88 (ft)
CTMW-20	12/5/2022	--	2.97	11.18	14.15
CTMW-23R	12/5/2022	--	6.76	13.12	19.88
CTMW-24	12/5/2022	--	5.86	13.61	19.47
CTMW-24D	**12/5/2022**	**--**	**13.54**	**5.97**	**19.51**
CTMW-25D	**12/5/2022**	**--**	**10.30**	**5.88**	**16.18**
PZ-1*	12/5/2022	--	--	--	--
PZ-5	12/5/2022	--	3.79	12.19	15.98
PZ-7	12/5/2022	--	12.38	11.71	24.09
PZ-8	12/5/2022	--	7.73	10.23	17.96
PZ-9	12/5/2022	--	6.04	12.63	18.67
TWA-1	12/5/2022	--	5.63	9.15	14.78
TWA-2	12/5/2022	--	4.11	7.58	11.69
TWA-3	12/5/2022	--	7.32	8.16	15.48
TWA-4D	**12/5/2022**	**--**	**8.87**	**6.41**	**15.28**
TWA-5D	**12/5/2022**	**--**	**11.62**	**6.52**	**18.14**
TWA-6D	**12/5/2022**	**--**	**11.91**	**5.74**	**17.65**
TWA-7D	**12/5/2022**	**--**	**8.91**	**6.49**	**15.40**
TWA-8D	**12/5/2022**	**--**	**9.19**	**5.73**	**14.92**
TWA-9D	**12/5/2022**	**--**	**9.25**	**6.59**	**15.84**
TWA-10D	**12/5/2022**	**--**	**10.11**	**5.86**	**15.97**
Emerald Services Site Monitoring Wells					
MW-1**	12/5/2022	--	3.15	10.92	14.07
MW-2R**	12/5/2022	--	2.58	11.21	13.79
MW-3R**	12/5/2022	--	4.03	10.25	14.28
MW-4**	12/5/2022	--	3.16	10.95	14.11

Notes:

Gray shading indicates wells on the Port of Tacoma property and monitored by the Port's consultant

Bold font indicates well is screened in deep aquifer

-- = LNAPL not detected during measurement

[1] = CCW-1A insufficient volume for sample collection, well dry.

* = PZ-1 was approved by Ecology to be decommissioned prior to the beginning of the event.

** = Well located on adjacent Emerald Services property and measured by Emerald's consultant in cooperation with DOF. Datum presumed NAVD88 based on values presented in Ecology's EIM database

Abbreviations:

ft = feet

NAVD 88 = North American Vertical Datum

LNAPL = light non-aqueous phase liquid

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Table 3
Groundwater Analytical Results - Total and Extractable Petroleum Hydrocarbons
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

Total Petroleum Hydrocarbons	DGWP Screening Level	CCW-1B	CCW-1C	CCW-2A	CCW-2B	CCW-2C	CCW-3A	CCW-3B	CCW-3C	CCW-4C	CCW-5B	CCW-5B (DUPLICATE)	CCW-5C	CCW-6B	CCW-6B (DUPLICATE)	CCW-6C	CCW-7B	CCW-7C
	Date Sampled	12/9/2022	12/9/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/9/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022
Gasoline Range Organics	800	100 U	100 U	**2,600**	**4,600**	100 U	**450**	**770**	100 U	100 U	**800**	**840**	100 U	**200**	**160**	100 U	**950**	100 U
Diesel Range Organics	500	**510 X**	**640 X**	**3,800 X**	**6,000 X**	**960 X**	**6,300 X**	**5,200 X**	**1,500 X**	**860 X**	**1,300 X**	**1,400 X**	**1,500 X**	**520 X**	**530 X**	**650 X**	**1,100 X**	**450 X**
Oil Range Organics	500	**450 X**	**590 X**	**1,400 X**	**3,200 X**	**1,100 X**	**4,100 X**	**5,100 X**	**1,500 X**	**730 X**	**660 X**	**770 X**	**720 X**	**380 X**	**400 X**	**530 X**	**430 X**	**430 X**
Sum of Diesel and Oil Range Organics[1]	500	**960 X**	**1,230 X**	**5,200 X**	**9,200 X**	**2,060 X**	**10,400 X**	**10,300 X**	**3,000 X**	**1,590 X**	**1,960 X**	**2,170 X**	**2,220 X**	**900 X**	**930 X**	**1,180 X**	**1,530 X**	**880 X**

Total Petroleum Hydrocarbons	DGWP Screening Level	CCW-8B	MW-1	MW-1 (DUPLICATE)	MW-4	SB-1A	SB-2A	SB-3A	TWA-1	TWA-2	TWA-3	TWA-4D	TWA-5D	TWA-6D	TWA-7D	TWA-8D	TWA-9D	TWA-10D
	Date Sampled	12/9/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022	12/6/2022	12/5/2022	12/5/2022	12/5/2022	12/6/2022	12/6/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022
Gasoline Range Organics	800	**230**	**200**	**210**	**160**	100 U	100 U	100 U	100 U	100 U	100 U	NA	100 U	100 U	NA	100 U	100 U	100 U
Diesel Range Organics	500	**2,100 X**	**18,000**	**20,000 J+**	**5,800 X**	50 U	50 U	**910 ***	**650 ***	**190 ***	50 U	50 U	**1,000 ***	**600 J-***	50 U	**120 X**	**370 X**	50 U
Oil Range Organics	500	**1,200 X**	**6,000 ***	**6,700 J+***	**4,300 X**	250 U	250 U	**940 ***	**460 ***	**510 ***	250 U	250 U	**1,100 ***	**660 J-***	250 U	**110 X**	**380 X**	250 U
Sum of Diesel and Oil Range Organics[1]	500	**3,300 X**	**24,000 ***	**26,700 J+***	**10,100 X**	50 U	50 U	**1,850 ***	**1,110 ***	**700 ***	50 U	50 U	**2,100 ***	**1,260 J-***	50 U	**230 X**	**750 X**	50 U

Extractable Petroleum Hydrocarbons	DGWP Screening Level	CCW-3A	CCW-5B	CCW-5B (DUPLICATE)	CCW-8B	MW-1	MW-1 (DUPLICATE)	TWA-1	TWA-6D
	Date Sampled	12/7/2022	12/8/2022	12/8/2022	12/9/2022	12/6/2022	12/6/2022	12/5/2022	12/6/2022
Aliphatic Hydrocarbons									
C8-C10	NA	79.1 U	79.4 U	79.5 U	79.9 U	79.5 U	79.3 UJ	78.9 U	90.4 UJ
C10-C12	NA	39.6 UJ	39.7 U	39.8 U	39.9 U	39.8 U	39.6 UJ	39.5 U	45.2 UJ
C12-C16	NA	39.6 UJ	39.7 U	39.8 U	39.9 U	**234**	**177 J-**	39.5 U	45.2 UJ
C16-C21	NA	39.6 UJ	39.7 U	39.8 U	39.9 U	**127**	**111 J-**	39.5 U	45.2 UJ
C21-C34	NA	**163 J**	**42.1**	39.8 U	39.9 U	**200 J**	39.6 UJ	39.5 U	45.2 UJ
Aromatic Hydrocarbons									
C8-C10	NA	79.1 UJ	79.4 U	79.5 U	79.9 U	79.5 U	79.3 UJ	78.9 U	90.4 UJ
C10-C12	NA	39.6 U	39.7 U	39.8 U	39.9 U	39.8 U	39.6 UJ	39.5 U	45.2 UJ
C12-C16	NA	39.6 U	39.7 U	39.8 U	39.9 U	**96.2 J**	**97.6 J**	39.5 U	45.2 UJ
C16-C21	NA	**61.8**	**41.3**	39.8 U	**40**	**285 J-**	**236 J-**	**40.2 J-**	45.2 UJ
C21-C34	NA	39.6 U	39.7 U	39.8 U	39.9 U	**370**	**291 J-**	39.5 U	45.2 UJ
Volatile Petroleum Hydrocarbons									
Aliphatic Hydrocarbons									
C5-C6	NA	**60**	50 U	50 U	50 U	50 U	50 U	50 U	50 U
C6-C8	NA	**88**	**54**	**53**	50 U	50 U	50 U	50 U	50 U
C8-C10	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
C10-C12	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Aromatic Hydrocarbons									
C8-C10	NA	**120**	**200**	**200**	50 U	50 U	50 U	50 U	50 U
C10-C12	NA	50 U	**190**	**190**	**120**	**69**	**77**	50 U	50 U
C12-C13	NA	**62**	**200**	**220**	**350**	**480**	**510**	50 U	50 U

Notes:

all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels used in the Data Gaps Work Plan (DOF, 2020)
No screening level assigned for Extractable or Volatile Petroleum Hydrocarbons
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels
1. Qualification flags from individual diesel and oil range results applied to sum value

Definitions:

J = Result is estimated
J+ = Result is estimated, but the result may be biased high
J- = Result is estimated, but the result may be biased low
U = Not Detected above the value shown at left
UJ = Not detected above the estimated value shown at left
X = Result qualified as tentatively identified and estimated by data validator based on review of lab report and historical site results. As required by Ecology, qualifiers are restated in Table 3 as X, a flag commonly used by laboratories to indicate the sample chromatographic pattern did not resemble the fuel standard used for quantitation.
* = Flagged by the laboratory because the sample chromatographic pattern did not resemble the fuel standard used for quantitation
NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level included in the DGWP

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Table 4
Groundwater Analytical Results - Volatile Organic Compounds
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

VOCs	DGWP Screening Level	MTCA A/B Screening Level	CCW-1B	CCW-1C	CCW-2A	CCW-2B	CCW-2C	CCW-3A	CCW-3B	CCW-3C
		Date Sampled	12/9/2022	12/9/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022
1,1,1,2-Tetrachloroethane	NA	1.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	341,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	0.22	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	25.3	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	120,000	NA	1 U	1 U	1 U	**3.1**	1 U	1 U	1 U	1 U
1,1-Dichloroethene	4,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	5	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	6.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	0.00038	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	3,870	NA	1 U	1 U	**30**	**120**	1 U	**3.5**	**1.2**	1 U
1,2-Dibromo-3-chloropropane	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	NA	0.01	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	59.4	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	23.2	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	5730	NA	1 U	1 U	**4.4**	**18**	1 U	**1.1**	1 U	1 U
1,3-Dichloropropane	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	1,420,000	NA	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Chlorotoluene	NA	160	1 U	1 U	1 U	**16**	1 U	**1**	1 U	1 U
2-Hexanone	1,960,000	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	NA	NA	1 U	1 U	1 U	**2.9**	1 U	1 U	1 U	1 U
Acetone	426,000	137.6	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	1.6	NA	0.35 U	0.35 U	**15**	**89**	0.35 U	**13**	**4.5**	0.35 U
Bromobenzene	NA	64	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NA	5.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	968	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CFC-11	NA	2400	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CFC-12	NA	1600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5,030	NA	1 U	1 U	**23**	**790**	1 U	1 U	1 U	1 U
Chloroethane	64,900	NA	1 U	1 U	1 U	**2.2**	1 U	1 U	1 U	1 U
Chloroform	283	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	133	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	16	NA	1 U	1 U	**220**	**1.2**	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Dibromochloromethane	20.6	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	NA	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	NA	1600	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	887	NA	1 U	1 U	**81**	**36**	1 U	**25**	**1.3**	1 U
Hexane	NA	480	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (Cumene)	8,000	NA	1 U	1 U	**8.8**	**4.6**	1 U	**1**	1 U	1 U
m, p-Xylene	266,000	NA	2 U	2 U	**27**	**92**	2 U	**10**	2 U	2 U
Methyl isobutyl ketone	NA	640	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl t-butyl ether	NA	20	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	960	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Propylbenzene	737	NA	1 U	1 U	**16**	**8**	1 U	1 U	1 U	1 U
o-Xylene	266,000	NA	1 U	1 U	**32**	**63**	1 U	**7.9**	**1.1**	1 U
p-Isopropyltoluene	4,520	NA	1 U	1 U	**4.9**	**2.9**	1 U	1 U	1 U	1 U
sec-Butylbenzene	359	NA	1 U	1 U	**3.4**	**1.2**	1 U	1 U	1 U	1 U
Styrene	819	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	800	1 U	1 U	**2.4**	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.9	NA	**1.4**	1 U	**120**	1 U	1 U	1 U	1 U	1 U
Toluene	130	NA	1 U	1 U	**32**	**180**	1 U	**28**	**10**	1 U
trans-1,2-Dichloroethene	21,300	NA	1 U	1 U	**2.5**	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Trichloroethene	0.7	NA	0.5 U	0.5 U	**230**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	**0.024**	0.02 U	**31**	**1.3**	0.02 U	**0.31**	**0.69**	0.02 U

Notes:
all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels used in Data Gaps Work Plan (DOF, 2020)
MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels

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Table 4
Groundwater Analytical Results - Volatile Organic Compounds
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

VOCs	DGWP Screening Level	MTCA A/B Screening Level	CCW-4C	CCW-5B	CCW-5B (DUPLICATE)	CCW-5C	CCW-6B	CCW-6B (DUPLICATE)	CCW-6C	CCW-7B	CCW-7C
		Date Sampled	12/9/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022
1,1,1,2-Tetrachloroethane	NA	1.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	341,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	0.22	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	25.3	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	120,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	4,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	5	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	6.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	0.00038	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	3,870	NA	1 U	**3.4**	**3.9**	1 U	1 U	1 U	1 U	**1.9**	1 U
1,2-Dibromo-3-chloropropane	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	NA	0.01	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	59.4	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	23.2	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	5730	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	1,420,000	NA	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Chlorotoluene	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	1,960,000	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	426,000	137.6	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	1.6	NA	0.35 U	**24**	**25**	0.35 U	**12**	**12**	0.35 U	**15**	**3.4**
Bromobenzene	NA	64	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NA	5.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	968	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CFC-11	NA	2400	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CFC-12	NA	1600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5,030	NA	1 U	**26**	**24**	1 U	**10**	**10**	1 U	**40**	1 U
Chloroethane	64,900	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	283	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	133	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	16	NA	1 U	**1.2**	**1.4**	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Dibromochloromethane	20.6	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	NA	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	NA	1600	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	887	NA	1 U	**37**	**41**	1 U	**7**	**6.8**	1 U	**55**	1 U
Hexane	NA	480	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (Cumene)	8,000	NA	1 U	**5.6**	**6.3**	1 U	**1.4**	**1.3**	1 U	**6.9**	1 U
m, p-Xylene	266,000	NA	2 U	**6.2**	**6.8**	2 U	2 U	2 U	2 U	**5**	2 U
Methyl isobutyl ketone	NA	640	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl t-butyl ether	NA	20	**3.3**	1 U	1 U	**1.3**	1 U	1 U	1 U	1 U	1 U
Methylene chloride	960	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Propylbenzene	737	NA	1 U	**11**	**12**	1 U	**1.4**	**1.3**	1 U	**12**	1 U
o-Xylene	266,000	NA	1 U	**10**	**11**	1 U	**2**	**2**	1 U	**10**	1 U
p-Isopropyltoluene	4,520	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	359	NA	1 U	**1.6**	**1.8**	1 U	1 U	1 U	1 U	**2**	1 U
Styrene	819	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	800	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.9	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	130	NA	1 U	**10**	**11**	1 U	**1.5**	**1.4**	1 U	**14**	1 U
trans-1,2-Dichloroethene	21,300	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Trichloroethene	0.7	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	0.02 U	**0.81**	**0.96**	0.02 U	**0.083**	**0.087**	0.02 U	**0.093**	0.02 U

Notes:

all concentrations in micrograms per liter (µg/L)

DGWP Screening Level = Screening Levels used in Data Gaps Work Plan (DOF, 2020)

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Table 4
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Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

VOCs	DGWP Screening Level	MTCA A/B Screening Level	CCW-8B	MW-1	MW-1 (DUPLICATE)	MW-4	SB-1A	SB-2A	SB-3A	TWA-1	TWA-2
		Date Sampled	12/9/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022	12/6/2022	12/5/2022	12/5/2022
1,1,1,2-Tetrachloroethane	NA	1.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	341,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	0.22	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	25.3	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	120,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	4,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	5	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	6.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	0.00038	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	3,870	NA	1 U	1 U	1 U	**1.3**	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	NA	0.01	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	59.4	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	23.2	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	5730	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	1,420,000	NA	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Chlorotoluene	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	1,960,000	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	426,000	137.6	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 UJ	50 U
Benzene	1.6	NA	**0.36**	**7.2**	**8.4**	**4.2**	0.35 U	0.35 U	0.35 U	**0.53**	0.35 U
Bromobenzene	NA	64	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NA	5.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	968	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CFC-11	NA	2400	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CFC-12	NA	1600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5,030	NA	**3.8**	1 U	1 U	**1.6**	1 U	1 U	1 U	1 U	1 U
Chloroethane	64,900	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	283	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	133	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	16	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Dibromochloromethane	20.6	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	NA	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	NA	1600	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	887	NA	1 U	1 U	1 U	**2.5**	1 U	1 U	1 U	1 U	1 U
Hexane	NA	480	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (Cumene)	8,000	NA	**2.1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m, p-Xylene	266,000	NA	2 U	2 U	2 U	**2.9**	2 U	2 U	2 U	2 U	2 U
Methyl isobutyl ketone	NA	640	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl t-butyl ether	NA	20	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	960	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Propylbenzene	737	NA	**2.3**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	266,000	NA	1 U	1 U	1 U	**5**	1 U	1 U	1 U	1 U	1 U
p-Isopropyltoluene	4,520	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	359	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	819	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	800	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.9	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	130	NA	1 U	1 U	1 U	**3.7**	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	21,300	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Trichloroethene	0.7	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	**0.035**	0.02 U	0.02 U	**0.47**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

Notes:

all concentrations in micrograms per liter (µg/L)

DGWP Screening Level = Screening Levels used in Data Gaps Work Plan (DOF, 2020)

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Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

VOCs	DGWP Screening Level	MTCA A/B Screening Level	TWA-3	TWA-4D	TWA-5D	TWA-6D	TWA-7D	TWA-8D	TWA-9D	TWA-10D
		Date Sampled	12/5/2022	12/6/2022	12/6/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022
1,1,1,2-Tetrachloroethane	NA	1.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	341,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	NA	0.22	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	25.3	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	120,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	4,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	5	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	NA	6.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	NA	0.00038	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	3,870	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	NA	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	NA	0.01	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	59.4	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	23.2	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	5730	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	1,420,000	NA	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Chlorotoluene	NA	160	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	1,960,000	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	426,000	137.6	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzene	1.6	NA	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Bromobenzene	NA	64	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	NA	5.5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	968	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CFC-11	NA	2400	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CFC-12	NA	1600	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5,030	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	64,900	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	283	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	133	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	16	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Dibromochloromethane	20.6	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromomethane	NA	80	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	NA	1600	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	887	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexane	NA	480	5 U	5 U	5 U	5 U	5 U	11	5 U	5 U
Isopropylbenzene (Cumene)	8,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m, p-Xylene	266,000	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methyl isobutyl ketone	NA	640	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl t-butyl ether	NA	20	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	960	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Propylbenzene	737	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	266,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
p-Isopropyltoluene	4,520	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	359	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	819	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	NA	800	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	2.9	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	130	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	21,300	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	NA	0.44	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Trichloroethene	0.7	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U

Notes:

all concentrations in micrograms per liter (µg/L)

DGWP Screening Level = Screening Levels used in Data Gaps Work Plan (DOF, 2020)

MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference

Bold values indicate detections

Yellow shading indicates detection above DGWP Screening Levels

Definitions:

U = Not Detected above the value shown at left

J = Result is estimated

NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level

Table 5
Groundwater Analytical Results - Semi-Volatile Organic Compounds
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

SVOCs	DGWP Screening Level	MTCA A/B Screening Level	CCW-1B	CCW-1C	CCW-2A	CCW-2B	CCW-2C	CCW-3A	CCW-3B	CCW-3C	CCW-4C	CCW-5B
		Date Sampled	12/9/2022	12/9/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/9/2022	12/8/2022
1,2,4-Trichlorobenzene	NA	1.5	0.1 U	0.1 U	0.1 U	**0.1** U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	4,200	720	0.1 U	0.1 U	**4**	**3.1**	0.1 U	1 U	0.1 U	0.1 U	0.1 U	**0.4**
1,3-Dichlorobenzene	110	NA	0.1 U	0.1 U	**0.68**	**5.4**	0.1 U	1 U	**0.24**	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	10	8.1	0.1 U	0.1 U	**1.7**	**37**	0.1 U	1 U	**0.13**	0.1 U	0.1 U	**0.21**
1-Methylnaphthalene	NA	1.5	0.1 U	0.1 U	**15**	**4.1**	0.1 U	1 U	**3.1**	0.1 U	0.1 U	**6.6**
2,2'-Oxybis(1-chloropropane)	NA	0.63	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-Trichlorophenol	NA	800	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2,4,6-Trichlorophenol	NA	4	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2,4-Dichlorophenol	NA	24	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	553	NA	1 U	1 U	**2.3**	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2,4-Dinitrophenol	3,460	NA	3 U	3 U	3 U	3 U	3 U	30 U	3 U	3 U	3 U	3 U
2,4-Dinitrotoluene	1,360	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,6-Dinitrotoluene	4,260	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chloronaphthalene	1,030	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorophenol	96.7	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	994	NA	0.1 U	0.1 U	**15**	**2.1**	0.1 U	1 U	**2.5**	0.1 U	0.1 U	**0.66**
2-Methylphenol	33,300	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
2-Nitroaniline	210	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Nitrophenol	NA	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
3-Methylphenol + 4-Methylphenol	2,960	NA	2 U	2 U	2 U	2 U	2 U	20 U	2 U	2 U	2 U	2 U
3-Nitroaniline	NA	NA	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NA	1.3	3 U	3 U	3 U	3 U	3 U	30 U	3 U	3 U	3 U	3 U
4-Bromophenyl phenyl ether	NA	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chloro-3-methylphenol	20	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
4-Chloroaniline	6,730	NA	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NA	137.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Nitroaniline	NA	NA	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	10 U
4-Nitrophenol	15,200	NA	3 U	3 U	3 U	3 U	3 U	30 U	3 U	3 U	3 U	3 U
Acenaphthene	643	NA	**0.44**	0.01 U	**5.1**	**1.4**	**0.073**	**0.2**	**0.46**	0.01 U	**0.022**	**0.96**
Acenaphthylene	4,530	NA	0.01 U	0.01 U	**0.28**	**0.029**	**0.72**	0.1 U	0.01 U	**0.019**	0.01 U	0.01 U
Anthracene	14,200	NA	0.01 U	0.01 U	**0.26**	**0.17**	**0.24**	0.1 U	**0.03**	0.01 U	0.01 U	**0.019**
Benz[a]anthracene	10	NA	0.01 U	0.01 U	**0.035**	0.01 U	**0.021**	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzo(a)pyrene	0.05	NA	0.01 U	0.01 U	**0.014**	0.01 U	**0.06**	0.1 U	**0.014**	0.01 U	0.01 U	0.01 U
Benzo(b)fluoranthene	10	NA	0.01 U	0.01 U	**0.017**	0.01 U	**0.026**	0.1 U	**0.024**	0.01 U	0.01 U	0.01 U
Benzo(ghi)perylene	739	NA	0.02 U	0.02 U	0.02 U	0.02 U	**0.11**	0.2 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(k)fluoranthene	10	NA	0.01 U	0.01 U	0.01 U	0.01 U	**0.012**	0.1 U	**0.024**	0.01 U	0.01 U	0.01 U
Benzoic acid	5,830,000	NA	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	5 U
Benzyl alcohol	1,270,000	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Bis(2-chloroethoxy)methane	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroethyl) ether	NA	0.04	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-ethylhexyl) phthalate	0.046	NA	0.32 U	0.85 U	0.45 U	0.48 U	1.5 U	3.2 U	0.63 U	0.44 U	0.85 U	0.85 U
Butylbenzyl phthalate	NA	46	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Carbazole	236	NA	0.1 U	0.1 U	**1.4**	**0.49**	0.1 U	1 U	**0.27**	0.1 U	0.1 U	**0.31**
Chrysene	10	NA	0.01 U	0.01 U	**0.035**	0.01 U	**0.018**	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U
Dibenzo(a,h)anthracene	10	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U	**0.015**	0.01 U	0.01 U	0.01 U
Dibenzofuran	260	NA	0.1 U	0.1 U	**2.1**	**0.45**	0.1 U	1 U	**0.2**	0.1 U	0.1 U	**0.3**
Diethyl phthalate	28,400	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Dimethyl phthalate	72,000	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Di-n-butyl phthalate	2,910	NA	1 UJ-	1 UJ-	1 U	1 U	1 U	10 U	1 U	1 U	1 UJ-	1 UJ-
Di-n-octyl phthalate	10	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Fluoranthene	90.2	NA	**0.011**	0.01 U	**0.42**	**0.18**	**0.21**	0.1 U	0.01 U	0.01 U	0.01 U	**0.015**
Fluorene	2,740	NA	**0.066**	0.01 U	**4.1**	**0.62**	**0.31**	**0.13**	**0.67**	0.01 U	0.01 U	**0.6**
Hexachlorobenzene	NA	0.055	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene	17.7	NA	0.1 U	0.1 U	0.35	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorocyclopentadiene	NA	48	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	3 U	0.3 U	0.3 U	0.3 U	0.3 U
Hexachloroethane	NA	5.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Indeno(1,2,3-cd)pyrene	10	NA	0.01 U	0.01 U	0.01 U	0.01 U	**0.036**	0.1 U	**0.014**	0.01 U	0.01 U	0.01 U
Isophorone	1,560	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	3,090	NA	0.1 U	0.1 U	**17**	**30**	**0.15**	**1.6**	**2.4**	0.1 U	0.1 U	**0.56**
Nitrobenzene	449	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitroso-di-n-propylamine	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitrosodiphenylamine	10	NA	0.1 U	0.1 U	**0.24**	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	50	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
Phenanthrene	139	NA	**0.073**	0.01 U	**2**	**0.89**	**1.4**	**0.1**	**0.31**	0.01 U	0.01 U	**0.16**
Phenol	789,000	NA	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U
Pyrene	603	NA	**0.011**	0.01 U	**0.31**	**0.14**	**0.6**	0.1 U	0.01 U	0.01 U	0.01 U	**0.017**
1,4-Dioxane	160	NA	**4.1**	**23**	**0.4** U	**1.3**	**2.5**	**1.7**	**0.98**	**1.7**	**20**	**0.62**

Notes:

all concentrations in micrograms per liter (µg/L)

DGWP Screening Level = Screening Levels from the Data Gaps Work Plan (DOF, 2020)

MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference

Bold values indicate detections

Yellow shading indicates detection above DGWP Screening Levels

Abbreviations:

U = Not Detected above the value shown at left

J = Result is estimated.

UJ- = Not detected above the estimated value, which may be biased low

J- = result is estimated with an associated negative bias

J+= result is estimated with an associated high bias

R = Result Rejected

NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level included in the DGWP

Table 5
Groundwater Analytical Results - Semi-Volatile Organic Compounds
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

SVOCs	DGWP Screening Level	MTCA A/B Screening Level	CCW-5B (DUPLICATE)	CCW-5C	CCW-6B	CCW-6B (DUPLICATE)	CCW-6C	CCW-7B	CCW-7C	CCW-8B	MW-1	MW-1 (DUPLICATE)	MW-4
Date Sampled			12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/9/2022	12/6/2022	12/6/2022	12/9/2022
1,2,4-Trichlorobenzene	NA	1.5	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
1,2-Dichlorobenzene	4,200	720	**0.39**	0.1 U	1 U	**0.52**	0.1 U	**3.7**	0.1 U	**0.2**	0.1 U	0.1 U	1 U
1,3-Dichlorobenzene	110	NA	0.1 U	0.1 U	1 U	**0.14**	0.1 U	**1.3**	0.1 U	0.1 U	0.1 U	0.1 U	1 U
1,4-Dichlorobenzene	10	8.1	**0.22**	0.1 U	1 U	**0.37**	0.1 U	**3.5**	0.1 U	0.1 U	0.1 U	0.1 U	1 U
1-Methylnaphthalene	NA	1.5	**6.2**	0.1 U	1 U	**0.4**	0.1 U	**19**	0.1 U	**8.2**	**2**	**1.8**	1 U
2,2'-Oxybis(1-chloropropane)	NA	0.63	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
2,4,5-Trichlorophenol	NA	800	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2,4,6-Trichlorophenol	NA	4	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2,4-Dichlorophenol	NA	24	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2,4-Dimethylphenol	553	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2,4-Dinitrophenol	3,460	NA	3 U	3 U	30 U	3 U	3 U	3 U	3 U	3 U	3 UJ	3 UJ	30 U
2,4-Dinitrotoluene	1,360	NA	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
2,6-Dinitrotoluene	4,260	NA	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
2-Chloronaphthalene	1,030	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
2-Chlorophenol	96.7	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2-Methylnaphthalene	994	NA	**0.53**	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	**6.8**	0.1 U	0.1 U	1 U
2-Methylphenol	33,300	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
2-Nitroaniline	210	NA	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
2-Nitrophenol	NA	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
3-Methylphenol + 4-Methylphenol	2,960	NA	2 U	2 U	20 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	20 U
3-Nitroaniline	NA	NA	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U
4,6-Dinitro-2-methylphenol	NA	1.3	3 U	3 U	30 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	30 U
4-Bromophenyl phenyl ether	NA	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
4-Chloro-3-methylphenol	20	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
4-Chloroaniline	6,730	NA	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U
4-Chlorophenyl phenyl ether	NA	137.6	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
4-Nitroaniline	NA	NA	10 U	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U
4-Nitrophenol	15,200	NA	3 U	3 U	30 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	30 U
Acenaphthene	643	NA	**0.95**	0.01 U	**1.1**	**1.3**	0.01 U	**16**	0.01 U	**1.5**	**0.3**	**0.33**	**0.46**
Acenaphthylene	4,530	NA	0.01 U	0.01 U	0.1 U	**0.014**	0.01 U	**0.21**	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U
Anthracene	14,200	NA	**0.021**	0.01 U	0.1 U	**0.026**	0.01 U	**0.83**	0.01 U	**0.055**	**0.093 J**	0.01 UJ	0.1 U
Benz[a]anthracene	10	NA	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	**0.039**	0.01 U	0.01 U	**0.019**	**0.022**	0.1 U
Benzo(a)pyrene	0.05	NA	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.014**	**0.018**	0.1 U
Benzo(b)fluoranthene	10	NA	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	**0.019**	0.01 U	0.01 U	**0.02**	**0.023**	0.1 U
Benzo(ghi)perylene	739	NA	0.02 U	0.02 U	0.2 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.2 U
Benzo(k)fluoranthene	10	NA	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	**0.015**	0.01 U	0.01 U	**0.02**	**0.022**	0.1 U
Benzoic acid	5,830,000	NA	5 U	5 U	50 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U
Benzyl alcohol	1,270,000	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
Bis(2-chloroethoxy)methane	10	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Bis(2-chloroethyl) ether	NA	0.04	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Bis(2-ethylhexyl) phthalate	0.046	NA	0.85 U	0.85 U	3.2 U	0.4 J	0.32 U	**0.4 J**	0.32 U	0.32 U	1.6 U	1.6 U	3.2 U
Butylbenzyl phthalate	NA	46	1 U	1 U	10 UJ	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	10 U
Carbazole	236	NA	**0.32**	0.1 U	1 U	**0.35**	0.1 U	**5.7**	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Chrysene	10	NA	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	**0.044**	0.01 U	0.01 U	**0.025**	**0.032**	0.1 U
Dibenzo(a,h)anthracene	10	NA	0.01 U	0.01 U	0.1 U	**0.014**	0.01 U	**0.013**	0.01 U	0.01 U	**0.017**	**0.019**	0.1 U
Dibenzofuran	260	NA	**0.32**	0.1 U	1 U	**0.36**	0.1 U	**8.5**	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Diethyl phthalate	28,400	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
Dimethyl phthalate	72,000	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U
Di-n-butyl phthalate	2,910	NA	1 UJ-	1 UJ-	10 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ-	1 U	1 U	10 UJ
Di-n-octyl phthalate	10	NA	1 U	1 U	10 U	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	10 U
Fluoranthene	90.2	NA	**0.028**	0.01 U	0.1 U	**0.028**	0.01 U	**1.4**	0.01 U	**0.057**	**0.064**	**0.06**	0.1 U
Fluorene	2,740	NA	**0.63**	0.01 U	**0.41**	**0.51**	0.01 U	**11**	0.01 U	**0.3**	**0.43**	**0.3**	**0.3**
Hexachlorobenzene	NA	0.055	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Hexachlorobutadiene	17.7	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Hexachlorocyclopentadiene	NA	48	0.3 U	0.3 U	3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	3 U
Hexachloroethane	NA	5.6	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Indeno(1,2,3-cd)pyrene	10	NA	0.01 U	0.01 U	0.1 U	**0.016**	0.01 U	**0.011**	0.01 U	0.01 U	**0.015**	**0.017**	0.1 U
Isophorone	1,560	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Naphthalene	3,090	NA	**0.46**	0.1 U	1 U	**0.27**	0.1 U	**7.3**	0.1 U	0.1 U	0.1 U	0.1 U	1 U
Nitrobenzene	449	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
N-Nitroso-di-n-propylamine	10	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1 U
N-Nitrosodiphenylamine	10	NA	0.1 U	0.1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**1**
Pentachlorophenol	50	NA	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U
Phenanthrene	139	NA	**0.15**	0.01 U	0.1 U	**0.01**	0.01 U	**0.65**	**0.011**	**0.033**	**0.12 J**	0.01 UJ	0.1 U
Phenol	789,000	NA	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	**2**	10 U
Pyrene	603	NA	**0.035**	0.01 U	0.1 U	**0.02**	0.01 U	**0.84**	0.01 U	**0.058**	**0.16**	**0.17**	0.1 U
1,4-Dioxane	160	NA	**0.85**	**7.2**	0.4 U	0.4 U	**9.4**	0.4 U	**7.1**	**2.3**	0.4 U	0.4 U	**250**

Notes:

all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels from the Data Gaps Work Plan (DOF, 2020)
MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels

Abbreviations:

U = Not Detected above the value shown at left
J = Result is estimated.
UJ- = Not detected above the estimated value, which may be biased low
J- = result is estimated with an associated negative bias
J+= result is estimated with an associated high bias
R = Result Rejected
NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level included in the DGWP

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Table 5
Groundwater Analytical Results - Semi-Volatile Organic Compounds
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

SVOCs	DGWP Screening Level	MTCA A/B Screening Level	SB-1A	SB-2A	SB-3A	TWA-1	TWA-2	TWA-3	TWA-5D	TWA-6D	TWA-8D	TWA-9D	TWA-10D
		Date Sampled	12/6/2022	12/5/2022	12/6/2022	12/5/2022	12/5/2022	12/5/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022
1,2,4-Trichlorobenzene	NA	1.5	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,2-Dichlorobenzene	4,200	720	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,3-Dichlorobenzene	110	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1,4-Dichlorobenzene	10	8.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
1-Methylnaphthalene	NA	1.5	0.1 U	0.1 U	0.1 U	**0.32**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,2'-Oxybis(1-chloropropane)	NA	0.63	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2,4,5-Trichlorophenol	NA	800	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4,6-Trichlorophenol	NA	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dichlorophenol	NA	24	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	553	NA	1 U	1 U	1 U	3 U	3 U	3 U	1 U	1 U	1 U	1 U	1 U
2,4-Dinitrophenol	3,460	NA	3 U	3 U	3 U	0.5 U	0.5 U	0.5 U	3 UJ	3 UJ	3 U	3 U	3 U
2,4-Dinitrotoluene	1,360	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2,6-Dinitrotoluene	4,260	NA	0.5 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Chloronaphthalene	1,030	NA	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Chlorophenol	96.7	NA	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	994	NA	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
2-Methylphenol	33,300	NA	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline	210	NA	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
2-Nitrophenol	NA	NA	1 U	1 U	1 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U	1 U
3-Methylphenol + 4-Methylphenol	2,960	NA	2 U	2 U	2 U	10 U	10 U	10 U	2 U	2 U	2 U	2 U	2 U
3-Nitroaniline	NA	NA	10 U	10 U	10 U	3 U	3 U	3 U	10 U	10 U	10 U	10 U	10 U
4,6-Dinitro-2-methylphenol	NA	1.3	3 U	3 U	3 U	0.1 U	0.1 U	0.1 U	3 U	3 U	3 U	3 U	3 U
4-Bromophenyl phenyl ether	NA	NA	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Chloro-3-methylphenol	20	NA	1 U	1 U	1 U	10 U	10 U	10 U	1 U	1 U	1 U	1 U	1 U
4-Chloroaniline	6,730	NA	10 U	10 U	10 U	0.1 U	0.1 U	0.1 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	NA	137.6	0.1 U	0.1 U	0.1 U	10 U	10 U	10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4-Nitroaniline	NA	NA	10 U	10 U	10 U	3 U	3 U	3 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	15,200	NA	3 U	3 U	3 U	**1.7**	0.01 U	0.01 U	3 U	3 U	3 U	3 U	3 U
Acenaphthene	643	NA	**0.016**	0.01 U	**0.014**	0.01 U	0.01 U	0.01 U	**0.022**	0.01 U	0.01 U	**0.01**	**0.024**
Acenaphthylene	4,530	NA	0.01 U	**0.014**	0.01 U	0.01 U	**0.01** U	0.01 U	0.01 U	0.01 U	0.01 U	**0.28**	0.01 U
Anthracene	14,200	NA	0.01 U	0.01 U	0.01 U	**0.012**	**0.01**	**0.012**	**0.032**	0.01 U	0.01 U	0.01 U	0.01 U
Benz[a]anthracene	10	NA	0.01 U	0.01 U	0.01 U	**0.015**	**0.011**	**0.011**	**0.05**	**0.03**	0.01 U	**0.058**	0.01 U
Benzo(a)pyrene	0.05	NA	0.01 U	0.01 U	0.01 U	**0.024**	**0.013**	**0.023**	**0.047**	**0.028**	0.01 U	**0.04**	0.01 U
Benzo(b)fluoranthene	10	NA	**0.018**	**0.011**	**0.017**	0.02 U	0.02 U	**0.023**	**0.062**	**0.059**	0.01 U	**0.066**	**0.012**
Benzo(ghi)perylene	739	NA	0.02 U	0.02 U	0.02 U	**0.017**	**0.015**	**0.019**	**0.05**	**0.044**	0.02 U	**0.034**	0.02 U
Benzo(k)fluoranthene	10	NA	**0.015**	**0.011**	**0.018**	5 U	5 U	5 U	**0.057**	**0.061**	0.01 U	**0.045**	**0.012**
Benzoic acid	5,830,000	NA	5 U	5 U	5 U	1 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U
Benzyl alcohol	1,270,000	NA	1 U	1 U	1 U	0.1 U	0.1 U	0.1 U	1 U	1 U	1 U	1 U	1 U
Bis(2-chloroethoxy)methane	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-chloroethyl) ether	NA	0.04	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Bis(2-ethylhexyl) phthalate	0.046	NA	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	**5.8**	0.85 U	0.48 U	1.6 U
Butylbenzyl phthalate	NA	46	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	236	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Chrysene	10	NA	**0.016**	0.01 U	**0.011**	**0.011**	**0.011**	**0.014**	**0.058**	**0.04**	0.01 U	**0.062**	0.01 U
Dibenzo(a,h)anthracene	10	NA	**0.014**	**0.011**	**0.015**	**0.013**	**0.013**	**0.021**	**0.052**	**0.049**	0.01 U	**0.024**	**0.013**
Dibenzofuran	260	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Diethyl phthalate	28,400	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dimethyl phthalate	72,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butyl phthalate	2,910	NA	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octyl phthalate	10	NA	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Fluoranthene	90.2	NA	**0.031**	0.01 U	0.01 U	**0.012**	0.01 U	0.01 U	**0.055**	**0.025**	0.01 U	**0.064**	0.01 U
Fluorene	2,740	NA	**0.02**	0.01 U	0.01 U	**0.37**	0.01 U	0.01 U	**0.036**	**0.02**	0.01 U	**0.014**	**0.019**
Hexachlorobenzene	NA	0.055	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorobutadiene	17.7	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Hexachlorocyclopentadiene	NA	48	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U	0.3 U
Hexachloroethane	NA	5.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Indeno(1,2,3-cd)pyrene	10	NA	**0.014**	**0.011**	**0.016**	**0.018**	**0.013**	**0.021**	**0.052**	**0.045**	0.01 U	**0.037**	**0.013**
Isophorone	1,560	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	3,090	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nitrobenzene	449	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitroso-di-n-propylamine	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
N-Nitrosodiphenylamine	10	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Pentachlorophenol	50	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Phenanthrene	139	NA	**0.058 J+**	**0.012 J+**	**0.012 J+**	**0.024 J+**	0.01 U	**0.01 J+**	**0.054 J+**	**0.06**	**0.01**	**0.045**	**0.014 J+**
Phenol	789,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pyrene	603	NA	**0.037**	**0.01**	0.01 U	**0.014**	0.01 U	0.01 U	**0.06**	**0.02**	0.01 U	**0.077**	**0.013**
1,4-Dioxane	160	NA	0.4 U	0.4 U	0.4 U	**0.49**	0.4 U	0.4 U	**0.5**	**5.3**	0.4 U	**1.0**	0.4 U

Notes:

all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels from the Data Gaps Work Plan (DOF, 2020)
MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels

Abbreviations:

U = Not Detected above the value shown at left
J = Result is estimated.
UJ- = Not detected above the estimated value, which may be biased low
J- = result is estimated with an associated negative bias
J+= result is estimated with an associated high bias
R = Result Rejected
NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level included in the DGWP

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Table 6
Groundwater Analytical Results - Total Metals
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

Metals	DGWP Screening Level	CCW-1B	CCW-1C	CCW-2A	CCW-2B	CCW-2C	CCW-3A	CCW-3B	CCW-3C	CCW-4C	CCW-5B	CCW-5B (DUPLICATE)	CCW-5C	CCW-6B	CCW-6B (DUPLICATE)	CCW-6C	CCW-7B	CCW-7C
Date Sampled		12/9/2022	12/9/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/9/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022
Mercury	0.025	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.031**	**0.030**	0.02 U	0.02 U	0.02 U
Arsenic	5	1 U	**2.62**	**2.34**	**996**	**4.04**	**61.5**	**3.32**	**1.84**	**1.88**	**113**	**123**	**1.58**	**16.1**	**17.3**	**8.95**	**5.72**	**2.36**
Cadmium	40	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**4.69**	**4.71**	1 U	1 U	1 U
Chromium	11	1 U	4.43 U	1 U	1 U	2.06 U	2.11 U	1 U	2.79 U	**2.26**	1 U	1 U	3.08 U	1.46 U	1.46 U	**23.1**	1.46 U	7.04 U
Copper	2.4	1.21 U	1 U	3.45 U	2.43 U	1 U	2.43 U	1 U	1 U	1 U	3.3 U	3.41 U	1 U	**67.3**	**67.2**	2.43 U	9.83 U	1 U
Lead	8.1	1 U	1 U	**3.88**	1 U	1 U	**4.78**	1 U	1 U	1 U	**6.61**	**6.91**	1 U	**133**	**133**	1 U	**20.8**	1 U
Manganese	100	**483**	**295**	**698**	**249**	**235**	**73.7**	**1,220**	**1,340**	**521**	**1310**	**1310**	**1070**	**860**	**836**	**239**	**901**	**188**
Nickel	10	**1.78**	**3.81**	**3.46**	**8.51**	**3.37**	**143**	**4.64**	**2.08**	**2.87**	**2.35**	**2.37**	**2.2**	**7.31**	**7.57**	**1.28**	**2.1**	**1.4**
Zinc	81	5 U	5 U	**14.4**	5 U	5 U	**394**	5 U	5 U	5 U	**74.1**	**75.5**	5 U	**1360**	**1450**	5 U	**106**	5 U

Metals	DGWP Screening Level	CCW-8B	MW-1	MW-1 (DUPLICATE)	MW-4	SB-1A	SB-2A	SB-3A	TWA-1	TWA-2	TWA-3	TWA-4D	TWA-5D	TWA-6D	TWA-7D	TWA-8D	TWA-9D	TWA-10D
Date Sampled		12/9/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022	12/6/2022	12/5/2022*	12/5/2022	12/5/2022	12/6/2022	12/6/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022
Mercury	0.025	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Arsenic	5	**1.06**	**1.18**	**1.02**	**1.77**	**2.27**	**2.31**	**1.24**	**4.83**	**17.3**	**27.1**	**10.2**	**6.27**	**9.49**	**8.05**	**13**	**12.3**	**12**
Cadmium	40	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	2 U	1 U	1 U	1 U	5 U	5 U	1 U
Chromium	11	1 U	**1 J+**	**1.07 J+**	1 U	1 U	1 U	1 U	1 U	1 U	35	1.62 U	**6.02 J+**	**29.2**	1.46 U	1.46 U	5.61 U	5 U
Copper	2.4	1 U	**3.95 J+**	**3.43 J+**	3.81 U	**3.45 J+**	1 U	1 U	**3.4 J+**	**5.48 J+**	**8.28 J+**	4.08 U	**2.82 J+**	**3.95 J+**	3.44 U	3.38 U	4.26 U	5 U
Lead	8.1	1 U	1 U	1.44	**4.02**	1 U	1 U	1 U	1 U	1 U	5 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U
Manganese	100	**418**	**121**	**139**	**284**	**153**	**552**	**167**	**912**	**794**	**1,060**	**266**	**176**	**806**	**268**	**265**	**71.1**	**70.4**
Nickel	10	**2.32**	**5.99**	**6.21**	**5.61**	**2.73**	**2.53**	**1.98**	**8.62**	**8.62**	**25.5**	**3.28**	**1.83**	**3.01**	**2.8**	**3.6**	**2.17**	5 U
Zinc	81	5 U	5 U	**6.24**	**14.3**	5 U	5 U	5 U	**5.13**	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	25 U

Notes:
all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels from the Data Gaps Work Plan (DOF, 2020)
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels
Abbreviations:
U = Not Detected above the value shown at left
J = Result is estimated.
J+ = Result is estimated with an associated high bias
NJ = Tentatively identified compound, estimated value.
* See Appendix B - Data Validation Memorandum.

DOF DALTON OLMSTED FUGLEVAND

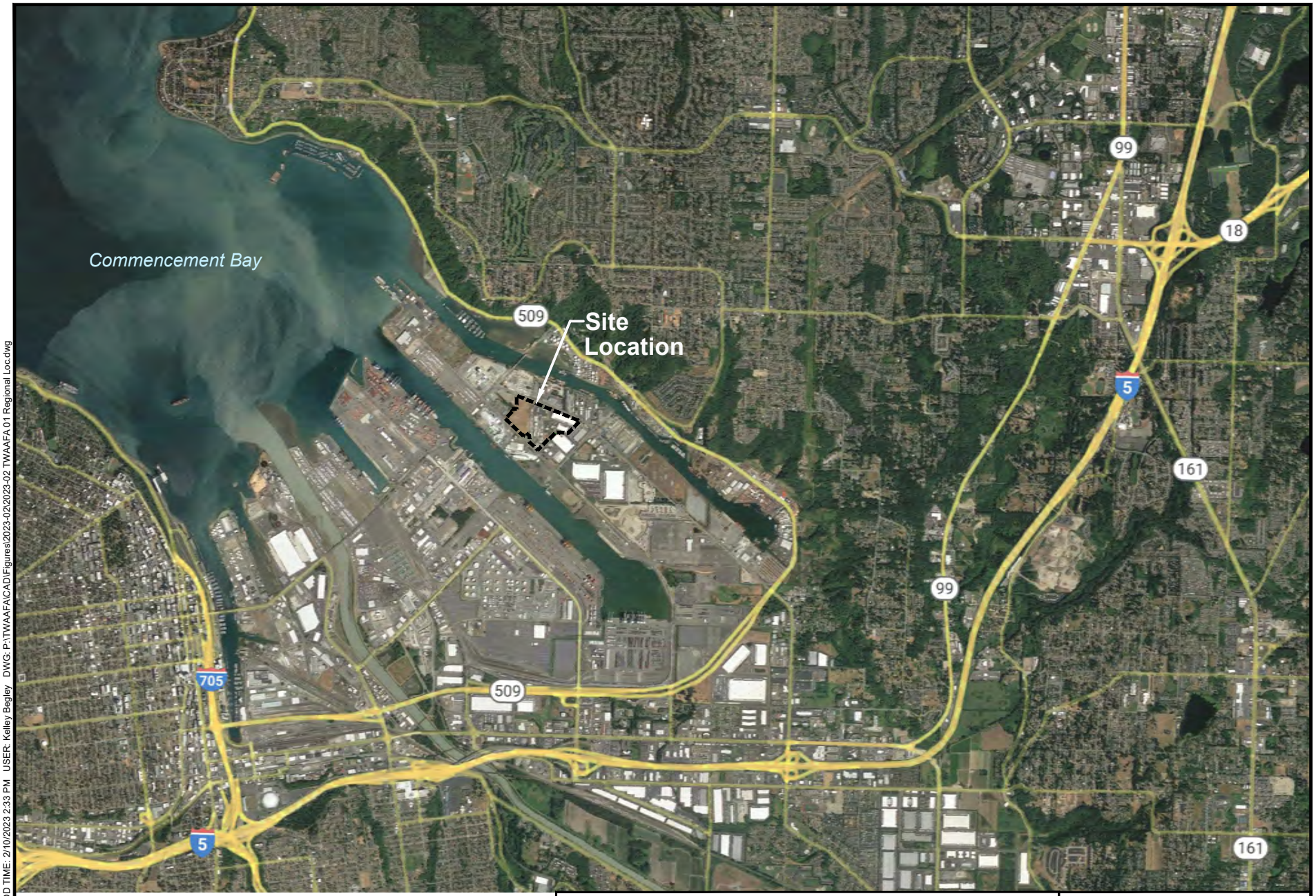
Table 7
Groundwater Analytical Results - Polychlorinated Biphenyls
Fourth Quarter 2022 Groundwater Data Analysis Report
TWAAFA Site
Tacoma, Washington

PCBs	DGWP Screening Level	MTCA A/B Screening Level	CCW-1B	CCW-1C	CCW-2A	CCW-2B	CCW-2C	CCW-3A	CCW-3B	CCW-3C	CCW-4C	CCW-5B	CCW-5B (DUPLICATE)	CCW-5C	CCW-6B	CCW-6B (DUPLICATE)	CCW-6C	CCW-7B
		Date Sampled	12/9/2022	12/9/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/7/2022	12/9/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022	12/8/2022
Aroclor 1016	NA	1.1	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1221	NA	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1232	NA	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1242	0.65	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	**0.072**	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1248	NA	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1254	1.3	NA	0.0035 U	0.0035 U	**0.032**	0.0035 U	0.0035 U	**0.030**	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1260	0.00607	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	**0.024**	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1262	NA	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U
Aroclor 1268	NA	NA	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U	0.0035 U

PCBs	DGWP Screening Level	MTCA A/B Screening Level	CCW-7C	CCW-8B	MW-1	MW-1 (DUPLICATE)	MW-4	SB-1A	SB-2A	SB-3A	TWA-1	TWA-2	TWA-3	TWA-5D	TWA-6D	TWA-8D	TWA-9D	TWA-10D
		Date Sampled	12/8/2022	12/9/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022	12/6/2022	12/5/2022	12/5/2022	12/5/2022	12/6/2022	12/6/2022	12/9/2022	12/6/2022	12/5/2022
Aroclor 1016	NA	1.1	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1221	NA	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1232	NA	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1242	0.65	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	**0.049**	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1248	NA	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1254	1.3	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	**0.048**	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1260	0.00607	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	**0.046**	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1262	NA	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ
Aroclor 1268	NA	NA	0.0035 U	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 UJ	0.0035 U	0.0035 U	0.0035 UJ

Notes:
all concentrations in micrograms per liter (µg/L)
DGWP Screening Level = Screening Levels from the Data Gaps Work Plan (DOF, 2020)
MTCA A/B Screening Level = minimum screening level for Model Toxics Control Act Methods A or B groundwater, provided for reference
Bold values indicate detections
Yellow shading indicates detection above DGWP Screening Levels
Abbreviations:
U = Not Detected above the value shown at left
UJ = Not detected above the estimated value shown at left
NA =not available or not applicable. Ecology's lowest current MTCA Levels are included as a reference for analytes that did not have a screening level included in the DGWP
PCB = Polychlorinated Biphenyl

Figures



Source: Aerial Photography-Google Earth Pro, 08/14/2020.

0 4500

Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

Regional Location Map

DALTON OLMSTED FUGLEVAND

FIGURE 1

11/22/2022

PLOT TIME: 3/9/2023 2:44 PM MOD TIME: 2/10/2023 2:33 PM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 01 Regional Loc.dwg

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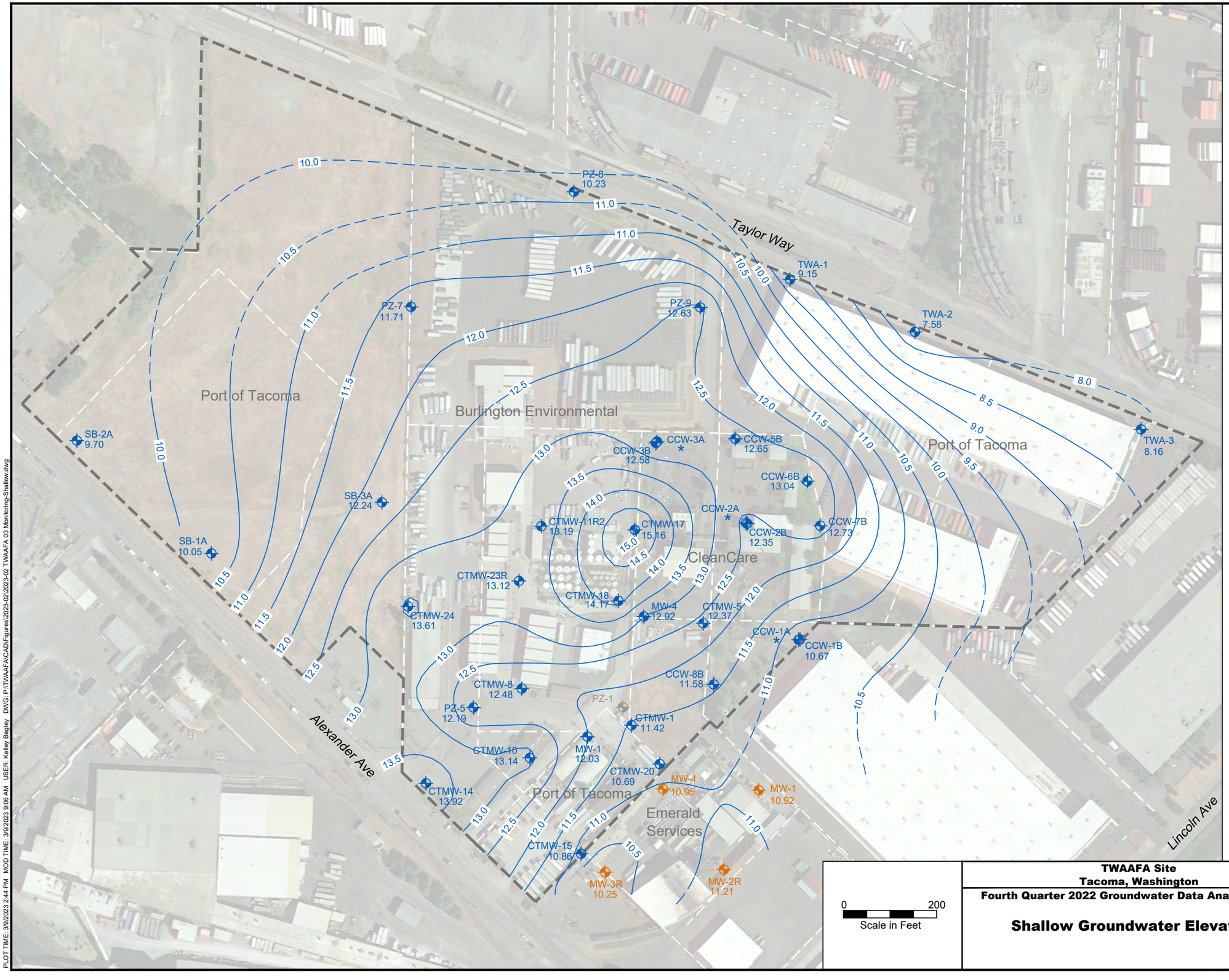
TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

Site Location Map

DALTON OLMSTED FUGLEVAND

FIGURE 2

11/22/2022



Legend

- Shallow Aquifer Monitoring Well/Piezometer with Groundwater Elevation (feet)
- Decommissioned Well/Piezometer
- Emerald Services Alexander Ave Site Shallow Monitoring Well with Groundwater Elevation (feet)
- Groundwater Elevation Contour Contour Interval = 0.5 (feet) Datum: NAVD88
- Interpolated Groundwater Elevation Contour Interval = 0.5 (Feet) Datum : NAVD88
- TWAAFA Site Boundary
- Parcel Boundary

Notes:

1. Water levels measured on 12/05/2022.
2. Wells on properties owned by Port of Tacoma measured by the Port's consultant.
3. Wells on Emerald Site measured by Emerald's consultant and included for contouring at the request of Ecology.

* Water levels not used for contouring as discussed in 4Q22 GW Analysis Report.

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

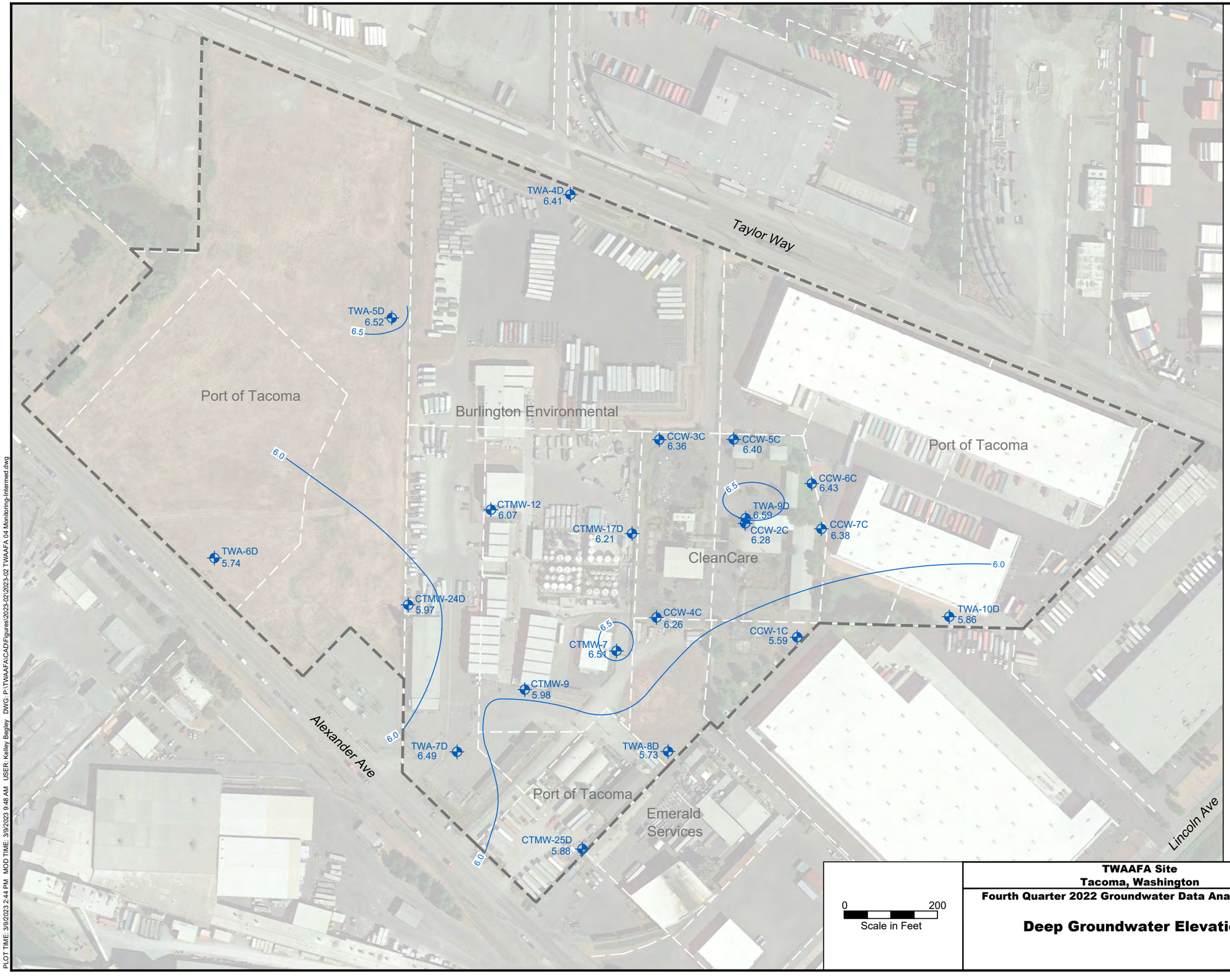
Shallow Groundwater Elevations

DALTON OLMSTED FUGLEVAND

FIGURE 3

03/09/2023

PLOT TIME: 3/9/2023 2:44 PM MOD TIME: 3/9/2023 9:06 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 03 Monitoring-Shallow.dwg



State of Washington
Hydrogeologist
1600
Licensed Geologist
David G. Cooper

Legend

- Deep Aquifer Monitoring Well/Piezometer with Groundwater Elevation (feet)
- Groundwater Elevation Contour
  Contour Interval = 0.5 (feet)
  Datum: NAVD88
- TWAAFA Site Boundary
- Parcel Boundary

Notes:
1. Water levels measured on 12/05/2022.
2. Wells on properties owned by Port of Tacoma measured by the Port's consultant.

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

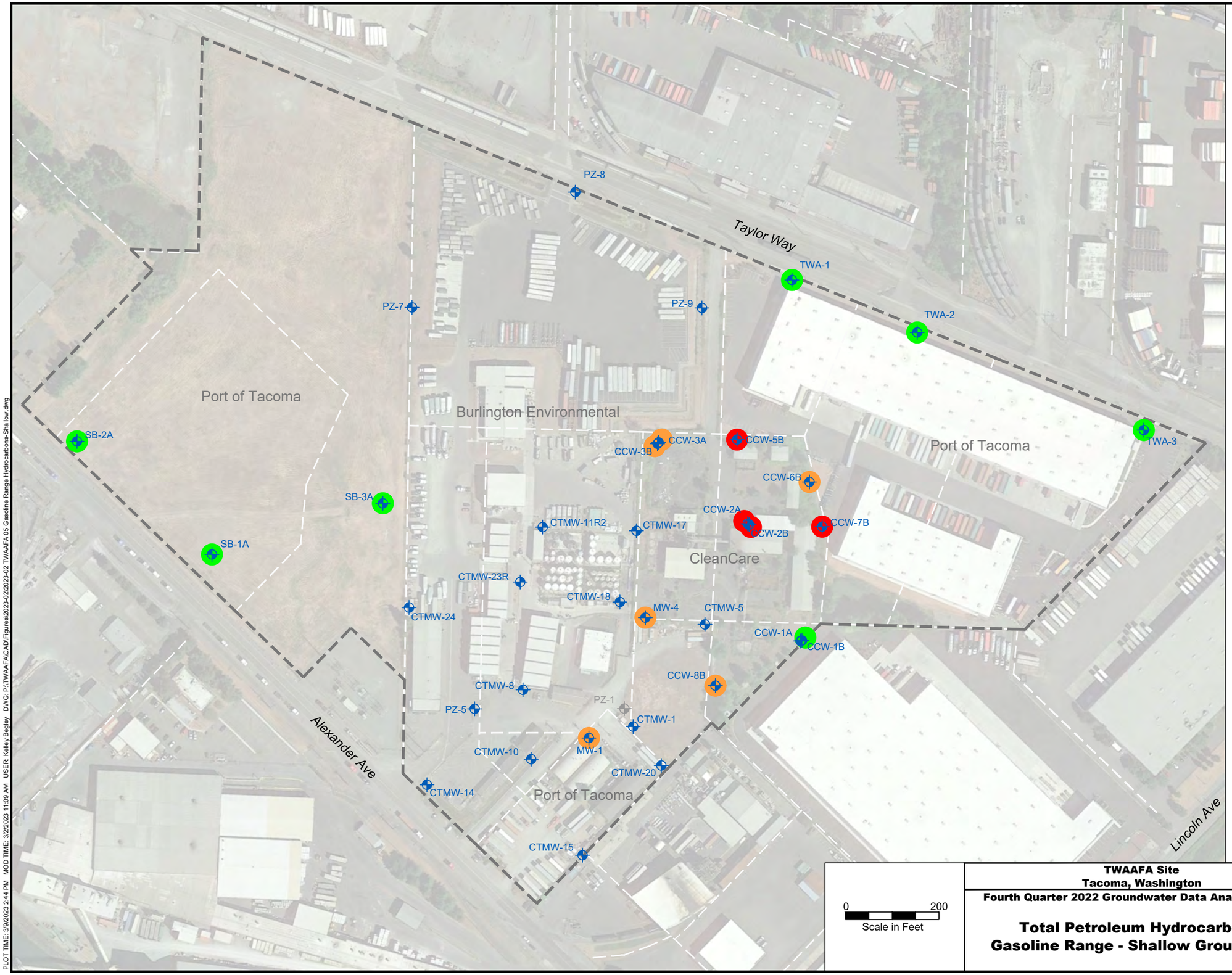
Deep Groundwater Elevations

DALTON OLMSTED FUGLEVAND

FIGURE 4

03/09/2022

PLOT TIME: 3/9/2023 2:44 PM MOD TIME: 3/9/2023 9:48 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 04 Monitoring-Intermed.dwg



Legend

- Shallow Aquifer Monitoring Well/ Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=800 μg/L
- Detected Above SL from DGWP SL=800 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

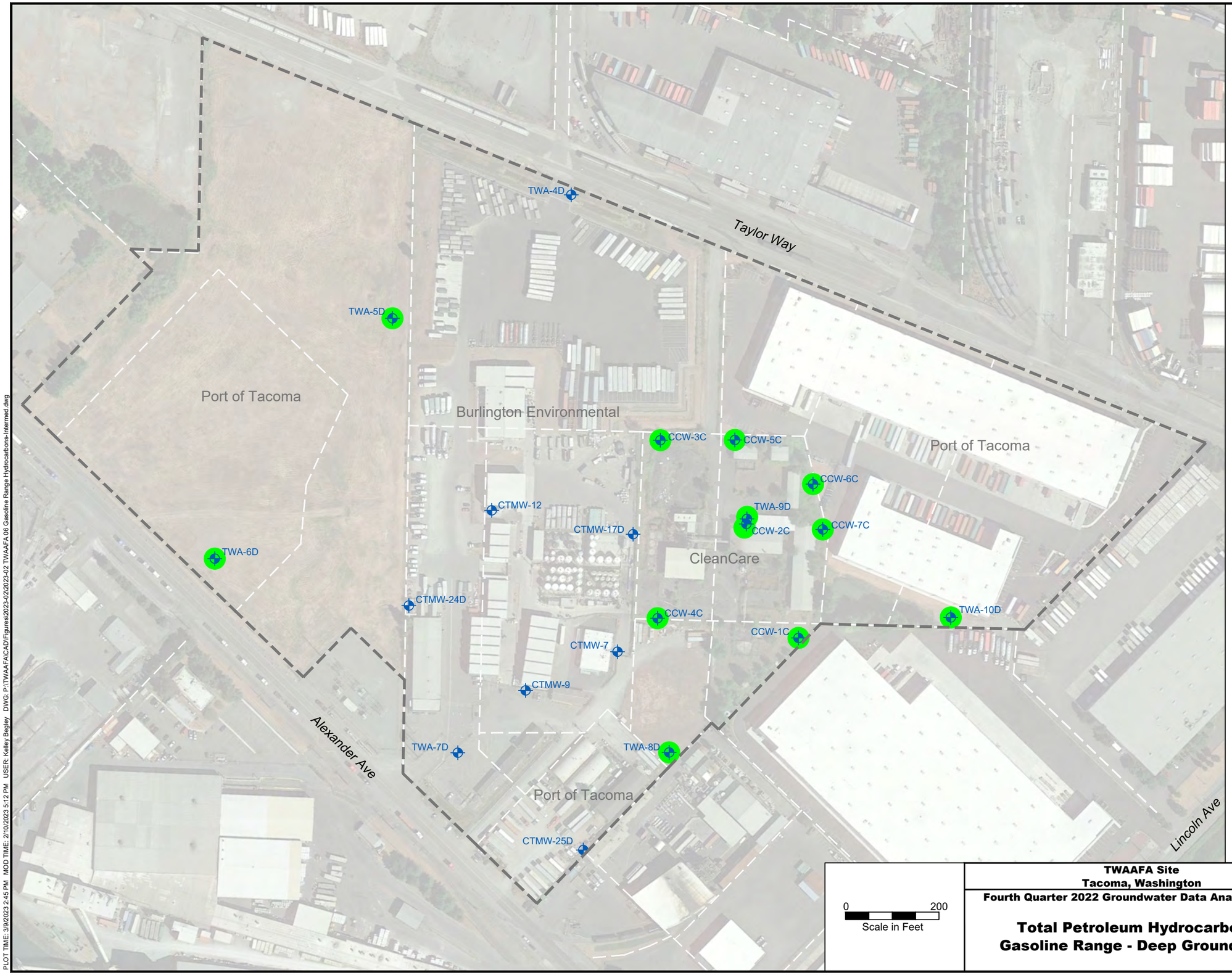
Total Petroleum Hydrocarbons: Gasoline Range - Shallow Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 5

03/02/2023

PLOT TIME: 3/9/2023 2:44 PM MOD TIME: 3/2/2023 11:09 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 05 Gasoline Range Hydrocarbons-Shallow.dwg



Legend

- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=800 μg/L
- Detected Above SL from DGWP SL=800 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

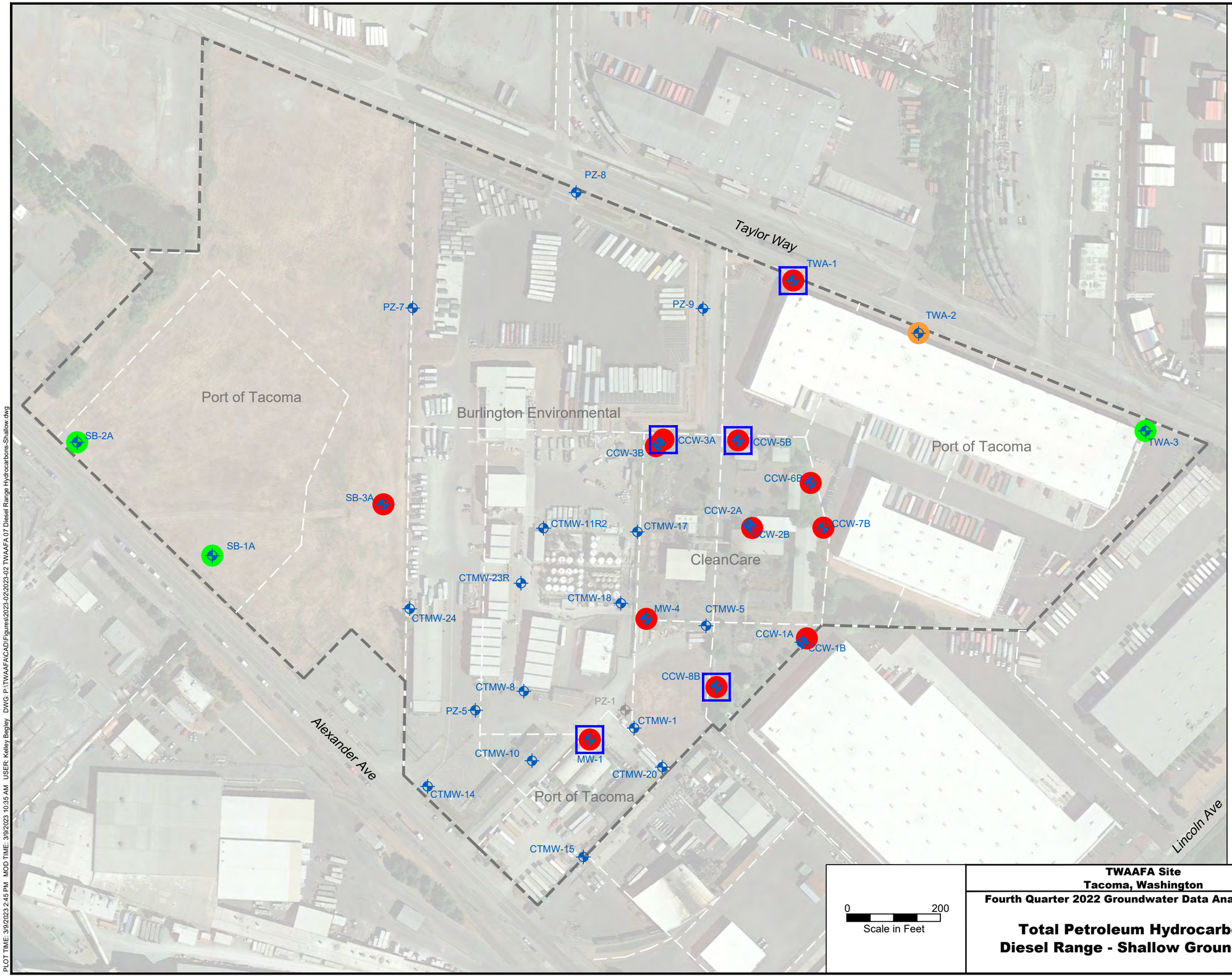
Total Petroleum Hydrocarbons: Gasoline Range - Deep Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 6

02/13/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 2/10/2023 5:12 PM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 06 Gasoline Range Hydrocarbons-Intermed.dwg



Legend

- EPH detected above laboratory reporting limit
- Shallow Aquifer Monitoring Well/ Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=500 μg/L
- Detected Above SL from DGWP SL=500 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

EPH = Extractable Petroleum Hydrocarbons

Note:
EPH analyzed at CCW-3A, CCW-5B, CCW-8B, MW-1, and TWA-1 only

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington

Fourth Quarter 2022 Groundwater Data Analysis Report

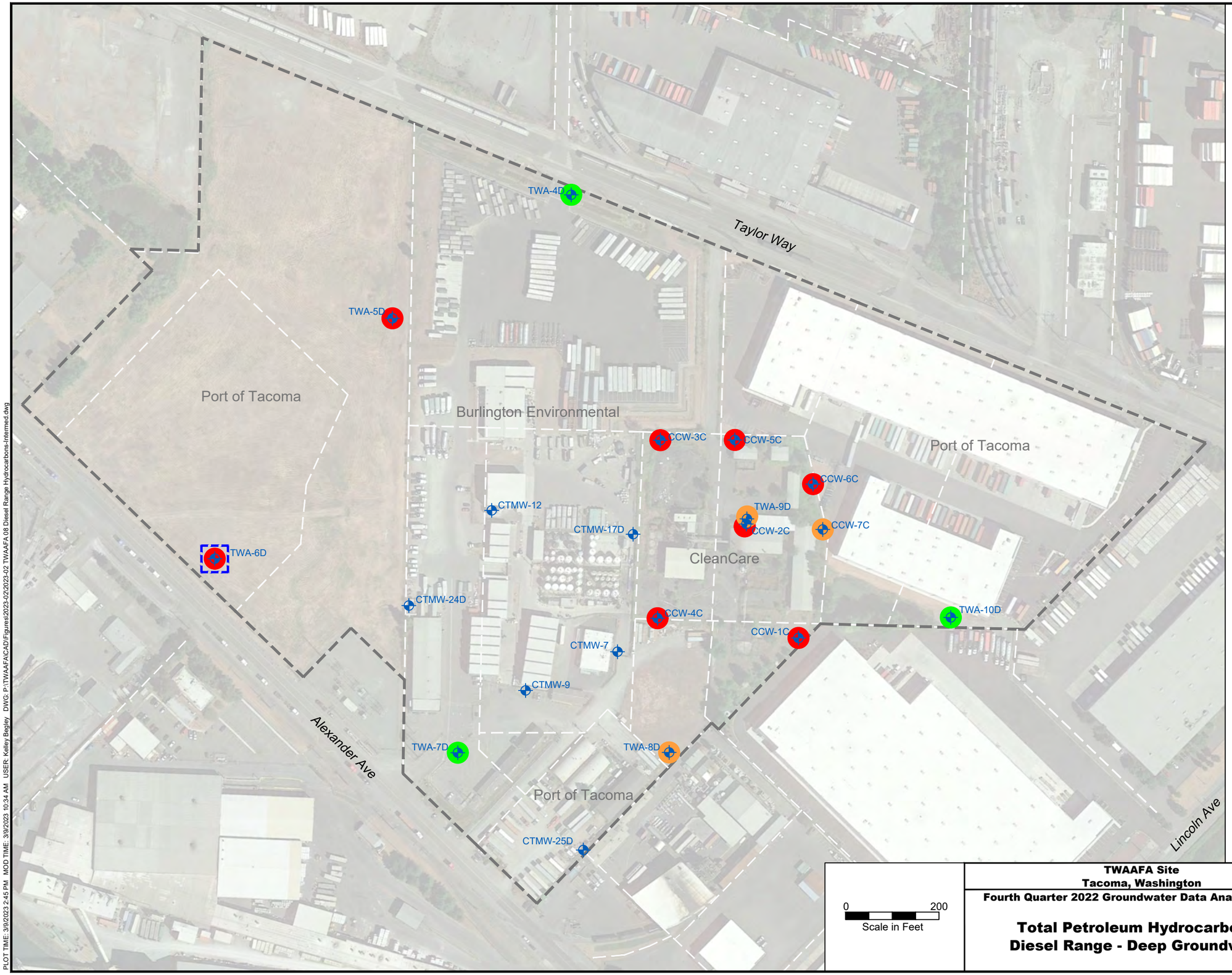
Total Petroleum Hydrocarbons: Diesel Range - Shallow Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 7

03/09/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 3/9/2023 10:35 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 07 Diesel Range Hydrocarbons-Shallow.dwg



Legend

- EPH not detected above laboratory reporting limit
- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=500 μg/L
- Detected Above SL from DGWP SL=500 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

EPH = Extractable Petroleum Hydrocarbons

Note:
EPH analyzed at TWA-6D only

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

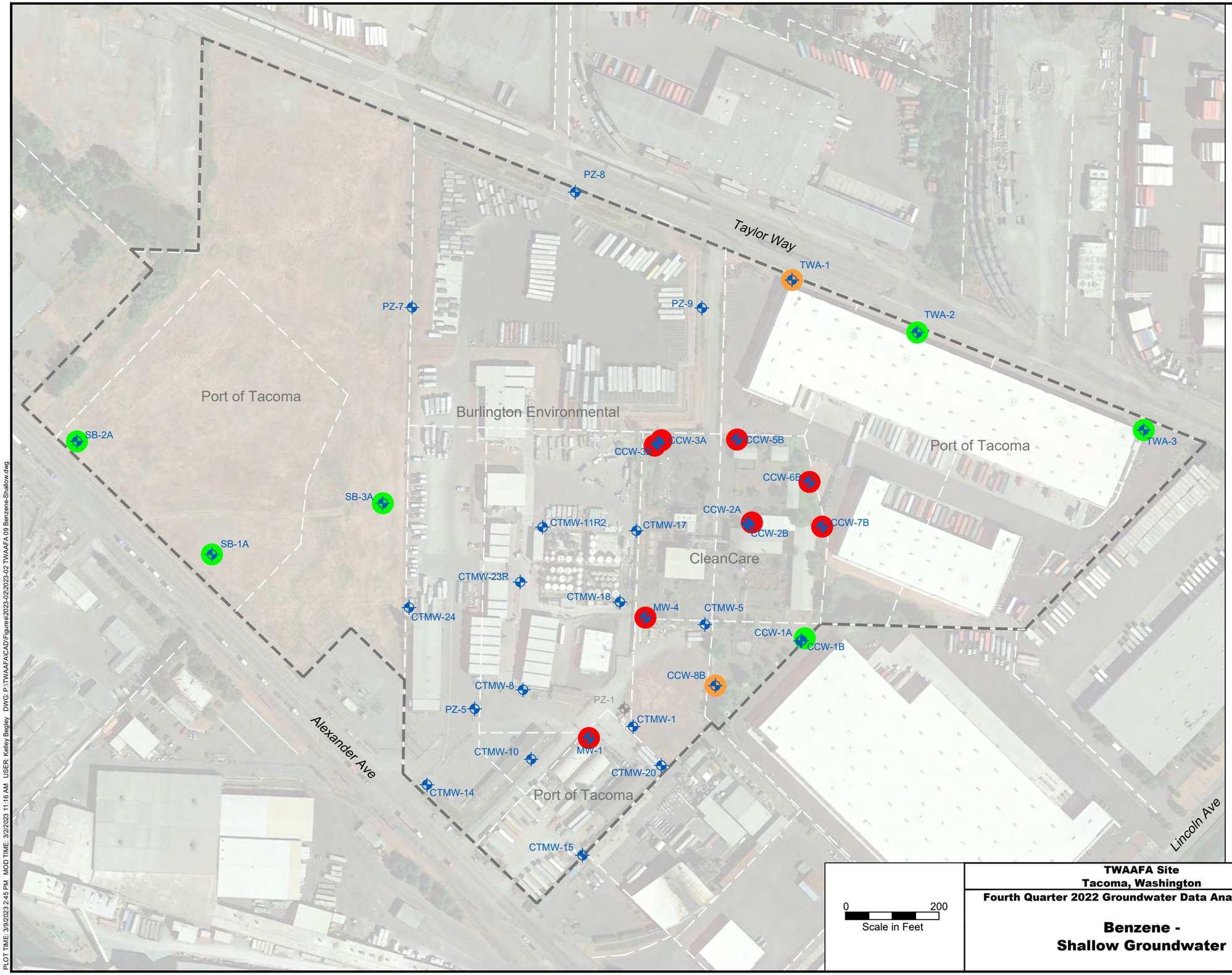
Total Petroleum Hydrocarbons: Diesel Range - Deep Groundwater

DOF DALTON OLMSTED FUGLEVAND

FIGURE 8

03/09/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 3/9/2023 10:34 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 08 Diesel Range Hydrocarbons-Intermed.dwg



Legend

- Shallow Aquifer Monitoring Well/ Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=1.6 μg/L
- Detected Above SL from DGWP SL=1.6 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington

Fourth Quarter 2022 Groundwater Data Analysis Report

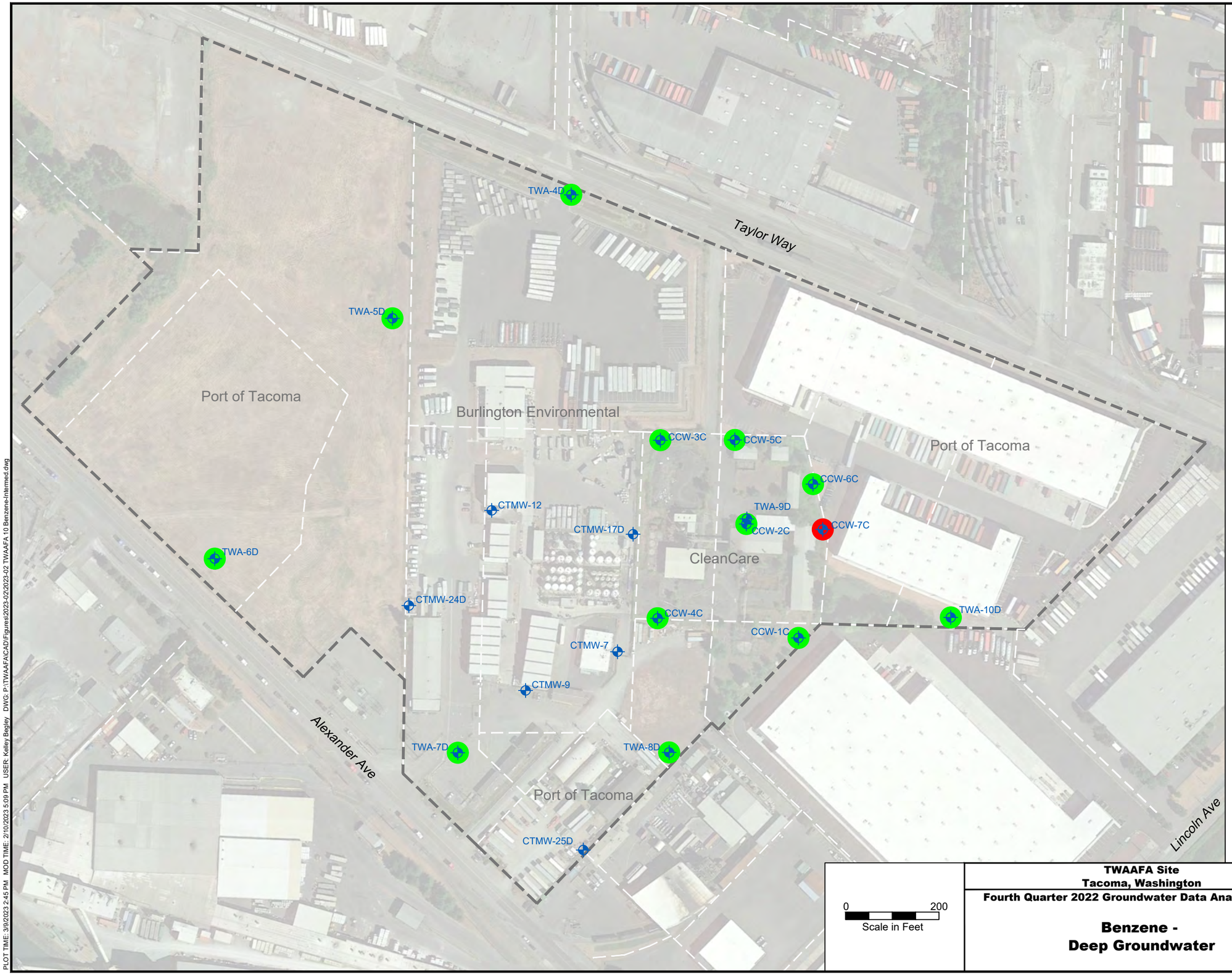
Benzene - Shallow Groundwater

DOF DALTON OLMSTED FUGLEVAND

FIGURE 9

03/02/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 3/2/2023 11:16 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 09 Benzene-Shallow.dwg



Legend

- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=1.6 μg/L
- Detected Above SL from DGWP SL=1.6 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

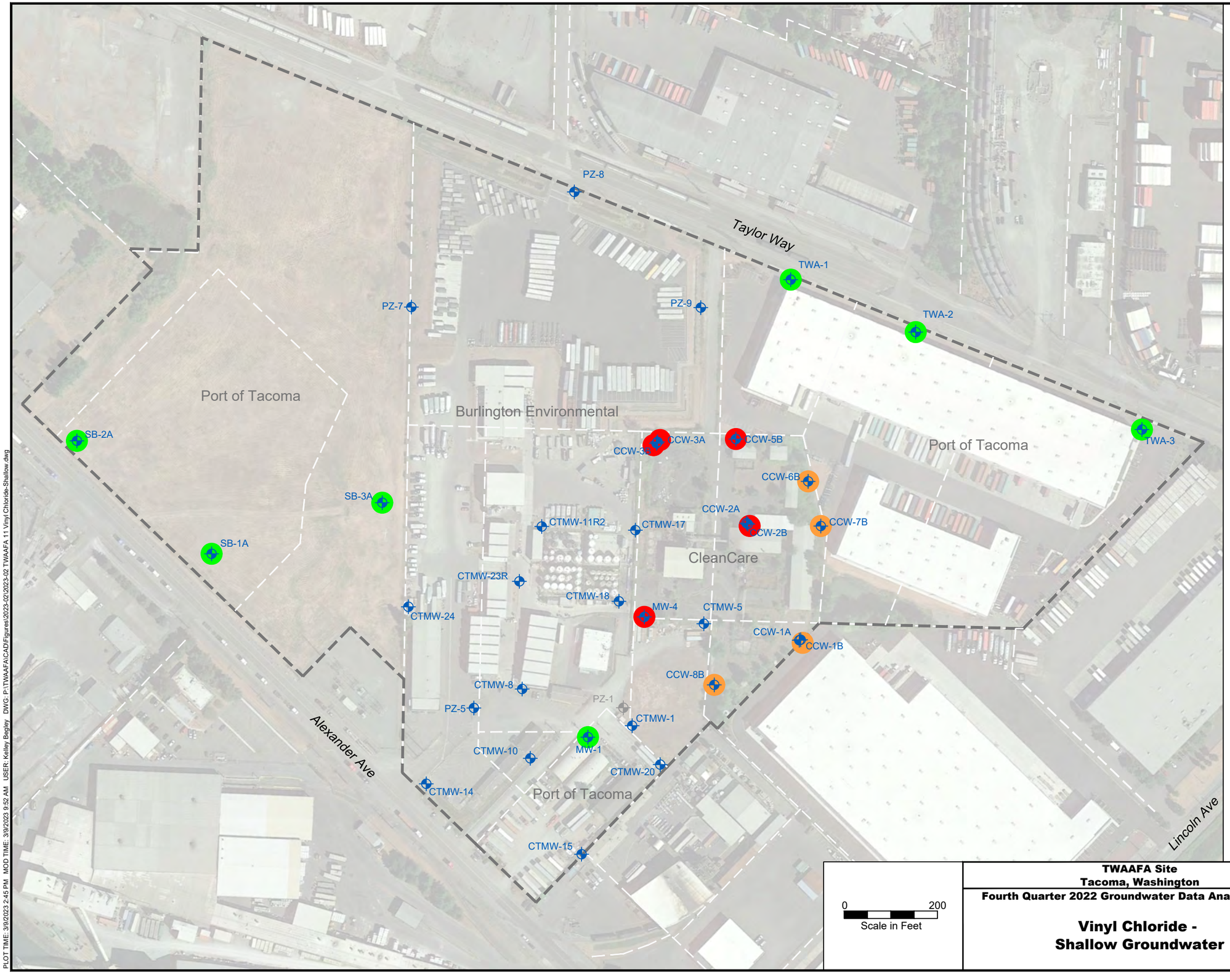
Benzene - Deep Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 10

02/13/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 2/10/2023 5:09 PM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 10 Benzene-Interred.dwg



Legend

- Shallow Aquifer Monitoring Well/Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=0.18 μg/L
- Detected Above SL from DGWP SL=0.18 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

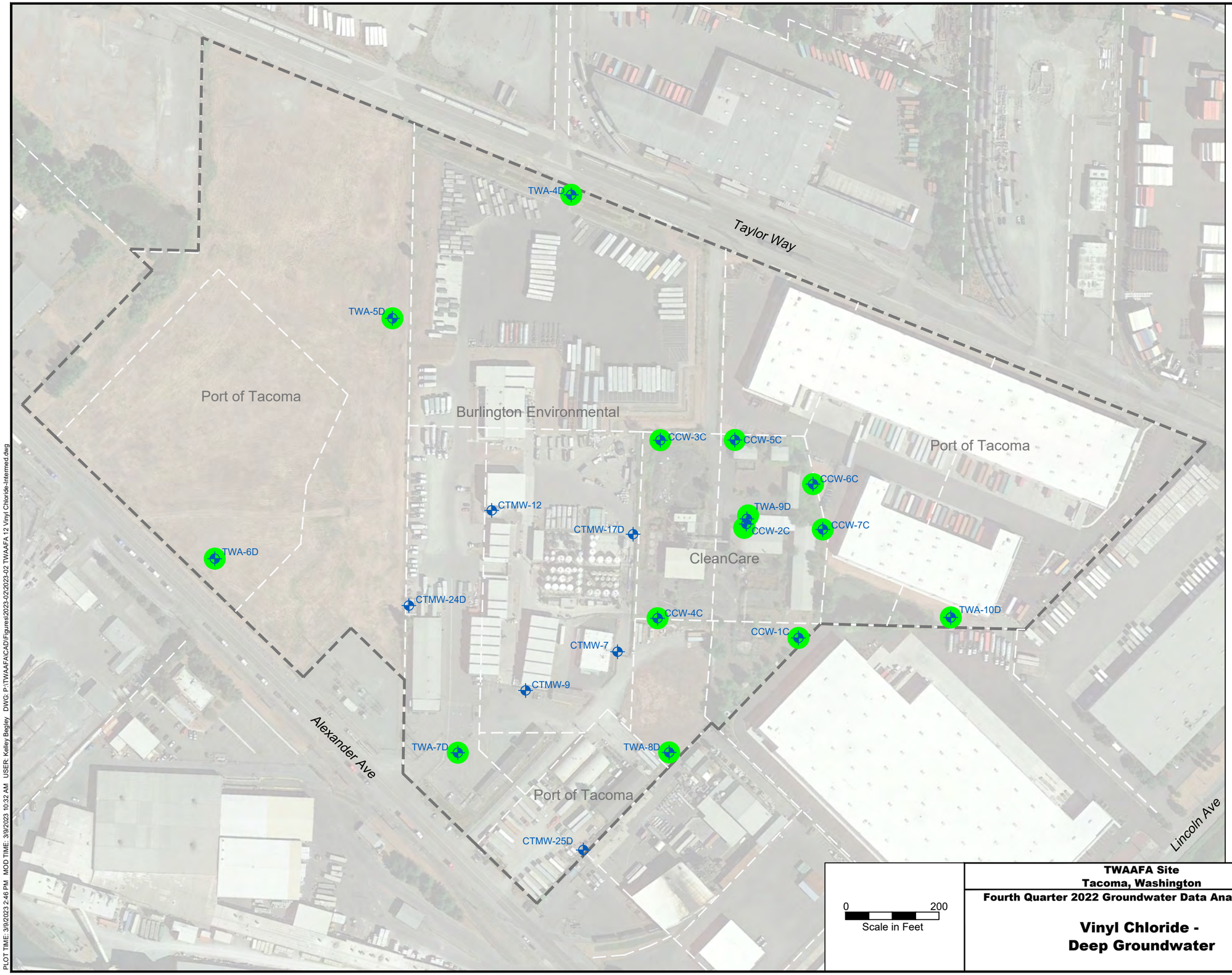
Vinyl Chloride - Shallow Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 11

03/09/2023

PLOT TIME: 3/9/2023 2:45 PM MOD TIME: 3/9/2023 9:52 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 11 Vinyl Chloride-Shallow.dwg



N

Legend

- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=0.18 μg/L
- Detected Above SL from DGWP SL=0.18 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

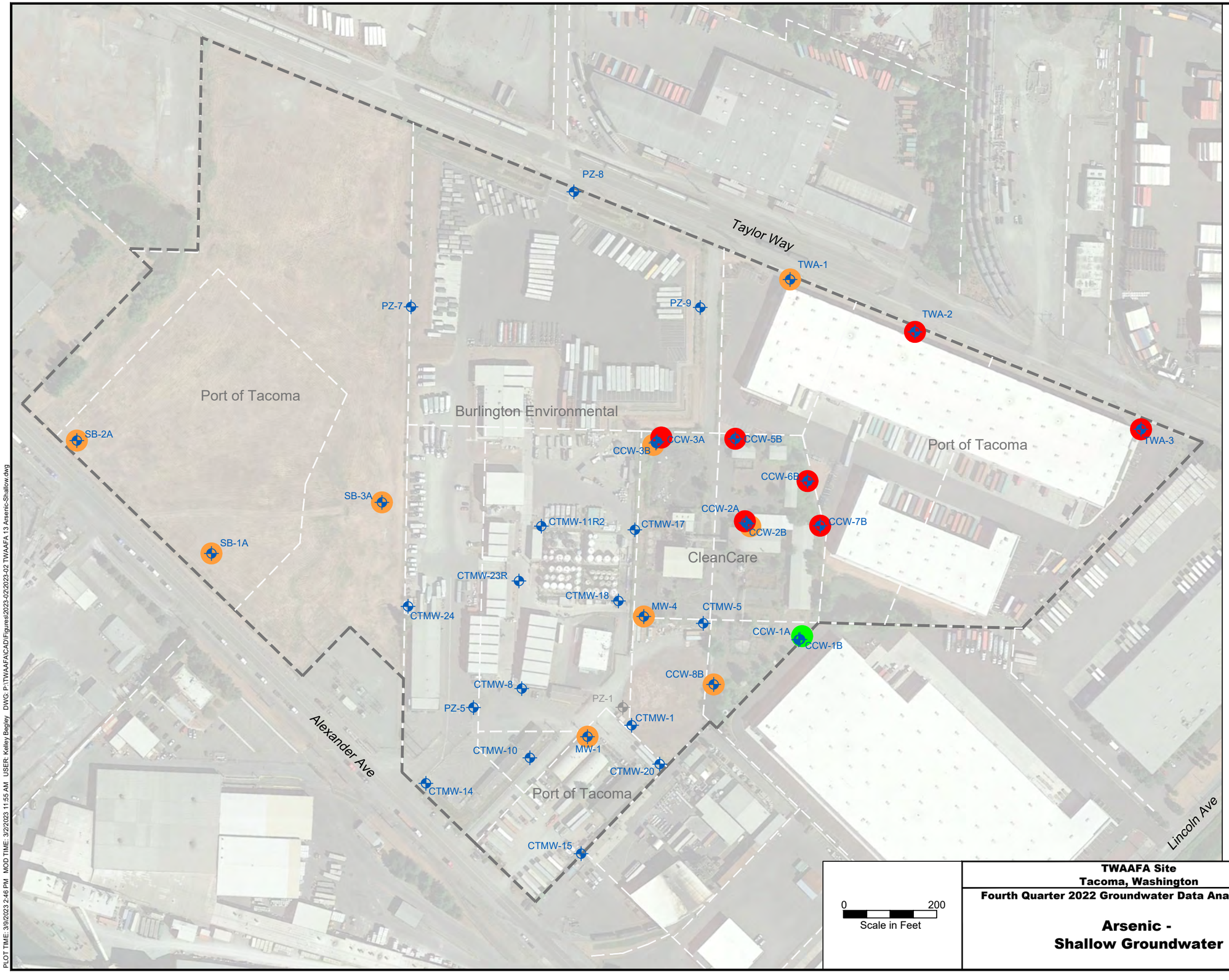
Vinyl Chloride - Deep Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 12

03/09/2023

PLOT TIME: 3/9/2023 2:46 PM MOD TIME: 3/9/2023 10:32 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 12 Vinyl Chloride-Intermed.dwg



Legend

- Shallow Aquifer Monitoring Well/ Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=5 μg/L
- Detected Above SL from DGWP SL=5 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

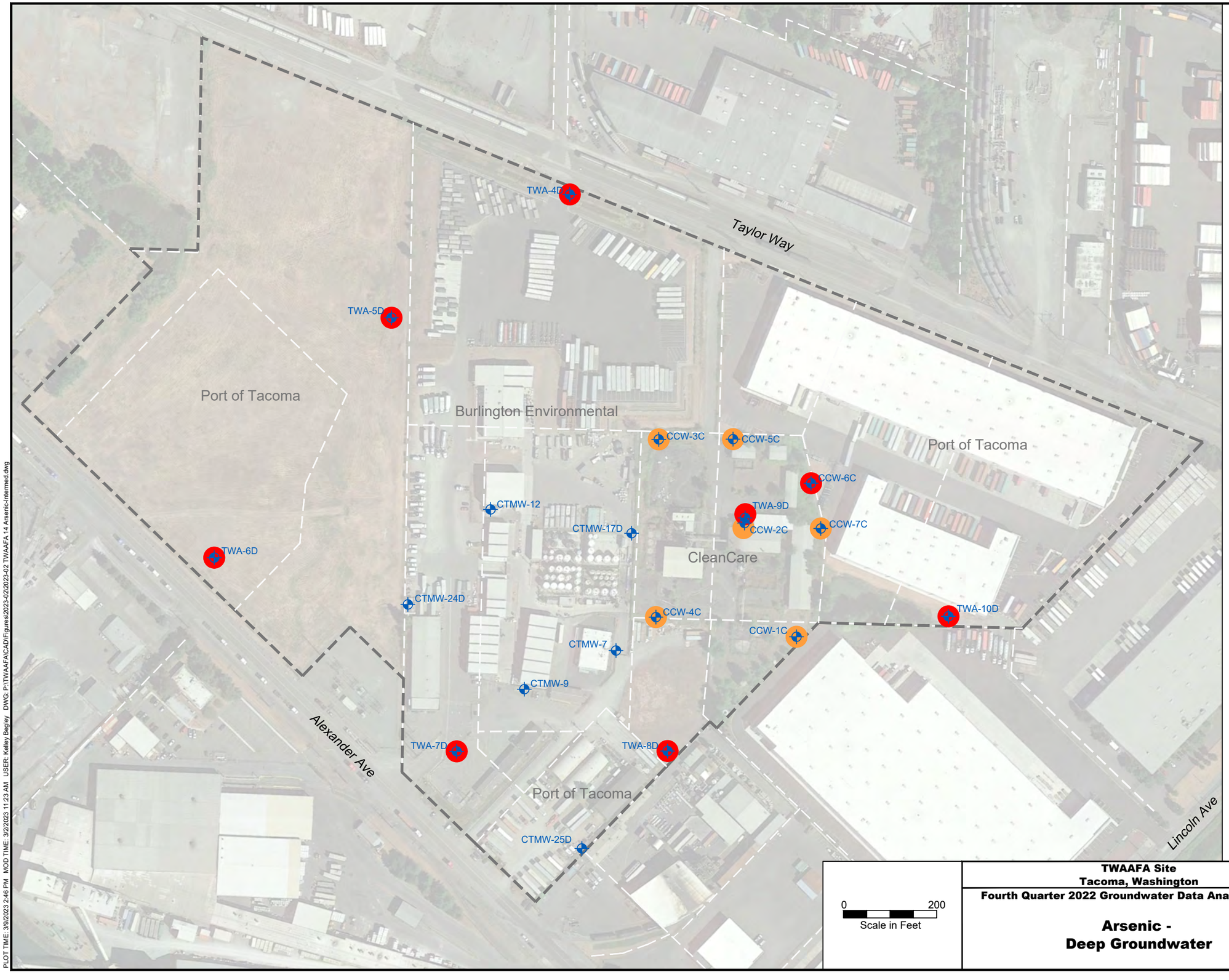
Arsenic - Shallow Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 13

03/02/2023

PLOT TIME: 3/9/2023 2:46 PM MOD TIME: 3/2/2023 11:55 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 13 Arsenic-Shallow.dwg



Legend

- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=5 μg/L
- Detected Above SL from DGWP SL=5 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200

Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

Arsenic - Deep Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 14

03/02/2023

PLOT TIME: 3/9/2023 2:46 PM MOD TIME: 3/2/2023 11:23 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 14 Arsenic-Intermed.dwg

PZ-8
Taylor Way
TWA-1
TWA-2
TWA-3
PZ-7
PZ-9
Port of Tacoma
Burlington Environmental
Port of Tacoma
SB-2A
CCW-3A
CCW-5B
CCW-3B
CCW-6B
SB-3A
CCW-2A
CTMW-11R2
CTMW-17
CCW-2B
CCW-7B
SB-1A
CleanCare
CTMW-23R
CTMW-18
MW-4
CTMW-5
CTMW-24
CCW-1A
CCW-1B
CCW-8B
CTMW-8
PZ-1
PZ-5
CTMW-1
Alexander Ave
MW-1
CTMW-10
CTMW-20
CTMW-14
Port of Tacoma
CTMW-15
Lincoln Ave

Legend

- Shallow Aquifer Monitoring Well/ Piezometer
- Decommissioned Well/Piezometer
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=2.4 μg/L
- Detected Above SL from DGWP SL=2.4 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

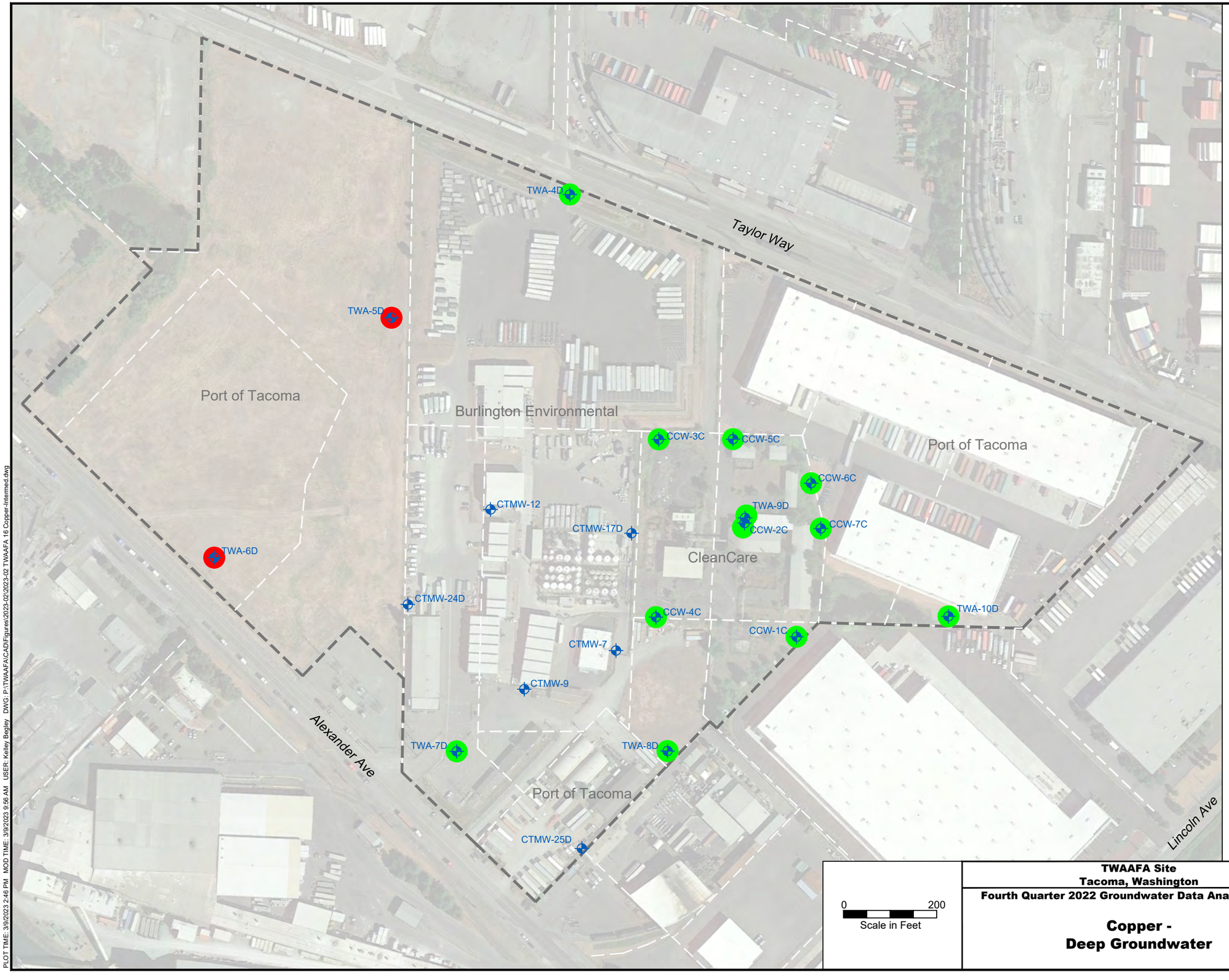
Copper - Shallow Groundwater

DALTON OLMSTED FUGLEVAND

FIGURE 15

03/09/2023

PLOT TIME: 3/9/2023 2:46 PM MOD TIME: 3/9/2023 9:55 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 15 Copper-Shallow.dwg



Legend

- Deep Aquifer Monitoring Well
- TWAAFA Site Boundary
- Parcel Boundary
- Not Detected
- Detected Below SL from DGWP SL=2.4 μg/L
- Detected Above SL from DGWP SL=2.4 μg/L

Abbreviations:

SL = Screening Level

DGWP = Data Gaps Work Plan (DOF, 2020)

μg/L = micrograms/liter

0 200
Scale in Feet

TWAAFA Site
Tacoma, Washington
Fourth Quarter 2022 Groundwater Data Analysis Report

Copper -
Deep Groundwater

DOF DALTON OLMSTED FUGLEVAND

FIGURE 16

03/09/2023

PLOT TIME: 3/9/2023 2:46 PM MOD TIME: 3/9/2023 9:56 AM USER: Kelley Begley DWG: P:\TWAAFA\CAD\Figures\2023-02\2023-02 TWAAFA 16 Copper-Interred.dwg

Appendix A

Groundwater Sampling Field Sheets

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. TWA-8D

Facility: CLEAN EARTH.

Date: 12/9/2022

Sampling Personnel: AC/ES

Sampling Method: LF PERI

Initial Headspace (ppm) 5.1

Intial-Water Level before purge (ft. BTOC) 8.90'

Equipment Used:
WL - GEOTECH INT PID - MINI. RAE
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LA MOTTE 2020e

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17 (55.6 - 8.90) = 7.9 gal

End-Water Level post purge/sample with pump on (ft. BTOC): 10.80

Pump Intake Depth (ft.BTOC): 53' (SCREEN 55.6 - 50.6)

Purge start time:	1448	Initial Flow Rate:	250	Flow cell disconnected prior to sampling : ☑
Purge stop time:	1548	Final Flow Rate:	200	

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1448	PURGE BEGINS @ 250							
1452	10.06	250	7.27	2800	12.9	0.42	88.0	1.0
1455	10.48	250	7.39	2864	12.8	0.30	86.0	1.1
1458	10.65	200	7.47	2965	12.8	0.28	82.6	1.5
1501	10.76	200	7.60	3193	12.6	0.21	73.5	1.3
1504	10.80	200	7.64	3318	12.6	0.18	68.0	1.0
1507	10.80	200	7.66	3417	12.8	0.17	65.0	0.9
1510	10.80	200	7.68	3500	12.7	0.14	61.8	0.4
1513	10.80	200	7.68	3562	12.6	0.16	59.4	0.7
1514	ALL PARMS STABLE.		FLOW CELL	DISCONNECTED				
1515	SAMPLE COLLECTED							
1548	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
TWA-8D-1222
Date: 12/9/2022
Time: 15:15
Analysis/preservative

Notes: - CLEAR
- TOTAL PURGE VOLUME = 2 gallons

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) 2 x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
250
(12) 14 = Total Bottles

4Q22

DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-4C

Facility: CLEAN CARE

Date: 12/9/2022 AC 2022

Sampling Personnel: AC/ES

Initial Headspace (ppm) 0.2 ppm

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 10.40

Equipment Used:
WL - GEOTECH INT. PID - MINIRAE
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LA MOTTE 2020t.

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(24 - 10.4) = 2.3 gal

End-Water Level post purge/sample with pump on (ft. BTOC): 10.37

Pump Intake Depth (ft.BTOC): (21.5') (SCREEN = 19-24')

Purge start time:	1342	Initial Flow Rate:	450	Flow cell disconnected prior to sampling : ☑
Purge stop time:	14	Final Flow Rate:	350	

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1342	PURGE BEGINS							
1346	10.41	450	6.81	668	13.5	0.52	80.1	~~32~~ AC 1.3
1349	10.41	350	6.88	~~746~~	13.7	0.42	82.5	0.53
1352	10.41	350	6.89	~~784~~	13.8	0.34	78.6	0.64
1355	10.41	350	6.89	790	13.8	0.26	74.1	0.3
1358	10.41	350	6.89	805	13.7	0.23	71.6	0.5
1359	ALL PARMS STABLE		FLOW CELL DISCONNECTED					
1400	SAMPLE COLLECTED							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-4C-1222
Date: 12/9/2022
Time: 14:00
Analysis/preservative

Notes: - CLEAR
- TOTAL PURGE VOL = 3 gal

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx and TPH-Dx with Silica Gel Cleanup
(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) 14 = Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. CCW-8B
		Facility: CLEAN CARE
Date: 12/9/22	Sampling Personnel: AC/ES	Initial Headspace (ppm) 0.2
Sampling Method: LF PERI		Intial-Water Level before purge (ft. BTOC) 4.73
Equipment Used: WL - GEOTECH INT. PID - MINI RAE WQ - YSI PRO + Pump - GEOTECH PERI Turb - LA MOTTE 2020e.	Well volume = 0.17 * (total well depth - water level)	End-Water Level post purge/sample with pump on (ft. BTOC) 4.78
	Well Volume = 0.17 (11 - 4.73) = 1 gal	Pump Intake Depth (ft.BTOC): 8.5' (SCREEN 11-6')

Purge start time:	1230	Initial Flow Rate:	300	Flow cell disconnected prior to sampling :	☑
Purge stop time:	1320	Final Flow Rate:	300		

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1230	PURGE BEGINS @ 300mL/min							
1233	4.78	300	7.70	387	13.5	0.74	11.5	11.8
1236	4.78	300	7.46	381	13.5	0.73	16.6	8.7
1239	4.78	300	7.28	376	13.5	0.80	21.3	~~7.22~~
1242	4.78	300	7.22	374	13.6	0.84	22.8	6.6
1245	4.78	300	7.12	369	13.7	0.64	25.3	4.89
1248	4.78	300	7.08	365	13.6	0.62	26.8	4.30
1251	4.78	300	7.04	363	13.6	0.44	27.3	~~4.27~~ AC 4.27
1253	ALL PARAMS STABLE;	FLOW CELL	DISCONNECTED					
1255	SAMPLE	COLLECTED						
1320	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-8B-1222
Date: 12/9/2022
Time: 12:55
Analysis/preservative

Notes: - CLEAR W/ RUSTY/BROWN & BLACK SPECKS.
- TOTAL PURGE VOL = 3 gal

Bottles and Analyses: (collected in order below)

AC (6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) 3 x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) = Total Bottles

1 x 1000mL AG EPH
3 X 40mL VOA HCl VPH

18 = TOTAL BOTTLES

4022

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-1C

Facility: CLEAN CARE.

Date: 12/9/2022

Sampling Personnel: AC / ES

Initial Headspace (ppm) 0.9 ppm

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 9.93

Equipment Used:
WL - GEOTECH INT. PID - MINI RAE.
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LA MOTTE 2020+.

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(23 − 9.93) = 2.2 gal.

End-Water Level post purge/sample with pump on (ft. BTOC): 9.92

Pump Intake Depth (ft.BTOC): ~20.5' (SCREEN 18-23)

Purge start time: 1122

Purge stop time: 1203

Initial Flow Rate: 300

Final Flow Rate: 350

Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1122	PURGE BEGINS @	300						
1125	9.95	300	7.09	773	13.7	0.34	91.7	3.31
1128	9.95	300	7.12	811	13.6	0.25	85.7	1.95
1131	9.95	300	7.14	830	13.7	0.22	82.9	3.02
1134	9.95	300	7.15	840	13.6	0.22	79.8	1.10
1137	9.95	350	7.15	856	13.7	0.20	76.8	1.14
1138	ALL PARMS STABLE; FLOW CELL DISCONNECTED.							
1140	SAMPLE COLLECTED.							
1203	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-1C-1222
Date: 12/9/2022
Time: 11:40
Analysis/preservative

Notes:
- CLEAR WATER
- SLIGHT EFFERVESCENCE
- TOTAL PURGE VOL = 3.5 gal

Bottles and Analyses: (collected in order below)

AC

(6)	9	x 40 mL HCl VOA	☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx and TPH-Dx with Silica Gel Cleanup ~~AC~~	
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs	
(2)		x 1000 mL unpreserved AG 8082A PCBs	
(1)	1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)	
(12)	14	= Total Bottles	

~~250~~

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-1B

Facility: CLEAN CARE

Date: 12/9/2022

Sampling Personnel: AC/ES

Initial Headspace (ppm) 0.4

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 4.60

Equipment Used:
WL - GEOTECH INT. PID - MINI RAE
WQ - 451 PRO + Pump - GEOTECH PERI
Turb - LAMOTTE 2020

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(9.6 - 4.6) = 0.85 gal

End-Water Level post purge/sample with pump on (ft. BTOC): 5.01

Pump Intake Depth (ft.BTOC): 8.6' SCREEN (7.8 - 9.6)

Purge start time:	1036	Initial Flow Rate:	400	Flow cell disconnected prior to sampling :	☑
Purge stop time:	1111	Final Flow Rate:	400		

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1036	PURGE BEGINS @ 400							
1039	4.97	400	7.61	430	12.5	0.21	41.5	6.3
1042	4.99	400	7.41	410	12.7	0.18	44.6	4.0
1045	5.01	450	7.26	390	12.8	0.17	50.4	3.6
1048	4.96	400	7.19	384	12.8	0.14	54.2	3.2
1051	4.96	350	7.15	371	12.7	0.16	57.2	1.7
1052	ALL PARMS STABLE!		FLOW CELL	DISCONNECTED	1.5 gal PURGE.			
1055	SAMPLE	COLLECTED.						
1111	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-1B-1222
Date: 12/9/2022
Time: 10:55
Analysis/preservative

Notes: - CLEAR WATER.
- TOTAL PURGE = 2.5 gal

Bottles and Analyses: (collected in order below)

AC

(6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx and TPH-Dx with Silica Gel Cleanup
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	3	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	14	= Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. CCW-1A.
		Facility: CLEAN EARTH
Date: 12/9/22	Sampling Personnel: AC/ES	Initial Headspace (ppm) 39.5
Sampling Method:		Intial-Water Level before purge (ft. BTOC) 5.04 TOTAL DEPTH
Equipment Used:	Well volume = 0.17 * (total well depth - water level)	End-Water Level post purge/sample with pump on (ft. BTOC): 5.3'
WL - PID - WQ - Pump - Turb -	Well Volume = 0.17 (~~6-0~~ AC)	Pump Intake Depth (ft.BTOC):

Purge start time:		Initial Flow Rate:		Flow cell disconnected prior to sampling : ☐
Purge stop time:		Final Flow Rate:		

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1014	PURGE BEGINS NO WATER -							
		WL = 5.04	TOTAL DEPTH =	5.3'				
			WELL DRY. NO SAMPLE					

Notes:

Bottles and Analyses: (collected in order below)

AC: (6) x 40 mL HCl VOA ☐ 8260/8260 SIM dual acquisition ☐ 1,4 Dioxane ☐ NWTPH-Gx

(1) x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC

(2) x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs

(2) x 1000 mL unpreserved AG 8082A PCBs

(1) x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

(12) = Total Bottles

AC

4Q22

DOF DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. MW-4
		Facility: CLEAN CABLE
Date: 12/7/2022	Sampling Personnel: AC/ES	Initial Headspace (ppm) 5.0
Sampling Method: LF PERI		Intial-Water Level before purge (ft. BTOC) 6.34
Equipment Used: WL - GEOTECH PID - MINIRAE WQ - YSI PRO+ Pump - GEOTECH PERI Turb - LAMOTTE 2020e	Well volume = 0.17 * (total well depth - water level)	End-Water Level post purge/sample with pump on (ft. BTOC): 8.72
	Well Volume = 0.17(~13 - 6.34) = 1.1 gal	Pump Intake Depth (ft.BTOC): ~2' FROM BOTTOM OF WELL (SCREEN 5')
Purge start time: 0812	Initial Flow Rate: 300	Flow cell disconnected prior to sampling: ☑
Purge stop time: 0910	Final Flow Rate: 200	

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
0812	PURGE BEGINS @	300 mL						
0816	8.00	200	7.44	815	12.4	0.72	87.9	11.29
0819	8.31	200	7.40	842	12.6	0.56	84.4	11.1
0822	8.45	200	7.38	856	12.7	0.48	80.4	11.8
0825	8.50	200	7.31	889	12.8	0.43	79.5	10.9
0828	8.54	200	7.30	900	13.0	0.38	76.5	8.60
0831	8.71	200	7.30	926	13.2	0.32	72.5	8.02
0834	8.74	200	7.28	923	13.2	0.27	70.2	5.78
0837	8.75	200	7.28	900	13.2	0.22	63.5	5.00
0840	8.75	200	7.27	890	13.3	0.23	62.1	4.29
0843	8.75	200	7.26	887	13.3	0.19	60.7	3.98
0844	ALL PARMS STABLE FLOW CELL DISCONNECTED							
0845	SAMPLE COLLECTED							
0910	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
MW-4-1222
Date: 12/9/2022
Time: 08:45
Analysis/preservative

Notes:
- CLEAR W/ TRACE BLACK SPECKS.
- LIGHT SHEEN ON VOA; NAPL ON PURGE
- TOTAL PURGE VOL = 2.5 gal.

Bottles and Analyses: (collected in order below)

(6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	1	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	14	= Total Bottles

AM (6) 9 + (1) 1 + (2) 3 + (2) 1 + (1) 1 = 350 (12) 14

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-5C

Facility: CLEAN CARE

Date: 12/8/22

Sampling Personnel: AC/ES

Initial Headspace (ppm) 0.2 ppm

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 9.01

Equipment Used:
WL - GEOTECH INT PID - MINI RAE PID
WQ - YSI PRO + Pump - GEOTECH PERI
Turb - LAMOTTE 2020 e

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(24 - 9.01) = 2.5 gal.

End-Water Level post purge/sample with pump on (ft. BTOC): 9.02

Pump Intake Depth (ft.BTOC): ~21.5 (SCREEN 24-19')

Purge start time:	1528	Initial Flow Rate:	300	Flow cell disconnected prior to sampling :	☑
Purge stop time:	1625	Final Flow Rate:	300		

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1528	PURGE BEGINS @	300 mL/min						
1531	9.05	300	6.63	493	13.2	0.53	79.1	34.4
1534	9.05	300	6.62	528	13.2	0.43	69.9	18.0
1537	9.05	300	6.62	569	13.2	0.32	65.4	12.0
1540	9.05	300	6.62	579	13.2	0.25	60.1	~~12.2~~ AC 6.21
1543	9.05	300	6.62	582	13.1	0.23	57.8	6.81
1546	9.05	300	6.62	588	13.1	0.19	55.2	6.20
1548	ALL PARMS STABLE.							
1550	SAMPLE COLLECTED							
1625	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-5C-1222
Date: 12/8/2022
Time: 15:50
Analysis/preservative

Notes: - SOME EFFERVESCENCE. CLEAR WATER
- TOTAL PURGE VOLUME:

Bottles and Analyses: (collected in order below)

AC

(6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx and TPH-Dx with Silica Gel Cleanup
(2)	2	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	2	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	14	= Total Bottles

+ FIELD BLANK #2 COLLECTED.

Project:TWAAFA
Sampler: AC/ES
Sample ID:
FIELD BLANK#2-1222
Date: 12/8/2022
Time: 16:00
Analysis/preservative

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-5B

Facility: CLEAN CARE

Date: 12/8/2022

Sampling Personnel: AC/ES

Initial Headspace (ppm) 1.0

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 3.12

Equipment Used:
WL - GEOTECH INTERFACE
PID - MINI RAE
WQ - YSI PRO+
Pump - GEOTECH PERI
Turb - LA MOTTE 2020e.

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(10 - 3.12) = 1.2 gal

End-Water Level post purge/sample with pump on (ft. BTOC): 3.12

Pump Intake Depth (ft.BTOC): ~7.5' SCREEN (5-10')

Purge start time: 1358

Purge stop time: 1514

Initial Flow Rate: 400

Final Flow Rate: 400

Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1358	PURGE	BEGINS @	400					
1401	3.12	400	7.16	478	13.3	0.64	25.0	10.3
1404	3.12	400	6.67	454	13.3	0.36	34.3	6.8
1407	3.12	400	6.53	440	13.3	0.29	43.0	5.5
1410	3.12	400	6.45	420	13.3	0.26	47.6	6.1
1413	3.12	400	6.44	413	13.3	0.22	48.6	6.3
1416	3.12	400	6.41	409	13.3	0.19	48.2	4.9
1419	3.12	400	6.39	396	13.3	0.18	46.8	4.3
1422	3.12	400	6.39	391	13.3	0.16	45.4	4.6
1423	ALL PARMS STABLE		FLOW CELL DISCONNECTED					
1425	SAMPLE	COLLECTED;	PLUS DUPLICATE.					

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-5B-1222
Date: 12/8/2022
Time: 14:25
Analysis/preservative

Notes: - CLEAR.
- TOTAL PURGE VOL = 5 gal.

Bottles and Analyses: (collected in order below)

AC

(6) 12 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx

(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC.

(2) ~~4~~ 2 AC x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs 34

(2) ~~4~~ 2 x 1000 mL unpreserved AG 8082A PCBs

(1) 1 x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

(12) (18) = Total Bottles

18 = +DUPLICATE SAMPLE

1 x 1000 mL AG + EPH

3 x 40 mL VOA HCl + VPH

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-9-5B-1222
Date: 12/8/2022
Time: 14:30
Analysis/preservative

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-7C
Facility: CLEAN CARE

Date: 12/8/22
Sampling Personnel: AC/ES
Initial Headspace (ppm) 0.0
Sampling Method: LF PERI
Intial-Water Level before purge (ft. BTOC) 8.79
Equipment Used:
WL - GEOTECH INTERFACE PID - MINIRAE PID
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LAMOTTE 2020t.
Well volume = 0.17 * (total well depth - water level)
End-Water Level post purge/sample with pump on (ft. BTOC):
Well Volume = 0.17(26 − 8.79) = 2.9 gal.
Pump Intake Depth (ft.BTOC): ~ 23.5' (SCREEN 21-26')

Purge start time: 1242
Purge stop time:
Initial Flow Rate: 400
Final Flow Rate:
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1242	PURGE BEGINS @	400						
1246	8.82	400	6.70	633	12.6	0.42	57.9	3.39
1249	8.82	200	6.79	673	12.5	0.30	48.3	4.13
1252	8.82	250	6.84	684	12.5	0.25	40.8	2.64
1255	8.82	300	6.87	694	12.5	0.22	35.5	3.83
1258	8.82	300	6.89	698	12.5	0.19	33.0	1.86
1259	ALL PARMS STABLE; FLOW CELL DISCONNECTED. 2.5 gal PURGE.							
1300	SAMPLE COLLECTED							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-7C-1222
Date: 12/8/2022
Time: 13:00
Analysis/preservative

Notes: - CLEAR
- TOTAL PURGE VOLUME = 3gal

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☐ 8260/8260 SIM dual acquisition ☐ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) 3 x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) 14 = Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-7B

Facility: CLEAN CARE.

Date: 12/8/22

Sampling Personnel: AC/ES

Initial Headspace (ppm) 7.4

Sampling Method: LF PERI

Intial-Water Level before purge (ft. BTOC) 2.35

Equipment Used:
WL - GEOTECH INTERFA PID - MINI RAE PID
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LA MOTTE 2020 t

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17(9 − 2.35) = 1.1 gal.

End-Water Level post purge/sample with pump on (ft. BTOC): 2.35

Pump Intake Depth (ft.BTOC): ~ 6.5 SCREEN (4-9')

Purge start time: 1132

Purge stop time: 1232

Initial Flow Rate: 250

Final Flow Rate: 300

Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1132	PURGE BEGINS				~~11.4~~ AC			
1136	2.35	250	6.99	463	11.4	0.85	−9.8	3.16
1139	2.35	300	6.67	434	11.5	0.62	11.3	3.57
1142	2.35	300	6.48	411	11.5	0.37	22.6	3.95
1145	2.35	300	6.43	402	11.5	0.31	27.0	3.14
1148	2.35	300	6.39	398	11.5	0.28	29.1	4.82
1149	ALL PARMS STABLE; FLOW CELL DISCONNECTED. 2.5 gal PURGED							
1200	CCW-7B-1222 SAMPLE COLLECTED							
1232	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-7B-1222
Date: 12/8/2022
Time: 12:00
Analysis/preservative

Notes: - CLEAR
- TOTAL PURGE VOLUME = 5 gal.

Bottles and Analyses: (collected in order below)

AC

(6)	27	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	3	x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2)	9	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)		x 1000 mL unpreserved AG 8082A PCBs
(1)	3	x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	42	= Total Bottles

+ EXTRA VOLUME FOR MS/MSD

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-6C
Facility: CLEAN CARE

Date: 12/8/22
Sampling Personnel: AC/ES
Sampling Method: LF PERI
Initial Headspace (ppm) 0.9
Intial-Water Level before purge (ft. BTOC) 8.90
End-Water Level post purge/sample with pump on (ft. BTOC): 9.19

Equipment Used:
WL - GEOTECH INT. PID - MINI RAE PID
WQ - YSI PRO T Pump - GEOTECH PERI
Turb - LA MOTTE 2020E.

Well volume = 0.17 * (total well depth - water level)
Well Volume = 0.17(23 - 8.90) = 2.4 gal
Pump Intake Depth (ft.BTOC): 20.5 SCREEN (23-13)

Purge start time: 1017
Purge stop time: 1103
Initial Flow Rate: 350
Final Flow Rate: 400
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1017	~~PUMP OFF~~ AC PURGE	BEGINS @ 350 mL/MIN						
1020	9.16	350	6.58	1118	12.5	1.74	84.3	11.8
1023	9.16	350	6.62	1228	12.5	0.76	77.7	5.66
1026	9.17	350	6.64	1311	12.6	0.48	69.5	5.07
1029	9.19	375	6.66	1373	12.6	0.35	62.7	4.87
1032	9.18	400	6.67	1418	12.6	0.28	57.6	2.91
1035	9.18	400	6.67	1450	12.6	0.24	53.7	3.60
1038	9.19	400	6.68	1486	12.6		49.3	2.67
1040	ALL PARMS STABLE;	FLOW CELL DISCONNECTED.						
1103	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-6C-1222
Date: 12/8/2022
Time: 10:45
Analysis/preservative

Notes: - CLEAR; TAN COLOR; EFFERVESCENT
- TOTAL PURGE VOL = 4 GAL.

Bottles and Analyses: (collected in order below)

AC (6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	1	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x ~~500~~ AC mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	14	= Total Bottles

FIELD BLANK #1 COLLECTED CONCURRENTLY

Project:TWAAFA
Sampler: AC/ES
Sample ID:
FIELD BLANK#1-1222
Date: 12/8/2022
Time: 10:40
Analysis/preservative

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-6B
Facility: CLEAN CARE

Date: 12/8/2022
Sampling Personnel: AC/ES
Initial Headspace (ppm) 3.0
Sampling Method: LF PERI
Intial-Water Level before purge (ft. BTOC) 2.41
Equipment Used:
WL - GEOTECH PID - MINI RAE PID
WQ - YSI PRO + Pump - GEOTECH PERI
Turb - LA MOTTE 2020T.
Well volume = 0.17 * (total well depth - water level)
Well Volume = 0.17 (8.5 - 2.41) = 1 gal.
End-Water Level post purge/sample with pump on (ft. BTOC): 2.41
Pump Intake Depth (ft.BTOC): ~6.0 SCREEN = 3.5 - 8.5'

Purge start time: 0835
Purge stop time: 0954
Initial Flow Rate: 400
Final Flow Rate: 400
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
0835	PURGE BEGINS @							
0838								
0840	2.41	400	6.94	452	12.1	0.79	20.6	17.1
0843	2.41	400	6.65	412	12.2	0.52	35.2	17.1
0846	2.41	400	6.46	402	12.2	0.42	46.2	14.5
0849	2.41	400	6.40	396	12.2	0.37	48.9	8.4
0852	2.41	400	6.35	390	12.2	0.32	51.6	8.8
0855	2.41	400	6.32	387	12.2	0.29	52.4	9.8
0858	2.41	400	6.30	382	12.2	0.26	52.4	9.6
0901	2.41	400	6.28	378	12.2	0.24	51.8	11.3
0904	2.41	400	6.28	374	12.2	0.21	51.1	12.1
0907	2.41	400	6.27	372	12.2	0.20	50.6	12.7
0910	2.41	400	6.27	369	12.2	0.19	50.0	12.5
0913	ALL PARMS STABLE, FLOW CELL DISCONNECTED.							
0915	CCW-6B-1222							
0920	CCW-9-6B-1222							
0954	PUMP OFF							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-6B-1222
Date: 12/8/2022
Time: 09:15
Analysis/preservative

Notes: - CLEAR; TURBIDITY >10 NTU SO FIELD FILTERED METALS COLLECTED
- TOTAL PURGE = 7 gal

AC

Bottles and Analyses: (collected in order below)

(6)	9	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	1	x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~. AC
(2)	3	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)			x 1000 mL unpreserved AG 8082A PCBs
(1)	1 AC	1 AC	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	15	15	= Total Bottles

250
~~(1 TOTAL 1 DISSOLVED)~~ AC 12/8/22

AC 12/9/22 14 14

+ DUPLICATE COLLECTED. CCW-9-6B-1222.

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-9-6B-1222
Date: 12/8/2022
Time: 09:20
Analysis/preservative

4022

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-3A

Facility: CLEAN CARE.

Date: 12/7/2022

Sampling Personnel: AC/ES

Initial Headspace (ppm) 14ppm

Intial-Water Level before purge (ft. BTOC) 4.4

Sampling Method: LF PERI

Equipment Used:
WL - GEOTECH INTERFACE PID - MINIRAE PID
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LAMOTTE 2020T.

Well volume = 0.17 * (total well depth - water level)

Well Volume = 0.17 (9.8 - 4.4) = ~.5 gal

End-Water Level post purge/sample with pump on (ft. BTOC): 4.79

Pump Intake Depth (ft.BTOC): ~1' FROM BOTTOM SCREEN = (1.8')

Purge start time:	1418	Initial Flow Rate:	200	Flow cell disconnected prior to sampling :	☑
Purge stop time:	1508	Final Flow Rate:	250		

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1418	PURGE BEGINS @ 200mL/min							
1421	4.61	200	7.10	672	12.4	0.69	42.5	
1424	4.65	250	7.04	669	12.4	0.47	38.1	~~0.0~~ AC 2.08
1427	4.66	250	6.99	660	12.3	0.34	34.9	3.72
1430	4.69	250	6.93	652	12.2	0.30	32.7	4.49
1433	4.70	250	6.91	648	12.2	0.26	31.2	3.87.
1434	ALL PARAMS STABLE; FLOW CELL DISCONNECTED							
1435	SAMPLE COLLECTED.							
1508	PURGE COMPLETE 3.5gal TOTAL							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-3A-1222
Date: 12/7/2022
Time: 14:35
Analysis/preservative

Notes: - CLEAR WATER
- TOTAL PURGE VOLUME = 3.5gal

AC

Bottles and Analyses: (collected in order below)

(6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	3	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	18	= Total Bottles

+ 1 unpres 1000mL AG FOR EPH.

+ 3 40mL HCl VOA FOR VPH.

4Q22

DOF DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. CCW-3C
		Facility: CLEAN CARE
Date: 12/7/2022	Sampling Personnel: AC/ES	Initial Headspace (ppm) 0.0 ppm.
Sampling Method: iF PERI		Intial-Water Level before purge (ft. BTOC) 12.54
Equipment Used: WL - GEOTECH INTERFACE PID - MINI RAE PID WQ - YSI PRO T Pump - GEOTECH PERI Turb - LA MOTTE 2020t.	Well volume = 0.17 * (total well depth - water level)	End-Water Level post purge/sample with pump on (ft. BTOC): 12.55
	Well Volume = 0.17(23 - 12.54) = 2.2 gal	Pump Intake Depth (ft.BTOC): ~~20.5~~ AC ~1' FROM BOTTOM OF WELL SCREEN = 5' BTOC TBD.
Purge start time: 1224	Initial Flow Rate: 200	Flow cell disconnected prior to sampling : ☑
Purge stop time:	Final Flow Rate:	

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1224	PURGE BEGINS @ 200mL/min							
1227	12.57	200	7.00	874	13.1	1.38	8.7	9.16
1230	12.57	400	6.94	841	13.2	0.60	8.1	7.2
1233	12.56	400	6.87	829	13.3	0.38	9.8	4.0
1236	12.56	400	6.83	819	13.4	0.25	10.8	2.8
1239	12.56	400	6.83	814	13.3	0.24	11.1	3.5
1240	ALL PARAMS STABLE.	FLOW CELL	DISCONNECTED					
1245	SAMPLE	COLLECTED.						
1300	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-3C-1222
Date: 12/7/2022
Time: 12:45
Analysis/preservative

Notes: - CLEAR w/ ORANGE/BROWN FLOC.
- TOTAL PURGE VOL = 3.5 gal.

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2) ~~3~~ 2 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) 2 x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) 14 = Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-3B
Facility: CLEAN CARE

Date: 12/7/2022
Sampling Personnel: AC/ES
Initial Headspace (ppm) 27
Sampling Method: LF PERI
Intial-Water Level before purge (ft. BTOC) 4.62
Equipment Used:
WL - GEOTECH INTERFACE PID - MINI RAE PID
WQ - YSI PRO + Pump - GEOTECH PERI
Turb - LA MOTTE 2020+.
Well volume = 0.17 * (total well depth - water level)
End-Water Level post purge/sample with pump on (ft. BTOC): 5.15
Well Volume = 0.17(10.8 - 4.62) = 1 gal
Pump Intake Depth (ft.BTOC): ~1.0' FROM BOTTOM OF WELL BTOC TBD SCREEN = (1.8')

Purge start time: 1314
Purge stop time: 1356
Initial Flow Rate: 300
Final Flow Rate:
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1314	PURGE BEGINS @ 300 mL/min							
1318	4.93	300	6.99	698	12.9	0.45	20.9	6.01
1321	5.10	300	6.94	702	13.1	0.24	21.7	8.48
1324	5.15	300	6.92	702	13.3	0.21	22.1	3.43
1327	5.11	300	6.90	698	13.3	0.20	22.4	2.42
1330	5.14	300	6.89	697	13.3	0.20	22.6	4.33
1332	ALL PARMS STABLE;	FLOW CELL	DISCONNECTED.					
1335	SAMPLE COLLECTED.							
1356	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-3B-1222
Date: 12/7/2022
Time: 13:35
Analysis/preservative

Notes: - CLEAR WATER.
- 3.5 gal TOTAL PURGE

Bottles and Analyses: (collected in order below)

(6)	9	x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1)	1	x 500 mL unpreserved AG TPH-Dx and ~~TPH-Dx with Silica Gel Cleanup~~ AC
(2)	3	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2)	2	x 1000 mL unpreserved AG 8082A PCBs
(1)	1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12)	14	= Total Bottles

AC

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-2C
Facility: CLEAN CARE

Date: 12/7/2022
Sampling Personnel: AC/ES
Initial Headspace (ppm) 0.5
Intial-Water Level before purge (ft. BTOC) 9.07
End-Water Level post purge/sample with pump on (ft. BTOC): 9.09

Equipment Used:
WL - GEOTECH INTERFACE PID - MINI RAE PID
WQ - YSI PRO+ Pump - GEOTECH PERI
Turb - LA MOTTE 2020+

Well volume = 0.17 * (total well depth - water level)
Well Volume = 0.17 (24 - 9.07) = 2.5 gal

Pump Intake Depth (ft.BTOC): ~ 21.5' SCREEN = (24-19)

Purge start time: 1121
Purge stop time:
Initial Flow Rate: 300
Final Flow Rate:
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
1121	PURGE BEGINS @	300 mL/min						
1124	9.10	300	7.05	955	12.9	0.80	39.2	7.98
1127	9.10	300	7.05	944	13.0	0.38	30.6	3.1
1130	9.10	300	7.04	942	13.0	0.29	23.3	1.42
1133	9.10	350	7.04	951	13.0	0.23	19.5	1.0
1136	9.10	350	7.04	959	13.0	0.20	16.2	0.2
1138	ALL PARMS STABLE.	FLOWCELL	DISCONNECTED.					
1140	SAMPLE	COLLECTED.						
1159	PURGE	COMPLETE.						

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-2C-1222
Date: 12/7/2022
Time: 11:40
Analysis/preservative

Notes: - WATER CLEAR; TRACE SPECS (WHITE-ISH)
- TOTAL VOL PURGED = 3.5 gal

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
(2) 3> x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) 1 x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x 500 mL 250mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) 14 = Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-2B
Facility: CLEAN CARE

Date: 12/7/22
Sampling Personnel: AC/ES
Initial Headspace (ppm) 95.2
Sampling Method: LF PERI
Intial-Water Level before purge (ft. BTOC) 3.01
Equipment Used:
WL - GEOTECH INTERFACE PID -
WQ - Pump -
Turb -
Well volume = 0.17 * (total well depth - water level)
End-Water Level post purge/sample with pump on (ft. BTOC): 4.86
Well Volume = 0.17 (12.8 - 3.01) = 1.65 gal.
Pump Intake Depth (ft.BTOC): ~ 11.5' SCREEN (12.8-11.0')

Purge start time: 0956
Purge stop time: 1107
Initial Flow Rate: 200
Final Flow Rate: 200
Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
0956	PURGE BEGINS @ 200mL/min.							
~~0959~~ 1000	3.69	200	6.50	990	11.5	0.27	53	17.7
1003	3.96	200	6.57	1037	11.6	0.30	48	13.1
1006	4.22	180	6.61	1052	11.8	0.20	44	14.1
1009	4.30	180	6.65	1057	11.7	0.30	41	15.7
1012	4.36	180	6.68	1059	11.9	0.26	37	9.22
1015	4.48	180	6.73	1055	11.9	0.18	32	7.3
1018	4.50	200	6.77	1057	12.0	0.22	29	6.55
1021	4.57	200	6.81	1056	12.0	0.21	26	5.37
1024	4.56	200	6.85	1048	12.0	0.19	23	5.41
1027	4.60	200	6.87	1047	12.0	0.18	20.7	6.13
1030	4.62	200	6.88	1045	12.2	0.16	19.5	5.78
1033	4.65	200	6.89	1046	12.2	0.17	18.7	6.13
1034	ALL PARAMETERS STABLE. FLOW CELL DISCONNECTED.							
1107	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID: CCW-2B-1222
Date: 12/7/2022
Time: 10:40
Analysis/preservative

Notes: - CLEAR WATER; WHITE FLOATERS
- TOTAL PURGE VOLUME = 2.25 gal.

Bottles and Analyses: (collected in order below)

AC
(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx
(1) 1 x 500 mL unpreserved AG TPH-Dx and ~~TPH-Dx with Silica Gel Cleanup~~ AC
(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
(2) x 1000 mL unpreserved AG 8082A PCBs
(1) 1 x ~~500~~ 250 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)
(12) 14 = Total Bottles

4Q22

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Well No. CCW-2A

Facility: CLEAN CARE.

Date: 12/7/2022

Sampling Personnel: AC/ES

Initial Headspace (ppm) 107.5

Sampling Method:

Intial-Water Level before purge (ft. BTOC) 2.84

Equipment Used:

Well volume = 0.17 * (total well depth - water level)

End-Water Level post purge/sample with pump on (ft. BTOC): 2.90

WL - GEOTECH INTERFACE PID - MINI RAE.

WQ - YSI PRO+ Pump - GEOTECH PERI

Turb - LA MOTTE 2020+

Well Volume = 0.17 (5.8 - 2.84) = 0.5 gal.

Pump Intake Depth (ft.BTOC): ~ 5.0' SCREEN = 5.8 - 4.0'

Purge start time: 0842

Purge stop time: 0943

Initial Flow Rate: 200

Final Flow Rate: 250

Flow cell disconnected prior to sampling : ☑

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	{3 readings} < 5 NTU **or** < 10% if >5 NTU
0842	PURGE BEGINS @							
0845	2.86	200	8.54	851	7.9	0.81	-118	2.7
0848	2.89	200	8.23	749	7.9	0.68	-116	2.6
0851	2.89	200	7.68	767	8.0	0.6	-95	2.5
0854	2.89	200	7.44	599	8.0	0.5	-85	1.9
0857	2.89	200	7.24	566	8.0	0.5	-67	1.8
0900	2.89	200	7.08	535	8.0	0.5	-59	1.6
0903	2.90	250	6.95	509	8.0	0.4	-45	1.5
0906	2.90	250	6.85	486	8.0	0.3	-37	1.3
0909	2.90	250	6.79	475	8.0	0.3	-32	1.2
0912	2.90	250	6.75	452	8.0	0.3	-27	1.4
0915	2.90	250	6.69	450	8.0	0.2	-22	1.4
0917	ALL PARMS STABLE	(SC WITHIN	EQUIP ACCURACY) + 2.5 gal (≥ 1 WELL VOLUME PURGED)					
0918	FLOW CELL DISCONNECTED							
0943	PURGE COMPLETE							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
CCW-2A-1222
Date: 12/7/2022
Time: 09:20
Analysis/preservative

Notes: - CLEAR w/ ODOR
- TOTAL PURGE VOL. = 3.75 gal

AC

Bottles and Analyses: (collected in order below)

(6) 9 x 40 mL HCl VOA ☑ 8260/8260 SIM dual acquisition ☑ 1,4 Dioxane ☑ NWTPH-Gx

(1) 1 x 500 mL unpreserved AG TPH-Dx and ~~TPH-Dx with Silica Gel Cleanup~~ AC

(2) 3 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs

(2) x 1000 mL unpreserved AG 8082A PCBs

(1) 1 x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

250

(12) 14 = Total Bottles

DOF DALTON OLMSTED FUGLEVAND

Monitoring Well Sampling Field Sheet

Date: 12/6/2022	Sampling Personnel: AC/ES	Well No. TWA-9D
Sampling Method: LF PERI		Facility: CLEAN CARE
Equipment Used: YSI PRO+ / GEOTECH PERI / MINI RAE PID - LAMOTTE 2020	1 Volume = 0.17 * (total well depth - water level) 0.17 (60.2 - 9.55) = 8.6 gal.	Initial Headspace (ppm) 2.1 ppm
		Begin-Water Level: 9.55
		End-Water Level: 9.74
		Pump Intake Depth (ft) TOC: ~58.0'

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	< 5 NTU **or** < 10% if >5 NTU
1317	PURGE BEGINS @ 300mL/min							
1320	~~10.80~~ 9.80 AC 300	300ml/min	7.9	3968	12.8	0.8	0.3	1.22
1323	9.81	300	7.97	4233	12.8	0.6	-5.6	0.21
1326	9.80	300	7.99	4220	12.7	0.4	-12.7	0.03
1329	9.78	300	8.01	4169	12.8	0.3	-18.0	0.00
1331	9.79	300	8.05	4146	12.8	0.3	-21.2	0.10
1335	ALL PARAMETERS STABLE, FLOW CELL DISCONNECTED							
1345	SAMPLE COLLECTED							
		EXTRA VOLUME FOR MS/MSD						
1442	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
TWA-9D-1222
Date: 12/6/2022
Time: 13:45
Analysis/preservative

Notes: - SLIGHTLY TAN, CLEAR WATER.
- TOTAL VOL PURGED 5 gallons + SAMPLE VOLUME.

Bottles and Analyses: (collected in order below)

27 ~~27~~ AC x 40 mL unpreserved VOA 8260/8260 SIM dual acquisition and 1,4 Dioxane
x 40 mL unpreserved VOA TPH-Gx
3 x 500 mL unpreserved AG TPH-Dx ~~and TPH-Dx with Silica Gel Cleanup~~ AC
9 x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
1 x 1000 mL unpreserved AG 8082A PCBs
3 x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

42 = EXTRA VOLUME COLLECTED FOR MS/MSD

4Q22

DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. TWA-7D
		Facility: CLEAN EARTH TACOMA
Date: 12/6/22	Sampling Personnel: AC/ES	Initial Headspace (ppm) 0.0
Sampling Method: LF PERI		Begin-Water Level: 9.25
Equipment Used: YSI PROT / CAMBOTTE 2020E / GEOTECH PERI MINI 592	1 Volume = 0.17 * (total well depth - water level) 0.17 (60 - 9.25) = 1 wv = 8.6 gal	End-Water Level: 11.04
		Pump Intake Depth (ft) TOC: ~58'

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	< 5 NTU **or** < 10% if >5 NTU
1140	PURGE BEGINS @ 200 mL/min							
1144	10.10	200	8.06	3241	14.0	0.67	26.2	5.2
1147	10.50	200	8.0	3133	14.1	0.40	25.3	3.2
1150	10.68	150	7.9	3068	14.1	0.31	24.9	2.9
1153	10.85	200	7.9	3024	14.1	0.24	24.1	~~3.8~~ AC 2.5
1156	10.89	150	7.9	2990	13.9	0.20	23.4	2.1
1159	10.86	150	7.9	2961	13.9	0.20	22.3	1.7
1200	ALL PARAMETERS STABLE ; FLOW CELL DISCONNECTED							
1205	SAMPLE COLLECTED.							
1217	PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
TWA-7D-1222
Date: 12/6/2022
Time: 12:05
Analysis/preservative

Notes:
- CLEAR WATER
- SLIGHT EFFERVESCENT.
- 1.75 gal PURGED

Bottles and Analyses: (collected in order below)

6	x 40 mL unpreserved VOA 8260/8260 SIM dual acquisition and 1,4 Dioxane
—	x 40 mL unpreserved VOA TPH-Gx
1	x 500 mL unpreserved AG TPH-Dx and TPH-Dx with Silica Gel Cleanup
—	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
—	x 1000 mL unpreserved AG 8082A PCBs
1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

8 TOTAL BOTTLES

4Q22

DOF DALTON OLMSTED FUGLEVAND	Monitoring Well Sampling Field Sheet	Well No. TWA-4D
		Facility: CE TACOMA
Date: 12/6/2022	Sampling Personnel: AC/ES	Initial Headspace (ppm) 1.0
Sampling Method: LF PERI		Begin-Water Level: 9.46
Equipment Used: YSI PRO+/LAMOTTE 2020 PC / GEOTECH PERI MINI RAE PID	1 Volume = 0.17 * (total well depth - water level)	End-Water Level: 10.63
	0.17 (57.7 -) = 8 gal	Pump Intake Depth (ft) TOC: ~55' BTOC

Water Quality Measurements

Time	Water level	Purge Rate	pH	Conductivity	Temperature	Dissoved Oxygen	Redox Potential	Turbidity
(military)	ft	(mL/min)	pH Units	uS/cm	°C	mg/L	mV	(NTU)
	< 0.33 ft from 2nd reading	< 500 mL	< 0.1 unit	</= 3%	< 3%	</= 0.3 mg/L	< 10 mV	< 5 NTU or < 10% if >5 NTU
1017	PURGE BEGINS.	@ 225 mL/min.						
1022	10.35	225	7.89	2326	13.0	0.49	46.1	4.54
1025	10.40	225	7.78	2725	13.1	0.41	38.6	2.21
1028	10.45	225	7.76	2957	13.1	0.35	34.6	2.00
1031	10.50	225	7.76	3088	13.1	0.29	32.1	2.21
1034	10.52	225	7.76	3177	13.1	0.28	30.5	1.52
1037	10.55	225	7.77	3215	13.1	0.28	29.3	1.31
1040	10.60	225	7.78	3248	13.0	0.23	28.0	0.88
1041	ALL PARAMETERS	STABLE						
1042	FLOW CELL DISCONNECTED							
1045	SAMPLE COLLECTED							
1185	PUMP OFF PURGE COMPLETE.							

Project:TWAAFA
Sampler: AC/ES
Sample ID:
TWA-4D-1222
Date: 12/6/2022
Time: 10:45
Analysis/preservative

Notes: - CLEAR WATER.
- SLIGHTLY EFFERVESCENT → HCl VOAs HIGHLY EFFERVESCENT
- 2.5 gallons PURGED

Bottles and Analyses: (collected in order below)

6	x 40 mL unpreserved VOA 8260/8260 SIM dual acquisition and ~~1,4 Dioxane~~ AC
0	x 40 mL unpreserved VOA TPH-Gx
1	x 500 mL unpreserved AG TPH-Dx and ~~TPH-Dx with Silica Gel Cleanup~~ AC
0	x 1000 mL unpreserved AG 8270E SVOCs and 8270E cPAHs
0	x 1000 mL unpreserved AG 8082A PCBs
1	x 500 mL HDPE w/ HNO_3 6020 Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn) and 1613E (Hg)

8 TOTAL BOTTLES.

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-1
Project #	M0615.20.007	**Sampling Date**	12/05/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-1-1222
Sub Area	1514 Taylor Way Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	10.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/05/2022	9:50	13.56	--	5.71	--	7.85	1.28

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 10:20									
Allowed purge water to clear prior to hooking up YSI. Water initially orange and turbid.									
10:30	0.3	6.05	0.1	6.40	11.9	914	2.19	164.6	433
10:33	0.4	6.02	0.1	6.38	11.9	910	2.08	162.1	390
10:36	0.4	6.00	0.1	6.36	11.9	911	2.08	158.2	358
10:39	0.5	6.03	0.1	6.40	12.0	910	1.98	151.9	322
10:42	0.5	6.01	0.1	6.41	11.8	909	1.95	146.2	290
10:45	0.6	6.00	0.1	6.42	11.5	912	2.04	139.3	259
Drained YSI flow-through cell to remove turbid water. Allowed purge water to clear before hooking back up.									
10:50	0.9	6.03	--	--	--	--	--	--	191
10:55	1.0	6.06	--	--	--	--	--	--	208
11:05	1.2	6.05	0.1	6.54	11.5	917	1.88	108.4	140
11:08	1.3	6.06	0.1	6.49	11.6	914	1.81	97.9	110
11:11	1.4	6.06	0.1	6.49	11.5	913	1.78	93.8	102
11:14	1.5	6.06	0.1	6.48	11.4	911	1.76	80.2	82.5
11:17	1.6	6.06	0.1	6.48	11.5	908	1.73	76.3	81.2
11:20	1.7	6.06	0.1	6.48	11.5	905	1.70	74.9	80.7
Water Quality Observations:									
Cloudy; orange tint; no odor; no sheen.									

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

Client Name	Port of Tacoma	**Sampling Location**	TWA-1
Project #	M0615.20.007	**Sampling Date**	12/05/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	11:30	VOA-Glass	12	No
			Amber Glass	5	No
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly	1	Yes
			Total Bottles	18	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 1.7 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-1 (total metals analysis only)
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-1-1222
Sub Area	1514 Taylor Way Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	10.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	7:46	13.56	--	5.62	--	7.94	1.29

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 7:48									
Allowed purge water to clear prior to hooking up YSI. Water initially orange and turbid.									
7:51	0.1	6.12	0.1	--	--	--	--	--	168
7:54	0.2	6.07	0.1	--	--	--	--	--	128
7:57	0.3	6.06	0.1	--	--	--	--	--	81.8
8:03	0.5	6.07	0.1	6.36	11.4	973	3.03	95.5	108
8:06	0.6	6.05	0.1	6.45	11.3	869	2.92	76.4	64.4
8:09	0.7	6.04	0.1	6.45	11.0	870	2.70	70.5	66.0
8:12	0.9	6.03	0.2	6.44	10.9	862	2.77	68.6	69.1
8:15	1.2	6.04	0.2	6.46	10.9	865	2.61	66.9	62.5
8:18	1.3	6.06	0.2	6.47	10.9	861	2.58	63.4	61.3
8:21	1.5	6.07	0.2	6.47	11.0	863	2.60	61.2	62.6
Water Quality Observations:									
Cloudy in initial purge, then clear with particulates; orange tint; no odor; no sheen.									

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-1 (total metals analysis only)
Project #	M0615.20.007	**Sampling Date**	12/06/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	8:30	VOA-Glass		
			Amber Glass		
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	1	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 1.5 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-2
Project #	M0615.20.007	**Sampling Date**	12/05/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	C. Sifford
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-2-1222
Sub Area	1514 Taylor Way Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	6.5
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/05/2022	11:46	9.03	--	4.32	--	4.71	0.77

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 11:47									
11:50	0.1	4.38	0.1	--	--	--	--	--	9.15
11:53	0.2	4.42	0.1	6.60	10.8	1,785	20.2	149.4	6.28
11:56	0.3	4.44	0.1	6.68	10.9	1,768	9.3	142.0	5.09
12:00	0.4	4.46	0.1	6.81	10.8	1,757	6.2	113.0	8.44
12:04	0.5	4.47	0.1	6.83	10.9	1,737	5.3	82.7	5.43
12:07	0.6	4.48	0.1	6.85	10.7	1,690	5.4	66.5	3.07
12:11	0.8	4.48	0.1	6.87	10.5	1,602	5.6	51.0	2.37
12:15	0.9	4.48	0.1	6.87	10.5	1,539	5.5	40.6	1.87
12:18	1.0	4.48	0.1	6.88	10.5	1,492	5.7	32.0	1.95
12:23	1.1	4.48	0.1	6.89	10.5	1,444	6.0	24.7	1.65
12:26	1.2	4.48	0.1	6.89	10.4	1,424	6.1	21.0	1.52
12:29	1.3	4.48	0.1	6.89	10.4	1,396	6.2	16.8	1.38

Water Quality Observations:

Clear; colorless; no odor; no sheen.

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-2
Project #	M0615.20.007	**Sampling Date**	12/05/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	12:30	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 107 P7; Serial Number 531501

Water Quality Meter: YSI Professional Plus; Serial Number 18M102253

Turbidity Meter: Hach 2100P; Serial Number 040500035330

Total purge volume prior to sampling: 1.3 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-3
Project #	M0615.20.007	**Sampling Date**	12/05/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-3-1222
Sub Area	1514 Taylor Way Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	9.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/05/2022	12:56	9.73	--	7.30	--	2.43	0.40

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 13:00									
13:03	0.1	7.31	0.1	6.57	8.7	19,604	2.38	163.3	19.1
13:06	0.2	7.30	0.1	6.73	8.7	17,951	1.96	151.6	8.99
13:09	0.3	7.25	0.1	6.76	8.6	17,296	1.54	145.8	9.51
13:12	0.4	7.23	0.1	6.77	8.6	17,226	1.52	142.3	9.01
13:15	0.5	7.20	0.1	6.78	8.6	17,176	1.50	139.0	6.28
13:18	0.6	7.18	0.1	6.79	8.6	16,999	1.48	136.1	4.89

Water Quality Observations:

Clear; colorless; no odor; no sheen.

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	13:30	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 0.6 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-10D
Project #	M0615.20.007	**Sampling Date**	12/05/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-10D-1222
Sub Area	1514 Taylor Way Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	53.5
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/05/2022	14:36	58.68	--	9.92	--	48.76	7.95

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 14:46									
Allowed purge water to clear prior to hooking up YSI. Purged initial 5.0 gallons at 0.5 L/min.									
15:33	5.0	10.06	0.4	8.02	12.4	8,000	1.30	154.6	1.68
15:36	5.4	10.06	0.4	8.08	12.4	8,023	1.12	148.5	1.72
15:39	5.8	10.05	0.4	8.10	12.5	8,031	1.02	143.0	1.96
15:42	6.2	10.05	0.4	8.12	12.5	8,040	1.00	137.7	1.78
15:45	6.6	10.05	0.4	8.13	12.5	8,065	0.94	132.1	1.64
15:48	7.0	10.05	0.4	8.14	12.6	8,080	0.84	122.0	1.72
15:51	7.4	10.05	0.4	8.15	12.6	8,105	0.79	118.0	0.76
15:54	7.8	10.05	0.4	8.15	12.5	8,107	0.77	115.6	0.79
15:57	8.2	10.05	0.4	8.15	12.5	8,110	0.78	112.3	0.75
16:00	8.6	10.05	0.4	8.15	12.5	8,107	0.76	111.4	0.63
Water Quality Observations:									
Cloudy, then clear; reddish brown tint; no odor; no sheen.									

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-10D
Project #	M0615.20.007	**Sampling Date**	12/05/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	16:10	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 8.6 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	SB-1A
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	SB-1A-1222
Sub Area	Hylebos Marsh		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	8.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	0:00	11.63	--	5.32	--	6.31	1.03

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 9:54									
Allowed purge water to clear prior to hooking up YSI.									
10:02	0.3	5.55	0.1	--	--	--	--	--	20.5
10:08	0.5	5.57	0.1	--	--	--	--	--	15.0
10:11	0.6	5.59	0.1	7.27	11.8	493.5	2.10	74.5	12.3
10:14	0.7	5.60	0.1	7.27	11.7	427.6	1.91	69.4	10.4
10:17	0.8	5.60	0.1	7.26	11.9	422.1	1.87	67.6	8.3
10:20	0.9	5.60	0.1	7.26	11.8	419.9	1.88	66.0	8.07
10:23	1.0	5.60	0.1	7.25	11.8	413.8	1.84	63.0	8.03
10:26	1.1	5.60	0.1	7.25	11.9	411.4	1.82	62.0	7.98

Water Quality Observations:

Clear; brown tint; no odor; no sheen.

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	10:30	VOA-Glass	18	No
			Amber Glass	10	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	2	No
			Red Dissolved Poly		
			Total Bottles	30	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 1.1 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	SB-2A
Project #	M0615.20.007	**Sampling Date**	12/05/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	C. Sifford
Sampling Event	Quarter 4 of 2022	**Sample Name**	SB-2A-1222
Sub Area	Hylebos Marsh		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	9.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/05/2022	15:11	12.72	--	5.31	--	7.41	1.21

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 15:12									
15:15	0.1	5.43	0.15	--	--	--	--	--	37.0
15:19	0.2	0.24	0.15	--	--	--	--	--	21.0
15:21	0.3	5.48	0.15	7.21	12.8	559.2	10.1	64.0	22.1
15:24	0.4	5.49	0.15	7.17	12.9	558.7	6.7	61.3	18.4
15:27	0.5	5.49	0.15	7.13	13.0	553.1	5.0	50.6	15.8
15:31	0.7	5.49	0.15	7.11	13.1	542.6	4.1	32.1	8.17
15:34	0.8	5.49	0.15	7.09	13.1	530.8	3.5	12.0	5.26
15:39	1.0	5.49	0.15	7.08	13.1	525.1	6.7	-5.1	4.71
15:42	Tubing cracked; paused purging to replace tubing.								
15:47	Resumed purging.								
15:47	1.1	5.49	0.15	7.11	13.0	508.9	4.7	-22.4	7.99
15:51	1.2	5.50	0.15	7.09	13.0	510.4	3.2	-26.9	9.61
15:54	1.4	5.49	0.15	7.07	13.0	506.6	2.9	-31.2	8.97
15:57	1.6	5.49	0.15	7.06	13.1	503.8	2.8	-33.5	6.22

Water Quality Observations:

Clear; colorless; no odor; no sheen.

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
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Client Name	Port of Tacoma	**Sampling Location**	SB-2A
Project #	M0615.20.007	**Sampling Date**	12/05/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	16:00	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 107 P7; Serial Number 531501

Water Quality Meter: YSI Professional Plus; Serial Number 18M102253

Turbidity Meter: Hach 2100P; Serial Number 040500035330

Total purge volume prior to sampling: 1.6 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-5D
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	C. Sifford
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-5D-1222
Sub Area	Hylebos Marsh		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	28.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	12:44	33.79	--	11.85	--	21.94	3.58

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 12:45									
12:50	0.1	11.87	0.16	--	--	--	--	--	4.78
12:54	0.2	11.88	0.16	7.50	12.7	3,160	16.6	41.6	3.96
12:59	0.4	11.88	0.16	7.46	12.8	3,382	6.3	4.1	4.90
13:03	0.6	11.88	0.16	7.44	12.9	3,444	3.8	-51.5	3.05
13:08	0.8	11.88	0.16	7.43	12.9	3,465	3.1	-69.7	3.50
13:11	1.0	11.89	0.16	7.42	12.9	3,465	2.9	-80.5	2.80
13:15	1.3	11.89	0.3	7.42	13.0	3,469	2.6	-87.7	3.66
13:18	1.5	11.88	0.3	7.41	12.9	3,466	2.4	-93.8	2.75
13:22	1.8	11.88	0.3	7.41	12.9	3,474	2.3	-99.4	2.29
13:26	2.1	11.88	0.3	7.41	13.0	3,471	2.1	-103.6	2.26
13:31	2.3	11.88	0.3	7.40	13.0	3,475	2.0	-108.0	1.79
13:34	2.5	11.88	0.3	7.40	12.9	3,475	1.9	-109.9	2.42
13:37	2.7	11.88	0.3	7.40	13.0	3,482	2.0	-111.2	2.04
13:40	3.0	11.88	0.3	7.40	12.9	3,489	1.9	-113.1	2.20
13:43	3.2	11.88	0.3	7.40	12.8	3,488	2.1	-114.6	1.75
13:46	3.4	11.88	0.3	7.39	12.9	3,493	2.0	-116.3	1.82
13:49	3.6	11.88	0.3	7.39	12.9	3,483	1.9	-117.5	1.59
13:52	3.8	11.88	0.3	7.39	12.9	3,483	1.90	-118.0	1.57

Water Quality Observations:

Clear; brown tint; no odor; no sheen; slight effervescence with hydrochloric acid.

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	Sampling Location	TWA-5D
Project #	M0615.20.007	Sampling Date	12/06/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	14:00	VOA-Glass	12	No
			Amber Glass	5	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	18	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 107 P7; Serial Number 531501

Water Quality Meter: YSI Professional Plus; Serial Number 18M102253

Turbidity Meter: Hach 2100P; Serial Number 040500035330

Total purge volume prior to sampling: 3.8 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-6D
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	TWA-6D-1222
Sub Area	Hylebos Marsh		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	25.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	12:20	33.09	--	11.58	--	21.51	3.51

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 12:25									
Allowed purge water to clear prior to hooking up YSI. Water initially turbid.									
12:32	0.3	11.58	0.2	--	--	--	--	--	6.45
12:36	0.5	11.61	0.2	7.18	11.3	3,593	2.58	137.3	6.64
12:39	0.7	11.60	0.2	7.13	11.3	3,639	1.47	129.6	2.44
12:42	0.9	11.60	0.2	7.12	11.4	3,677	1.29	125.8	2.73
12:45	1.1	11.60	0.2	7.12	11.5	3,723	1.11	119.8	2.06
12:48	1.4	11.60	0.3	7.12	11.7	3,756	1.01	115.9	2.08
12:51	1.7	11.60	0.3	7.12	11.8	3,773	0.97	112.9	3.37
12:54	2.0	11.60	0.3	7.12	11.7	3,808	0.92	108.9	1.44
12:57	2.3	11.60	0.3	7.13	11.7	3,806	0.83	105.4	1.23
13:00	2.6	11.60	0.3	7.13	11.7	3,805	0.84	101.6	0.99
13:03	2.9	11.59	0.3	7.13	11.7	3,810	0.83	99.4	1.17
13:06	3.2	11.59	0.3	7.13	11.8	3,810	0.81	97.1	1.13
13:09	3.5	11.59	0.3	7.13	11.7	3,813	0.83	95.4	1.02
Water Quality Observations:									
Clear; dark reddish brown tint; no odor; no sheen; strong effervescence with hydrochloric acid.									

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	TWA-6D
Project #	M0615.20.007	**Sampling Date**	12/06/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	13:20	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 19K102418

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 3.5 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	SB-3A
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	C. Sifford
Sampling Event	Quarter 4 of 2022	**Sample Name**	SB-3A-1222
Sub Area	Hylebos Marsh		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	8.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	9:55	12.76	--	4.38	--	8.38	1.37

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 9:56									
9:59	0.1	4.44	0.15	7.60	11.6	628.4	26.2	65.7	28.5
10:02	0.2	4.43	0.15	7.46	11.7	640.7	12.4	62.2	26.4
10:05	0.3	4.44	0.15	7.37	11.9	637.4	8.8	48.1	23.7
10:08	0.4	4.44	0.15	7.33	11.9	636.7	5.5	-8.1	19.3
10:11	0.5	4.44	0.15	7.31	12.0	631.3	5.0	-32.6	15.7
10:14	0.6	4.43	0.15	7.31	12.0	630.0	4.3	-51.8	13.3
10:17	0.7	4.43	0.15	7.29	12.0	627.8	3.7	-56.9	14.6
10:20	0.9	4.43	0.15	7.28	12.0	625.0	3.2	-78.2	12.9
10:23	1.0	4.43	0.15	7.27	12.2	623.2	3.2	-84.5	10.8
10:26	1.1	4.43	0.15	7.28	12.2	623.8	3.1	-91.8	11.0
10:29	1.2	4.43	0.15	7.28	12.2	622.7	2.9	-94.1	11.4
10:32	1.4	4.43	0.15	7.27	12.1	623.0	2.8	-97.3	9.64

Water Quality Observations:

Clear; colorless; no odor; no sheen.

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	Sampling Location	SB-3A
Project #	M0615.20.007	Sampling Date	12/06/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	10:45	VOA-Glass	9	No
			Amber Glass	4	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	14	

General Sampling Comments:

Equipment Used:

Water Level Meter: Solinst Model 107 P7; Serial Number 531501

Water Quality Meter: YSI Professional Plus; Serial Number 18M102253

Turbidity Meter: Hach 2100P; Serial Number 040500035330

Total purge volume prior to sampling: 1.4 gallons

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	**Sampling Location**	MW-1
Project #	M0615.20.007	**Sampling Date**	12/06/2022
Project Name	TWAAFA Groundwater Monitoring	**Sampler**	A. Bixby
Sampling Event	Quarter 4 of 2022	**Sample Name**	MW-1-1222
Sub Area	Potter Property		
FSDS QA	A. Bixby 12/30/2022	**Sample Depth**	5.0
Hydrology/Level Measurements		**Purge Method**	Peristaltic pump

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW	DTB-DTW	Pore Volume
12/06/2022	14:23	8.37	--	2.04	--	6.33	1.03

All depths measured from top of casing of monitoring well.

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

Water Quality Data

Time	Purge Volume	Water Level	Flowrate L/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
BEGAN PURGE AT: 14:49									
Allowed purge water to clear prior to hooking up YSI. Water initially turbid.									
14:53	0.2	2.14	0.3	--	--	--	--	--	36.7
14:56	0.4	2.16	0.3	--	--	--	--	--	34.2
14:59	0.7	2.22	0.3	--	--	--	--	--	46.2
15:02	0.9	2.25	0.25	--	--	--	--	--	48.1
15:07	1.2	2.29	0.25	7.93	9.4	246.4	23.4	-130.1	50.0
15:11	1.6	2.36	0.25	6.24	9.2	197.3	4.6	-82.4	55.3
15:16	1.9	2.39	0.25	6.19	9.4	203.1	3.5	-75.4	51.0
15:19	2.1	2.40	0.25	6.19	9.3	206.1	3.2	-73.8	45.9
15:22	2.2	2.41	0.25	6.20	9.2	206.0	3.0	-71.1	46.0
15:25	2.5	2.44	0.25	6.19	9.2	210.9	3.0	-66.5	44.1
Water Quality Observations:									
Clear; gray tint; petroleum hydrocarbon-like odor; rainbow and ribbon sheen.									

Water Field Sampling Data Sheet
TWAAFA Groundwater Sampling
Port of Tacoma

MAUL FOSTER ALONGI

Client Name	Port of Tacoma	Sampling Location	MW-1
Project #	M0615.20.007	Sampling Date	12/06/2022

Sample Information:

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Peristaltic pump	Groundwater	15:30	VOA-Glass	12	No
			Amber Glass	5	No
			Yellow Poly		
			Green Poly		
			Red Total Poly	1	No
			Red Dissolved Poly		
			Total Bottles	18	

General Sampling Comments: Field duplicate sample MW-9-1-1222 collected here.

Equipment Used:

Water Level Meter: Solinst Model 101; Serial Number 223663

Water Quality Meter: YSI Professional Plus; Serial Number 18M102253

Turbidity Meter: Hach 2100Q; Serial Number 19070C077831

Total purge volume prior to sampling: 2.5 gallons

Appendix B

Analytical Laboratory Reports and Data Validation Review Reports

QA/QC SOLUTIONS, LLC

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February 13, 2023

Tasya Gray, LG
DOF Dalton, Olmsted & Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, Washington 98134

Subject: Taylor Way and Alexander Ave Fill Area (TWAAFA) Site - 4thQ 2022 Groundwater Sampling Data Validation Summary
Client Project No., Task Order No.: Not Specified, Task No. 7
QA/QC Solutions, LLC Project No.: 011823.1

Dear Tasya:

This letter documents the results of the data validation summary of selected organic compounds and elements completed on groundwater samples associated with Taylor Way and Alexander Ave Fill Area (TWAAFA) Site – Fourth Quarter 2022 Sampling event located in Tacoma, Washington.

The available data were validated to verify applicable laboratory quality assurance and quality control (QA/QC) measurements were reported, documented, and of sufficient quality to support its intended purpose(s). A summary of the overall assessment of data quality, the data set, a summary of the analytical methods used to complete the chemical analyses, a summary of the data validation procedures used, and a summary of the reasons why data were qualified (including other items noted during data validation) is presented below.

Overall Assessment of Data Quality

Overall, the data reported are of good quality (with the exception of data that were rejected) and the results for the applicable QA/QC measurements that were used by the laboratories during the analysis of the samples were generally acceptable. Some sample results required qualification during data validation because method-specific QA/QC criteria were not met and/or based on best professional judgement. Data users should note that selected sample results maybe qualified for more than one reason. During data validation the following actions were taken:

- A total of 3 results reported as detected required qualification as estimated and were assigned a *J* data validation qualifier.
- A total of 44 results reported as detected required qualification as tentatively identified and estimated and were assigned a *NJ* data validation qualifier.
- A total of 35 results reported as detected required restatement as undetected and were assigned a *U* data validation qualifier,

- A total of 17 results reported as undetected (*U*) required qualification as undetected and estimated and were assigned a *UJ* data validation qualifier.
- A total of 8 results reported as undetected (*U*) required qualification as estimated with an associated negative bias and were assigned a *UJ*- data validation qualifier.
- No results required rejection (*R*).

Analytical data that did not meet method- and/or laboratory-established control limits for applicable quality control measurements or based on best professional judgment were qualified as estimated (*J, NJ, U, UJ, or UJ*-) by the laboratory or during data validation. These qualified data are usable and represent data of good quality and reasonable confidence and have an acceptable degree of uncertainty (i.e., may be less precise or less accurate than unqualified data).

Data Set

The data set consisted of 21 groundwater samples, 2 field duplicates, 2 field blanks, and 4 trip blanks that were collected in August 2022. A summary of the samples collected and analyses completed in summarized in Table 1.

Most analyses were completed by Friedman & Bruya, Inc. Environmental Chemists located in Seattle, Washington; extractable petroleum hydrocarbons (EPH) were analyzed by Fremont Analytical located in Seattle, Washington; and, volatile petroleum hydrocarbons (VPH) were analyzed by OnSite Environmental Inc. located in Redmond, Washington. The data were reported in a total of four (4) data packages and six (6) electronic data deliverable (EDDs) were submitted.

Analytical Methods

The analytical methods used to complete the chemical analyses are listed as follows and are also listed in Table 1.

- Gasoline-range petroleum hydrocarbons by purge and trap and analysis by gas chromatography/flame ionization detection (GC/FID) using the Washington Department of Ecology NWTPH-Gx method (Ecology 1997).
- Diesel- and oil-range petroleum hydrocarbons by extraction and analysis by GC/FID using the Washington Department of Ecology NWTPH-Dx (extended) method (Ecology 1997). All samples were analyzed without silica gel cleanup.
- Total metals (arsenic, cadmium, chromium, copper, lead, manganese, nickel, and zinc) by digestion and analysis by inductively coupled plasma-mass spectrometry (ICP-MS) EPA Method 6020B (U.S. EPA 2022).
- Total mercury by oxidation, purge and trap, and Cold Vapor Atomic Fluorescence Spectrometry by Method 1631, Revision E (U.S. EPA 2002a).
- Volatile organic compounds (VOCs) for 63 target analytes (including co-eluting VOCs) by purge and trap and analysis by GC/MS using U.S. EPA SW-846 Method 8260D, respectively (U.S. EPA 2022).
- 1,4- by purge and trap and analysis by GC/MS operated in the selected ion monitoring mode (SIM) using U.S. EPA SW-846 Method 8260D (U.S. EPA 2022).
- Semivolatile organic compounds (SVOCs) for 66 target analytes (including co-eluting SVOCs) and/or for 7 carcinogenic polycyclic aromatic hydrocarbons

(PAHs) by extraction and analysis by gas chromatography/mass spectrometry (GC/MS) using U.S. EPA SW-846 Method 8270E (U.S. EPA 2022). Samples were filtered prior to extraction.

- Polychlorinated biphenyls (PCBs) for nine Aroclors® mixtures by extraction and analysis by gas chromatography/electron capture detection (GC/ECD) using U.S. EPA SW-846 method 8082A (U.S. EPA 2022).
- EPH for five (5) aliphatic fractions and five (5) aromatic fractions by extraction and analysis by GC/FID using the Washington Department of Ecology Method for the Determination of Extractable Petroleum Hydrocarbons (EPH) (Ecology 1997).
- VPH for four (4) aliphatic fractions, three (3) aromatic fractions, total aliphatics, and total aromatics by extraction and analysis by GC with a photoionization detector and FID in-series using the Washington Department of Ecology Method for the Determination of Extractable Petroleum Hydrocarbons (VPH) (Ecology 1997).

Data Validation Procedures

Data validation procedures included evaluating a summary of the sample results and applicable quality control results reported by the laboratory; this level of validation is also referred to as an abbreviated data review (equivalent to "Stage 2A/2B" review per U.S. EPA 2009. The analytical data were validated generally following the applicable guidance and requirements:

- Method-specific and laboratory-established quality control requirements, as applicable.
- Guidance on Environmental Data Verification and Validation (U.S. EPA 2002b)
- Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. OSWER No. 9200.1-85. EPA 540-R-08-005. (U.S. EPA 2009).
- National Functional Guidelines for Organic Superfund Methods Data Review. OLEM 9240.0-5.1, EPA 540-R-20-005, November 2020. U.S. Environmental Protection Agency (EPA), Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. (U.S. EPA 2020a).
- National Functional Guidelines for Inorganic Data Superfund Data Review. Final. OLEM 9240.1-66, EPA 542-R-20-006, November 2020. U.S. Environmental Protection Agency (EPA), Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. (U.S. EPA 2020b).

The laboratory data deliverables that were validated and available for review included the following:

- Case narratives discussing analytical problems (if any) and procedures.
- Chain-of-custody documentation to verify completeness of the data set.
- Sample preparation logs or laboratory summary result forms to verify analytical holding times were met.
- Results for applicable method blanks, field blanks, and trip blanks to determine whether an analyte that may have been reported as detected in a sample was the result of possible contamination introduced at the laboratory, during sampling, and/or during transport of samples, respectively.

- Results for applicable surrogate compound, laboratory control sample (LCS) (i.e., blank spike), duplicate LCS, matrix spike (MS), and matrix spike duplicate (MSD) recoveries to assess analytical accuracy.
- Results for applicable laboratory duplicate sample, duplicate LCS, and MSD analyses to assess analytical precision as are applicable.
- Results for the field duplicate samples to provide additional information.
- Laboratory summaries of analytical results reported for the analyses competed.

Verification and validation of 100-percent of all applicable laboratory calculations, transcriptions, review of instrument printouts, and review of bench sheets were not completed during the data validation review. There may be analytical problems that could only be identified by reviewing every instrument printout and associated analytical quality control results. Verification of all possible factors that could result in the degradation of data quality was not completed nor should be inferred at this time. The laboratory case narratives did not indicate any significant problems with data that were not reviewed during data validation. The adequacy of the sampling procedures was not completed during the data validation.

Performance based control limits established by the laboratory, applicable control limits specified in the analytical methods, and best professional judgement were used to evaluate data quality and to determine if specific data required qualification. Data qualifiers were assigned during data validation following guidance specified by U.S. EPA (2002b, 2020a, and 2020b) to the EDD when applicable QC measurement criteria were not met and qualification of the data was warranted.

Reasons for Data Qualification

The reasons for qualification of sample results are summarized in Table 2 (Summary of Qualified Data).

General Comments:

- Data users should refer to the laboratory data packages for complete information pertinent to the analyses completed.
- Some sample results were reported from a dilution analysis that was required. In these instances, all other sample results were reported from the undiluted analysis.
- Trip blanks were not requested for analysis of 1,4-Dioxane on the chain-of-custody records
- In some instances, continuing calibration QC limits were not met. Qualification of associated sample results was not required because the exceedances were due to an increase of instrument sensitivity and the applicable target compound was not detected.
- For the analysis of metals and SVOCs, some MS/MSD recoveries and/or RPDs between the MS and MSD were outside applicable control limits. In some instances, the concentration of a spike compound was significantly greater the spike amount so a reliable recovery cannot be calculated. In these instances, the precision and accuracy of individual samples was assessed based on other quality control measurements (e.g., surrogate and LCS recoveries).
- For a few samples analyzed for SVOCs a few samples had internal standards response that were below the lower -50 percent control limit. The laboratory

correctly reanalyzed the affected samples at a higher dilution and obtained acceptable internal standard responses and these results were reported. Due to an increase of reporting limits by a factor of 10, the results reported for the undiluted samples were used in the data file.

- Batch QC data (e.g., MS/MSDs) were associated with several data packages. Results from batch QC samples are not used to determine whether sample data require qualification.
- All results reported as detected for diesel- and motor oil-range petroleum hydrocarbons (herein after referred to as DRO/RRO) were qualified as tentatively identified and estimated (*NJ*) because the sample chromatographic pattern does not resemble the fuel standard used for quantitation as noted by the laboratory. These results were qualified *NJ* during data validation based on best professional judgement and after reviewing all sample and standard chromatogram, the following reasons:
  - DRO and RRO are operational definitions that equate to a possible range of compounds that may elute within a given boiling point range. Compounds that may yield a chromatographic response may (or may not) be related to petroleum product(s); may be metabolites/degradation products of a specific petroleum product(s); may be synthetic compounds; may be naturally occurring biogenic compounds; or may be any number of non-petroleum related constituents that elute within the chromatographic range (or boiling point ranges) similar to that of diesel (e.g., fuel oil #2) and/or an oil (e.g., motor oil) petroleum product. Data users should note that a positive DRO/RRO result does not definitively mean the sample contains a diesel and/or oil product. Further, since there is not a definitive chromatographic confirmation of the DRO/RRO results reported using the referenced analytical method all results should be considered only as tentative (*N*) for use in decision making.
  - The DRO/RRO concentrations reported as detected were quantified based on the responses of chromatographic peaks representative of unweathered diesel fuel oil #2 and an unweathered 10W30 motor oil standards. The laboratory noted (and confirmed during data validation) that chromatographic patterns for samples in which DRO/RRO were reported as detected did not match the chromatographic patterns of the standards used for quantification and so flagged the affected results with an "*x*" laboratory flag. Since the concentrations reported as detected for DRO/RRO are based on mis-matched chromatographic patterns there is an inherent indeterminate bias associated with the concentration quantified and reported. Therefore, at a minimum, the DRO/RRO results reported as detected should be considered as estimated (*J*).
  - The analyses completed for DRO/RRO are obtained using a solvent extraction technique with analysis completed by gas chromatography/flame ionization detection (GC/FID) using the Washington Department of Ecology NWTPH-Dx (extended) method (Ecology 1997). It is well-known in the literature that the FID is a non-selective detector. By using a non-selective detector any compound that can ionize and elutes within the specified boiling point range equivalent to a diesel and/or oil range product (e.g., DRO/RRO) will yield a chromatographic response(s). All chromatographic

response(s) detected could be associated with a petroleum product (weathered or unweathered) but may also be due to the presence of any number of non-petroleum-related compounds (e.g., naturally occurring biogenic compounds, sulfur containing compounds; plasticizers such as various phthalate esters, organic solvents, etc.) Therefore, based on the use of a method using a single non-selective detector without the use of a confirmatory analytical method, all chromatographic interpretations based on chromatographic responses that do not directly (or closely) match a specific petroleum product are subjective and the results reported should be considered as tentatively identified (*N*) at an estimated concentration (*J*).

- Sample analyses for DRO/RRO associated with this 3rd quarter sampling event were not subjected to silica gel column cleanup. However, samples analyzed for the 1st and 2nd quarter sampling events were reported based on the use of without and with silica gel column cleanup. Silica gel cleanup, in brief, is used to remove polar metabolites and/or non-hydrocarbon components (e.g., biogenic compounds). It was noted during data validation of the previous two quarters that the concentrations of DRO/RRO on samples subjected to silica gel column cleanup were reported as mostly not detected or were at concentrations significantly lower than all of the positive results reported for samples not subjected to silica gel column cleanup. The magnitude of difference between the concentrations reported as detected vs non-detected results for samples analyzed without and with silica gel cleanup further support the qualification of all detected results as tentatively identified and estimated (*NJ*) until a confirmatory analytical technique (e.g., GCxGC-MS) is approved for use in commercial analytical laboratories.

- A total of 23 results reported as detected for chromium and/or copper were restated as undetected (*U*) due to detection in both field blanks. The average concentration of the two field blanks was used for all four (4) data sets because a field blank was not collected on each day of sampling.
- A total of 12 results reported as detected for bis(2-ethylhexyl) phthalate were restated as undetected (*U*) due to detections in the associated method blank.
- Two results reported as detected for bis(2-ethylhexyl) phthalate were qualified as estimated (*J*) because the concentration reported was greater than the detection limit, but less than the reporting limit.
- A total of 13 results reported as not detected for either di-n-butyl phthalate, butylbenzyl phthalate, and/or di-n-octyl phthalate were qualified as undetected and estimated (*UJ*). The laboratory flagged applicable results to indicate the associated calibration result(s) did not meet acceptance criterion and the result reported is considered as an estimate.
- A total of eight (8) results reported as undetected for di-n-butyl phthalate were a *UJ*- data validation qualifier because an LCS recovery of 25 percent is below lower control limit of 28 percent and the relative percent difference (RPD) between the recoveries of the LCS and LC duplicate of 21 is above the control limit of 20.
- All results reported as undetected or detected for the five (5) aliphatic fractions for one sample required qualification as estimated (*UJ or J*) because the surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit. This recovery is slightly below the lower control limit of 50 percent.

- Results were reported as a non-detect were at the applicable reporting limit, with the exception of PCBs as Aroclors® mixtures which were reported to the method detection limits as noted by the laboratory.

This concludes the data validation review. Should you have any questions regarding the information presented herein, please contact me by telephone at 503.763.6948 or by e-mail at jjmcateer@msn.com.

Cordially,

James J. Mc Ateer, Jr., BS, MRSC
Managing Member

cc: Trevor Louviere, DOF Dalton, Olmsted & Fuglevand, Inc.

Attachments

References

Ecology. 1997. Analytical methods for petroleum hydrocarbons. June 1997. Washington Department of Ecology, Olympia, WA.

U.S. EPA 2002b. Method 1631, Revision E: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry. EPA-821-R-02-019. August 2002. U.S. Environmental Protection Agency, Office of Water, Washington, DC

U.S. EPA 2002b. Guidance on Environmental Data Verification and Data Validation. EPA QA/G-8. EPA/240/R-02/004. November 2002. U.S. Environmental Protection Agency, Office of Environmental Information, Washington DC.

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Table 1. Summary of Samples Collected and Analyses Completed

Sample Number	Laboratory ID	Date Collected	Time Collected	Gasoline-Range Hydrocarbons by WDOE NWTPH-Gx	Diesel- and Oil-Range Hydrocarbons by WDOE NWTPH-Dx, ext. w/o silica gel	Metals by SW-846 6020B	Total Mercury by 1631E	1,4-Dioxane by SW-846 8260D-SIM	VOCs by SW-846 8260D	SVOCs by SW-846 8270E*	PCBs by SW-846 8082A	EPH by WDOE EPH	VPH by WDOE VPH
F&BI 212077													
TRIP BLANK 1-1222	212077-01	12/6/22	10:20	-	-	-	-	-	✓	-	-	-	-
TWA-4D-1222	212077-02	12/6/22	10:45	-	✓	✓	✓	-	✓	-	-	-	-
TWA-7D-1222	212077-03	12/6/22	12:05	-	✓	✓	✓	-	✓	-	-	-	-
F&BI 212108													
TWA-9D-1222	212108-01	12/6/22	13:45	✓	✓	✓	✓	✓	✓	✓	✓	-	-
TRIP BLANK 2-1222	212108-02	12/6/22	14:15	✓	-	-	-	-	-	-	-	-	-
CCW-2A-1222	212108-03	12/7/22	09:20	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-2B-1222	212108-04	12/7/22	10:40	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-2C-1222	212108-05	12/7/22	11:40	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-3C-1222	212108-06	12/7/22	12:45	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-3B-1222	212108-07	12/7/22	13:35	✓	✓	✓	✓	✓	✓	✓	✓	-	-
F&BI 212147													
CCW-3A-1222	212147-01	12/7/22	14:35	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRIP BLANK 3-1222	212147-02	12/7/22	14:45	✓	-	-	-	-	-	-	-	-	-
CCW-6B-1222	212147-03	12/8/22	09:15	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-9-6B-1222	212147-04	12/8/22	09:20	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-6C-1222	212147-05	12/8/22	10:45	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-3C-1222	212108-06	12/7/22	10:40	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-7B-1222	212147-07	12/8/22	12:00	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-7C-1222	212147-08	12/8/22	13:00	✓	✓	✓	✓	✓	✓	✓	✓	-	-
F&BI 212176													
CCW-5B-1222	212176-01	12/8/22	!4:25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CCW-9-5B-1222	212176-02	12/8/22	14:30	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TRIP BLANK 4-1222	212176-03	12/8/22	14:40	✓	-	-	-	-	-	-	-	-	-
CCW-5C-1222	212176-04	12/8/22	15:50	✓	✓	✓	✓	✓	✓	✓	✓	-	-
FIELD BLANK 2-1222	212176-05	12/8/22	16:00	✓	✓	✓	✓	✓	✓	✓	✓	-	-
MW-4-1222	212176-06	12/9/22	08:45	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-1B-1222	212176-07	12/9/22	10:55	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-1C-1222	212176-08	12/9/22	11:40	✓	✓	✓	✓	✓	✓	✓	✓	-	-
CCW-8B-1222	212176-09	12/9/22	12:55	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CCW-4C-1222	212176-10	12/9/22	14:00	✓	✓	✓	✓	✓	✓	✓	✓	-	-
TWA-8D-1222	212176-11	12/9/22	15:15	✓	✓	✓	✓	✓	✓	✓	✓	-	-
Notes		Number of Samples:		26	25	25	25	23	26	23	23	4	4

Dx - diesel-range and oil-range hydrocarbons
EPH - extractable petroleum hydrocarbons
Gx - gasoline-range hydrocarbons
NWTPH - Northwest Total Petroleum Hydrocarbons
PCBs - polychlorinated biphenyls
SIM - selected ion monitoring
SVOC - semivolatile organic compound
VOC - volatile organic compound
VPH - volatile petroleum hydrocarbons
WDOE - Washington Department of Ecology
w/o SG = without silica gel cleanup

* - samples for 8270E analyses were filtered at the laboratory

Table 2. Summary of Qualified Data

Sample ID	Laboratory ID	Chemical	Concentration	Units	DL	RL	Lab Qualifier	Final DV Qualifier	Reason for Qualification
Diesel-Range Extended Hydrocarbons w/o SG									
TWA-9D-1222	212108-01	Diesel Range Organics	370	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	380	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-2A-1222	212108-03	Diesel Range Organics	3800	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	1400	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-2B-1222	212108-04	Diesel Range Organics	6000	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	3200	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-2C-1222	212108-05	Diesel Range Organics	960	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	1100	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-3C-1222	212108-06	Diesel Range Organics	1500	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	1500	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-3B-1222	212108-07	Diesel Range Organics	5200	ug/L	48	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	5100	ug/L	44	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-3A-1222	212147-01	Diesel Range Organics	6300	ug/L	6.4	20	None assigned	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	4100	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-6B-1222	212147-03	Diesel Range Organics	520	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	380	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used

Table 2. Summary of Qualified Data

Sample ID	Laboratory ID	Chemical	Concentration	Units	DL	RL	Lab Qualifier	Final DV Qualifier	Reason for Qualification
CCW-9-6B-1222	212147-04	Diesel Range Organics	530	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	400	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-6C-1222	212147-05	Diesel Range Organics	650	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	530	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
FIELD BLANK 1-1222	212147-06	Diesel Range Organics	64	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-7B-1222	212147-07	Diesel Range Organics	1100	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	430	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-7C-1222	212147-08	Diesel Range Organics	450	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	430	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-5B-1222	212176-01	Diesel Range Organics	1300	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	660	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-9-5B-1222	212176-02	Diesel Range Organics	1400	ug/L	7.7	24	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	770	ug/L	19	120	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-5C-1222	212176-04	Diesel Range Organics	1500	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	720	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
FIELD BLANK 2-1222	212176-05	Diesel Range Organics	63	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used

Table 2. Summary of Qualified Data

Sample ID	Laboratory ID	Chemical	Concentration	Units	DL	RL	Lab Qualifier	Final DV Qualifier	Reason for Qualification
MW-4-1222	212176-06	Diesel Range Organics	5800	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	4300	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-1B-1222	212176-07	Diesel Range Organics	510	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	450	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-1C-1222	212176-08	Diesel Range Organics	640	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	590	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-8B-1222	212176-09	Diesel Range Organics	2100	ug/L	7.7	24	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	1200	ug/L	19	120	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
CCW-4C-1222	212176-10	Diesel Range Organics	860	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	730	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
TWA-8D-1222	212176-11	Diesel Range Organics	120	ug/L	6.4	20	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
		Lube Oil	110	ug/L	16	100	x	NJ	The sample chromatographic pattern does not resemble the fuel standard used for quantitation; please see data validation summary for additional detailed information regarding best professional judgement used
Metals									
TWA-4D-1222	212077-02	Chromium	1.62	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
		Copper	4.08	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
TWA-7D-1222	212077-03	Chromium	1.46	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
		Copper	3.44	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
TWA-9D-1222	212108-01	Chromium	5.61	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
		Copper	4.26	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-2A-1222	212108-03	Copper	3.45	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-2B-1222	212108-04	Copper	2.43	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-2C-1222	212108-05	Chromium	2.06	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
CCW-3C-1222	212108-06	Chromium	2.79	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L

Table 2. Summary of Qualified Data

Sample ID	Laboratory ID	Chemical	Concentration	Units	DL	RL	Lab Qualifier	Final DV Qualifier	Reason for Qualification
CCW-3A-1222	212147-01	Chromium	2.11	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
		Copper	2.43	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-6B-1222	212147-03	Chromium	1.46	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
CCW-9-6B-1222	212147-04	Chromium	1.46	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
CCW-6C-1222	212147-05	Copper	2.43	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-7B-1222	212147-07	Chromium	1.46	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
		Copper	9.83	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-7C-1222	212147-08	Chromium	7.04	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
CCW-5B-1222	212176-01	Copper	3.3	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-9-5B-1222	212176-02	Copper	3.41	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-5C-1222	212176-04	Chromium	3.08	ug/L	0.28	1		U	Element detected in both field blanks at average concentration of 1.46 ug/L
MW-4-1222	212176-06	Copper	3.81	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
CCW-1B-1222	212176-07	Copper	1.21	ug/L	0.16	5		U	Element detected in both field blanks at average concentration of 2.43 ug/L
Semivolatile Organic Compounds									
TWA-9D-1222	212108-01	Bis(2-ethylhexyl) phthalate	0.48	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-2A-1222	212108-03	Bis(2-ethylhexyl) phthalate	0.45	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-2B-1222	212108-04	Bis(2-ethylhexyl) phthalate	0.48	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-2C-1222	212108-05	Bis(2-ethylhexyl) phthalate	1.5	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-3C-1222	212108-06	Bis(2-ethylhexyl) phthalate	0.44	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-3B-1222	212108-07	Bis(2-ethylhexyl) phthalate	0.63	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.35 ug/L
CCW-9-6B-1222	212147-04	Di-n-butyl phthalate	1	ug/L	0.34	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Butylbenzyl phthalate	1	ug/L	0.13	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Di-n-octyl phthalate	1	ug/L	0.18	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
CCW-9-6B-1222	212147-04	Bis(2-ethylhexyl) phthalate	0.4	ug/L	0.31	1.6	j fb	J	Concentration >DL, <RL
CCW-6C-1222	212147-05	Di-n-butyl phthalate	1	ug/L	0.34	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Butylbenzyl phthalate	1	ug/L	0.13	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
FIELD BLANK 1-1222	212147-06	Butylbenzyl phthalate	1	ug/L	0.13	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
CCW-7B-1222	212147-07	Di-n-butyl phthalate	1	ug/L	0.34	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Butylbenzyl phthalate	1	ug/L	0.13	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Di-n-octyl phthalate	1	ug/L	0.18	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Bis(2-ethylhexyl) phthalate	0.4	ug/L	0.31	1.6	j fb	J	Concentration >DL, <RL

Table 2. Summary of Qualified Data

Sample ID	Laboratory ID	Chemical	Concentration	Units	DL	RL	Lab Qualifier	Final DV Qualifier	Reason for Qualification
CCW-7C-1222	212147-08	Di-n-butyl phthalate	1	ug/L	0.34	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Butylbenzyl phthalate	1	ug/L	0.13	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
		Di-n-octyl phthalate	1	ug/L	0.18	1	U, ca	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and result is an estimate
CCW-5B-1222	212176-01	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
		Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
CCW-9-5B-1222	212176-02	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
		Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
CCW-5C-1222	212176-04	Di-n-butyl phthalate	1	ug/L	0.075	1	jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
		Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
FIELD BLANK 2-1222	212176-05	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
MW-4-1222	212176-06	Di-n-butyl phthalate	10	ug/L	3.4	10	ca jl	UJ	Laboratory flagged result to indicate associated calibration result(s) did not meet acceptance criterion and is an result is an estimate
CCW-1B-1222	212176-07	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
CCW-1C-1222	212176-08	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
CCW-8B-1222	212176-09	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
CCW-4C-1222	212176-10	Di-n-butyl phthalate	1	ug/L	0.075	1	U, jl	UJ-	LCS recovery of 25% below lower control limit of 28% and RPD of 21 is above control limit of 20
CCW-1C-1222	212176-08	Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
CCW-4C-1222	212176-10	Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
TWA-8D-1222	212176-11	Bis(2-ethylhexyl) phthalate	0.85	ug/L	0.24	1.6	j fb	U	Detected in associated method blank at 0.85 ug/L
EPH									
CCW-3A-1222		EPH >C10-C12 Aliphatics	39.6	ug/L	20.4	39.6	U	UJ	Surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit
		EPH >C12-C16 Aliphatics	39.6	ug/L	9.75	39.6	U	UJ	Surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit
		EPH >C16-C21 Aliphatics	39.6	ug/L	14.1	39.6	U	UJ	Surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit
		EPH >C21-C34 Aliphatics	163	ug/L	22.4	39.6		J	Surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit
		EPH >C8-C10 Aliphatics	79.1	ug/L	39.2	79.1	U	UJ	Surrogate recovery of 44.8% for o-Terphenyl (used for aliphatic fraction) below lower control limit

Data Validation Assigned Data Qualifiers and Definitions

ca =the calibration result for this analyte was outside applicable control limit and value reported is an estimate
DL = detection limit
fb = detected in method blank (lab assigned)
j = estimated (lab assigned)
jl = applicable control limit for LCS not met (lab assigned)
J = estimated
J+= estimated with positive bias
J- = estimated with negative bias
LCS/LCS dup = laboratory control sample/laboratory control sample duplicate
NJ = tentatively identified and estimated
R = rejected
RPD = relative percent difference
RL = reporting limit
UJ = result restated as undetected at value shown
UJ- = undetected at value shown and estimated with negative bias
w/o SG = without silica gel cleanup
x = The sample chromatographic pattern does not resemble the fuel standard used for quantitation

Total results qualified "J" =	3
Total results qualified "J+" =	0
Total results qualified "J-" =	0
Total results qualified "NJ" =	44
Total results qualified "NJ+" =	0
Total results qualified "UJ" =	17
Total results qualified "UJ+" =	0
Total results qualified "UJ-" =	8
Total results qualified "U" =	35
Total results qualified "R" =	0

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. M0615.20.007 | JANUARY 23, 2023 | PORT OF TACOMA

Maul Foster & Alongi, Inc. (MFA), conducted an independent review of the quality of analytical results for groundwater and associated quality control samples collected on December 5 and 6, 2022, at the Taylor Way and Alexander Avenue Fill Area in Tacoma, Washington.

Friedman & Bruya, Inc. (FBI), performed the analyses. MFA reviewed FBI report numbers 212076 and 212106. Portions of some samples were subcontracted by FBI to Fremont Analytical, Inc. (Fremont), for extractable petroleum hydrocarbons (EPH) analysis, and OnSite Environmental Inc. (OE) for volatile petroleum hydrocarbons (VPH) analysis. The subcontracted laboratory reports are appended to the FBI reports. The analyses performed and the samples analyzed are listed in the following tables. Not all analyses were performed on all samples.

Analysis	References
Diesel- and motor oil-range hydrocarbons	NWTPH-Dx
1,4-Dioxane	EPA 8260D-SIM
Extractable petroleum hydrocarbons	NWTPH-EPH
Gasoline-range hydrocarbons	NWTPH-Gx
Polychlorinated biphenyls as Aroclors	EPA 8082A
Semivolatile organic compounds	EPA 8270E
Total metals	EPA 6020B
Total mercury	EPA 1631E
Volatile organic compounds	EPA 8260D
Volatile petroleum hydrocarbons	NWTPH-VPH, EPA 8021B

Notes
EPA = U.S. Environmental Protection Agency.
EPH = extractable petroleum hydrocarbons.
NWTPH = Northwest Total Petroleum Hydrocarbons.
SIM = selected ion monitoring.
VPH = volatile petroleum hydrocarbons.

Samples Analyzed		
Report 212076		**Report 212106**
TWA-1-1222[a][b]	SB-2A-1222	TWA-5D-1222[d]
TWA-1-1222[c]	FieldBlank1-1222	TWA-6D-1222[d]
TWA-2-1222	TripBlank1-1222	MW-1-1222[d]
TWA-3-1222	SB-1A-1222	MW-9-1-1222[d]
TWA-10D-1222	SB-3A-1222	Trip Blank2-1222

Notes
[a]Sample fraction collected on December 5, 2022.
[b]Sample also analyzed in Fremont report 2212147 and OE report 2212-068.
[c]Sample fraction collected on December 6, 2022.
[d]Sample also analyzed in Fremont report 2212180 and OE report 2212-083.

DATA QUALIFICATION

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020a, 2020b) and appropriate laboratory- and method-specific guidelines (EPA 1986, FBI 2022, Fremont 2020, OE 2022).

Data validation procedures were modified, as appropriate, to accommodate quality control requirements for methods that EPA data review procedures do not specifically address (e.g., Northwest Total Petroleum Hydrocarbons [NWTPH]-Dx).

Based on the results of the data quality review procedures described below, the data, with the appropriate final data qualifiers assigned, are considered acceptable for their intended use. Final data qualifiers represent qualifiers originating from the laboratory and accepted by the reviewer, and data qualifiers assigned by the reviewer during validation.

Final data qualifiers:

- J = result is estimated.
- J+ = result is estimated, but the result may be biased high.
- J- = result is estimated, but the result may be biased low.
- U = result is non-detect at the method reporting limit (MRL).
- UJ = result is non-detect with an estimated detection limit or reporting limit.

According to reports 212076 and 212106, all detected NWTPH-Dx diesel-range and motor oil-range hydrocarbons results, except the diesel-range hydrocarbons results for samples MW-1-1222 and MW-9-1-1222, were flagged by the laboratory because the sample chromatographic patterns did not resemble the fuel standards used for quantitation. These results were reported as diesel-range and/or motor oil-range hydrocarbons instead of specific fuel products; thus, qualification was not required. The laboratory note will be retained and provided along with the detected diesel- and motor-oil-range analytical results.

According to reports 212076 and 212106, all field samples and the associated laboratory method blank were filtered in the laboratory prior to analysis by EPA Method 8270E. The reviewer confirmed with the laboratory that the remaining batch quality control results were also filtered, and that filtration for EPA Method 8270E analysis is necessary for the samples in this project.

SAMPLE CONDITIONS

Sample Custody

In reports 212076 and 212106, the subcontracted Fremont chain-of-custody forms show gaps of several hours between relinquishment by FBI and receipt by Fremont, while the sample login checklists accompanying the subcontracted reports indicate that samples were delivered directly by the client. The reviewer confirmed with the laboratory that the gap in custody is due to the no-contact drop-off protocol at Fremont, and that samples were dropped off by an FBI courier in a secure sample receipt location at Fremont.

Sample custody was appropriately documented on the remaining chain-of-custody forms accompanying the reports.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

REPORTING LIMITS

The laboratories evaluated results to MRLs, except where noted below. Samples that required dilutions because of high analyte concentrations, matrix interferences, and/or dilutions necessary for preparation and/or analysis were reported with raised MRLs.

The reviewer confirmed with the laboratory that NWTPH-Dx MRLs for FieldBlank1-1222 were raised due to the low sample volume in the container.

The reviewer confirmed that when samples were diluted for analysis or when a higher sample volume was used for the extraction, FBI provided the preparation or dilution factor after the laboratory sample identification number (e.g., 212076-04 x5 indicates a dilution factor of 5).

FBI reported EPA Method 82170E bis(2-ethylhexyl) phthalate results and all EPA Method 8082A results to method detection limits (MDLs). Results between the MDL and the MRL were qualified by FBI with J, as estimated.

In reports 212076 and 212106, FBI noted that all EPA Method 8082A MDLs are considered estimates. All sample results were non-detect, and the reviewer qualified the results with UJ, as shown in the following table.

Report	Samples	Analysis	Original Results	Qualification
212076	All	EPA 8082A	Non-detect	UJ
212106				

Notes
EPA = U.S. Environmental Protection Agency
UJ = result is non-detect with an estimated detection limit.

BLANKS

Field quality control sample results may be qualified as a result of laboratory instrument or batch information, but original or unvalidated laboratory field quality control sample results are used to assess potential contamination of associated field sample results.

Where an analyte was detected in both a sample and its associated blank, sample results were qualified if the concentration was less than five times the blank concentration for organics and less than ten times the blank concentration for inorganics. Non-detect sample results did not require qualification.

Initial Calibration Blanks

Initial calibration blanks (ICBs) are used to assess analytical background contamination. Fremont reported ICB results for NWTPH-EPH; ICB results were reviewed when provided.

All ICB results were non-detect.

Method Blanks

Laboratory method blanks are used to assess whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the laboratory method blanks were associated with all samples prepared in the analytical batch.

In reports 212076 and 212106, FBI flagged some EPA Method 8270E phenanthrene and bis(2-ethylhexyl)phthalate results for being associated with a method blank detection. The laboratory method blanks were reported as non-detect for both these analytes. The reviewer confirmed with the laboratory that these analytes were detected in the laboratory method blanks below MDLs or MRLs and within ten times the reported value of the flagged samples. Based on the laboratory flags, the reviewer qualified phenanthrene sample results and the bis(2-ethylhexyl)phthalate result in the field blank, as shown in the following table. The reviewer confirmed with the laboratory that the bis(2-ethylhexyl)phthalate MRL is 1.6 micrograms per liter (ug/L). The sample results were evaluated and qualified for bis(2-ethylhexyl)phthalate based on the original field blank detection, as shown in the Field Blanks section below.

Report	Sample	Analyte	Method Blank Result	Original Result (ug/L)	Qualified Result (ug/L)
212076	TWA-1-1222[(a)]	Phenanthrene	<MRL	0.024	0.024 J+
	TWA-3-1222			0.010	0.010 J+
	TWA-10D-1222			0.014	0.014 J+
	SB-2A-1222			0.012	0.012 J+
	SB-1A-1222			0.058	0.058 J+
	SB-3A-1222			0.012	0.012 J+
	FieldBlank1-1222	Bis(2-ethylhexyl) phthalate	<MRL	0.45 J	1.6 U
212106	TWA-5D-1222	Phenanthrene	<MRL	0.054	0.054 J+

Notes
J = result is estimated.
J+ = result is estimated, but the result may be biased high.
MRL = method reporting limit.
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
[(a)]TWA-1-1222 fraction collected on December 5, 2022.

All remaining laboratory method blank results were non-detect.

Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate field equipment decontamination. These blanks were not required for this sampling event, as all samples were collected using dedicated, single-use equipment.

Trip Blanks

Trip blanks are used to evaluate whether volatile organic compound contamination was introduced during sample storage and during shipment between the sampling location and the laboratory.

Trip blanks (TripBlank1-1222 in report 212076 and Trip Blank2-1222 in report 212106) were submitted with both sample delivery groups for NWTPH-Gx and EPA Method 8260D analysis. Each trip blank is associated with the sample results in each respective report, because samples in each sample delivery group were packed in coolers and shipped together.

The trip blanks were non-detect to MRLs for all target analytes.

Field Blanks

Field blanks are used to evaluate contamination from the field.

One field blank (FieldBlank1-1222) was submitted with sample delivery group 212076. The field blank is associated with all sample results in reports 212076 and 212106, because all aqueous samples, including the field blank sample, were collected using consistent sampling protocols.

According to report 212076, FieldBlank1-1222 had EPA Method 6020B total chromium, total copper, and total manganese detections above MRLs, at concentrations of 1.53 ug/L, 1.48 ug/L, and 1.87 ug/L, respectively. Associated sample results less than ten times the field blank concentration were qualified by the reviewer, as shown in the following table.

Report	Sample	Analyte	Field Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
212076	TWA-1-1222[a]	Total copper	1.48	3.40	3.40 J+
	TWA-2-1222			5.48	5.48 J+
	TWA-3-1222			8.28	8.28 J+
	SB-1A-1222			3.45	3.45 J+
212106	TWA-5D-1222	Total chromium	1.53	6.02	6.02 J+
	MW-1-1222			1.00	1.00 J+
	MW-9-1-1222[b]			1.07	1.07 J+
	TWA-5D-1222	Total copper	1.48	2.82	2.82 J+
	TWA-6D-1222			3.95	3.95 J+
	MW-1-1222			3.95	3.95 J+
	MW-9-1-1222[b]			3.43	3.43 J+

Notes
J+ = result is estimated, but the result may be biased high.
ug/L = micrograms per liter.
[a]TWA-1-1222 fraction collected on December 6, 2022.
[b]Field duplicate of MW-1-1222.

According to report 212076, FieldBlank1-1222 had an EPA Method 8260D methylene chloride detection, at a concentration of 19 ug/L. The laboratory noted that this was likely due to laboratory contamination. Methylene chloride is a common laboratory contaminant. All associated sample results were non-detect for methylene chloride; thus, qualification was not required.

According to report 212076, FieldBlank1-1222 had an EPA Method 8270E bis(2-ethylhexyl)phthalate detection between the MDL and the MRL, at a concentration of 0.45 ug/L. The reviewer confirmed with the laboratory that the bis(2-ethylhexyl)phthalate MRL is 1.6 ug/L. The laboratory noted that this analyte was associated with a method blank detection, which the reviewer confirmed was below the MDL. Associated sample results detected between the MDL and the MRL were qualified by the reviewer as non-detect at the MRL, as shown in the following table. The associated result for TWA-6D-1222 was greater than five times the concentration in the field blank and thus did not require qualification. The laboratory noted that the analyte is a common laboratory and field contaminant.

Report	Sample	Analyte	Field Blank Result (ug/L)	Original Result (ug/L)	Qualified Result (ug/L)
212076	TWA-1-1222[a]	Bis(2-ethylhexyl)phthalate	0.45 J	1.2 J	1.6 U
	TWA-2-1222			0.80 J	1.6 U
	TWA-3-1222			0.64 J	1.6 U
	TWA-10D-1222			0.43 J	1.6 U
	SB-2A-1222			0.51 J	1.6 U
	SB-1A-1222			0.93 J	1.6 U
	SB-3A-1222			0.58 J	1.6 U
212106	TWA-5D-1222			0.83 J	1.6 U
	MW-1-1222			0.80 J	1.6 U
	MW-9-1-1222[b]			0.67 J	1.6 U

Notes
J = result is estimated.
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
[a]TWA-1-1222 fraction collected on December 5, 2022.
[b]Field duplicate of MW-1-1222.

All remaining field blank results were non-detect.

LABORATORY CONTROL SAMPLE AND LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample (LCS) and a laboratory control sample duplicate (LCSD) are spiked with target analytes to provide information about laboratory precision and accuracy.

Where LCSDs were not reported, laboratory precision was evaluated using matrix spike (MS) and matrix spike duplicate (MSD) results. The LCS and the LCSD were prepared and analyzed at the required frequency.

According to reports 212076 and 212106, the NWTPH-EPH batch 38803 LCS and LCSD results for C8–C10 aromatic hydrocarbons and C12–C16 aromatic hydrocarbons had passing recoveries but relative percent differences (RPDs) above the acceptance criteria of 20 percent, at 29.6 percent and 28.5 percent, respectively. The reviewer qualified associated detected sample results, as shown in the following table. A result that is associated with multiple quality control issues is indicated below. The remaining associated sample results were non-detect and thus did not require qualification.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212106	MW-1-1222	C12–C16 Aromatic hydrocarbons	96.2	96.2 J
	MW-9-1-1222[a]		97.6	97.6 J[b]

Notes
J = result is estimated.
ug/L = micrograms per liter.
[a]Field duplicate of MW-1-1222.
[b]Final qualification based on surrogate recovery and laboratory control sample/laboratory control sample duplicate relative percent difference result.

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

LABORATORY DUPLICATE RESULTS

Laboratory duplicate results are used to evaluate laboratory precision.

Laboratory duplicate results were not reported; laboratory precision was evaluated using LCS and LCSD or MS and MSD results.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RESULTS

MS and MSD results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and analysis.

Where MS or MSD results were not reported, laboratory precision and accuracy were evaluated using LCS and/or LCSD results. In reports 212076 and 212106, FBI did not report LCSD or MSD for EPA Method 8270E, so no measurement of precision was provided for this method. The reviewer confirmed with the laboratory that there was no MSD for EPA Method 8270E due to insufficient sample volume during a necessary re-extraction; the MFA project manager approved MS analysis with no associated MSD.

All remaining MS and MSD samples were prepared and analyzed at the required frequency.

When MS and MSD were prepared from samples with high concentrations of target analytes, associated MS and/or MSD percent recovery and/or RPD control limit exceedances did not require qualification because spike concentrations could not be accurately quantified. High concentrations of target analytes are defined as four times the spike amount for all analyses.

When MS and MSD were prepared with samples from unrelated projects, the MS and/or MSD percent recovery and/or RPD control limit exceedances did not require qualification because these sample matrices were not representative of project sample matrices.

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

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance for individual samples for organic analyses.

The laboratory appropriately documented and qualified surrogate outliers. When surrogate percent recoveries were outside of acceptance limits because of dilutions necessary to quantify high concentrations of target analytes, qualification by the reviewer was not required. The reviewer confirmed that batch quality control results for samples with surrogate outliers were within acceptance limits.

According to report 212106, the NWTPH-Dx surrogate results for TWA-6D-1222 and MW-9-1-1222 were outside percent recovery acceptance limits. The reviewer confirmed with the laboratory that the o-terphenyl result for sample TWA-6D-1222 recovered low at 35 percent, and the o-terphenyl result for sample MW-9-1-1222 recovered high at 168 percent. The reviewer qualified the associated sample results, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212106	TWA-6D-1222	Diesel-range hydrocarbons	600	600 J-
		Motor-oil-range hydrocarbons	660	660 J-
	MW-9-1-1222[(a)]	Diesel-range hydrocarbons	20,000	20,000 J+
		Motor-oil-range hydrocarbons	6,700	6,700 J+

Notes
J+ = result is estimated, but the result may be biased high.
J- = result is estimated, but the result may be biased low.
ug/L = micrograms per liter.
[(a)]Field duplicate of MW-1-1222.

According to report 212106, the NWTPH-EPH 1-chlorooctadecane and o-terphenyl surrogate results for samples TWA-5D-1222 and TWA-6D-1222 were below the lower percent recovery acceptance limit of 50 percent, ranging from 15.3 percent to 49.2 percent. The 1-chlorooctadecane surrogate result for sample MW-9-1-1222 was also below the lower percent recovery acceptance limit, at 43.9 percent. The reviewer qualified all associated sample results, as shown in the following table. Results associated with multiple quality control issues are indicated below. Where detected results were associated with low surrogate recoveries and high LCS and LCSD RPD results, final qualification by the reviewer is J.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212106	TWA-5D-1222	C8–10 Aliphatic hydrocarbons	78.5 U	78.5 UJ
		C10–C12 Aliphatic hydrocarbons	39.3 U	39.3 UJ
		C12–C16 Aliphatic hydrocarbons	39.3 U	39.3 UJ

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212106	TWA-5D-1222	C16–C21 Aliphatic hydrocarbons	39.3 U	39.3 UJ
		C21–C34 Aliphatic hydrocarbons	39.3 U	39.3 UJ
	TWA-5D-1222	C8–C10 Aromatic hydrocarbons	78.5 U	78.5 UJ
		C10–C12 Aromatic hydrocarbons	39.3 U	39.3 UJ
		C12–C16 Aromatic hydrocarbons	39.3 U	39.3 UJ
		C16–C21 Aromatic hydrocarbons	39.3 U	39.3 UJ[a]
		C21–C34 Aromatic hydrocarbons	39.3 U	39.3 UJ
	TWA-6D-1222	C8–10 Aliphatic hydrocarbons	90.4 U	90.4 UJ
		C10–C12 Aliphatic hydrocarbons	45.2 U	45.2 UJ
		C12–C16 Aliphatic hydrocarbons	45.2 U	45.2 UJ
		C16–C21 Aliphatic hydrocarbons	45.2 U	45.2 UJ
		C21–C34 Aliphatic hydrocarbons	45.2 U	45.2 UJ
		C8–C10 Aromatic hydrocarbons	90.4 U	90.4 UJ
		C10–C12 Aromatic hydrocarbons	45.2 U	45.2 UJ
		C12–C16 Aromatic hydrocarbons	45.2 U	45.2 UJ
		C16–C21 Aromatic hydrocarbons	45.2 U	45.2 UJ[a]
		C21–C34 Aromatic hydrocarbons	45.2 U	45.2 UJ
	MW-9-1-1222[b]	C8–10 Aliphatic hydrocarbons	79.3 U	79.3 UJ
		C10–C12 Aliphatic hydrocarbons	39.6 U	39.6 UJ
		C12–C16 Aliphatic hydrocarbons	177	177 J-
		C16–C21 Aliphatic hydrocarbons	111	111 J-
		C21–C34 Aliphatic hydrocarbons	39.6 U	39.6 UJ[c]
		C8–C10 Aromatic hydrocarbons	79.3 U	79.3 UJ
		C10–C12 Aromatic hydrocarbons	39.6 U	39.6 UJ
		C12–C16 Aromatic hydrocarbons	97.6	97.6 J[d]
		C16–C21 Aromatic hydrocarbons	236	236 J-[a]
		C21–C34 Aromatic hydrocarbons	291	291 J-

Notes
J = result is estimated.
J- = result is estimated, but the result may be biased low.
RPD = relative percent difference.
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect with an estimated reporting limit.
[a]Final qualification based on surrogate recovery and continuing calibration verification result.
[b]Field duplicate of MW-1-1222.
[c]Final qualification based on surrogate recovery and field duplicate RPD result.
[d]Final qualification based on surrogate recovery and laboratory control sample and laboratory control sample duplicate RPD result.

All remaining surrogate results were within percent recovery acceptance limits.

CALIBRATION VERIFICATION RESULTS

Initial calibration verification (ICV) results are used to verify the accuracy of the instrument calibration. Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch.

Fremont reported ICV and CCV results in both reports for NWTPH-EPH; ICV and CCV results were reviewed when provided. OnSite reported CCV results in report 212106 for NWTPH-VPH. FBI did not report calibration results, but appropriately flagged results associated with calibration exceedances.

Surrogate or batch quality control results flagged by the laboratory based on CCV exceedances but meeting percent recovery and/or RPD acceptance criteria required no action from the reviewer.

In report 212076, FBI noted that the EPA Method 8260D calibration results for acetone were outside acceptance criteria and associated values are considered estimates. The associated sample result was qualified by the reviewer, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212076	TWA-1-1222[(a)]	Acetone	50 U	50 UJ

Notes
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect with an estimated reporting limit.
[(a)]TWA-1-1222 fraction collected on December 5, 2022.

In report 212076, FBI noted that the EPA Method 8270E calibration results for di-n-butyl phthalate, benzyl butyl phthalate, and di-n-octyl phthalate were outside acceptance criteria and associated values are considered estimates. The associated sample results were qualified by the reviewer, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212076	SB-1A-1222	Di-n-butyl phthalate	1 U	1 UJ
		Benzyl butyl phthalate	1 U	1 UJ
		Di-n-octyl phthalate	1 U	1 UJ

Notes
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect with an estimated reporting limit.

According to reports 212076 and 212106, NWTPH-EPH batch 38803 had multiple CCVs that were above the percent recovery acceptance limit of 120 percent for C8–C10 aliphatic hydrocarbons, C10–C12 aliphatic hydrocarbons, and C8–C10 aromatic hydrocarbons, ranging

from 123 percent to 131 percent. The associated sample results were non-detect; thus, qualification was not required.

According to reports 212076 and 212106, the NWTPH-EPH batch 38803 CCV (ARO-CCV-38803B) result for C16–C21 aromatic hydrocarbons was below the lower percent recovery acceptance limit of 80 percent, at 73.3 percent. Fremont noted that the associated results may be biased low. The reviewer qualified the associated sample results, as shown in the following table. Results associated with multiple quality control issues are indicated below.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212076	TWA-1-1222[a]	C16–C21 Aromatic hydrocarbons	40.2	40.2 J-
212106	TWA-5D-1222		39.3 U	39.3 UJ[b]
	TWA-6D-1222		45.2 U	45.2 UJ[b]
	MW-1-1222		285	285 J-
	MW-9-1-1222[c]		236	236 J-[b]

Notes
J- = result is estimated, but the result may be biased low.
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect with an estimated reporting limit.
[a]TWA-1-1222 fraction collected on December 5, 2022.
[b]Final qualification based on surrogate recovery and continuing calibration verification result.
[c]Field duplicate of MW-1-1222.

In report 212106, FBI noted that the EPA Method 8270E calibration results for hexachlorocyclopentadiene and 2,4-dinitrophenol were outside acceptance criteria and associated values are considered estimates. The associated sample results were qualified by the reviewer, as shown in the following table.

Report	Sample	Analyte	Original Result (ug/L)	Qualified Result (ug/L)
212106	TWA-5D-1222	Hexachlorocyclopentadiene	0.3 U	0.3 UJ
		2,4-Dinitrophenol	3 U	3 UJ
	TWA-6D-1222	Hexachlorocyclopentadiene	0.3 U	0.3 UJ
		2,4-Dinitrophenol	3 U	3 UJ
	MW-1-1222	Hexachlorocyclopentadiene	0.3 U	0.3 UJ
		2,4-Dinitrophenol	3 U	3 UJ
	MW-9-1-1222[a]	Hexachlorocyclopentadiene	0.3 U	0.3 UJ
		2,4-Dinitrophenol	3 U	3 UJ

Notes
U = result is non-detect at the method reporting limit.
ug/L = micrograms per liter.
UJ = result is non-detect with an estimated reporting limit.
[a]Field duplicate of MW-1-1222.

The remaining NWTPH-EPH ICV and CCV results were within percent recovery acceptance limits.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. The following field duplicate and parent sample pair was submitted for analysis:

Report	Parent Sample	Field Duplicate Sample
212106	MW-1-1222	MW-9-1-1222

MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL or 50 percent RPD for results that are greater than five times the MRL. RPD was not evaluated when both results in the sample pair were non-detect. When one result in the sample pair was non-detect, RPD was evaluated using the MRL of the non-detect result. Field duplicate results that exceeded the acceptance criteria were qualified by the reviewer, as shown in the following table. A result that is associated with multiple quality control issues is indicated below.

Report	Sample	Analysis	Analyte	RPD (%)	Original Result (ug/L)	Qualified Result (ug/L)
212106	MW-1-1222	EPA 8270E	Phenanthrene	170	0.12	0.12 J
	MW-9-1-1222				0.01 U	0.01 UJ
	MW-1-1222		Anthracene	160	0.093	0.093 J
	MW-9-1-1222				0.01 U	0.01 UJ
	MW-1-1222	NWTPH-EPH	C21–C34 Aliphatic hydrocarbons	130	200	200 J
	MW-9-1-1222				39.6 U	39.6 UJ[(a)]

Notes
EPA = U.S. Environmental Protection Agency.
EPH = extractable petroleum hydrocarbons.
J = result is estimated.
NWTPH = Northwest Total Petroleum Hydrocarbons.
RPD = relative percent difference.
ug/L = micrograms per liter.
U = result is non-detect at the method reporting limit.
UJ = result is non-detect with an estimated reporting limit.
[(a)]Final qualification based on surrogate recovery and field duplicate RPD result.

All remaining field duplicate results met the RPD acceptance criteria.

DATA PACKAGE

The data package was reviewed for transcription errors, omissions, and anomalies.

According to report 212076, two samples named TWA-1-1222 were submitted with separate collection dates. The initial sample, collected on December 5, 2022, was submitted for all analyses (including total mercury) except total metals, and the second sample, collected on

December 6, 2022, was submitted for only total metals analysis by EPA Method 6020B. The reviewer confirmed with the sampler that samples for this location were collected on separate dates because high turbidity was observed in the well during initial collection. The sampler collected the total metals sample fraction the following day in order to achieve lower turbidity measurements.

According to reports 212076 and 212106, OE reported some EPA Method 8021B analytes for NWTPH-VPH. The reviewer confirmed with the laboratory that these data are considered VPH data and can be reported as such. This is in accordance with method NWTPH-VPH.

No other issues were found.

REFERENCES

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FRIEDMAN & BRUYA, INC.

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December 28, 2022

Trevor Louviere, Project Manager
Dalton Olmsted Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, WA 98134

Dear Mr Louviere:

Included are the results from the testing of material submitted on December 6, 2022 from the TWAAFA-001, F&BI 212077 project. There are 18 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Anthony Cerruti, Tasya Gray
DOF1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 6, 2022 by Friedman & Bruya, Inc. from the Dalton Olmsted Fuglevand TWAAFA-001, F&BI 212077 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Dalton Olmsted Fuglevand
212077 -01	TRIP BLANK 1-1222
212077 -02	TWA-4D-1222
212077 -03	TWA-7D-1222

Manganese in the 6020B matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

Mercury in the 1631E matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

All other quality control requirements were acceptable.

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077
Date Extracted: 12/07/22
Date Analyzed: 12/07/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
TWA-4D-1222 212077-02	<50	<250	117
TWA-7D-1222 212077-03	<50	<250	127
Method Blank 02-2902 MB2	<50	<250	100

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-4D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/12/22	Lab ID:	212077-02
Date Analyzed:	12/13/22	Data File:	212077-02.094
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	1.62
Copper	4.08
Manganese	266
Nickel	3.28
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-4D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/12/22	Lab ID:	212077-02 x2
Date Analyzed:	12/14/22	Data File:	212077-02 x2.133
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<2
Lead	<2

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-4D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/12/22	Lab ID:	212077-02 x5
Date Analyzed:	12/13/22	Data File:	212077-02 x5.045
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	10.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-7D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/12/22	Lab ID:	212077-03
Date Analyzed:	12/13/22	Data File:	212077-03.095
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	8.05
Cadmium	<1
Chromium	1.19
Copper	3.44
Lead	<1
Manganese	268
Nickel	2.80
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	NA	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/12/22	Lab ID:	I2-890 mb
Date Analyzed:	12/12/22	Data File:	I2-890 mb.060
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077
Date Extracted: 12/09/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
TWA-4D-1222 212077-02	<0.02
TWA-7D-1222 212077-03	<0.02
Method Blank i2-885 MB	<0.02

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TRIP BLANK 1-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/13/22	Lab ID:	212077-01
Date Analyzed:	12/13/22	Data File:	121318.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2,3-Trichlorobenzene	<1
Bromodichloromethane	<0.5	1,2-Dibromo-3-chloropropane	<10
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-4D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/13/22	Lab ID:	212077-02
Date Analyzed:	12/13/22	Data File:	121319.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	78	126
Toluene-d8	101	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2,3-Trichlorobenzene	<1
Bromodichloromethane	<0.5	1,2-Dibromo-3-chloropropane	<10
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-7D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/06/22	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/13/22	Lab ID:	212077-03
Date Analyzed:	12/13/22	Data File:	121320.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212077
Date Extracted:	12/13/22	Lab ID:	02-2956 mb
Date Analyzed:	12/13/22	Data File:	121308.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2,3-Trichlorobenzene	<1
Bromodichloromethane	<0.5	1,2-Dibromo-3-chloropropane	<10
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	108	108	70-130	0

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212076-09 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<10	95	90	75-125	5
Cadmium	ug/L (ppb)	5	<10	96	94	75-125	2
Chromium	ug/L (ppb)	20	<10	94	94	75-125	0
Copper	ug/L (ppb)	20	<50	101	98	75-125	3
Lead	ug/L (ppb)	10	<10	98	96	75-125	2
Manganese	ug/L (ppb)	20	149	66 vo	44 vo	75-125	40 vo
Nickel	ug/L (ppb)	20	<10	100	97	75-125	3
Zinc	ug/L (ppb)	50	<50	101	97	75-125	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	86	80-120
Cadmium	ug/L (ppb)	5	97	80-120
Chromium	ug/L (ppb)	20	98	80-120
Copper	ug/L (ppb)	20	100	80-120
Lead	ug/L (ppb)	10	97	80-120
Manganese	ug/L (ppb)	20	91	80-120
Nickel	ug/L (ppb)	20	99	80-120
Zinc	ug/L (ppb)	50	96	80-120

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	0.002	86	63 vo	71-125	31 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	101	68-125

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	109	106	50-150	3
Chloromethane	ug/L (ppb)	10	<10	100	96	50-150	4
Vinyl chloride	ug/L (ppb)	10	<0.2	106	103	50-150	3
Bromomethane	ug/L (ppb)	10	<1	121	130	50-150	7
Chloroethane	ug/L (ppb)	10	<1	110	106	50-150	4
Trichlorofluoromethane	ug/L (ppb)	10	<1	102	105	50-150	3
Acetone	ug/L (ppb)	50	<10	73	73	50-150	0
1,1-Dichloroethene	ug/L (ppb)	10	<1	103	100	50-150	3
Hexane	ug/L (ppb)	10	<1	110	106	50-150	4
Methylene chloride	ug/L (ppb)	10	<5	96	93	50-150	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	103	101	50-150	2
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
2,2-Dichloropropane	ug/L (ppb)	10	<1	109	108	50-150	1
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	99	50-150	3
Chloroform	ug/L (ppb)	10	<1	98	93	50-150	5
2-Butanone (MEK)	ug/L (ppb)	50	<10	87	87	50-150	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	98	96	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloropropene	ug/L (ppb)	10	<1	101	99	50-150	2
Carbon tetrachloride	ug/L (ppb)	10	<1	106	103	50-150	3
Benzene	ug/L (ppb)	10	<0.35	100	99	50-150	1
Trichloroethene	ug/L (ppb)	10	<1	94	93	50-150	1
1,2-Dichloropropane	ug/L (ppb)	10	<1	101	98	50-150	3
Bromodichloromethane	ug/L (ppb)	10	<1	98	97	50-150	1
Dibromomethane	ug/L (ppb)	10	<1	106	102	50-150	4
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	100	97	50-150	3
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	95	99	50-150	4
Toluene	ug/L (ppb)	10	<1	96	96	50-150	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	99	101	50-150	2
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	98	98	50-150	0
2-Hexanone	ug/L (ppb)	50	<10	98	97	50-150	1
1,3-Dichloropropane	ug/L (ppb)	10	<1	95	98	50-150	3
Tetrachloroethene	ug/L (ppb)	10	<1	96	97	50-150	1
Dibromochloromethane	ug/L (ppb)	10	<1	100	99	50-150	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	97	98	50-150	1
Chlorobenzene	ug/L (ppb)	10	<1	98	100	50-150	2
Ethylbenzene	ug/L (ppb)	10	<1	98	99	50-150	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	101	99	50-150	2
m,p-Xylene	ug/L (ppb)	20	<2	98	99	50-150	1
o-Xylene	ug/L (ppb)	10	<1	98	99	50-150	1
Styrene	ug/L (ppb)	10	<1	100	99	50-150	1
Isopropylbenzene	ug/L (ppb)	10	<1	99	101	50-150	2
Bromoform	ug/L (ppb)	10	<1	101	101	50-150	0
n-Propylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
Bromobenzene	ug/L (ppb)	10	<1	100	96	50-150	4
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	99	98	50-150	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	110	105	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	99	99	50-150	0
2-Chlorotoluene	ug/L (ppb)	10	<1	101	98	50-150	3
4-Chlorotoluene	ug/L (ppb)	10	<1	99	98	50-150	1
tert-Butylbenzene	ug/L (ppb)	10	<1	100	98	50-150	2
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	100	96	50-150	4
sec-Butylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
p-Isopropyltoluene	ug/L (ppb)	10	<1	103	100	50-150	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	100	96	50-150	4
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	102	101	50-150	1

Date of Report: 12/28/22
Date Received: 12/06/22
Project: TWAAFA-001, F&BI 212077

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	98	98	46-206	0
Chloromethane	ug/L (ppb)	10	95	96	70-142	1
Vinyl chloride	ug/L (ppb)	10	100	103	70-130	3
Bromomethane	ug/L (ppb)	10	128	125	56-197	2
Chloroethane	ug/L (ppb)	10	106	111	70-130	5
Trichlorofluoromethane	ug/L (ppb)	10	92	94	70-130	2
Acetone	ug/L (ppb)	50	77	78	10-140	1
1,1-Dichloroethene	ug/L (ppb)	10	100	101	70-130	1
Hexane	ug/L (ppb)	10	108	105	54-136	3
Methylene chloride	ug/L (ppb)	10	93	94	43-134	1
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	103	103	70-130	0
trans-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
1,1-Dichloroethane	ug/L (ppb)	10	103	103	70-130	0
2,2-Dichloropropane	ug/L (ppb)	10	109	107	70-130	2
cis-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
Chloroform	ug/L (ppb)	10	100	98	70-130	2
2-Butanone (MEK)	ug/L (ppb)	50	88	85	17-154	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	99	98	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	103	102	70-130	1
1,1-Dichloropropene	ug/L (ppb)	10	100	99	70-130	1
Carbon tetrachloride	ug/L (ppb)	10	104	109	70-130	5
Benzene	ug/L (ppb)	10	102	101	70-130	1
Trichloroethene	ug/L (ppb)	10	96	96	70-130	0
1,2-Dichloropropane	ug/L (ppb)	10	100	100	70-130	0
Bromodichloromethane	ug/L (ppb)	10	104	100	70-130	4
Dibromomethane	ug/L (ppb)	10	107	104	70-130	3
4-Methyl-2-pentanone	ug/L (ppb)	50	101	93	68-130	8
cis-1,3-Dichloropropene	ug/L (ppb)	10	99	98	69-131	1
Toluene	ug/L (ppb)	10	101	100	70-130	1
trans-1,3-Dichloropropene	ug/L (ppb)	10	108	106	70-130	2
1,1,2-Trichloroethane	ug/L (ppb)	10	102	101	70-130	1
2-Hexanone	ug/L (ppb)	50	102	88	45-138	15
1,3-Dichloropropane	ug/L (ppb)	10	105	103	70-130	2
Tetrachloroethene	ug/L (ppb)	10	100	100	70-130	0
Dibromochloromethane	ug/L (ppb)	10	102	106	60-148	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	101	105	70-130	4
Chlorobenzene	ug/L (ppb)	10	104	101	70-130	3
Ethylbenzene	ug/L (ppb)	10	103	102	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	102	105	70-130	3
m,p-Xylene	ug/L (ppb)	20	103	101	70-130	2
o-Xylene	ug/L (ppb)	10	103	102	70-130	1
Styrene	ug/L (ppb)	10	102	100	70-130	2
Isopropylbenzene	ug/L (ppb)	10	103	102	70-130	1
Bromoform	ug/L (ppb)	10	104	102	69-138	2
n-Propylbenzene	ug/L (ppb)	10	105	108	70-130	3
Bromobenzene	ug/L (ppb)	10	102	105	70-130	3
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	106	70-130	6
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	113	120	70-130	6
1,2,3-Trichloropropane	ug/L (ppb)	10	104	105	70-130	1
2-Chlorotoluene	ug/L (ppb)	10	103	109	70-130	6
4-Chlorotoluene	ug/L (ppb)	10	101	102	70-130	1
tert-Butylbenzene	ug/L (ppb)	10	102	107	70-130	5
1,2,4-Trimethylbenzene	ug/L (ppb)	10	101	104	70-130	3
sec-Butylbenzene	ug/L (ppb)	10	103	107	70-130	4
p-Isopropyltoluene	ug/L (ppb)	10	104	107	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	104	107	70-130	3
1,2,3-Trichlorobenzene	ug/L (ppb)	10	102	108	70-130	6

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY

12/06/22 C2/M1/VW1

Page # 1 of 1

212077 ANTHONY CERRUTI

cc:

Report To Trevor Louviere/Tasya Gray

Company DOF

Address 1001 SW Klickitat Way

City, State, ZIP Seattle, WA 98134

Phone ~~425-785-6322~~ 215 767 7749 Email tlouviere@dofnw.com acerruti@dofnw.com

SAMPLERS (*signature*)

PROJECT NAME: TWAAFA

PO # TWAAFA-001

REMARKS: SVOCs lab filtered at 0.7 micron before analysis

Project Specific RLs - (Yes) / No

INVOICE TO: DOF

TURNAROUND TIME
X Standard Turnaround
X RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx w/SGC	NWTPH-Dx	NWTPH-Gx	VOCs EPA 8260 + SIM VOC EPA 8260 ~~+ 1,4 Dioxane~~ Ac	SVOCs EPA 8270E	LL PCBs 8082A	Total Metals 6020 (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn)	Mecury by 1631E	Notes
TRIP BLANK#1-1222	01 A-B	12/6/22	1020	GRAB	2				X					
TWA-40-1222	02 A-H	12/6/22	1045	GRAB	8		X		X			X	X	
TWA-70-1222	03 I	12/6/22	1205	GRAB	8		X		X			X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: ANTHONY CERRUTI		DOF	12/6/22	1420
Received by:	VINH	FB	12-6-22	1420
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

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December 28, 2022

Trevor Louviere, Project Manager
Dalton Olmsted Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, WA 98134

Dear Mr Louviere:

Included are the results from the testing of material submitted on December 7, 2022 from the TWAAFA-001, F&BI 212108 project. There are 69 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Anthony Cerruti, Tasya Gray
DOF1228R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 7, 2022 by Friedman & Bruya, Inc. from the Dalton Olmsted Fuglevand TWAAFA-001, F&BI 212108 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Dalton Olmsted Fuglevand
212108 -01	TWA-9D-1222
212108 -02	TRIP BLANK 2-1222
212108 -03	CCW-2A-1222
212108 -04	CCW-2B-1222
212108 -05	CCW-2C-1222
212108 -06	CCW-3C-1222
212108 -07	CCW-3B-1222

Acetone failed below the acceptance criteria in the 8260D matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

The 8260D matrix spike and matrix spike duplicate failed the relative percent difference for chlorobenzene. The analyte was not detected, therefore the data were acceptable.

Bis(2-ethylhexyl)phthalate were detected in the 8270E method blank and the field samples. The data were flagged as a common field and laboratory contaminant.

Mercury in the 1631E matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8082A PCB results were reported to the method detection limit. The data were flagged accordingly.

The 8270E matrix spike and matrix spike duplicate failed the relative percent difference for several compounds. The analytes were not detected, therefore the data were acceptable.

The 8270E samples were filtered prior to extraction. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108
Date Extracted: 12/13/22
Date Analyzed: 12/13/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TWA-9D-1222 212108-01	<100	114
TRIP BLANK 2-1222 212108-02	<100	112
CCW-2A-1222 212108-03 1/5	2,600	119
CCW-2B-1222 212108-04 1/10	4,600	127
CCW-2C-1222 212108-05	<100	117
CCW-3C-1222 212108-06	<100	109
CCW-3B-1222 212108-07	770	119
Method Blank 02-2924 MB	<100	106

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108
Date Extracted: 12/08/22
Date Analyzed: 12/08/22 and 12/09/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
TWA-9D-1222 212108-01 1/0.4	370 x	380 x	99
CCW-2A-1222 212108-03 1/0.4	3,800 x	1,400 x	122
CCW-2B-1222 212108-04 1/0.4	6,000 x	3,200 x	119
CCW-2C-1222 212108-05 1/0.4	960 x	1,100 x	118
CCW-3C-1222 212108-06 1/0.4	1,500 x	1,500 x	115
CCW-3B-1222 212108-07 1/0.4	5,200 x	5,100 x	106
Method Blank 02-2917 MB	<50	<250	119

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-9D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-01
Date Analyzed:	12/13/22	Data File:	212108-01.108
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	5.61
Copper	4.26
Lead	<1
Manganese	71.1
Nickel	2.17
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-9D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-01 x5
Date Analyzed:	12/13/22	Data File:	212108-01 x5.100
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	12.3
Cadmium	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-03
Date Analyzed:	12/13/22	Data File:	212108-03.111
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.34
Cadmium	<1
Chromium	<1
Copper	3.45
Manganese	698
Nickel	3.46
Zinc	14.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-03
Date Analyzed:	12/14/22	Data File:	212108-03.257
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	3.88

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-04
Date Analyzed:	12/13/22	Data File:	212108-04.117
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-04
Date Analyzed:	12/14/22	Data File:	212108-04.263
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Copper	1.35
Manganese	249
Nickel	8.51
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-04 x5
Date Analyzed:	12/13/22	Data File:	212108-04 x5.104
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	996

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-05
Date Analyzed:	12/13/22	Data File:	212108-05.118
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	4.04
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-2C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-05
Date Analyzed:	12/14/22	Data File:	212108-05.247
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	2.06
Copper	<1
Manganese	235
Nickel	3.37
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-06
Date Analyzed:	12/13/22	Data File:	212108-06.119
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.84
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-06
Date Analyzed:	12/14/22	Data File:	212108-06.245
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	2.79
Copper	<1
Nickel	2.08
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-06 x5
Date Analyzed:	12/13/22	Data File:	212108-06 x5.106
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1,340

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-07
Date Analyzed:	12/13/22	Data File:	212108-07.120
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	3.32
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-07
Date Analyzed:	12/14/22	Data File:	212108-07.246
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Copper	<1
Nickel	4.64
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	212108-07 x5
Date Analyzed:	12/13/22	Data File:	212108-07 x5.107
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1,220

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	NA	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/12/22	Lab ID:	I2-891 mb
Date Analyzed:	12/12/22	Data File:	I2-891 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108
Date Extracted: 12/09/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
TWA-9D-1222 212108-01	<0.02
CCW-2A-1222 212108-03	<0.02
CCW-2B-1222 212108-04	<0.02
CCW-2C-1222 212108-05	<0.02
CCW-3C-1222 212108-06	<0.02
CCW-3B-1222 212108-07	<0.02
Method Blank i2-885 MB	<0.02

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-9D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-01
Date Analyzed:	12/16/22	Data File:	121537.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	95	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	1.0

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-03
Date Analyzed:	12/16/22	Data File:	121544.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	108	50	150
Toluene-d8	116	50	150
4-Bromofluorobenzene	95	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-04
Date Analyzed:	12/16/22	Data File:	121538.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	117	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	90	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	1.3

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-2C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-05
Date Analyzed:	12/16/22	Data File:	121539.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	99	50	150
4-Bromofluorobenzene	96	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	2.5

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-06
Date Analyzed:	12/16/22	Data File:	121540.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	97	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	1.7

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-07
Date Analyzed:	12/16/22	Data File:	121541.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	114	50	150
Toluene-d8	97	50	150
4-Bromofluorobenzene	89	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	0.98

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	02-2960 mb
Date Analyzed:	12/15/22	Data File:	121525.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-9D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-01
Date Analyzed:	12/14/22	Data File:	121441.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	90	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TRIP BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-02
Date Analyzed:	12/14/22	Data File:	121438.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	89	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	104	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-03
Date Analyzed:	12/14/22	Data File:	121442.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	78	126
Toluene-d8	102	84	115
4-Bromofluorobenzene	109	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	120
Vinyl chloride	31	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	23
Trichlorofluoromethane	<1	Ethylbenzene	81
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	27
Hexane	<5	o-Xylene	32
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	8.8
trans-1,2-Dichloroethene	2.5	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	16
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	230 ve	1,3,5-Trimethylbenzene	4.4
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	2.4
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	30
Benzene	15	sec-Butylbenzene	3.4
Trichloroethene	240 ve	p-Isopropyltoluene	4.9
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	32		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-03 1/10
Date Analyzed:	12/15/22	Data File:	121523.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)
cis-1,2-Dichloroethene	220
Trichloroethene	230

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-04
Date Analyzed:	12/15/22	Data File:	121452.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	78	126
Toluene-d8	103	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	1.3	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	2.2	Chlorobenzene	790 ve
Trichlorofluoromethane	<1	Ethylbenzene	36
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	92
Hexane	<5	o-Xylene	63
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	4.6
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	3.1	n-Propylbenzene	8.0
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	1.2	1,3,5-Trimethylbenzene	18
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	16
1,1,1-Trichloroethane	<1	4-Chlorotoluene	2.9
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	120
Benzene	89	sec-Butylbenzene	1.2
Trichloroethene	<0.5	p-Isopropyltoluene	2.9
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	180		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/15/22	Lab ID:	212108-04 1/10
Date Analyzed:	12/15/22	Data File:	121524.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)
Chlorobenzene	790

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-2C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-05
Date Analyzed:	12/16/22	Data File:	121616.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	93	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-06
Date Analyzed:	12/14/22	Data File:	121444.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	212108-07
Date Analyzed:	12/14/22	Data File:	121445.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.69	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	1.3
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	1.1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	1.2
Benzene	4.5	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	10		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/14/22	Lab ID:	02-2961 mb
Date Analyzed:	12/14/22	Data File:	121437.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2,3-Trichlorobenzene	<1
Bromodichloromethane	<0.5	1,2-Dibromo-3-chloropropane	<10
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-9D-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-01 1/0.5
Date Analyzed:	12/12/22	Data File:	121212.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	42	11	65
Phenol-d6	38	11	65
Nitrobenzene-d5	94	11	173
2-Fluorobiphenyl	96	44	108
2,4,6-Tribromophenol	115	10	140
Terphenyl-d14	109	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.010
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.014
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.045
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.064
Hexachlorobutadiene	<0.1	Pyrene	0.077
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.058
2-Methylnaphthalene	<0.1	Chrysene	0.062
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.48 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.040
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.066
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.045
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.037
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.024
Acenaphthylene	0.28	Benzo(g,h,i)perylene	0.034

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-2A-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-03 1/0.5
Date Analyzed:	12/12/22	Data File:	121213.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	36	11	65
Phenol-d6	31	11	65
Nitrobenzene-d5	90	11	173
2-Fluorobiphenyl	87	44	108
2,4,6-Tribromophenol	119	10	140
Terphenyl-d14	104	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	5.1
1,3-Dichlorobenzene	0.68	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	1.7	Dibenzofuran	2.1
1,2-Dichlorobenzene	4.0	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	4.1
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	0.24
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	2.3	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	2.0
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.26
2,4-Dichlorophenol	<1	Carbazole	1.4
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	17 ve	Fluoranthene	0.42
Hexachlorobutadiene	0.35	Pyrene	0.31
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.035
2-Methylnaphthalene	15	Chrysene	0.035
1-Methylnaphthalene	16 ve	Bis(2-ethylhexyl) phthalate	0.45 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.014
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.017
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	0.28	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-2A-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-03 1/5
Date Analyzed:	12/16/22	Data File:	121523.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35 d	11	65
Phenol-d6	28 d	11	65
Nitrobenzene-d5	88 d	11	173
2-Fluorobiphenyl	85 d	44	108
2,4,6-Tribromophenol	121 d	10	140
Terphenyl-d14	106 d	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	17
1-Methylnaphthalene	15

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-2B-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-04 1/0.5
Date Analyzed:	12/12/22	Data File:	121214.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	11	65
Phenol-d6	22	11	65
Nitrobenzene-d5	78	11	173
2-Fluorobiphenyl	61	44	108
2,4,6-Tribromophenol	87	10	140
Terphenyl-d14	93	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	1.4
1,3-Dichlorobenzene	5.4	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	40 ve	Dibenzofuran	0.45
1,2-Dichlorobenzene	3.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.62
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.89
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.17
2,4-Dichlorophenol	<1	Carbazole	0.49
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	29 ve	Fluoranthene	0.18
Hexachlorobutadiene	<0.1	Pyrene	0.14
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	2.1	Chrysene	<0.01
1-Methylnaphthalene	4.1	Bis(2-ethylhexyl) phthalate	0.48 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	0.029	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-2B-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-04 1/5
Date Analyzed:	12/16/22	Data File:	121524.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37 d	11	65
Phenol-d6	20 d	11	65
Nitrobenzene-d5	75 d	11	173
2-Fluorobiphenyl	52 d	44	108
2,4,6-Tribromophenol	79 d	10	140
Terphenyl-d14	90 d	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dichlorobenzene	37
Naphthalene	30

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-2C-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-05 1/0.5
Date Analyzed:	12/12/22	Data File:	121215.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	33	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	73	11	173
2-Fluorobiphenyl	56	44	108
2,4,6-Tribromophenol	79	10	140
Terphenyl-d14	92	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.073
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.31
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	1.4
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.24
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	0.15	Fluoranthene	0.21
Hexachlorobutadiene	<0.1	Pyrene	0.60
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.021
2-Methylnaphthalene	<0.1	Chrysene	0.018
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	1.5 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.060
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.026
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.012
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.036
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	0.72	Benzo(g,h,i)perylene	0.11

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-3C-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-06 1/0.5
Date Analyzed:	12/12/22	Data File:	121216.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	83	11	173
2-Fluorobiphenyl	63	44	108
2,4,6-Tribromophenol	93	10	140
Terphenyl-d14	114	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.44 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	0.019	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-3B-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	212108-07 1/0.5
Date Analyzed:	12/12/22	Data File:	121217.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	40	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	87	11	173
2-Fluorobiphenyl	74	44	108
2,4,6-Tribromophenol	97	10	140
Terphenyl-d14	109	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.46
1,3-Dichlorobenzene	0.24	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	0.13	Dibenzofuran	0.20
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.67
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.31
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.030
2,4-Dichlorophenol	<1	Carbazole	0.27
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	2.4	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	2.5	Chrysene	<0.01
1-Methylnaphthalene	3.1	Bis(2-ethylhexyl) phthalate	0.63 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.014
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.024
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.024
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.014
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.015
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank f	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/09/22	Lab ID:	02-2942 mb 1/0.5
Date Analyzed:	12/12/22	Data File:	121211.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	31	11	60
Phenol-d6	24	11	49
Nitrobenzene-d5	82	11	144
2-Fluorobiphenyl	86	44	128
2,4,6-Tribromophenol	77	10	142
Terphenyl-d14	101	50	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.35 j lc
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-9D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/16/22	Lab ID:	212108-01 1/0.5
Date Analyzed:	12/16/22	Data File:	121606.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	48	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-2A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/19/22	Lab ID:	212108-03 1/0.5
Date Analyzed:	12/20/22	Data File:	122007.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	32	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	0.032
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-2B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/19/22	Lab ID:	212108-04 1/0.5
Date Analyzed:	12/20/22	Data File:	122011.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	31	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-2C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/16/22	Lab ID:	212108-05 1/0.5
Date Analyzed:	12/16/22	Data File:	121612.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	43	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-3C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/16/22	Lab ID:	212108-06 1/0.5
Date Analyzed:	12/16/22	Data File:	121613.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	48	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-3B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/07/22	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/16/22	Lab ID:	212108-07 1/0.5
Date Analyzed:	12/16/22	Data File:	121616.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	45	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/16/22	Lab ID:	02-3010 mb 1/0.5
Date Analyzed:	12/16/22	Data File:	121604.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212108
Date Extracted:	12/19/22	Lab ID:	02-3029 mb 1/0.5
Date Analyzed:	12/20/22	Data File:	122004.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	42	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 212108-01 Matrix Spike

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	<100	110	100	50-150	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	110	70-130

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	640	70	78	70-130	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	110	70-130

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212108-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	10.4	93	89	75-125	4
Cadmium	ug/L (ppb)	5	<10	94	93	75-125	1
Chromium	ug/L (ppb)	20	<10	100	96	75-125	4
Copper	ug/L (ppb)	20	<10	94	93	75-125	1
Lead	ug/L (ppb)	10	<10	87	85	75-125	2
Manganese	ug/L (ppb)	20	70.4	88	81	75-125	8
Nickel	ug/L (ppb)	20	<10	96	95	75-125	1
Zinc	ug/L (ppb)	50	<50	96	98	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	85	80-120
Cadmium	ug/L (ppb)	5	99	80-120
Chromium	ug/L (ppb)	20	98	80-120
Copper	ug/L (ppb)	20	101	80-120
Lead	ug/L (ppb)	10	97	80-120
Manganese	ug/L (ppb)	20	91	80-120
Nickel	ug/L (ppb)	20	100	80-120
Zinc	ug/L (ppb)	50	97	80-120

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.02	86	63 vo	71-125	31 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	101	68-125

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	<0.4	103	91	50-150	12

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	1.0	114	114	50-150	0

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	79	84	70-130	6

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	67	58	50-150	14
Chloromethane	ug/L (ppb)	10	<10	71	69	50-150	3
Vinyl chloride	ug/L (ppb)	10	<0.2	72	69	50-150	4
Bromomethane	ug/L (ppb)	10	<1	84	85	50-150	1
Chloroethane	ug/L (ppb)	10	<1	78	75	50-150	4
Trichlorofluoromethane	ug/L (ppb)	10	<1	63	58	50-150	8
Acetone	ug/L (ppb)	50	<10	48 vo	46 vo	50-150	4
1,1-Dichloroethene	ug/L (ppb)	10	<1	68	65	50-150	5
Hexane	ug/L (ppb)	10	<1	55	50	50-150	10
Methylene chloride	ug/L (ppb)	10	<5	70	64	50-150	9
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	69	65	50-150	6
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	69	65	50-150	6
1,1-Dichloroethane	ug/L (ppb)	10	<1	70	67	50-150	4
2,2-Dichloropropane	ug/L (ppb)	10	<1	59	59	50-150	0
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	71	67	50-150	6
Chloroform	ug/L (ppb)	10	<1	67	64	50-150	5
2-Butanone (MEK)	ug/L (ppb)	50	<10	64	53	50-150	19
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	69	66	50-150	4
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	68	64	50-150	6
1,1-Dichloropropene	ug/L (ppb)	10	<1	66	60	50-150	10
Carbon tetrachloride	ug/L (ppb)	10	<1	70	61	50-150	14
Benzene	ug/L (ppb)	10	<0.35	70	66	50-150	6
Trichloroethene	ug/L (ppb)	10	<1	62	58	50-150	7
1,2-Dichloropropane	ug/L (ppb)	10	<1	70	62	50-150	12
Bromodichloromethane	ug/L (ppb)	10	<1	67	64	50-150	5
Dibromomethane	ug/L (ppb)	10	<1	72	71	50-150	1
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	67	60	50-150	11
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	63	62	50-150	2
Toluene	ug/L (ppb)	10	<1	68	62	50-150	9
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	65	61	50-150	6
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	69	66	50-150	4
2-Hexanone	ug/L (ppb)	50	<10	67	59	50-150	13
1,3-Dichloropropane	ug/L (ppb)	10	<1	70	66	50-150	6
Tetrachloroethene	ug/L (ppb)	10	<1	59	54	50-150	9
Dibromochloromethane	ug/L (ppb)	10	<1	69	65	50-150	6
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	69	65	50-150	6
Chlorobenzene	ug/L (ppb)	10	<1	78	63	50-150	21 vo
Ethylbenzene	ug/L (ppb)	10	<1	66	60	50-150	10
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	71	65	50-150	9
m,p-Xylene	ug/L (ppb)	20	<2	64	58	50-150	10
o-Xylene	ug/L (ppb)	10	<1	67	61	50-150	9
Styrene	ug/L (ppb)	10	<1	69	61	50-150	12
Isopropylbenzene	ug/L (ppb)	10	<1	64	58	50-150	10
Bromoform	ug/L (ppb)	10	<1	71	65	50-150	9
n-Propylbenzene	ug/L (ppb)	10	<1	63	57	50-150	10
Bromobenzene	ug/L (ppb)	10	<1	67	63	50-150	6
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	62	57	50-150	8
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	78	73	50-150	7
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	67	66	50-150	2
2-Chlorotoluene	ug/L (ppb)	10	<1	66	58	50-150	13
4-Chlorotoluene	ug/L (ppb)	10	<1	64	59	50-150	8
tert-Butylbenzene	ug/L (ppb)	10	<1	65	58	50-150	11
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	66	57	50-150	15
sec-Butylbenzene	ug/L (ppb)	10	<1	62	55	50-150	12
p-Isopropyltoluene	ug/L (ppb)	10	<1	60	55	50-150	9
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	68	66	50-150	3
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	62	57	50-150	8

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	84	85	50-150	1
Chloromethane	ug/L (ppb)	10	<10	85	104	50-150	20
Vinyl chloride	ug/L (ppb)	10	<0.2	90	89	50-150	1
Bromomethane	ug/L (ppb)	10	<1	107	116	50-150	8
Chloroethane	ug/L (ppb)	10	<1	99	100	50-150	1
Trichlorofluoromethane	ug/L (ppb)	10	<1	82	85	50-150	4
Acetone	ug/L (ppb)	50	<10	65	67	50-150	3
1,1-Dichloroethene	ug/L (ppb)	10	<1	85	90	50-150	6
Hexane	ug/L (ppb)	10	<1	60	66	50-150	10
Methylene chloride	ug/L (ppb)	10	<5	88	90	50-150	2
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	88	91	50-150	3
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	86	88	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	90	92	50-150	2
2,2-Dichloropropane	ug/L (ppb)	10	<1	78	84	50-150	7
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	90	91	50-150	1
Chloroform	ug/L (ppb)	10	<1	87	87	50-150	0
2-Butanone (MEK)	ug/L (ppb)	50	<10	74	83	50-150	11
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	90	92	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	88	90	50-150	2
1,1-Dichloropropene	ug/L (ppb)	10	<1	79	85	50-150	7
Carbon tetrachloride	ug/L (ppb)	10	<1	90	91	50-150	1
Benzene	ug/L (ppb)	10	<0.35	95	90	50-150	5
Trichloroethene	ug/L (ppb)	10	<1	78	81	50-150	4
1,2-Dichloropropane	ug/L (ppb)	10	<1	84	87	50-150	4
Bromodichloromethane	ug/L (ppb)	10	<1	91	89	50-150	2
Dibromomethane	ug/L (ppb)	10	<1	87	92	50-150	6
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	80	85	50-150	6
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	79	84	50-150	6
Toluene	ug/L (ppb)	10	<1	83	87	50-150	5
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	82	84	50-150	2
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	85	91	50-150	7
2-Hexanone	ug/L (ppb)	50	<10	73	79	50-150	8
1,3-Dichloropropane	ug/L (ppb)	10	<1	86	92	50-150	7
Tetrachloroethene	ug/L (ppb)	10	<1	71	79	50-150	11
Dibromochloromethane	ug/L (ppb)	10	<1	90	88	50-150	2
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	84	89	50-150	6
Chlorobenzene	ug/L (ppb)	10	<1	83	86	50-150	4
Ethylbenzene	ug/L (ppb)	10	<1	72	79	50-150	9
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	85	90	50-150	6
m,p-Xylene	ug/L (ppb)	20	<2	76	82	50-150	8
o-Xylene	ug/L (ppb)	10	<1	80	85	50-150	6
Styrene	ug/L (ppb)	10	<1	79	84	50-150	6
Isopropylbenzene	ug/L (ppb)	10	<1	77	83	50-150	7
Bromoform	ug/L (ppb)	10	<1	84	86	50-150	2
n-Propylbenzene	ug/L (ppb)	10	<1	75	81	50-150	8
Bromobenzene	ug/L (ppb)	10	<1	83	86	50-150	4
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	73	81	50-150	10
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	91	96	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	85	87	50-150	2
2-Chlorotoluene	ug/L (ppb)	10	<1	83	90	50-150	8
4-Chlorotoluene	ug/L (ppb)	10	<1	75	84	50-150	11
tert-Butylbenzene	ug/L (ppb)	10	<1	78	86	50-150	10
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	76	83	50-150	9
sec-Butylbenzene	ug/L (ppb)	10	<1	74	82	50-150	10
p-Isopropyltoluene	ug/L (ppb)	10	<1	73	81	50-150	10
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	101	102	50-150	1
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	78	85	50-150	9

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	104	97	46-206	7
Chloromethane	ug/L (ppb)	10	90	85	70-142	6
Vinyl chloride	ug/L (ppb)	10	95	94	70-130	1
Bromomethane	ug/L (ppb)	10	112	129	56-197	14
Chloroethane	ug/L (ppb)	10	101	100	70-130	1
Trichlorofluoromethane	ug/L (ppb)	10	92	89	70-130	3
Acetone	ug/L (ppb)	50	82	81	10-140	1
1,1-Dichloroethene	ug/L (ppb)	10	95	95	70-130	0
Hexane	ug/L (ppb)	10	104	96	54-136	8
Methylene chloride	ug/L (ppb)	10	83	78	43-134	6
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	98	97	70-130	1
trans-1,2-Dichloroethene	ug/L (ppb)	10	98	95	70-130	3
1,1-Dichloroethane	ug/L (ppb)	10	98	96	70-130	2
2,2-Dichloropropane	ug/L (ppb)	10	100	106	70-130	6
cis-1,2-Dichloroethene	ug/L (ppb)	10	98	96	70-130	2
Chloroform	ug/L (ppb)	10	97	94	70-130	3
2-Butanone (MEK)	ug/L (ppb)	50	92	84	17-154	9
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	95	94	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	99	97	70-130	2
1,1-Dichloropropene	ug/L (ppb)	10	98	95	70-130	3
Carbon tetrachloride	ug/L (ppb)	10	103	102	70-130	1
Benzene	ug/L (ppb)	10	98	96	70-130	2
Trichloroethene	ug/L (ppb)	10	93	91	70-130	2
1,2-Dichloropropane	ug/L (ppb)	10	95	94	70-130	1
Bromodichloromethane	ug/L (ppb)	10	98	94	70-130	4
Dibromomethane	ug/L (ppb)	10	102	98	70-130	4
4-Methyl-2-pentanone	ug/L (ppb)	50	102	101	68-130	1
cis-1,3-Dichloropropene	ug/L (ppb)	10	98	96	69-131	2
Toluene	ug/L (ppb)	10	96	96	70-130	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	101	98	70-130	3
1,1,2-Trichloroethane	ug/L (ppb)	10	99	100	70-130	1
2-Hexanone	ug/L (ppb)	50	97	98	45-138	1
1,3-Dichloropropane	ug/L (ppb)	10	102	99	70-130	3
Tetrachloroethene	ug/L (ppb)	10	95	94	70-130	1
Dibromochloromethane	ug/L (ppb)	10	105	103	60-148	2
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	98	98	70-130	0
Chlorobenzene	ug/L (ppb)	10	100	100	70-130	0
Ethylbenzene	ug/L (ppb)	10	100	99	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	103	105	70-130	2
m,p-Xylene	ug/L (ppb)	20	100	98	70-130	2
o-Xylene	ug/L (ppb)	10	100	99	70-130	1
Styrene	ug/L (ppb)	10	101	98	70-130	3
Isopropylbenzene	ug/L (ppb)	10	101	100	70-130	1
Bromoform	ug/L (ppb)	10	105	104	69-138	1
n-Propylbenzene	ug/L (ppb)	10	103	100	70-130	3
Bromobenzene	ug/L (ppb)	10	99	99	70-130	0
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	99	70-130	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	116	115	70-130	1
1,2,3-Trichloropropane	ug/L (ppb)	10	103	102	70-130	1
2-Chlorotoluene	ug/L (ppb)	10	101	100	70-130	1
4-Chlorotoluene	ug/L (ppb)	10	102	98	70-130	4
tert-Butylbenzene	ug/L (ppb)	10	101	100	70-130	1
1,2,4-Trimethylbenzene	ug/L (ppb)	10	99	99	70-130	0
sec-Butylbenzene	ug/L (ppb)	10	101	102	70-130	1
p-Isopropyltoluene	ug/L (ppb)	10	104	101	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	101	100	70-130	1
1,2,3-Trichlorobenzene	ug/L (ppb)	10	103	101	70-130	2

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 212108-01 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Phenol	ug/L (ppb)	2.5	<1	42 vo	31 vo	50-150	30 vo
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	<0.1	76	64	50-150	17
2-Chlorophenol	ug/L (ppb)	2.5	<1	70	59	50-150	17
1,3-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	71	59	50-150	18
1,4-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	72	59	50-150	20
1,2-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	73	60	50-150	20
Benzyl alcohol	ug/L (ppb)	12.5	<1	67	58	50-150	14
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	<0.1	79	68	50-150	15
2-Methylphenol	ug/L (ppb)	2.5	<1	64	55	50-150	15
Hexachloroethane	ug/L (ppb)	2.5	<0.1	72	57	50-150	23 vo
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	<0.1	88	80	50-150	10
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	<2	64	56	50-150	13
Nitrobenzene	ug/L (ppb)	2.5	<0.1	84	70	50-150	18
Isophorone	ug/L (ppb)	2.5	<0.1	89	79	50-150	12
2-Nitrophenol	ug/L (ppb)	2.5	<1	92	83	50-150	10
2,4-Dimethylphenol	ug/L (ppb)	2.5	<1	60	45 vo	50-150	29 vo
Benzoic acid	ug/L (ppb)	20	<5	13 vo	10 vo	50-150	26 vo
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	<0.1	83	71	50-150	16
2,4-Dichlorophenol	ug/L (ppb)	2.5	<1	80	67	50-150	18
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	<0.1	74	62	50-150	18
Naphthalene	ug/L (ppb)	2.5	<0.1	78	66	50-150	17
Hexachlorobutadiene	ug/L (ppb)	2.5	<0.1	74	60	50-150	21 vo
4-Chloroaniline	ug/L (ppb)	12.5	<10	76	61	50-150	22 vo
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	<1	90	82	50-150	9
2-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	81	73	50-150	10
1-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	81	73	50-150	10
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	<0.3	80	73	50-150	9
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	<1	45 vo	38 vo	50-150	17
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	<1	82	70	50-150	16
2-Chloronaphthalene	ug/L (ppb)	2.5	<0.1	82	71	50-150	14
2-Nitroaniline	ug/L (ppb)	12.5	<0.5	94	82	50-150	14
Dimethyl phthalate	ug/L (ppb)	2.5	<1	98	87	50-150	12
Acenaphthylene	ug/L (ppb)	2.5	0.28	80	68	50-150	16
2,6-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	112	97	50-150	14
3-Nitroaniline	ug/L (ppb)	12.5	<10	89	78	50-150	13
Acenaphthene	ug/L (ppb)	2.5	0.010	86	77	50-150	11
2,4-Dinitrophenol	ug/L (ppb)	5	<3	0 vo	0 vo	50-150	nm
Dibenzofuran	ug/L (ppb)	2.5	<0.1	89	80	50-150	11
2,4-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	109	100	50-150	9
4-Nitrophenol	ug/L (ppb)	5	<3	12 vo	8 vo	50-150	40 vo
Diethyl phthalate	ug/L (ppb)	2.5	<1	105	93	50-150	12
Fluorene	ug/L (ppb)	2.5	0.014	93	84	50-150	10
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	89	81	50-150	9
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	<0.1	93	82	50-150	13
4-Nitroaniline	ug/L (ppb)	12.5	<10	81	75	50-150	8
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	<3	16 vo	17 vo	50-150	6
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	93	81	50-150	14
Hexachlorobenzene	ug/L (ppb)	2.5	<0.1	87	79	50-150	10
Pentachlorophenol	ug/L (ppb)	2.5	<0.5	26 vo	23 vo	50-150	12
Phenanthrene	ug/L (ppb)	2.5	0.045	95	86	50-150	10
Anthracene	ug/L (ppb)	2.5	<0.01	94	87	50-150	8
Carbazole	ug/L (ppb)	2.5	<0.1	99	94	50-150	5
Di-n-butyl phthalate	ug/L (ppb)	2.5	<1	140	120	50-150	15
Fluoranthene	ug/L (ppb)	2.5	0.064	95	91	50-150	4
Pyrene	ug/L (ppb)	2.5	0.077	95	90	50-150	5
Benzyl butyl phthalate	ug/L (ppb)	2.5	<1	113	107	50-150	5
Benz(a)anthracene	ug/L (ppb)	2.5	0.058	95	91	50-150	4
Chrysene	ug/L (ppb)	2.5	0.062	94	89	50-150	5
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	0.48 j	105	108	50-150	3
Di-n-octyl phthalate	ug/L (ppb)	2.5	<1	101	96	50-150	5
Benzo(a)pyrene	ug/L (ppb)	2.5	0.040	98	92	50-150	6
Benzo(b)fluoranthene	ug/L (ppb)	2.5	0.066	95	87	50-150	9
Benzo(k)fluoranthene	ug/L (ppb)	2.5	0.045	96	89	50-150	8
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	0.037	110	106	50-150	4
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	0.024	112	107	50-150	5
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	0.034	110	105	50-150	5

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	27	10-86
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	68	60-108
2-Chlorophenol	ug/L (ppb)	2.5	62	10-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	59	48-96
1,4-Dichlorobenzene	ug/L (ppb)	2.5	58	48-96
1,2-Dichlorobenzene	ug/L (ppb)	2.5	62	52-96
Benzyl alcohol	ug/L (ppb)	12.5	62	10-76
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	71	59-101
2-Methylphenol	ug/L (ppb)	2.5	54	10-80
Hexachloroethane	ug/L (ppb)	2.5	61	47-97
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	83	71-106
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	54	10-66
Nitrobenzene	ug/L (ppb)	2.5	75	60-90
Isophorone	ug/L (ppb)	2.5	84	71-110
2-Nitrophenol	ug/L (ppb)	2.5	83	27-120
2,4-Dimethylphenol	ug/L (ppb)	2.5	31	10-106
Benzoic acid	ug/L (ppb)	20	27	10-102
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	77	55-117
2,4-Dichlorophenol	ug/L (ppb)	2.5	74	23-116
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	66	56-98
Naphthalene	ug/L (ppb)	2.5	71	62-97
Hexachlorobutadiene	ug/L (ppb)	2.5	63	48-100
4-Chloroaniline	ug/L (ppb)	12.5	68	28-121
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	85	18-113
2-Methylnaphthalene	ug/L (ppb)	2.5	77	64-101
1-Methylnaphthalene	ug/L (ppb)	2.5	78	64-93
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	74	49-113
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	82	16-131
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	86	26-129
2-Chloronaphthalene	ug/L (ppb)	2.5	77	67-102
2-Nitroaniline	ug/L (ppb)	12.5	89	31-168
Dimethyl phthalate	ug/L (ppb)	2.5	94	70-130
Acenaphthylene	ug/L (ppb)	2.5	85	70-130
2,6-Dinitrotoluene	ug/L (ppb)	2.5	98	70-130
3-Nitroaniline	ug/L (ppb)	12.5	83	33-128
Acenaphthene	ug/L (ppb)	2.5	84	70-130
2,4-Dinitrophenol	ug/L (ppb)	5	103	10-137
Dibenzofuran	ug/L (ppb)	2.5	86	67-114
2,4-Dinitrotoluene	ug/L (ppb)	2.5	103	53-132
4-Nitrophenol	ug/L (ppb)	5	43	10-89
Diethyl phthalate	ug/L (ppb)	2.5	96	60-128
Fluorene	ug/L (ppb)	2.5	89	70-130
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	84	70-130
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	85	70-130
4-Nitroaniline	ug/L (ppb)	12.5	80	32-124
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	109	10-146
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	90	70-130
Hexachlorobenzene	ug/L (ppb)	2.5	84	61-112
Pentachlorophenol	ug/L (ppb)	2.5	98	10-144
Phenanthrene	ug/L (ppb)	2.5	90	70-130
Anthracene	ug/L (ppb)	2.5	91	70-130
Carbazole	ug/L (ppb)	2.5	96	70-130
Di-n-butyl phthalate	ug/L (ppb)	2.5	100	28-147
Fluoranthene	ug/L (ppb)	2.5	96	70-130
Pyrene	ug/L (ppb)	2.5	100	70-130
Benzyl butyl phthalate	ug/L (ppb)	2.5	109	34-142
Benz(a)anthracene	ug/L (ppb)	2.5	97	70-130
Chrysene	ug/L (ppb)	2.5	96	70-130
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	113	44-140
Di-n-octyl phthalate	ug/L (ppb)	2.5	102	33-147
Benzo(a)pyrene	ug/L (ppb)	2.5	97	70-130
Benzo(b)fluoranthene	ug/L (ppb)	2.5	97	70-130
Benzo(k)fluoranthene	ug/L (ppb)	2.5	97	70-130
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	112	70-130
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	113	70-130
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	113	70-130

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 212108-01 1/0.5 (Matrix Spike) 1/0.5

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	<0.0035 j	66	62	50-150	6
Aroclor 1260	ug/L (ppb)	0.13	<0.0035 j	83	78	50-150	6

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	ug/L (ppb)	0.13	66	25-165
Aroclor 1260	ug/L (ppb)	0.13	83	25-163

Date of Report: 12/28/22
Date Received: 12/07/22
Project: TWAAFA-001, F&BI 212108

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	51	51	25-111	0
Aroclor 1260	ug/L (ppb)	0.13	74	70	23-123	6

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

108
212 1/98 (NP)

SAMPLE CHAIN OF CUSTODY

12/7/22 VW4/N4/G5

Page # 1 of

Report To: Anthony Cerruti / Trevor Louviere
CC: Tasya Gray

Company DOF

Address 1001 SW Klickitat Way

City, State, ZIP Seattle, WA 98134

Phone 215-767-7749 Email acerruti@dofnw.com

SAMPLERS (*signature*)	
PROJECT NAME: TWAAFA	PO # TWAAFA-001
REMARKS: SVOCs lab filtered at 0.7 micron before analysis Project Specific RLs - (Yes) / No	INVOICE TO: DOF

TURNAROUND TIME
__ Standard Turnaround
__ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	VOCs by EPA 8260D / SIM Dual Acquisition	NWTPH-Dx	EPH + VPH	NWTPH-Gx	Total Metals 6020B (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn)	Mecury by 1631E	SVOCs EPA 8270E SIM Dual Acquiston	cPAHs by EPA 8270	1,4 Dioxane by EPA 8260D SIM	LL PCBs 8082A	MS/MSD Collected? (Y/N)	Notes
						ANALYSES REQUESTED											** * SVOC full suite includes cPAH
TWA-9D-1222	01 A-AO	12/6/22	1345	WATER GRAB	42	X	X		X	X	X	X	X	X	X		EXTRA VOLUME FOR MS/MSD
TRIP BLANK #2-1222	02 AB	12/6/22	1415	WATER	2		X										
CCW-2A-1222	03 A-N	12/7/22	0920	WATER GRAB	14	X	X		X	X	X	X	X	X	X		
CCW-2B-1222	04	12/7/22	1040	WATER	14	X	X		X	X	X	X	X	X	X		
CCW-2C-1222	05	12/7/22	1140	WATER	14	X	X		X	X	X	X	X	X	X		
CCW-3C-1222	06	12/7/22	1245	WATER	14	X	X		X	X	X	X	X	X	X		
CCW-3B-1222	07	12/7/22	1335	WATER	14	X	X		X	X	X	X	X	X	X		

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	ANTHONY CERRUTI	DOF	12/7/22	1406
Received by: VW/H		FBI	12-7-22	1408
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 2, 2023

Trevor Louviere, Project Manager
Dalton Olmsted Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, WA 98134

Dear Mr Louviere:

Included are the amended results from the testing of material submitted on December 8, 2022 from the TWAAFA-001, F&BI 212147 project. The NWTPH-Dx concentrations for samples CCW-6B-1222 and CCW-7B-1222 were qualified with x.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Anthony Cerruti, Tasya Gray
DOF0105R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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www.friedmanandbruya.com

January 5, 2023

Trevor Louviere, Project Manager
Dalton Olmsted Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, WA 98134

Dear Mr Louviere:

Included are the results from the testing of material submitted on December 8, 2022 from the TWAAFA-001, F&BI 212147
project. There are 66 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Anthony Cerruti, Tasya Gray
DOF0105R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 8, 2022 by Friedman & Bruya, Inc. from the Dalton Olmsted Fuglevand TWAAFA-001, F&BI 212147 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Dalton Olmsted Fuglevand
212147 -01	CCW-3A-1222
212147 -02	TRIP BLANK 3-1222
212147 -03	CCW-6B-1222
212147 -04	CCW-9-6B-1222
212147 -05	CCW-6C-1222
212147 -06	FIELD BLANK 1-1222
212147 -07	CCW-7B-1222
212147 -08	CCW-7C-1222

Sample CCW-3A-1222 was sent to Fremont Analytical for EPH analysis. In addition, sample CCW-3A-1222 was sent to Onsite Environmental for VPH analysis. The reports are enclosed.

Mercury in the 1631E matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

Bis(2-ethylhexyl)phthalate and phenanthrene were detected in the 8270E method blank and the field samples. The data were flagged accordingly.

Several 8260D compounds in the 8260D matrix spike and matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

An 8270E internal standard failed the acceptance criteria for samples CCW-3A-1222 and CCW-6B-1222. The samples were diluted and reanalyzed with acceptable results. Both data sets were reported.

Several 8270E compounds exceeded the acceptance criteria in the matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

The 8270E calibration standard failed the acceptance criteria for di-n-butyl-phthalate and di-n-octyl phthalate. The data were flagged accordingly.

The 8270E samples were filtered prior to extraction. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147
Date Extracted: 12/14/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CCW-3A-1222 212147-01	450	129
TRIP BLANK 3-1222 212147-02	<100	120
CCW-6B-1222 212147-03	200	124
CCW-9-6B-1222 212147-04	160	114
CCW-6C-1222 212147-05	<100	114
FIELD BLANK 1-1222 212147-06	<100	115
CCW-7B-1222 212147-07	950	126
CCW-7C-1222 212147-08	<100	113
Method Blank 02-2928 MB	<100	114

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147
Date Extracted: 12/14/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
CCW-3A-1222 212147-01 1/0.4	6,300	4,100	ip
CCW-6B-1222 212147-03 1/0.4	520 x	380 x	125
CCW-9-6B-1222 212147-04 1/0.4	530 x	400 x	125
CCW-6C-1222 212147-05 1/0.4	650 x	530 x	124
FIELD BLANK 1-1222 212147-06 1/0.4	64 x	<250	128
CCW-7B-1222 212147-07 1/0.4	1,100 x	430 x	126
CCW-7C-1222 212147-08 1/0.4	450 x	430 x	129
Method Blank 02-2949 MB	<50	<250	120

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-01 x25
Date Analyzed:	12/15/22	Data File:	212147-01 x25.145
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	61.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-3A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-01
Date Analyzed:	12/14/22	Data File:	212147-01.231
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<1
Chromium	2.11
Copper	1.15
Lead	4.78
Manganese	73.7
Nickel	143
Zinc	394

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-03
Date Analyzed:	12/14/22	Data File:	212147-03.232
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	4.69
Chromium	1.25
Copper	67.3
Lead	133
Manganese	860
Nickel	7.31

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-03 x10
Date Analyzed:	12/15/22	Data File:	212147-03 x10.146
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	16.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-03 x5
Date Analyzed:	12/14/22	Data File:	212147-03 x5.225
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Zinc	1,360

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-04
Date Analyzed:	12/14/22	Data File:	212147-04.233
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	4.71
Chromium	1.20
Copper	67.2
Lead	133
Manganese	836
Nickel	7.57

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-04 x10
Date Analyzed:	12/16/22	Data File:	212147-04 x10.147
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	17.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-04 x5
Date Analyzed:	12/14/22	Data File:	212147-04 x5.226
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Zinc	1,450

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-05
Date Analyzed:	12/14/22	Data File:	212147-05.238
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<1
Chromium	23.1
Copper	1.98
Lead	<1
Manganese	239
Nickel	1.28
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-05 x5
Date Analyzed:	12/16/22	Data File:	212147-05 x5.148
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	8.95

Analysis For Total Metals By EPA Method 6020B

Client ID:	FIELD BLANK 1-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-06
Date Analyzed:	12/16/22	Data File:	212147-06.149
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	1.58
Copper	2.87
Lead	<1
Manganese	3.88
Nickel	<1
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-07
Date Analyzed:	12/14/22	Data File:	212147-07.240
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<1
Chromium	1.14
Copper	9.83
Lead	20.8
Manganese	901
Nickel	2.10
Zinc	106

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-07 x2
Date Analyzed:	12/16/22	Data File:	212147-07 x2.150
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	5.72

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-7C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	212147-08
Date Analyzed:	12/16/22	Data File:	212147-08.151
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.36
Cadmium	<1
Chromium	7.04
Copper	<1
Lead	<1
Manganese	188
Nickel	1.40
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	NA	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/13/22	Lab ID:	I2-896 mb
Date Analyzed:	12/13/22	Data File:	I2-896 mb.197
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147
Date Extracted: 12/09/22
Date Analyzed: 12/14/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
CCW-3A-1222 212147-01	<0.02
CCW-6B-1222 212147-03	0.031
CCW-9-6B-1222 212147-04	0.030
CCW-6C-1222 212147-05	<0.02
FIELD BLANK 1-1222 212147-06	<0.02
CCW-7B-1222 212147-07	<0.02
CCW-7C-1222 212147-08	<0.02
Method Blank i2-886 MB 07	<0.02

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-3A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-01
Date Analyzed:	12/17/22	Data File:	121631.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	1.7

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-03
Date Analyzed:	12/17/22	Data File:	121627.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	89	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-04
Date Analyzed:	12/17/22	Data File:	121628.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	95	50	150
4-Bromofluorobenzene	89	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-05
Date Analyzed:	12/17/22	Data File:	121632.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	9.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	FIELD BLANK 1-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-06
Date Analyzed:	12/17/22	Data File:	121629.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	93	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-07
Date Analyzed:	12/17/22	Data File:	121630.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	50	150
Toluene-d8	103	50	150
4-Bromofluorobenzene	94	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-7C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	212147-08 1/5
Date Analyzed:	12/17/22	Data File:	121633.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	88	50	150
4-Bromofluorobenzene	95	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	7.1

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/16/22	Lab ID:	02-2972 mb
Date Analyzed:	12/16/22	Data File:	121626.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-3A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-01
Date Analyzed:	12/14/22	Data File:	121446.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.31	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	25
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	10
Hexane	<5	o-Xylene	7.9
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	1.0
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	1.1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	1.0
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	3.5
Benzene	13	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	28		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TRIP BLANK 3-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-02
Date Analyzed:	12/14/22	Data File:	121439.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-03
Date Analyzed:	12/14/22	Data File:	121447.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.083	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	10
Trichlorofluoromethane	<1	Ethylbenzene	7.0
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	2.0
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	1.4
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	1.4
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	12	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	1.5		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-04
Date Analyzed:	12/14/22	Data File:	121448.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.087	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	10
Trichlorofluoromethane	<1	Ethylbenzene	6.8
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	2.0
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	1.3
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	1.3
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	12	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	1.4		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-05
Date Analyzed:	12/15/22	Data File:	121449.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	89	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-07
Date Analyzed:	12/15/22	Data File:	121451.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	101	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.093	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	40
Trichlorofluoromethane	<1	Ethylbenzene	55
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	5.0
Hexane	<5	o-Xylene	10
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	6.9
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	12
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	1.9
Benzene	15	sec-Butylbenzene	2.0
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	14		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-7C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	212147-08
Date Analyzed:	12/15/22	Data File:	121450.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	78	126
Toluene-d8	94	84	115
4-Bromofluorobenzene	105	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	3.4	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/15/22	Lab ID:	02-2961 mb
Date Analyzed:	12/14/22	Data File:	121437.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-3A-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-01 1/0.5
Date Analyzed:	12/12/22	Data File:	121213.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45	10	60
Phenol-d6	34	10	49
Nitrobenzene-d5	74	15	144
2-Fluorobiphenyl	61	25	128
2,4,6-Tribromophenol	86	10	142
Terphenyl-d14	180 ip	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5 J
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10 J
2-Chlorophenol	<1	Acenaphthene	0.21 J
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3 J
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1 J
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5 J
Benzyl alcohol	<1	4-Nitrophenol	<3 J
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	1.3 J
2-Methylphenol	<1	Fluorene	0.10 J
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1 J
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	1.5
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.11
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	0.41
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	1.7 ca
Naphthalene	1.5	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	0.45	Chrysene	<0.01
1-Methylnaphthalene	0.44	Bis(2-ethylhexyl) phthalate	0.98 j
Hexachlorocyclopentadiene	<0.3 J	Di-n-octyl phthalate	<1 J
2,4,6-Trichlorophenol	<1 J	Benzo(a)pyrene	<0.01 J
2,4,5-Trichlorophenol	<1 J	Benzo(b)fluoranthene	<0.01 J
2-Chloronaphthalene	<0.1 J	Benzo(k)fluoranthene	<0.01 J
2-Nitroaniline	<0.5 J	Indeno(1,2,3-cd)pyrene	0.015 J
Dimethyl phthalate	<1 J	Dibenz(a,h)anthracene	0.014 J
Acenaphthylene	<0.01 J	Benzo(g,h,i)perylene	<0.02 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-3A-1222 f	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-01 1/5
Date Analyzed:	12/16/22	Data File:	121525.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	43 d	11	60
Phenol-d6	31 d	11	49
Nitrobenzene-d5	83 d	11	144
2-Fluorobiphenyl	66 d	44	128
2,4,6-Tribromophenol	87 d	10	142
Terphenyl-d14	93 d	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<10	2,6-Dinitrotoluene	<5
Bis(2-chloroethyl) ether	<1	3-Nitroaniline	<100
2-Chlorophenol	<10	Acenaphthene	0.20
1,3-Dichlorobenzene	<1	2,4-Dinitrophenol	<30
1,4-Dichlorobenzene	<1	Dibenzofuran	<1
1,2-Dichlorobenzene	<1	2,4-Dinitrotoluene	<5
Benzyl alcohol	<10	4-Nitrophenol	<30
2,2'-Oxybis(1-chloropropane)	<1	Diethyl phthalate	<10
2-Methylphenol	<10	Fluorene	0.13
Hexachloroethane	<1	4-Chlorophenyl phenyl ether	<1
N-Nitroso-di-n-propylamine	<1	N-Nitrosodiphenylamine	<1
3-Methylphenol + 4-Methylphenol	<20	4-Nitroaniline	<100
Nitrobenzene	<1	4,6-Dinitro-2-methylphenol	<30
Isophorone	<1	4-Bromophenyl phenyl ether	<1
2-Nitrophenol	<10	Hexachlorobenzene	<1
2,4-Dimethylphenol	<10	Pentachlorophenol	<5
Benzoic acid	<50	Phenanthrene	0.10
Bis(2-chloroethoxy)methane	<1	Anthracene	<0.1
2,4-Dichlorophenol	<10	Carbazole	<1
1,2,4-Trichlorobenzene	<1	Di-n-butyl phthalate	<10
Naphthalene	1.6	Fluoranthene	<0.1
Hexachlorobutadiene	<1	Pyrene	<0.1
4-Chloroaniline	<100	Benzyl butyl phthalate	<10
4-Chloro-3-methylphenol	<10	Benz(a)anthracene	<0.1
2-Methylnaphthalene	<1	Chrysene	<0.1
1-Methylnaphthalene	<1	Bis(2-ethylhexyl) phthalate	<3.2 j
Hexachlorocyclopentadiene	<3	Di-n-octyl phthalate	<10
2,4,6-Trichlorophenol	<10	Benzo(a)pyrene	<0.1
2,4,5-Trichlorophenol	<10	Benzo(b)fluoranthene	<0.1
2-Chloronaphthalene	<1	Benzo(k)fluoranthene	<0.1
2-Nitroaniline	<5	Indeno(1,2,3-cd)pyrene	<0.1
Dimethyl phthalate	<10	Dibenz(a,h)anthracene	<0.1
Acenaphthylene	<0.1	Benzo(g,h,i)perylene	<0.2

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-03 1/0.5
Date Analyzed:	12/12/22	Data File:	121215.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	19	10	65
Phenol-d6	16	10	65
Nitrobenzene-d5	45	15	173
2-Fluorobiphenyl	50	25	108
2,4,6-Tribromophenol	80	10	140
Terphenyl-d14	90	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	1.1
1,3-Dichlorobenzene	0.12	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	0.31	Dibenzofuran	0.30
1,2-Dichlorobenzene	0.41	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.43
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.015 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.024
2,4-Dichlorophenol	<1	Carbazole	0.30
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	0.22	Fluoranthene	0.022
Hexachlorobutadiene	<0.1	Pyrene	0.015
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	0.32	Bis(2-ethylhexyl) phthalate	0.86 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca J
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01 J
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01 J
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01 J
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01 J
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01 J
Acenaphthylene	0.012	Benzo(g,h,i)perylene	<0.02 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-03 1/5
Date Analyzed:	12/19/22	Data File:	121907.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	18 d	10	60
Phenol-d6	15 d	10	49
Nitrobenzene-d5	38 d	15	144
2-Fluorobiphenyl	50 d	25	128
2,4,6-Tribromophenol	78 d	10	142
Terphenyl-d14	79 d	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<10	2,6-Dinitrotoluene	<5
Bis(2-chloroethyl) ether	<1	3-Nitroaniline	<100
2-Chlorophenol	<10	Acenaphthene	1.1
1,3-Dichlorobenzene	<1	2,4-Dinitrophenol	<30
1,4-Dichlorobenzene	<1	Dibenzofuran	<1
1,2-Dichlorobenzene	<1	2,4-Dinitrotoluene	<5
Benzyl alcohol	<10	4-Nitrophenol	<30
2,2'-Oxybis(1-chloropropane)	<1	Diethyl phthalate	<10
2-Methylphenol	<10	Fluorene	0.41
Hexachloroethane	<1	4-Chlorophenyl phenyl ether	<1
N-Nitroso-di-n-propylamine	<1	N-Nitrosodiphenylamine	<1
3-Methylphenol + 4-Methylphenol	<20	4-Nitroaniline	<100
Nitrobenzene	<1	4,6-Dinitro-2-methylphenol	<30
Isophorone	<1	4-Bromophenyl phenyl ether	<1
2-Nitrophenol	<10	Hexachlorobenzene	<1
2,4-Dimethylphenol	<10	Pentachlorophenol	<5
Benzoic acid	<50	Phenanthrene	<0.1
Bis(2-chloroethoxy)methane	<1	Anthracene	<0.1
2,4-Dichlorophenol	<10	Carbazole	<1
1,2,4-Trichlorobenzene	<1	Di-n-butyl phthalate	<10 ca
Naphthalene	<1	Fluoranthene	<0.1
Hexachlorobutadiene	<1	Pyrene	<0.1
4-Chloroaniline	<100	Benzyl butyl phthalate	<10
4-Chloro-3-methylphenol	<10	Benz(a)anthracene	<0.1
2-Methylnaphthalene	<1	Chrysene	<0.1
1-Methylnaphthalene	<1	Bis(2-ethylhexyl) phthalate	<3.2 j
Hexachlorocyclopentadiene	<3	Di-n-octyl phthalate	<10
2,4,6-Trichlorophenol	<10	Benzo(a)pyrene	<0.1
2,4,5-Trichlorophenol	<10	Benzo(b)fluoranthene	<0.1
2-Chloronaphthalene	<1	Benzo(k)fluoranthene	<0.1
2-Nitroaniline	<5	Indeno(1,2,3-cd)pyrene	<0.1
Dimethyl phthalate	<10	Dibenz(a,h)anthracene	<0.1
Acenaphthylene	<0.1	Benzo(g,h,i)perylene	<0.2

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-04 1/0.5
Date Analyzed:	12/12/22	Data File:	121216.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	28	10	60
Phenol-d6	21	10	49
Nitrobenzene-d5	63	15	144
2-Fluorobiphenyl	62	25	128
2,4,6-Tribromophenol	91	10	142
Terphenyl-d14	103	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	1.3
1,3-Dichlorobenzene	0.14	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	0.37	Dibenzofuran	0.36
1,2-Dichlorobenzene	0.52	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.51
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.010 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.026
2,4-Dichlorophenol	<1	Carbazole	0.35
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	0.27	Fluoranthene	0.028
Hexachlorobutadiene	<0.1	Pyrene	0.020
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	0.40	Bis(2-ethylhexyl) phthalate	0.40 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.016
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.014
Acenaphthylene	0.014	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-05 1/0.5
Date Analyzed:	12/12/22	Data File:	121217.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35	10	60
Phenol-d6	32	10	49
Nitrobenzene-d5	75	15	144
2-Fluorobiphenyl	71	25	128
2,4,6-Tribromophenol	96	10	142
Terphenyl-d14	109	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	FIELD BLANK 1-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-06 1/0.5
Date Analyzed:	12/12/22	Data File:	121218.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	32	10	60
Phenol-d6	23	10	49
Nitrobenzene-d5	74	15	144
2-Fluorobiphenyl	74	25	128
2,4,6-Tribromophenol	84	10	142
Terphenyl-d14	107	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-07 1/0.5
Date Analyzed:	12/12/22	Data File:	121219.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	29	10	60
Phenol-d6	21	10	49
Nitrobenzene-d5	59	15	144
2-Fluorobiphenyl	63	25	128
2,4,6-Tribromophenol	93	10	142
Terphenyl-d14	99	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	16
1,3-Dichlorobenzene	1.3	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	3.5	Dibenzofuran	8.5
1,2-Dichlorobenzene	3.7	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	11
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.65
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.83
2,4-Dichlorophenol	<1	Carbazole	5.7
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	7.3	Fluoranthene	1.4
Hexachlorobutadiene	<0.1	Pyrene	0.84
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.039
2-Methylnaphthalene	<0.1	Chrysene	0.044
1-Methylnaphthalene	19	Bis(2-ethylhexyl) phthalate	0.40 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.019
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.015
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.011
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.013
Acenaphthylene	0.21	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-7C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	212147-08 1/0.5
Date Analyzed:	12/13/22	Data File:	121220.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	38	10	60
Phenol-d6	31	10	49
Nitrobenzene-d5	81	15	144
2-Fluorobiphenyl	64	25	128
2,4,6-Tribromophenol	92	10	142
Terphenyl-d14	115	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.011 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank f	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/12/22	Lab ID:	02-2945 mb 1/0.5
Date Analyzed:	12/12/22	Data File:	121212.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	26	10	60
Phenol-d6	20	10	49
Nitrobenzene-d5	60	15	144
2-Fluorobiphenyl	66	25	128
2,4,6-Tribromophenol	75	10	142
Terphenyl-d14	94	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-3A-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-01 1/0.5
Date Analyzed:	12/14/22	Data File:	121425.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	46	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	0.072
Aroclor 1248	<0.0035 j
Aroclor 1254	0.030
Aroclor 1260	0.024
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-03 1/0.5
Date Analyzed:	12/14/22	Data File:	121426.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-9-6B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-04 1/0.5
Date Analyzed:	12/14/22	Data File:	121427.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	33	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-6C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-05 1/0.5
Date Analyzed:	12/14/22	Data File:	121428.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	28	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	FIELD BLANK 1-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-06 1/0.5
Date Analyzed:	12/14/22	Data File:	121429.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	43	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-7B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-07 1/0.5
Date Analyzed:	12/14/22	Data File:	121430.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	39	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-7C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/08/22	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	212147-08 1/0.5
Date Analyzed:	12/14/22	Data File:	121431.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	46	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212147
Date Extracted:	12/14/22	Lab ID:	02-2995 mb2 1/0.5
Date Analyzed:	12/14/22	Data File:	121413.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	31	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	950	118 b	125 b	50-150	6 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	120	70-130

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	1,000	1,400	89	84	70-130	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	1,000	94	70-130

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212147-07 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<10	94	98	75-125	4
Cadmium	ug/L (ppb)	5	<10	97	102	75-125	5
Chromium	ug/L (ppb)	20	<10	92	99	75-125	7
Copper	ug/L (ppb)	20	12.1	95	99	75-125	4
Lead	ug/L (ppb)	10	29.8	87	96	75-125	10
Manganese	ug/L (ppb)	20	1,040	0 b	106	75-125	200 b
Nickel	ug/L (ppb)	20	<10	93	97	75-125	4
Zinc	ug/L (ppb)	50	130	85	94	75-125	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	97	80-120
Cadmium	ug/L (ppb)	5	97	80-120
Chromium	ug/L (ppb)	20	95	80-120
Copper	ug/L (ppb)	20	97	80-120
Lead	ug/L (ppb)	10	96	80-120
Manganese	ug/L (ppb)	20	87	80-120
Nickel	ug/L (ppb)	20	96	80-120
Zinc	ug/L (ppb)	50	97	80-120

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.02	72	70 vo	71-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	96	68-125

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	<0.4	117	112	50-150	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	98	94	70-130	4

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	67	58	50-150	14
Chloromethane	ug/L (ppb)	10	<10	71	69	50-150	3
Vinyl chloride	ug/L (ppb)	10	<0.2	72	69	50-150	4
Bromomethane	ug/L (ppb)	10	<1	84	85	50-150	1
Chloroethane	ug/L (ppb)	10	<1	78	75	50-150	4
Trichlorofluoromethane	ug/L (ppb)	10	<1	63	58	50-150	8
Acetone	ug/L (ppb)	50	<10	48 vo	46 vo	50-150	4
1,1-Dichloroethene	ug/L (ppb)	10	<1	68	65	50-150	5
Hexane	ug/L (ppb)	10	<1	55	50	50-150	10
Methylene chloride	ug/L (ppb)	10	<5	70	64	50-150	9
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	69	65	50-150	6
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	69	65	50-150	6
1,1-Dichloroethane	ug/L (ppb)	10	<1	70	67	50-150	4
2,2-Dichloropropane	ug/L (ppb)	10	<1	59	59	50-150	0
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	71	67	50-150	6
Chloroform	ug/L (ppb)	10	<1	67	64	50-150	5
2-Butanone (MEK)	ug/L (ppb)	50	<10	64	53	50-150	19
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	69	66	50-150	4
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	68	64	50-150	6
1,1-Dichloropropene	ug/L (ppb)	10	<1	66	60	50-150	10
Carbon tetrachloride	ug/L (ppb)	10	<1	70	61	50-150	14
Benzene	ug/L (ppb)	10	<0.35	70	66	50-150	6
Trichloroethene	ug/L (ppb)	10	<1	62	58	50-150	7
1,2-Dichloropropane	ug/L (ppb)	10	<1	70	62	50-150	12
Bromodichloromethane	ug/L (ppb)	10	<1	67	64	50-150	5
Dibromomethane	ug/L (ppb)	10	<1	72	71	50-150	1
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	67	60	50-150	11
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	63	62	50-150	2
Toluene	ug/L (ppb)	10	<1	68	62	50-150	9
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	65	61	50-150	6
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	69	66	50-150	4
2-Hexanone	ug/L (ppb)	50	<10	67	59	50-150	13
1,3-Dichloropropane	ug/L (ppb)	10	<1	70	66	50-150	6
Tetrachloroethene	ug/L (ppb)	10	<1	59	54	50-150	9
Dibromochloromethane	ug/L (ppb)	10	<1	69	65	50-150	6
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	69	65	50-150	6
Chlorobenzene	ug/L (ppb)	10	<1	78	63	50-150	21 vo
Ethylbenzene	ug/L (ppb)	10	<1	66	60	50-150	10
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	71	65	50-150	9
m,p-Xylene	ug/L (ppb)	20	<2	64	58	50-150	10
o-Xylene	ug/L (ppb)	10	<1	67	61	50-150	9
Styrene	ug/L (ppb)	10	<1	69	61	50-150	12
Isopropylbenzene	ug/L (ppb)	10	<1	64	58	50-150	10
Bromoform	ug/L (ppb)	10	<1	71	65	50-150	9
n-Propylbenzene	ug/L (ppb)	10	<1	63	57	50-150	10
Bromobenzene	ug/L (ppb)	10	<1	67	63	50-150	6
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	62	57	50-150	8
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	78	73	50-150	7
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	67	66	50-150	2
2-Chlorotoluene	ug/L (ppb)	10	<1	66	58	50-150	13
4-Chlorotoluene	ug/L (ppb)	10	<1	64	59	50-150	8
tert-Butylbenzene	ug/L (ppb)	10	<1	65	58	50-150	11
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	66	57	50-150	15
sec-Butylbenzene	ug/L (ppb)	10	<1	62	55	50-150	12
p-Isopropyltoluene	ug/L (ppb)	10	<1	60	55	50-150	9
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	68	66	50-150	3
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	62	57	50-150	8

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	84	85	50-150	1
Chloromethane	ug/L (ppb)	10	<10	85	104	50-150	20
Vinyl chloride	ug/L (ppb)	10	<0.2	90	89	50-150	1
Bromomethane	ug/L (ppb)	10	<1	107	116	50-150	8
Chloroethane	ug/L (ppb)	10	<1	99	100	50-150	1
Trichlorofluoromethane	ug/L (ppb)	10	<1	82	85	50-150	4
Acetone	ug/L (ppb)	50	<10	65	67	50-150	3
1,1-Dichloroethene	ug/L (ppb)	10	<1	85	90	50-150	6
Hexane	ug/L (ppb)	10	<1	60	66	50-150	10
Methylene chloride	ug/L (ppb)	10	<5	88	90	50-150	2
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	88	91	50-150	3
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	86	88	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	90	92	50-150	2
2,2-Dichloropropane	ug/L (ppb)	10	<1	78	84	50-150	7
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	90	91	50-150	1
Chloroform	ug/L (ppb)	10	<1	87	87	50-150	0
2-Butanone (MEK)	ug/L (ppb)	50	<10	74	83	50-150	11
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	90	92	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	88	90	50-150	2
1,1-Dichloropropene	ug/L (ppb)	10	<1	79	85	50-150	7
Carbon tetrachloride	ug/L (ppb)	10	<1	90	91	50-150	1
Benzene	ug/L (ppb)	10	<0.35	95	90	50-150	5
Trichloroethene	ug/L (ppb)	10	<1	78	81	50-150	4
1,2-Dichloropropane	ug/L (ppb)	10	<1	84	87	50-150	4
Bromodichloromethane	ug/L (ppb)	10	<1	91	89	50-150	2
Dibromomethane	ug/L (ppb)	10	<1	87	92	50-150	6
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	80	85	50-150	6
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	79	84	50-150	6
Toluene	ug/L (ppb)	10	<1	83	87	50-150	5
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	82	84	50-150	2
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	85	91	50-150	7
2-Hexanone	ug/L (ppb)	50	<10	73	79	50-150	8
1,3-Dichloropropane	ug/L (ppb)	10	<1	86	92	50-150	7
Tetrachloroethene	ug/L (ppb)	10	<1	71	79	50-150	11
Dibromochloromethane	ug/L (ppb)	10	<1	90	88	50-150	2
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	84	89	50-150	6
Chlorobenzene	ug/L (ppb)	10	<1	83	86	50-150	4
Ethylbenzene	ug/L (ppb)	10	<1	72	79	50-150	9
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	85	90	50-150	6
m,p-Xylene	ug/L (ppb)	20	<2	76	82	50-150	8
o-Xylene	ug/L (ppb)	10	<1	80	85	50-150	6
Styrene	ug/L (ppb)	10	<1	79	84	50-150	6
Isopropylbenzene	ug/L (ppb)	10	<1	77	83	50-150	7
Bromoform	ug/L (ppb)	10	<1	84	86	50-150	2
n-Propylbenzene	ug/L (ppb)	10	<1	75	81	50-150	8
Bromobenzene	ug/L (ppb)	10	<1	83	86	50-150	4
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	73	81	50-150	10
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	91	96	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	85	87	50-150	2
2-Chlorotoluene	ug/L (ppb)	10	<1	83	90	50-150	8
4-Chlorotoluene	ug/L (ppb)	10	<1	75	84	50-150	11
tert-Butylbenzene	ug/L (ppb)	10	<1	78	86	50-150	10
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	76	83	50-150	9
sec-Butylbenzene	ug/L (ppb)	10	<1	74	82	50-150	10
p-Isopropyltoluene	ug/L (ppb)	10	<1	73	81	50-150	10
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	101	102	50-150	1
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	78	85	50-150	9

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	104	97	46-206	7
Chloromethane	ug/L (ppb)	10	90	85	70-142	6
Vinyl chloride	ug/L (ppb)	10	95	94	70-130	1
Bromomethane	ug/L (ppb)	10	112	129	56-197	14
Chloroethane	ug/L (ppb)	10	101	100	70-130	1
Trichlorofluoromethane	ug/L (ppb)	10	92	89	70-130	3
Acetone	ug/L (ppb)	50	82	81	10-140	1
1,1-Dichloroethene	ug/L (ppb)	10	95	95	70-130	0
Hexane	ug/L (ppb)	10	104	96	54-136	8
Methylene chloride	ug/L (ppb)	10	83	78	43-134	6
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	98	97	70-130	1
trans-1,2-Dichloroethene	ug/L (ppb)	10	98	95	70-130	3
1,1-Dichloroethane	ug/L (ppb)	10	98	96	70-130	2
2,2-Dichloropropane	ug/L (ppb)	10	100	106	70-130	6
cis-1,2-Dichloroethene	ug/L (ppb)	10	98	96	70-130	2
Chloroform	ug/L (ppb)	10	97	94	70-130	3
2-Butanone (MEK)	ug/L (ppb)	50	92	84	17-154	9
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	95	94	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	99	97	70-130	2
1,1-Dichloropropene	ug/L (ppb)	10	98	95	70-130	3
Carbon tetrachloride	ug/L (ppb)	10	103	102	70-130	1
Benzene	ug/L (ppb)	10	98	96	70-130	2
Trichloroethene	ug/L (ppb)	10	93	91	70-130	2
1,2-Dichloropropane	ug/L (ppb)	10	95	94	70-130	1
Bromodichloromethane	ug/L (ppb)	10	98	94	70-130	4
Dibromomethane	ug/L (ppb)	10	102	98	70-130	4
4-Methyl-2-pentanone	ug/L (ppb)	50	102	101	68-130	1
cis-1,3-Dichloropropene	ug/L (ppb)	10	98	96	69-131	2
Toluene	ug/L (ppb)	10	96	96	70-130	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	101	98	70-130	3
1,1,2-Trichloroethane	ug/L (ppb)	10	99	100	70-130	1
2-Hexanone	ug/L (ppb)	50	97	98	45-138	1
1,3-Dichloropropane	ug/L (ppb)	10	102	99	70-130	3
Tetrachloroethene	ug/L (ppb)	10	95	94	70-130	1
Dibromochloromethane	ug/L (ppb)	10	105	103	60-148	2
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	98	98	70-130	0
Chlorobenzene	ug/L (ppb)	10	100	100	70-130	0
Ethylbenzene	ug/L (ppb)	10	100	99	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	103	105	70-130	2
m,p-Xylene	ug/L (ppb)	20	100	98	70-130	2
o-Xylene	ug/L (ppb)	10	100	99	70-130	1
Styrene	ug/L (ppb)	10	101	98	70-130	3
Isopropylbenzene	ug/L (ppb)	10	101	100	70-130	1
Bromoform	ug/L (ppb)	10	105	104	69-138	1
n-Propylbenzene	ug/L (ppb)	10	103	100	70-130	3
Bromobenzene	ug/L (ppb)	10	99	99	70-130	0
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	99	70-130	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	116	115	70-130	1
1,2,3-Trichloropropane	ug/L (ppb)	10	103	102	70-130	1
2-Chlorotoluene	ug/L (ppb)	10	101	100	70-130	1
4-Chlorotoluene	ug/L (ppb)	10	102	98	70-130	4
tert-Butylbenzene	ug/L (ppb)	10	101	100	70-130	1
1,2,4-Trimethylbenzene	ug/L (ppb)	10	99	99	70-130	0
sec-Butylbenzene	ug/L (ppb)	10	101	102	70-130	1
p-Isopropyltoluene	ug/L (ppb)	10	104	101	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	101	100	70-130	1
1,2,3-Trichlorobenzene	ug/L (ppb)	10	103	101	70-130	2

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 212147-01 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Phenol	ug/L (ppb)	5	<1	32	34	10-76	6
Bis(2-chloroethyl) ether	ug/L (ppb)	5	<0.1	49	48	35-104	2
2-Chlorophenol	ug/L (ppb)	5	<1	67	67	18-97	0
1,3-Dichlorobenzene	ug/L (ppb)	5	<0.1	97 vo	106 vo	34-90	9
1,4-Dichlorobenzene	ug/L (ppb)	5	<0.1	181 vo	196 vo	36-90	8
1,2-Dichlorobenzene	ug/L (ppb)	5	<0.1	188 vo	208 vo	38-90	10
Benzyl alcohol	ug/L (ppb)	25	<1	59	62	27-89	5
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	5	<0.1	61	65	30-109	6
2-Methylphenol	ug/L (ppb)	5	<1	58	62	25-95	7
Hexachloroethane	ug/L (ppb)	5	<0.1	185 vo	196 vo	38-88	6
N-Nitroso-di-n-propylamine	ug/L (ppb)	5	<0.1	70	77	50-150	10
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	5	<2	65	70	15-95	7
Nitrobenzene	ug/L (ppb)	5	<0.1	74	76	41-114	3
Isophorone	ug/L (ppb)	5	<0.1	69	73	50-150	6
2-Nitrophenol	ug/L (ppb)	5	<1	71	80	21-113	12
2,4-Dimethylphenol	ug/L (ppb)	5	<1	44 vo	47 vo	50-150	7
Benzoic acid	ug/L (ppb)	40	<5	45	48	10-73	6
Bis(2-chloroethoxy)methane	ug/L (ppb)	5	<0.1	65	71	50-150	9
2,4-Dichlorophenol	ug/L (ppb)	5	<1	76	81	26-110	6
1,2,4-Trichlorobenzene	ug/L (ppb)	5	<0.1	63	66	42-95	5
Naphthalene	ug/L (ppb)	5	1.5	315 b	353 b	46-95	11 b
Hexachlorobutadiene	ug/L (ppb)	5	<0.1	65	67	39-94	3
4-Chloroaniline	ug/L (ppb)	25	<10	26	33	16-114	24 vo
4-Chloro-3-methylphenol	ug/L (ppb)	5	<1	87	89	46-123	2
2-Methylnaphthalene	ug/L (ppb)	5	0.45	57	61	50-150	7
1-Methylnaphthalene	ug/L (ppb)	5	0.44	763 vo	819 vo	50-150	7
Hexachlorocyclopentadiene	ug/L (ppb)	5	<0.3 J	63	75	28-122	17
2,4,6-Trichlorophenol	ug/L (ppb)	5	<1 J	77	83	10-149	7
2,4,5-Trichlorophenol	ug/L (ppb)	5	<1 J	78	85	10-143	9
2-Chloronaphthalene	ug/L (ppb)	5	<0.1 J	66	70	50-150	6
2-Nitroaniline	ug/L (ppb)	25	<0.5 J	78	82	41-139	5
Dimethyl phthalate	ug/L (ppb)	5	<1 J	80	82	50-150	2
Acenaphthylene	ug/L (ppb)	5	<0.01 J	98	80	50-150	20
2,6-Dinitrotoluene	ug/L (ppb)	5	<0.5 J	91	104	50-150	13
3-Nitroaniline	ug/L (ppb)	25	<10 J	31	34	21-124	9
Acenaphthene	ug/L (ppb)	5	0.21 J	644 vo	671 vo	50-150	4
2,4-Dinitrophenol	ug/L (ppb)	10	<3 J	122	131	10-182	7
Dibenzofuran	ug/L (ppb)	5	<0.1 J	377 vo	387 vo	46-116	3
2,4-Dinitrotoluene	ug/L (ppb)	5	<0.5 J	102	104	50-150	2
4-Nitrophenol	ug/L (ppb)	10	<3 J	55	52	10-86	6
Diethyl phthalate	ug/L (ppb)	5	1.3 J	36 b	36 b	50-150	0 b
Fluorene	ug/L (ppb)	5	0.10 J	491 vo	488 vo	50-150	1
4-Chlorophenyl phenyl ether	ug/L (ppb)	5	<0.1 J	80	84	50-150	5
N-Nitrosodiphenylamine	ug/L (ppb)	5	1.5	47 b	52 b	50-150	10 b
4-Nitroaniline	ug/L (ppb)	25	<10	44 vo	48	46-105	9
4,6-Dinitro-2-methylphenol	ug/L (ppb)	5	<3	134	146	10-223	9
4-Bromophenyl phenyl ether	ug/L (ppb)	5	<0.1	80	84	50-150	5
Hexachlorobenzene	ug/L (ppb)	5	<0.1	77	83	50-150	7
Pentachlorophenol	ug/L (ppb)	5	<0.5	106	112	10-207	6
Phenanthrene	ug/L (ppb)	5	0.11	160 vo	110	50-150	37 vo
Anthracene	ug/L (ppb)	5	<0.01	121	113	50-150	7
Carbazole	ug/L (ppb)	5	0.41	277 vo	290 vo	50-150	5
Di-n-butyl phthalate	ug/L (ppb)	5	1.7	48 b	34 b	50-150	34 b
Fluoranthene	ug/L (ppb)	5	<0.01	136	137	50-150	1
Pyrene	ug/L (ppb)	5	<0.01	126	122	50-150	3
Benzyl butyl phthalate	ug/L (ppb)	5	<1	79	85	50-150	7
Benz(a)anthracene	ug/L (ppb)	5	<0.01	83	86	50-150	4
Chrysene	ug/L (ppb)	5	<0.01	86	89	50-150	3
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	5	0.98 j	83	79	46-157	5
Di-n-octyl phthalate	ug/L (ppb)	5	<1 J	124	125	50-150	1
Benzo(a)pyrene	ug/L (ppb)	5	<0.01 J	84	88	50-150	5
Benzo(b)fluoranthene	ug/L (ppb)	5	<0.01 J	89	89	50-150	0
Benzo(k)fluoranthene	ug/L (ppb)	5	<0.01 J	85	88	50-150	3
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	0.015 J	63	72	50-150	13
Dibenz(a,h)anthracene	ug/L (ppb)	5	0.014 J	63	75	50-150	17
Benzo(g,h,i)perylene	ug/L (ppb)	5	<0.02 J	56	67	50-150	18

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	<1	23	10-76
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	<0.1	53	35-104
2-Chlorophenol	ug/L (ppb)	2.5	<1	50	18-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	51	34-90
1,4-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	53	36-90
1,2-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	54	38-90
Benzyl alcohol	ug/L (ppb)	12.5	<1	53	27-89
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	<0.1	56	30-109
2-Methylphenol	ug/L (ppb)	2.5	<1	51	25-95
Hexachloroethane	ug/L (ppb)	2.5	<0.1	52	38-88
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	<0.1	67	50-150
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	<2	48	15-95
Nitrobenzene	ug/L (ppb)	2.5	<0.1	58	41-114
Isophorone	ug/L (ppb)	2.5	<0.1	66	50-150
2-Nitrophenol	ug/L (ppb)	2.5	<1	66	21-113
2,4-Dimethylphenol	ug/L (ppb)	2.5	<1	59	50-150
Benzoic acid	ug/L (ppb)	20	<5	25	10-73
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	<0.1	62	50-150
2,4-Dichlorophenol	ug/L (ppb)	2.5	<1	63	26-110
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	<0.1	60	42-95
Naphthalene	ug/L (ppb)	2.5	<0.1	58	46-95
Hexachlorobutadiene	ug/L (ppb)	2.5	<0.1	61	39-94
4-Chloroaniline	ug/L (ppb)	12.5	<10	55	16-114
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	<1	70	46-123
2-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	62	50-150
1-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	64	50-150
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	<0.3	62	28-122
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	<1	72	10-149
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	<1	71	10-143
2-Chloronaphthalene	ug/L (ppb)	2.5	<0.1	65	50-150
2-Nitroaniline	ug/L (ppb)	12.5	<0.5	80	41-139
Dimethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Acenaphthylene	ug/L (ppb)	2.5	<0.01	69	50-150
2,6-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	83	50-150
3-Nitroaniline	ug/L (ppb)	12.5	<10	63	21-124
Acenaphthene	ug/L (ppb)	2.5	0.016	69	50-150
2,4-Dinitrophenol	ug/L (ppb)	5	<3	98	10-182
Dibenzofuran	ug/L (ppb)	2.5	<0.1	64	46-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	81	50-150
4-Nitrophenol	ug/L (ppb)	5	<3	35	10-86
Diethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Fluorene	ug/L (ppb)	2.5	0.020	73	50-150
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	72	50-150
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	<0.1	75	50-150
4-Nitroaniline	ug/L (ppb)	12.5	<10	59	46-105
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	<3	99	10-223
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	81	50-150
Hexachlorobenzene	ug/L (ppb)	2.5	<0.1	78	50-150
Pentachlorophenol	ug/L (ppb)	2.5	<0.5	80	10-207
Phenanthrene	ug/L (ppb)	2.5	0.058	77	50-150
Anthracene	ug/L (ppb)	2.5	<0.01	76	50-150
Carbazole	ug/L (ppb)	2.5	<0.1	79	50-150
Di-n-butyl phthalate	ug/L (ppb)	2.5	<1	57	50-150
Fluoranthene	ug/L (ppb)	2.5	0.031	77	50-150
Pyrene	ug/L (ppb)	2.5	0.037	82	50-150
Benzyl butyl phthalate	ug/L (ppb)	2.5	<1	78	50-150
Benz(a)anthracene	ug/L (ppb)	2.5	<0.01	79	50-150
Chrysene	ug/L (ppb)	2.5	0.016	82	50-150
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	0.93 j	61	46-157
Di-n-octyl phthalate	ug/L (ppb)	2.5	<1	89	50-150
Benzo(a)pyrene	ug/L (ppb)	2.5	<0.01	80	50-150
Benzo(b)fluoranthene	ug/L (ppb)	2.5	0.018	79	50-150
Benzo(k)fluoranthene	ug/L (ppb)	2.5	0.015	78	50-150
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	0.014	85	50-150
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	0.014	85	50-150
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	<0.02	81	50-150

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	28	10-30
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	66	43-117
2-Chlorophenol	ug/L (ppb)	2.5	63	21-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	65	39-102
1,4-Dichlorobenzene	ug/L (ppb)	2.5	66	41-103
1,2-Dichlorobenzene	ug/L (ppb)	2.5	70	43-105
Benzyl alcohol	ug/L (ppb)	12.5	59	14-82
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	73	51-110
2-Methylphenol	ug/L (ppb)	2.5	52	19-77
Hexachloroethane	ug/L (ppb)	2.5	64	39-104
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	77	60-114
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	53	14-63
Nitrobenzene	ug/L (ppb)	2.5	73	53-114
Isophorone	ug/L (ppb)	2.5	101	62-113
2-Nitrophenol	ug/L (ppb)	2.5	81	41-117
2,4-Dimethylphenol	ug/L (ppb)	2.5	30	23-105
Benzoic acid	ug/L (ppb)	20	14	10-25
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	74	56-111
2,4-Dichlorophenol	ug/L (ppb)	2.5	70	34-113
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	74	48-104
Naphthalene	ug/L (ppb)	2.5	71	50-104
Hexachlorobutadiene	ug/L (ppb)	2.5	75	40-107
4-Chloroaniline	ug/L (ppb)	12.5	65	34-120
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	73	34-111
2-Methylnaphthalene	ug/L (ppb)	2.5	75	54-109
1-Methylnaphthalene	ug/L (ppb)	2.5	77	55-108
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	73	34-126
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	78	28-125
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	83	39-120
2-Chloronaphthalene	ug/L (ppb)	2.5	78	57-130
2-Nitroaniline	ug/L (ppb)	12.5	92	51-146
Dimethyl phthalate	ug/L (ppb)	2.5	84	64-118
Acenaphthylene	ug/L (ppb)	2.5	82	60-114
2,6-Dinitrotoluene	ug/L (ppb)	2.5	102	66-121
3-Nitroaniline	ug/L (ppb)	12.5	77	42-134
Acenaphthene	ug/L (ppb)	2.5	82	57-110
2,4-Dinitrophenol	ug/L (ppb)	5	73	10-171
Dibenzofuran	ug/L (ppb)	2.5	75	52-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	94	55-127
4-Nitrophenol	ug/L (ppb)	5	34	10-46
Diethyl phthalate	ug/L (ppb)	2.5	83	63-118
Fluorene	ug/L (ppb)	2.5	83	61-115
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	82	61-112
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	80	63-116
4-Nitroaniline	ug/L (ppb)	12.5	72	42-150
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	100	13-152
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	84	62-115
Hexachlorobenzene	ug/L (ppb)	2.5	85	60-113
Pentachlorophenol	ug/L (ppb)	2.5	58	14-137
Phenanthrene	ug/L (ppb)	2.5	85	63-113
Anthracene	ug/L (ppb)	2.5	82	65-117
Carbazole	ug/L (ppb)	2.5	80	67-131
Di-n-butyl phthalate	ug/L (ppb)	2.5	53	37-135
Fluoranthene	ug/L (ppb)	2.5	85	68-121
Pyrene	ug/L (ppb)	2.5	87	66-125
Benzyl butyl phthalate	ug/L (ppb)	2.5	81	56-128
Benz(a)anthracene	ug/L (ppb)	2.5	87	70-130
Chrysene	ug/L (ppb)	2.5	93	67-119
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	90	57-124
Di-n-octyl phthalate	ug/L (ppb)	2.5	93	43-132
Benzo(a)pyrene	ug/L (ppb)	2.5	86	68-126
Benzo(b)fluoranthene	ug/L (ppb)	2.5	85	62-130
Benzo(k)fluoranthene	ug/L (ppb)	2.5	87	67-125
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	88	63-131
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	90	62-133
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	87	57-133

Date of Report: 01/05/23
Date Received: 12/08/22
Project: TWAAFA-001, F&BI 212147

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 212147-07 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.0035 j	58	62	29-125	7
Aroclor 1260	mg/kg (ppm)	0.25	<0.0035 j	66	66	25-137	0

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.25	<0.0035 j	55	29-125
Aroclor 1260	mg/kg (ppm)	0.25	<0.0035 j	62	25-137

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	62	60	25-111	3
Aroclor 1260	ug/L (ppb)	0.25	71	68	23-123	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY

12/08/22 VWS/IY/NV

Page # 1 of 1

212147

Report To: Anthony Cerruti / Trevor Louviere
CC: Tasya Gray

Company DOF

Address 1001 SW Klickitat Way

City, State, ZIP Seattle, WA 98134

Phone 215-767-7749 Email acerruti@dofnw.com

SAMPLERS (*signature*)	
PROJECT NAME: TWAAFA	PO # TWAAFA-001
REMARKS: SVOCs lab filtered at 0.7 micron before analysis Project Specific RLs - (Yes) / No	INVOICE TO: DOF

TURNAROUND TIME
✓ Standard Turnaround
__ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other _____

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	VOCs by EPA 8260D / SIM Dual Acquisition	NWTPH-Dx	EPH + VPH	NWTPH-Gx	Total Metals 6020B (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn)	Mecury by 1631E	SVOCs EPA 8270E SIM Dual Acquisiton	cPAHs by EPA 8270	1,4 Dioxane by EPA 8260D SIM	LL PCBs 8082A	MS/MSD Collected? (Y/N)	Notes
CCW-3A-1222	01A-R	12/7/22	14.35	WATER	18	X	X	X	X	X	X	X		X	X		
TRIP BLANK #3-1222	02A-N	12/7/22	1445	WATER	2	X			X								
CCW-6B-1222	03 A/B	12/8/22	0915	WATER	14	X	X		X	X	X	X		X	X		
CCW-9-6B-1222	04 A-N	12/8/22	0920	WATER	14	X	X		X	X	X	X		X	X		
CCW-6C-1222	05 A-N	12/8/22	1045	WATER	14	X	X		X	X	X	X		X	X		
FIELD BLANK #1-1222	06 A-N	12/8/22	1040	WATER	14	X	X		X	X	X	X		X	X		
CCW-7B-1222	07 A-P	12/8/22	1200	WATER	42	X	X		X	X	X	X		X	X	Y	EXTRA VOL. FOR MS+MSD
CCW-7C-1222	08A-N	12/8/22	1300	WATER	14	X	X		X	X	X	X		X	X		

* SVOC full suite includes cPAH

Samples received at 2 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	ANTHONY CERRUTI	DOF	12/8/22	1414
Received by:	VINH	FBI	12-8-22	1414
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 212147
Work Order Number: 2212214

January 03, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 12/9/2022 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *01/03/2023*

CLIENT: Friedman & Bruya
Project: 212147
Work Order: 2212214

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2212214-001	CCW-3A-1222	12/07/2022 2:35 PM	12/09/2022 2:34 PM

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

Case Narrative

WO#: **2212214**
Date: **1/3/2023**

CLIENT: Friedman & Bruya
Project: 212147

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

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2212214**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/7/2022 2:35:00 PM
Project: 212147
Lab ID: 2212214-001
Matrix: Water
Client Sample ID: **CCW-3A-1222**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.1		µg/L	1	12/30/2022 1:02:56 PM
Aliphatic Hydrocarbon (C10-C12)	ND	39.6		µg/L	1	12/30/2022 1:02:56 PM
Aliphatic Hydrocarbon (C12-C16)	ND	39.6		µg/L	1	12/30/2022 1:02:56 PM
Aliphatic Hydrocarbon (C16-C21)	ND	39.6		µg/L	1	12/30/2022 1:02:56 PM
Aliphatic Hydrocarbon (C21-C34)	163	39.6		µg/L	1	12/30/2022 1:02:56 PM
Aromatic Hydrocarbon (C8-C10)	ND	79.1		µg/L	1	12/30/2022 8:05:18 PM
Aromatic Hydrocarbon (C10-C12)	ND	39.6		µg/L	1	12/30/2022 8:05:18 PM
Aromatic Hydrocarbon (C12-C16)	ND	39.6		µg/L	1	12/30/2022 8:05:18 PM
Aromatic Hydrocarbon (C16-C21)	61.8	39.6	Q	µg/L	1	12/30/2022 8:05:18 PM
Aromatic Hydrocarbon (C21-C34)	ND	39.6		µg/L	1	12/30/2022 8:05:18 PM
Surr: 1-Chlorooctadecane	51.3	50 - 150		%Rec	1	12/30/2022 1:02:56 PM
Surr: o-Terphenyl	44.8	50 - 150	S	%Rec	1	12/30/2022 8:05:18 PM

NOTES:
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ALI ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	42.6		40.00		107	60	140				
Surr: o-Terphenyl	43.8		40.00		109	60	140				

Sample ID: **ALI ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	212	20.0	200.0	0	106	80	120				
Aliphatic Hydrocarbon (C10-C12)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C12-C16)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C16-C21)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	10.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	42.7		40.00		107	60	140				
Surr: o-Terphenyl	43.3		40.00		108	60	140				

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	53.1		40.00		133	60	140				
Surr: o-Terphenyl	52.5		40.00		131	60	140				

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **ARO ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/2/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/2/2022** SeqNo: **1587175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	220	20.0	200.0	0	110	80	120				
Aromatic Hydrocarbon (C10-C12)	99.4	10.0	100.0	0	99.4	80	120				
Aromatic Hydrocarbon (C12-C16)	110	10.0	100.0	0	110	80	120				
Aromatic Hydrocarbon (C16-C21)	88.2	10.0	100.0	0	88.2	80	120				
Aromatic Hydrocarbon (C21-C34)	104	10.0	100.0	0	104	80	120				
Surr: 1-Chlorooctadecane	39.8		40.00		99.4	60	140				
Surr: o-Terphenyl	39.7		40.00		99.3	60	140				

Sample ID: **ALI-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672873**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	247	80.0	200.0	0	124	80	120				S
Aliphatic Hydrocarbon (C10-C12)	123	40.0	100.0	0	123	80	120				S
Aliphatic Hydrocarbon (C12-C16)	115	40.0	100.0	0	115	80	120				
Aliphatic Hydrocarbon (C16-C21)	107	40.0	100.0	0	107	80	120				
Aliphatic Hydrocarbon (C21-C34)	101	40.0	100.0	0	101	80	120				
Surr: 1-Chlorooctadecane	44.1		40.00		110	60	140				
Surr: o-Terphenyl	44.0		40.00		110	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672874**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C16-C21)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: 1-Chlorooctadecane	328		400.0		82.1	50	150				

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672875**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	301	80.0	1,000	0	30.1	5.88	130				
Aliphatic Hydrocarbon (C10-C12)	320	40.0	500.0	0	63.9	25.3	107				
Aliphatic Hydrocarbon (C12-C16)	383	40.0	500.0	0	76.5	42.5	113				
Aliphatic Hydrocarbon (C16-C21)	399	40.0	500.0	0	79.8	42.7	118				
Aliphatic Hydrocarbon (C21-C34)	298	40.0	500.0	0	59.7	27.8	137				
Surr: 1-Chlorooctadecane	320		400.0		80.1	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672876**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	367	80.0	1,000	0	36.7	5.88	130	300.7	19.9	20	
Aliphatic Hydrocarbon (C10-C12)	343	40.0	500.0	0	68.6	25.3	107	319.5	7.13	20	
Aliphatic Hydrocarbon (C12-C16)	400	40.0	500.0	0	79.9	42.5	113	382.6	4.36	20	
Aliphatic Hydrocarbon (C16-C21)	411	40.0	500.0	0	82.3	42.7	118	398.8	3.09	20	
Aliphatic Hydrocarbon (C21-C34)	301	40.0	500.0	0	60.1	27.8	137	298.5	0.694	20	
Surr: 1-Chlorooctadecane	325		400.0		81.2	50	150		0		

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672880**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	423	85.3	1,066	0	39.7	5	130				
Aliphatic Hydrocarbon (C10-C12)	345	42.6	533.1	0	64.7	17.1	108				
Aliphatic Hydrocarbon (C12-C16)	397	42.6	533.1	0	74.5	35.7	111				
Aliphatic Hydrocarbon (C16-C21)	400	42.6	533.1	0	75.1	41.1	110				
Aliphatic Hydrocarbon (C21-C34)	299	42.6	533.1	0	56.1	31.4	125				
Surr: 1-Chlorooctadecane	331		426.5		77.7	50	150				

Sample ID: **ALI-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672888**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	250	80.0	200.0	0	125	80	120				S
Aliphatic Hydrocarbon (C10-C12)	126	40.0	100.0	0	126	80	120				S
Aliphatic Hydrocarbon (C12-C16)	118	40.0	100.0	0	118	80	120				
Aliphatic Hydrocarbon (C16-C21)	114	40.0	100.0	0	114	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	40.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	46.2		40.00		116	60	140				
Surr: o-Terphenyl	45.3		40.00		113	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	248	80.0	200.0	0	124	80	120				S
Aromatic Hydrocarbon (C10-C12)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C12-C16)	117	40.0	100.0	0	117	80	120				
Aromatic Hydrocarbon (C16-C21)	84.9	40.0	100.0	0	84.9	80	120				
Aromatic Hydrocarbon (C21-C34)	85.5	40.0	100.0	0	85.5	80	120				
Surr: 1-Chlorooctadecane	32.2		40.00		80.6	60	140				
Surr: o-Terphenyl	32.1		40.00		80.4	60	140				

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803A**	SampType: **CCV**	Units: **µg/L**	Prep Date: **12/30/2022**	RunNo: **80861**
Client ID: **CCV**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **MB-38803**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **MBLKW**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672890**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aromatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aromatic Hydrocarbon (C16-C21)	ND	40.0		0	0						Q
Aromatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: o-Terphenyl	296		400.0		74.0	50	150				

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Sample ID: **LCS-38803**	SampType: **LCS**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **LCSW**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	462	80.0	1,000	0	46.2	25.2	130				
Aromatic Hydrocarbon (C10-C12)	290	40.0	500.0	0	57.9	46.2	130				
Aromatic Hydrocarbon (C12-C16)	312	40.0	500.0	0	62.3	39.9	107				
Aromatic Hydrocarbon (C16-C21)	366	40.0	500.0	0	73.3	53.4	125				
Aromatic Hydrocarbon (C21-C34)	399	40.0	500.0	0	79.8	46.5	138				
Surr: o-Terphenyl	253		400.0		63.2	50	150				

Sample ID: **LCSD-38803**	SampType: **LCSD**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **LCSW02**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	623	80.0	1,000	0	62.3	25.2	130	461.8	29.6	20	R

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C10-C12)	348	40.0	500.0	0	69.5	46.2	130	289.5	18.2	20	
Aromatic Hydrocarbon (C12-C16)	415	40.0	500.0	0	83.0	39.9	107	311.6	28.5	20	R
Aromatic Hydrocarbon (C16-C21)	420	40.0	500.0	0	84.0	53.4	125	366.5	13.6	20	
Aromatic Hydrocarbon (C21-C34)	384	40.0	500.0	0	76.9	46.5	138	398.8	3.67	20	
Surr: o-Terphenyl	317		400.0		79.2	50	150		0		

NOTES:
R - High RPD observed, spike recovery is within range.

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	588	85.3	1,066	82.09	47.5	9.66	130				
Aromatic Hydrocarbon (C10-C12)	307	42.6	533.1	0	57.5	18	105				
Aromatic Hydrocarbon (C12-C16)	389	42.6	533.1	0	73.1	45.3	109				
Aromatic Hydrocarbon (C16-C21)	309	42.6	533.1	40.30	50.5	40.6	118				
Aromatic Hydrocarbon (C21-C34)	335	42.6	533.1	0	62.8	38.1	137				
Surr: o-Terphenyl	250		426.5		58.6	50	150				

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	262	80.0	200.0	0	131	80	120				S
Aromatic Hydrocarbon (C10-C12)	99.6	40.0	100.0	0	99.6	80	120				
Aromatic Hydrocarbon (C12-C16)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C16-C21)	73.3	40.0	100.0	0	73.3	80	120				S
Aromatic Hydrocarbon (C21-C34)	86.4	40.0	100.0	0	86.4	80	120				
Surr: 1-Chlorooctadecane	26.4		40.00		66.0	60	140				
Surr: o-Terphenyl	26.7		40.00		66.7	60	140				

Work Order: 2212214
CLIENT: Friedman & Bruya
Project: 212147

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**2212214**
Logged by:	**Elisabeth Samoray**	Date Received:	**12/9/2022 2:34:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	1.3

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2212214

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont
PROJECT NAME/NO. 212147
PO # D-52
REMARKS - Tier IV
Please Email Results - ~~EQuIS~~ EIM

TURNAROUND TIME
(X) Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins/Furans	EPH	VPH							Notes
CCW-3A-1222		12/7/22	1435	H_2O	3		X	X							EPH only ME 12/9/22

ANALYSES REQUESTED

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/9/22	0900 AM
Received by:		Lily Barnegat	FAI	12/9/22	14:34
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 22, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 212147
Laboratory Reference No. 2212-101

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on December 9, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 22, 2022
Samples Submitted: December 9, 2022
Laboratory Reference: 2212-101
Project: 212147

Case Narrative

Samples were collected on December 7, 2022 and received by the laboratory on December 9, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 22, 2022
Samples Submitted: December 9, 2022
Laboratory Reference: 2212-101
Project: 212147

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CCW-3A-1222**					
Laboratory ID:	12-101-01					
Aliphatic C5-C6	**60**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**88**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**150**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**120**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**62**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**180**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**13**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**32**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**30**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**12**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**8.6**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*65-122*				

Date of Report: December 22, 2022
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Project: 212147

VOLATILE PETROLEUM HYDROCARBONS
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1219W1					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1219W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**53.8**	**55.9**	50.0	50.0		**108**	**112**	80-116	4	12	
Toluene	**52.8**	**54.8**	50.0	50.0		**106**	**110**	82-118	4	12	
Ethylbenzene	**52.4**	**54.4**	50.0	50.0		**105**	**109**	82-118	4	12	
m,p-Xylene	**52.3**	**54.1**	50.0	50.0		**105**	**108**	81-118	3	12	
o-Xylene	**53.0**	**54.6**	50.0	50.0		**106**	**109**	81-116	3	11	
Surrogate:											
Fluorobenzene						*94*	*99*	*65-122*			

Date of Report: December 22, 2022
Samples Submitted: December 9, 2022
Laboratory Reference: 2212-101
Project: 212147

VOLATILE PETROLEUM HYDROCARBONS
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
MTBE	CCVD1219V-1	50.0	57.2	-14.378	+/- 15%
Benzene	CCVD1219V-1	50.0	56.6	-13.228	+/- 15%
Toluene	CCVD1219V-1	50.0	56.2	-12.34	+/- 15%
Ethylbenzene	CCVD1219V-1	50.0	55.7	-11.344	+/- 15%
m,p-Xylene	CCVD1219V-1	50.0	56.5	-13.052	+/- 15%
o-Xylene	CCVD1219V-1	50.0	56.0	-12.092	+/- 15%
MTBE	CCVD1219V-2	50.0	56.4	-12.762	+/- 15%
Benzene	CCVD1219V-2	50.0	53.5	-6.936	+/- 15%
Toluene	CCVD1219V-2	50.0	52.8	-5.651	+/- 15%
Ethylbenzene	CCVD1219V-2	50.0	52.5	-5.042	+/- 15%
m,p-Xylene	CCVD1219V-2	50.0	52.7	-5.492	+/- 15%
o-Xylene	CCVD1219V-2	50.0	53.1	-6.126	+/- 15%
MTBE	CCVD1219V-3	50.0	56.4	-12.824	+/- 15%
Benzene	CCVD1219V-3	50.0	55.9	-11.736	+/- 15%
Toluene	CCVD1219V-3	50.0	54.8	-9.64	+/- 15%
Ethylbenzene	CCVD1219V-3	50.0	54.6	-9.182	+/- 15%
m,p-Xylene	CCVD1219V-3	50.0	54.6	-9.228	+/- 15%
o-Xylene	CCVD1219V-3	50.0	54.9	-9.748	+/- 15%
MTBE	CCVD1219V-4	50.0	53.5	-7.032	+/- 15%
Benzene	CCVD1219V-4	50.0	53.8	-7.654	+/- 15%
Toluene	CCVD1219V-4	50.0	52.8	-5.542	+/- 15%
Ethylbenzene	CCVD1219V-4	50.0	52.4	-4.756	+/- 15%
m,p-Xylene	CCVD1219V-4	50.0	52.3	-4.574	+/- 15%
o-Xylene	CCVD1219V-4	50.0	53.0	-5.966	+/- 15%

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite 12-101

PROJECT NAME/NO. 212147

PO # D-51

REMARKS - Tier IV

Please Email Results ~~EQuIS~~ EIM

Page # 1 of 1

TURNAROUND TIME

(X) Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
CCW-3A-1222	1	12/7/22	1435	H_2O	3			x								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/9/22	0900AM
Received by:		M. VOLN	OSE	12/9/22	1400
Relinquished by:					
Received by:					

Sample/Cooler Receipt and Acceptance Checklist

Client: FBI

Client Project Name/Number: 21247

OnSite Project Number: 12-101

Initiated by: MV

Date Initiated: 12/9/22

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	(No)	N/A	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	(N/A)	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	(N/A)	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No	N/A	1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	N/A	Temperature:	4
1.6 Have shipping bills (if any) been attached to the back of this form?	(Yes)	N/A			
1.7 How were the samples delivered?	Client	Courier	(UPS/FedEx)	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	Yes	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 12, 2023

Trevor Louviere, Project Manager
Dalton Olmsted Fuglevand
1001 SW Klickitat Way, Suite 200B
Seattle, WA 98134

Dear Mr Louviere:

Included are the results from the testing of material submitted on December 9, 2022 from the TWAAFA-001, F&BI 212176 project. There are 77 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Anthony Cerruti, Tasya Gray
DOF0112R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 9, 2022 by Friedman & Bruya, Inc. from the Dalton Olmsted Fuglevand TWAAFA-001, F&BI 212176 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Dalton Olmsted Fuglevand
212176 -01	CCW-5B-1222
212176 -02	CCW-9-5B-1222
212176 -03	TRIP BLANK 4-1222
212176 -04	CCW-5C-1222
212176 -05	FIELD BLANK 2-1222
212176 -06	MW-4-1222
212176 -07	CCW-1B-1222
212176 -08	CCW-1C-1222
212176 -09	CCW-8B-1222
212176 -10	CCW-4C-1222
212176 -11	TWA-8D-1222

Samples CCW-5B-1222, CCW-9-5B-1222 ,and CCW-8B-1222 were sent to Fremont Analytical for EPH analysis. In addition, the samples were sent to Onsite Environmental for VPH analysis. The reports are enclosed.

The 6020B matrix spike and matrix spike duplicate failed the acceptance criteria and relative percent difference for manganese. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

Methylene chloride was detected in the 8260D analysis of sample TRIP BLANK 4-1222. The data were flagged as due to laboratory contamination.

Bis(2-ethylhexyl)phthalate were detected in the 8270E method blank and the field samples. The data were flagged as a common field and laboratory contaminant.

Di-n-butyl-phthalate in the 8270E laboratory control sample and laboratory control sample duplicate did not meet the acceptance criteria. The data were flagged accordingly.

The 8270E laboratory control sample and laboratory control sample duplicate did not meet the relative percent difference for several compounds. The analytes were not detected, therefore the data were acceptable.

The 8270E samples were filtered prior to extraction. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 01/12/23
Date Received: 12/09/22
Project: TWAAFA-001, F&BI 212176
Date Extracted: 12/14/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
CCW-5B-1222 212176-01	800	137
CCW-9-5B-1222 212176-02	840	116
TRIP BLANK 4-1222 212176-03	<100	111
CCW-5C-1222 212176-04	<100	117
FIELD BLANK 2-1222 212176-05	<100	110
MW-4-1222 212176-06	160	120
CCW-1B-1222 212176-07	<100	120
CCW-1C-1222 212176-08	<100	115
CCW-8B-1222 212176-09	230	123
CCW-4C-1222 212176-10	<100	121

Date of Report: 01/12/23
Date Received: 12/09/22
Project: TWAAFA-001, F&BI 212176
Date Extracted: 12/14/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TWA-8D-1222 212176-11	<100	117
Method Blank 02-2928 MB	<100	114

Date of Report: 01/12/23
Date Received: 12/09/22
Project: TWAAFA-001, F&BI 212176
Date Extracted: 12/15/22
Date Analyzed: 12/15/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
CCW-5B-1222 212176-01 1/0.4	1,300 x	660 x	125
CCW-9-5B-1222 212176-02 1/0.48	1,400 x	770 x	132
CCW-5C-1222 212176-04 1/0.4	1,500 x	720 x	121
FIELD BLANK 2-1222 212176-05 1/0.4	63 x	<250	134
MW-4-1222 212176-06 1/0.4	5,800 x	4,300 x	ip
CCW-1B-1222 212176-07 1/0.4	510 x	450 x	144
CCW-1C-1222 212176-08 1/0.4	640 x	590 x	137
CCW-8B-1222 212176-09 1/0.48	2,100 x	1,200 x	137
CCW-4C-1222 212176-10 1/0.4	860 x	730 x	144
TWA-8D-1222 212176-11 1/0.4	120 x	110 x	138
Method Blank 02-2949 MB2	<50	<250	134

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-01
Date Analyzed:	12/13/22	Data File:	212176-01.077
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	113
Cadmium	<1
Chromium	<1
Copper	3.30
Lead	6.61
Nickel	2.35
Zinc	74.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-01 x5
Date Analyzed:	12/13/22	Data File:	212176-01 x5.047
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1,310

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-02
Date Analyzed:	12/13/22	Data File:	212176-02.078
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	123
Cadmium	<1
Chromium	<1
Copper	3.41
Lead	6.91
Nickel	2.37
Zinc	75.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-02 x5
Date Analyzed:	12/13/22	Data File:	212176-02 x5.048
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1,310

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-04
Date Analyzed:	12/13/22	Data File:	212176-04.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.58
Cadmium	<1
Chromium	3.08
Copper	<1
Lead	<1
Nickel	2.20
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-04 x5
Date Analyzed:	12/13/22	Data File:	212176-04 x5.049
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	1,070

Analysis For Total Metals By EPA Method 6020B

Client ID:	FIELD BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-05
Date Analyzed:	12/13/22	Data File:	212176-05.080
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	1.34
Copper	1.99
Lead	<1
Manganese	3.10
Nickel	<1
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-06
Date Analyzed:	12/13/22	Data File:	212176-06.081
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.77
Cadmium	<1
Chromium	<1
Copper	3.81
Lead	4.02
Manganese	284
Nickel	5.61
Zinc	14.3

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-1B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-07
Date Analyzed:	12/13/22	Data File:	212176-07.089
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	1.21
Lead	<1
Manganese	483
Nickel	1.78
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-1C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-08
Date Analyzed:	12/13/22	Data File:	212176-08.090
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.62
Cadmium	<1
Chromium	4.43
Copper	<1
Lead	<1
Manganese	295
Nickel	3.81
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-8B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-09
Date Analyzed:	12/13/22	Data File:	212176-09.091
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.06
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	418
Nickel	2.32
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	CCW-4C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-10
Date Analyzed:	12/13/22	Data File:	212176-10.092
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.88
Cadmium	<1
Chromium	2.26
Copper	<1
Lead	<1
Manganese	521
Nickel	2.87
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-11
Date Analyzed:	12/13/22	Data File:	212176-11.093
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	1.34
Copper	3.38
Manganese	265
Nickel	3.60
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-11 x2
Date Analyzed:	12/14/22	Data File:	212176-11 x2.132
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Lead	<2

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	212176-11 x5
Date Analyzed:	12/13/22	Data File:	212176-11 x5.060
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	13.0
Cadmium	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	NA	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/12/22	Lab ID:	I2-890 mb
Date Analyzed:	12/12/22	Data File:	I2-890 mb.060
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 01/12/23
Date Received: 12/09/22
Project: TWAAFA-001, F&BI 212176
Date Extracted: 12/12/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
CCW-5B-1222 212176-01	<0.02
CCW-9-5B-1222 212176-02	<0.02
CCW-5C-1222 212176-04	<0.02
FIELD BLANK 2-1222 212176-05	<0.02
MW-4-1222 212176-06	<0.02
CCW-1B-1222 212176-07	<0.02
CCW-1C-1222 212176-08	<0.02
CCW-8B-1222 212176-09	<0.02
CCW-4C-1222 212176-10	<0.02
TWA-8D-1222 212176-11	<0.02
Method Blank i2-894 MB	<0.02

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-01
Date Analyzed:	12/17/22	Data File:	121637.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	97	50	150
4-Bromofluorobenzene	102	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	0.62

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-02
Date Analyzed:	12/17/22	Data File:	121638.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	107	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	100	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	0.85

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-04
Date Analyzed:	12/17/22	Data File:	121639.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	7.2

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	FIELD BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-05
Date Analyzed:	12/17/22	Data File:	121635.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	105	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-06 1/50
Date Analyzed:	12/17/22	Data File:	121706.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	90	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	250

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-1B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-07
Date Analyzed:	12/17/22	Data File:	121640.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	93	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	4.1

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-1C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-08 1/5
Date Analyzed:	12/17/22	Data File:	121643.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	104	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	23

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-8B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-09
Date Analyzed:	12/17/22	Data File:	121641.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	96	50	150
4-Bromofluorobenzene	104	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	2.3

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	CCW-4C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-10 1/5
Date Analyzed:	12/17/22	Data File:	121644.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	105	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	20

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-11
Date Analyzed:	12/17/22	Data File:	121636.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	94	50	150
4-Bromofluorobenzene	104	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	02-2972 mb
Date Analyzed:	12/16/22	Data File:	121626.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-01
Date Analyzed:	12/15/22	Data File:	121543.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	78	126
Toluene-d8	95	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.81	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	26
Trichlorofluoromethane	<1	Ethylbenzene	37
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	6.2
Hexane	<5	o-Xylene	10
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	5.6
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	11
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	1.2	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	3.4
Benzene	24	sec-Butylbenzene	1.6
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	10		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-02
Date Analyzed:	12/15/22	Data File:	121544.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.96	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	24
Trichlorofluoromethane	<1	Ethylbenzene	41
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	6.8
Hexane	<5	o-Xylene	11
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	6.3
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	12
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	1.4	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	3.9
Benzene	25	sec-Butylbenzene	1.8
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	11		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TRIP BLANK 4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-03
Date Analyzed:	12/15/22	Data File:	121541.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-04
Date Analyzed:	12/15/22	Data File:	121545.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	1.3	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	FIELD BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-05
Date Analyzed:	12/15/22	Data File:	121542.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	96	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	15 lc	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-06
Date Analyzed:	12/15/22	Data File:	121546.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	102	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.47	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	1.6
Trichlorofluoromethane	<1	Ethylbenzene	2.5
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	2.9
Hexane	<5	o-Xylene	5.0
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	1.3
Benzene	4.2	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	3.7		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-1B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-07
Date Analyzed:	12/15/22	Data File:	121547.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	1.4
Vinyl chloride	0.024	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-1C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-08
Date Analyzed:	12/16/22	Data File:	121548.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-8B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-09
Date Analyzed:	12/16/22	Data File:	121549.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	106	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	0.035	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	3.8
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	2.1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	2.3
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	0.36	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	CCW-4C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-10
Date Analyzed:	12/16/22	Data File:	121550.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	3.3	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-11
Date Analyzed:	12/16/22	Data File:	121551.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	11	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	02-2965 mb
Date Analyzed:	12/15/22	Data File:	121540.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-01 1/0.5
Date Analyzed:	12/15/22	Data File:	121513.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	33	11	65
Phenol-d6	23	11	65
Nitrobenzene-d5	66	11	173
2-Fluorobiphenyl	59	44	108
2,4,6-Tribromophenol	86	10	140
Terphenyl-d14	98	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.96
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	0.21	Dibenzofuran	0.30
1,2-Dichlorobenzene	0.40	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.60
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.16
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.019
2,4-Dichlorophenol	<1	Carbazole	0.31
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	0.56	Fluoranthene	0.015
Hexachlorobutadiene	<0.1	Pyrene	0.017
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	0.66	Chrysene	<0.01
1-Methylnaphthalene	6.6	Bis(2-ethylhexyl) phthalate	0.34 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-02 1/0.5
Date Analyzed:	12/15/22	Data File:	121514.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	32	11	65
Phenol-d6	23	11	65
Nitrobenzene-d5	66	11	173
2-Fluorobiphenyl	59	44	108
2,4,6-Tribromophenol	91	10	140
Terphenyl-d14	93	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.95
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	0.22	Dibenzofuran	0.32
1,2-Dichlorobenzene	0.39	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.63
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.15
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.021
2,4-Dichlorophenol	<1	Carbazole	0.32
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	0.46	Fluoranthene	0.028
Hexachlorobutadiene	<0.1	Pyrene	0.035
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	0.53	Chrysene	<0.01
1-Methylnaphthalene	6.2	Bis(2-ethylhexyl) phthalate	0.38 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-04 1/0.5
Date Analyzed:	12/15/22	Data File:	121515.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	39	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	81	11	173
2-Fluorobiphenyl	84	44	108
2,4,6-Tribromophenol	118	10	140
Terphenyl-d14	104	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.45 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	FIELD BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-05 1/0.5
Date Analyzed:	12/15/22	Data File:	121516.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	29	11	65
Phenol-d6	22	11	65
Nitrobenzene-d5	72	11	173
2-Fluorobiphenyl	64	44	108
2,4,6-Tribromophenol	79	10	140
Terphenyl-d14	91	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-06 1/0.5
Date Analyzed:	12/15/22	Data File:	121517.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	29	11	65
Phenol-d6	21	11	65
Nitrobenzene-d5	62	11	173
2-Fluorobiphenyl	61	44	108
2,4,6-Tribromophenol	84	10	140
Terphenyl-d14	96	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.57
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	0.17
1,2-Dichlorobenzene	0.17	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.34
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	0.95
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.016 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.050
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	0.15	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.011
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	0.23	Bis(2-ethylhexyl) phthalate	0.47 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 J
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01 J
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01 J
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01 J
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01 J
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01 J
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02 J

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-06 1/5
Date Analyzed:	12/19/22	Data File:	121908.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	27 d	10	60
Phenol-d6	19 d	10	49
Nitrobenzene-d5	59 d	15	144
2-Fluorobiphenyl	59 d	25	128
2,4,6-Tribromophenol	92 d	10	142
Terphenyl-d14	90 d	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<10	2,6-Dinitrotoluene	<5
Bis(2-chloroethyl) ether	<1	3-Nitroaniline	<100
2-Chlorophenol	<10	Acenaphthene	0.46
1,3-Dichlorobenzene	<1	2,4-Dinitrophenol	<30
1,4-Dichlorobenzene	<1	Dibenzofuran	<1
1,2-Dichlorobenzene	<1	2,4-Dinitrotoluene	<5
Benzyl alcohol	<10	4-Nitrophenol	<30
2,2'-Oxybis(1-chloropropane)	<1	Diethyl phthalate	<10
2-Methylphenol	<10	Fluorene	0.30
Hexachloroethane	<1	4-Chlorophenyl phenyl ether	<1
N-Nitroso-di-n-propylamine	<1	N-Nitrosodiphenylamine	1.0
3-Methylphenol + 4-Methylphenol	<20	4-Nitroaniline	<100
Nitrobenzene	<1	4,6-Dinitro-2-methylphenol	<30
Isophorone	<1	4-Bromophenyl phenyl ether	<1
2-Nitrophenol	<10	Hexachlorobenzene	<1
2,4-Dimethylphenol	<10	Pentachlorophenol	<5
Benzoic acid	<50	Phenanthrene	<0.1
Bis(2-chloroethoxy)methane	<1	Anthracene	<0.1
2,4-Dichlorophenol	<10	Carbazole	<1
1,2,4-Trichlorobenzene	<1	Di-n-butyl phthalate	<10 ca jl
Naphthalene	<1	Fluoranthene	<0.1
Hexachlorobutadiene	<1	Pyrene	<0.1
4-Chloroaniline	<100	Benzyl butyl phthalate	<10
4-Chloro-3-methylphenol	<10	Benz(a)anthracene	<0.1
2-Methylnaphthalene	<1	Chrysene	<0.1
1-Methylnaphthalene	<1	Bis(2-ethylhexyl) phthalate	<3.2 j
Hexachlorocyclopentadiene	<3	Di-n-octyl phthalate	<10
2,4,6-Trichlorophenol	<10	Benzo(a)pyrene	<0.1
2,4,5-Trichlorophenol	<10	Benzo(b)fluoranthene	<0.1
2-Chloronaphthalene	<1	Benzo(k)fluoranthene	<0.1
2-Nitroaniline	<5	Indeno(1,2,3-cd)pyrene	<0.1
Dimethyl phthalate	<10	Dibenz(a,h)anthracene	<0.1
Acenaphthylene	<0.1	Benzo(g,h,i)perylene	<0.2

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-1B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-07 1/0.5
Date Analyzed:	12/15/22	Data File:	121518.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	38	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	82	11	173
2-Fluorobiphenyl	67	44	108
2,4,6-Tribromophenol	100	10	140
Terphenyl-d14	107	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.44
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.066
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.073 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	0.011
Hexachlorobutadiene	<0.1	Pyrene	0.011
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-1C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-08 1/0.5
Date Analyzed:	12/15/22	Data File:	121519.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	36	11	65
Phenol-d6	26	11	65
Nitrobenzene-d5	77	11	173
2-Fluorobiphenyl	53	44	108
2,4,6-Tribromophenol	80	10	140
Terphenyl-d14	96	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.36 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-8B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-09 1/0.5
Date Analyzed:	12/15/22	Data File:	121520.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	25	11	65
Phenol-d6	18	11	65
Nitrobenzene-d5	54	11	173
2-Fluorobiphenyl	52	44	108
2,4,6-Tribromophenol	78	10	140
Terphenyl-d14	75	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	1.5
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	0.20	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.30
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.033 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.055
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	0.057
Hexachlorobutadiene	<0.1	Pyrene	0.058
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	6.8	Chrysene	<0.01
1-Methylnaphthalene	8.2	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	CCW-4C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-10 1/0.5
Date Analyzed:	12/16/22	Data File:	121521.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	34	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	70	11	173
2-Fluorobiphenyl	54	44	108
2,4,6-Tribromophenol	83	10	140
Terphenyl-d14	94	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.022
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.42 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	212176-11 1/0.5
Date Analyzed:	12/16/22	Data File:	121522.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	34	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	72	11	173
2-Fluorobiphenyl	71	44	108
2,4,6-Tribromophenol	91	10	140
Terphenyl-d14	94	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.010 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 jl
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.37 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/15/22	Lab ID:	02-3001 mb2 1/0.5
Date Analyzed:	12/15/22	Data File:	121512.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	82	11	173
2-Fluorobiphenyl	80	44	108
2,4,6-Tribromophenol	104	10	140
Terphenyl-d14	96	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	1.6 jl lc
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.85 j lc
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-01 1/0.5
Date Analyzed:	12/16/22	Data File:	121617.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	51	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-9-5B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-02 1/0.5
Date Analyzed:	12/16/22	Data File:	121618.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	43	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-5C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-04 1/0.5
Date Analyzed:	12/16/22	Data File:	121619.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	48	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	FIELD BLANK 2-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-05 1/0.5
Date Analyzed:	12/16/22	Data File:	121620.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	45	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-4-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-06 1/0.5
Date Analyzed:	12/16/22	Data File:	121621.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	57	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	0.049
Aroclor 1248	<0.0035 j
Aroclor 1254	0.048
Aroclor 1260	0.046
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-1B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-07 1/0.5
Date Analyzed:	12/16/22	Data File:	121622.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	54	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-1C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-08 1/0.5
Date Analyzed:	12/16/22	Data File:	121623.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	41	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-8B-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-09 1/0.5
Date Analyzed:	12/17/22	Data File:	121624.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	66	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	CCW-4C-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-10 1/0.5
Date Analyzed:	12/17/22	Data File:	121625.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	46	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-8D-1222	Client:	Dalton Olmsted Fuglevand
Date Received:	12/09/22	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	212176-11 1/0.5
Date Analyzed:	12/20/22	Data File:	122008.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	45	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Dalton Olmsted Fuglevand
Date Received:	Not Applicable	Project:	TWAAFA-001, F&BI 212176
Date Extracted:	12/16/22	Lab ID:	02-3010 mb 1/0.5
Date Analyzed:	12/16/22	Data File:	121604.D
Matrix:	Water	Instrument:	GC9
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	25	160

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Date of Report: 01/12/23
Date Received: 12/09/22
Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	950	118 b	125 b	50-150	6 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	120	70-130

Date of Report: 01/12/23
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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	1,000	1,400	89	84	70-130	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	1,000	94	70-130

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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212076-09 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<10	95	90	75-125	5
Cadmium	ug/L (ppb)	5	<10	96	94	75-125	2
Chromium	ug/L (ppb)	20	<10	94	94	75-125	0
Copper	ug/L (ppb)	20	<50	101	98	75-125	3
Lead	ug/L (ppb)	10	<10	98	96	75-125	2
Manganese	ug/L (ppb)	20	149	66 vo	44 vo	75-125	40 vo
Nickel	ug/L (ppb)	20	<10	100	97	75-125	3
Zinc	ug/L (ppb)	50	<50	101	97	75-125	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	86	80-120
Cadmium	ug/L (ppb)	5	97	80-120
Chromium	ug/L (ppb)	20	98	80-120
Copper	ug/L (ppb)	20	100	80-120
Lead	ug/L (ppb)	10	97	80-120
Manganese	ug/L (ppb)	20	91	80-120
Nickel	ug/L (ppb)	20	99	80-120
Zinc	ug/L (ppb)	50	96	80-120

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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212176-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.02	99	102	71-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	108	68-125

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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212147-07 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	<0.4	117	112	50-150	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	98	94	70-130	4

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212176-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	108	108	50-150	0
Chloromethane	ug/L (ppb)	10	<10	97	93	50-150	4
Vinyl chloride	ug/L (ppb)	10	0.035	99	102	50-150	3
Bromomethane	ug/L (ppb)	10	<1	118	123	50-150	4
Chloroethane	ug/L (ppb)	10	<1	107	110	50-150	3
Trichlorofluoromethane	ug/L (ppb)	10	<1	98	98	50-150	0
Acetone	ug/L (ppb)	50	<10	72	75	50-150	4
1,1-Dichloroethene	ug/L (ppb)	10	<1	105	106	50-150	1
Hexane	ug/L (ppb)	10	<1	110	112	50-150	2
Methylene chloride	ug/L (ppb)	10	<5	94	105	50-150	11
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	99	102	50-150	3
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	104	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	102	105	50-150	3
2,2-Dichloropropane	ug/L (ppb)	10	<1	114	107	50-150	6
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	103	105	50-150	2
Chloroform	ug/L (ppb)	10	<1	98	101	50-150	3
2-Butanone (MEK)	ug/L (ppb)	50	<10	83	97	50-150	16
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	97	99	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	101	104	50-150	3
1,1-Dichloropropene	ug/L (ppb)	10	<1	102	105	50-150	3
Carbon tetrachloride	ug/L (ppb)	10	<1	109	111	50-150	2
Benzene	ug/L (ppb)	10	0.36	101	105	50-150	4
Trichloroethene	ug/L (ppb)	10	<1	95	98	50-150	3
1,2-Dichloropropane	ug/L (ppb)	10	<1	98	101	50-150	3
Bromodichloromethane	ug/L (ppb)	10	<1	99	101	50-150	2
Dibromomethane	ug/L (ppb)	10	<1	104	106	50-150	2
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	97	105	50-150	8
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	99	101	50-150	2
Toluene	ug/L (ppb)	10	<1	99	102	50-150	3
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	98	101	50-150	3
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	100	104	50-150	4
2-Hexanone	ug/L (ppb)	50	<10	98	104	50-150	6
1,3-Dichloropropane	ug/L (ppb)	10	<1	100	104	50-150	4
Tetrachloroethene	ug/L (ppb)	10	<1	100	103	50-150	3
Dibromochloromethane	ug/L (ppb)	10	<1	103	104	50-150	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	98	101	50-150	3
Chlorobenzene	ug/L (ppb)	10	3.8	98	107	50-150	9
Ethylbenzene	ug/L (ppb)	10	<1	101	104	50-150	3
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	105	107	50-150	2
m,p-Xylene	ug/L (ppb)	20	<2	101	104	50-150	3
o-Xylene	ug/L (ppb)	10	<1	103	106	50-150	3
Styrene	ug/L (ppb)	10	<1	101	103	50-150	2
Isopropylbenzene	ug/L (ppb)	10	2.1	97	108	50-150	11
Bromoform	ug/L (ppb)	10	<1	99	104	50-150	5
n-Propylbenzene	ug/L (ppb)	10	2.3	98	113	50-150	14
Bromobenzene	ug/L (ppb)	10	<1	100	103	50-150	3
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	99	104	50-150	5
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	109	115	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	95	101	50-150	6
2-Chlorotoluene	ug/L (ppb)	10	<1	98	104	50-150	6
4-Chlorotoluene	ug/L (ppb)	10	<1	98	101	50-150	3
tert-Butylbenzene	ug/L (ppb)	10	<1	101	104	50-150	3
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	101	105	50-150	4
sec-Butylbenzene	ug/L (ppb)	10	<1	102	107	50-150	5
p-Isopropyltoluene	ug/L (ppb)	10	<1	104	107	50-150	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	104	109	50-150	5
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	102	104	50-150	2

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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	96	99	46-206	3
Chloromethane	ug/L (ppb)	10	86	87	70-142	1
Vinyl chloride	ug/L (ppb)	10	92	93	70-130	1
Bromomethane	ug/L (ppb)	10	110	110	56-197	0
Chloroethane	ug/L (ppb)	10	99	98	70-130	1
Trichlorofluoromethane	ug/L (ppb)	10	90	93	70-130	3
Acetone	ug/L (ppb)	50	70	72	10-140	3
1,1-Dichloroethene	ug/L (ppb)	10	94	91	70-130	3
Hexane	ug/L (ppb)	10	91	92	54-136	1
Methylene chloride	ug/L (ppb)	10	96	92	43-134	4
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	95	96	70-130	1
trans-1,2-Dichloroethene	ug/L (ppb)	10	93	94	70-130	1
1,1-Dichloroethane	ug/L (ppb)	10	95	95	70-130	0
2,2-Dichloropropane	ug/L (ppb)	10	91	92	70-130	1
cis-1,2-Dichloroethene	ug/L (ppb)	10	94	95	70-130	1
Chloroform	ug/L (ppb)	10	93	97	70-130	4
2-Butanone (MEK)	ug/L (ppb)	50	82	82	17-154	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	93	92	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	96	96	70-130	0
1,1-Dichloropropene	ug/L (ppb)	10	95	93	70-130	2
Carbon tetrachloride	ug/L (ppb)	10	98	97	70-130	1
Benzene	ug/L (ppb)	10	95	95	70-130	0
Trichloroethene	ug/L (ppb)	10	90	90	70-130	0
1,2-Dichloropropane	ug/L (ppb)	10	94	91	70-130	3
Bromodichloromethane	ug/L (ppb)	10	95	96	70-130	1
Dibromomethane	ug/L (ppb)	10	101	99	70-130	2
4-Methyl-2-pentanone	ug/L (ppb)	50	95	97	68-130	2
cis-1,3-Dichloropropene	ug/L (ppb)	10	93	91	69-131	2
Toluene	ug/L (ppb)	10	96	96	70-130	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	97	98	70-130	1
1,1,2-Trichloroethane	ug/L (ppb)	10	100	100	70-130	0
2-Hexanone	ug/L (ppb)	50	97	98	45-138	1
1,3-Dichloropropane	ug/L (ppb)	10	98	99	70-130	1
Tetrachloroethene	ug/L (ppb)	10	93	94	70-130	1
Dibromochloromethane	ug/L (ppb)	10	102	103	60-148	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	97	98	70-130	1
Chlorobenzene	ug/L (ppb)	10	99	99	70-130	0
Ethylbenzene	ug/L (ppb)	10	99	99	70-130	0
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	101	104	70-130	3
m,p-Xylene	ug/L (ppb)	20	98	99	70-130	1
o-Xylene	ug/L (ppb)	10	99	100	70-130	1
Styrene	ug/L (ppb)	10	94	93	70-130	1
Isopropylbenzene	ug/L (ppb)	10	98	99	70-130	1
Bromoform	ug/L (ppb)	10	103	104	69-138	1
n-Propylbenzene	ug/L (ppb)	10	102	100	70-130	2
Bromobenzene	ug/L (ppb)	10	99	98	70-130	1
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	97	70-130	3
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	119	115	70-130	3
1,2,3-Trichloropropane	ug/L (ppb)	10	103	98	70-130	5
2-Chlorotoluene	ug/L (ppb)	10	103	99	70-130	4
4-Chlorotoluene	ug/L (ppb)	10	100	98	70-130	2
tert-Butylbenzene	ug/L (ppb)	10	100	101	70-130	1
1,2,4-Trimethylbenzene	ug/L (ppb)	10	99	100	70-130	1
sec-Butylbenzene	ug/L (ppb)	10	100	100	70-130	0
p-Isopropyltoluene	ug/L (ppb)	10	103	100	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	103	107	70-130	4
1,2,3-Trichlorobenzene	ug/L (ppb)	10	100	105	70-130	5

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Phenol	ug/L (ppb)	2.5	26	23	10-86	12
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	74	67	60-108	10
2-Chlorophenol	ug/L (ppb)	2.5	69	67	10-97	3
1,3-Dichlorobenzene	ug/L (ppb)	2.5	65	63	48-96	3
1,4-Dichlorobenzene	ug/L (ppb)	2.5	64	63	48-96	2
1,2-Dichlorobenzene	ug/L (ppb)	2.5	66	65	52-96	2
Benzyl alcohol	ug/L (ppb)	13	64	63	10-76	2
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	75	65	59-101	14
2-Methylphenol	ug/L (ppb)	2.5	64	53	10-80	19
Hexachloroethane	ug/L (ppb)	2.5	68	66	47-97	3
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	83	80	71-106	4
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	61	55	10-66	10
Nitrobenzene	ug/L (ppb)	2.5	78	76	60-90	3
Isophorone	ug/L (ppb)	2.5	82	81	71-110	1
2-Nitrophenol	ug/L (ppb)	2.5	84	83	27-120	1
2,4-Dimethylphenol	ug/L (ppb)	2.5	76	30	10-106	87 vo
Benzoic acid	ug/L (ppb)	20	18	13	10-102	32 vo
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	78	78	55-117	0
2,4-Dichlorophenol	ug/L (ppb)	2.5	77	76	23-116	1
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	66	66	56-98	0
Naphthalene	ug/L (ppb)	2.5	72	67	62-97	7
Hexachlorobutadiene	ug/L (ppb)	2.5	66	64	48-100	3
4-Chloroaniline	ug/L (ppb)	13	72	70	28-121	3
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	83	83	18-113	0
2-Methylnaphthalene	ug/L (ppb)	2.5	77	74	64-101	4
1-Methylnaphthalene	ug/L (ppb)	2.5	78	74	64-93	5
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	79	79	49-113	0
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	80	77	16-131	4
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	85	88	26-129	3
2-Chloronaphthalene	ug/L (ppb)	2.5	74	74	67-102	0
2-Nitroaniline	ug/L (ppb)	13	87	86	31-168	1
Dimethyl phthalate	ug/L (ppb)	2.5	85	90	70-130	6
Acenaphthylene	ug/L (ppb)	2.5	81	79	70-130	2
2,6-Dinitrotoluene	ug/L (ppb)	2.5	98	103	70-130	5
3-Nitroaniline	ug/L (ppb)	13	89	92	33-128	3
Acenaphthene	ug/L (ppb)	2.5	81	79	70-130	2
2,4-Dinitrophenol	ug/L (ppb)	5	103	112	10-137	8
Dibenzofuran	ug/L (ppb)	2.5	93	92	67-114	1
2,4-Dinitrotoluene	ug/L (ppb)	2.5	102	108	53-132	6
4-Nitrophenol	ug/L (ppb)	5	37	40	10-89	8
Diethyl phthalate	ug/L (ppb)	2.5	87	92	60-128	6
Fluorene	ug/L (ppb)	2.5	85	85	70-130	0
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	79	82	70-130	4
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	83	77	70-130	7
4-Nitroaniline	ug/L (ppb)	13	71	73	32-124	3
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	108	113	10-146	5
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	83	81	70-130	2
Hexachlorobenzene	ug/L (ppb)	2.5	79	80	61-112	1
Pentachlorophenol	ug/L (ppb)	2.5	90	92	10-144	2
Phenanthrene	ug/L (ppb)	2.5	86	87	70-130	1
Anthracene	ug/L (ppb)	2.5	89	86	70-130	3
Carbazole	ug/L (ppb)	2.5	84	88	70-130	5
Di-n-butyl phthalate	ug/L (ppb)	2.5	25 vo	31	28-147	21 vo
Fluoranthene	ug/L (ppb)	2.5	87	89	70-130	2
Pyrene	ug/L (ppb)	2.5	89	90	70-130	1
Benzyl butyl phthalate	ug/L (ppb)	2.5	91	95	34-142	4
Benz(a)anthracene	ug/L (ppb)	2.5	87	87	70-130	0
Chrysene	ug/L (ppb)	2.5	88	89	70-130	1
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	58	65	44-140	11
Di-n-octyl phthalate	ug/L (ppb)	2.5	79	86	33-147	8
Benzo(a)pyrene	ug/L (ppb)	2.5	91	90	70-130	1
Benzo(b)fluoranthene	ug/L (ppb)	2.5	92	91	70-130	1
Benzo(k)fluoranthene	ug/L (ppb)	2.5	93	95	70-130	2
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	91	92	70-130	1
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	88	89	70-130	1
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	86	87	70-130	1

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Project: TWAAFA-001, F&BI 212176

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 212108-01 1/0.5 (Matrix Spike) 1/0.5

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.13	<0.0035 j	66	62	50-150	6
Aroclor 1260	ug/L (ppb)	0.13	<0.0035 j	83	78	50-150	6

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	ug/L (ppb)	0.13	66	25-165
Aroclor 1260	ug/L (ppb)	0.13	83	25-163

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY

212176

12/09/22

VW6/W4/I4

Page # 1 of 2

Report To: Anthony Cerruti / Trevor Louviere
cc: Tasya Gray

Company DOF

Address 1001 SW Klickitat Way

City, State, ZIP Seattle, WA 98134

Phone 215-767-7749 Email acerruti@dofnw.com

SAMPLERS (*signature*)

PROJECT NAME: TWAAFA

PO # TWAAFA-001

REMARKS: SVOCs lab filtered at 0.7 micron before analysis

Project Specific RLs - (Yes) / No

INVOICE TO: DOF

TURNAROUND TIME
✓ Standard Turnaround
__ RUSH ____
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	VOCs by EPA 8260D / SIM Dual Acquisition	NWTPH-Dx	EPH + VPH	NWTPH-Gx	Total Metals 6020B (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn)	Mecury by 1631E	SVOCs EPA 8270E SIM Dual Acquisiton	cPAHs by EPA 8270 12/9	1,4 Dioxane by EPA 8260D SIM	LL PCBs 8082A	MS/MSD Collected? (Y/N)	Notes
CCW-5B-1222	01 A-R	12/8/22	1425	WATER	18	X	X	X	X	X	X	X		X	X		
CCW-9-5B-1222	02	12/8/22	1430	WATER	18	X	X	X	X	X	X	X		X	X		
TRIPBLANK#4-1222	03 A-B	12/8/22	1440	WATER	2	X			X								
CCW-5C-1222	04 A-N	12/8/22	1550	WATER	14	X	X		X	X	X	X		X	X		
~~FREW~~ = AC 12/8/22																	
FIELD BLANK#2-1222	05 A-N	12/8/22	1600	WATER	14	X	X		X	X	X	X		X	X		
MW-4-1222	06	12/9/22	0845	WATER	14	X	X		X	X	X	X		X	X		
CCW-1B-1222	07	12/9/22	1055	WATER	14	X	X		X	X	X	X		X	X		
CCW-1C-1222	08	12/9/22	1140	WATER	14	X	X		X	X	X	X		X	X		
CCW-8B-1222	09 A-R	12/9/22	1255	WATER	18	X	X	X	X	X	X	X		X	X		

* SVOC full suite includes cPAH

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	ANTHONY CERRUTI	DOF	12/9/22	1613
Received by:	VINT	FBI	12-9-22	1613
Relinquished by:		Samples received at 0 °C		
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SAMPLE CHAIN OF CUSTODY

212176

12/09/22

VW6/N4/I4

Page # 2 of 2

Report To: Anthony Cerruti / Trevor Louviere
cc: Tasya Gray

Company DOF

Address 1001 SW Klickitat Way

City, State, ZIP Seattle, WA 98134

Phone 215-767-7749 Email acerruti@dofnw.com

SAMPLERS (*signature*)	
PROJECT NAME: TWAAFA	PO #: TWAAFA-001
REMARKS: SVOCs lab filtered at 0.7 micron before analysis Project Specific RLs - (Yes) / No	INVOICE TO: DOF

TURNAROUND TIME
✓ Standard Turnaround
__ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other _____

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	VOCs by EPA 8260D / SIM Dual Acquisition	NWTPH-Dx	EPH + VPH	NWTPH-Gx	Total Metals 6020B (As, Cd, Cr, Cu, Pb, Ni, Zn, Mn)	Mecury by 1631E	SVOCs EPA 8270E SIM Dual Acquisiton	cPAHs by EPA 8270 *	1,4 Dioxane by EPA 8260D SIM	LL PCBs 8082A	MS/MSD Collected? (Y/N)	Notes
CCW-4C-1222	10 A-N	12/9/22	1400	WATER	14	X	X		X	X	X	X		X	X		
TWA-8D-1222	11 1	12/9/22	1515	WATER	14	X	X		X	X	X	X		X	X		

* SVOC full suite includes cPAH

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	ANTHONY CERRUTI	DOF	12/9/22	1613
Received by:	VIN IT	EBI	12-9-22	1613
Relinquished by:				
Received by:		Samples received at 0 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 212176
Work Order Number: 2212238

January 10, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 3 sample(s) on 12/12/2022 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *01/10/2023*

CLIENT: Friedman & Bruya
Project: 212176
Work Order: 2212238

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2212238-001	CCW-5B-1222	12/08/2022 2:25 PM	12/12/2022 11:17 AM
2212238-002	CCW-9-1222	12/08/2022 2:30 PM	12/12/2022 11:17 AM
2212238-003	CCW-8B-1222	12/09/2022 12:55 PM	12/12/2022 11:17 AM

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

Original

Case Narrative

WO#: **2212238**
Date: **1/10/2023**

CLIENT: Friedman & Bruya
Project: 212176

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

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

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

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

Qualifiers:

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

Acronyms:

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

CLIENT: Friedman & Bruya
Project: 212176

Lab ID: 2212238-001 **Collection Date:** 12/8/2022 2:25:00 PM
Client Sample ID: **CCW-5B-1222** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.4		µg/L	1	1/9/2023 10:25:33 AM
Aliphatic Hydrocarbon (C10-C12)	ND	39.7		µg/L	1	1/9/2023 10:25:33 AM
Aliphatic Hydrocarbon (C12-C16)	ND	39.7		µg/L	1	1/9/2023 10:25:33 AM
Aliphatic Hydrocarbon (C16-C21)	ND	39.7		µg/L	1	1/9/2023 10:25:33 AM
Aliphatic Hydrocarbon (C21-C34)	42.1	39.7		µg/L	1	1/9/2023 10:25:33 AM
Aromatic Hydrocarbon (C8-C10)	ND	79.4		µg/L	1	1/10/2023 9:59:51 AM
Aromatic Hydrocarbon (C10-C12)	ND	39.7		µg/L	1	1/10/2023 9:59:51 AM
Aromatic Hydrocarbon (C12-C16)	ND	39.7		µg/L	1	1/10/2023 9:59:51 AM
Aromatic Hydrocarbon (C16-C21)	41.3	39.7		µg/L	1	1/10/2023 9:59:51 AM
Aromatic Hydrocarbon (C21-C34)	ND	39.7		µg/L	1	1/10/2023 9:59:51 AM
Surr: 1-Chlorooctadecane	63.3	50 - 150		%Rec	1	1/9/2023 10:25:33 AM
Surr: o-Terphenyl	62.0	50 - 150		%Rec	1	1/10/2023 9:59:51 AM

Lab ID: 2212238-002 **Collection Date:** 12/8/2022 2:30:00 PM
Client Sample ID: **CCW-9-1222** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.5		µg/L	1	1/9/2023 11:21:39 AM
Aliphatic Hydrocarbon (C10-C12)	ND	39.8		µg/L	1	1/9/2023 11:21:39 AM
Aliphatic Hydrocarbon (C12-C16)	ND	39.8		µg/L	1	1/9/2023 11:21:39 AM
Aliphatic Hydrocarbon (C16-C21)	ND	39.8		µg/L	1	1/9/2023 11:21:39 AM
Aliphatic Hydrocarbon (C21-C34)	ND	39.8		µg/L	1	1/9/2023 11:21:39 AM
Aromatic Hydrocarbon (C8-C10)	ND	79.5		µg/L	1	1/10/2023 10:22:50 AM
Aromatic Hydrocarbon (C10-C12)	ND	39.8		µg/L	1	1/10/2023 10:22:50 AM
Aromatic Hydrocarbon (C12-C16)	ND	39.8		µg/L	1	1/10/2023 10:22:50 AM
Aromatic Hydrocarbon (C16-C21)	ND	39.8		µg/L	1	1/10/2023 10:22:50 AM
Aromatic Hydrocarbon (C21-C34)	ND	39.8		µg/L	1	1/10/2023 10:22:50 AM
Surr: 1-Chlorooctadecane	54.7	50 - 150		%Rec	1	1/9/2023 11:21:39 AM
Surr: o-Terphenyl	62.5	50 - 150		%Rec	1	1/10/2023 10:22:50 AM

Analytical Report

Work Order: **2212238**
Date Reported: **1/10/2023**

CLIENT: Friedman & Bruya
Project: 212176

Lab ID: 2212238-003 **Collection Date:** 12/9/2022 12:55:00 PM
Client Sample ID: **CCW-8B-1222** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.9		µg/L	1	1/9/2023 3:15:38 PM
Aliphatic Hydrocarbon (C10-C12)	ND	39.9		µg/L	1	1/9/2023 3:15:38 PM
Aliphatic Hydrocarbon (C12-C16)	ND	39.9		µg/L	1	1/9/2023 3:15:38 PM
Aliphatic Hydrocarbon (C16-C21)	ND	39.9		µg/L	1	1/9/2023 3:15:38 PM
Aliphatic Hydrocarbon (C21-C34)	ND	39.9		µg/L	1	1/9/2023 3:15:38 PM
Aromatic Hydrocarbon (C8-C10)	ND	79.9		µg/L	1	1/10/2023 10:46:10 AM
Aromatic Hydrocarbon (C10-C12)	ND	39.9		µg/L	1	1/10/2023 10:46:10 AM
Aromatic Hydrocarbon (C12-C16)	ND	39.9		µg/L	1	1/10/2023 10:46:10 AM
Aromatic Hydrocarbon (C16-C21)	40.0	39.9		µg/L	1	1/10/2023 10:46:10 AM
Aromatic Hydrocarbon (C21-C34)	ND	39.9		µg/L	1	1/10/2023 10:46:10 AM
Surr: 1-Chlorooctadecane	56.1	50 - 150		%Rec	1	1/9/2023 3:15:38 PM
Surr: o-Terphenyl	57.2	50 - 150		%Rec	1	1/10/2023 10:46:10 AM

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ALI ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **37608** Analysis Date: **8/1/2022** SeqNo: **1587164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	42.6		40.00		107	60	140				
Surr: o-Terphenyl	43.8		40.00		109	60	140				

Sample ID: **ALI ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **37608** Analysis Date: **8/1/2022** SeqNo: **1587165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	212	20.0	200.0	0	106	80	120				
Aliphatic Hydrocarbon (C10-C12)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C12-C16)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C16-C21)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	10.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	42.7		40.00		107	60	140				
Surr: o-Terphenyl	43.3		40.00		108	60	140				

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **37608** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	53.1		40.00		133	60	140				
Surr: o-Terphenyl	52.5		40.00		131	60	140				

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **37608** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **ARO ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/2/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **37608** Analysis Date: **8/2/2022** SeqNo: **1587175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	220	20.0	200.0	0	110	80	120				
Aromatic Hydrocarbon (C10-C12)	99.4	10.0	100.0	0	99.4	80	120				
Aromatic Hydrocarbon (C12-C16)	110	10.0	100.0	0	110	80	120				
Aromatic Hydrocarbon (C16-C21)	88.2	10.0	100.0	0	88.2	80	120				
Aromatic Hydrocarbon (C21-C34)	104	10.0	100.0	0	104	80	120				
Surr: 1-Chlorooctadecane	39.8		40.00		99.4	60	140				
Surr: o-Terphenyl	39.7		40.00		99.3	60	140				

Sample ID: **ALI-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672873**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	247	80.0	200.0	0	124	80	120				S
Aliphatic Hydrocarbon (C10-C12)	123	40.0	100.0	0	123	80	120				S
Aliphatic Hydrocarbon (C12-C16)	115	40.0	100.0	0	115	80	120				
Aliphatic Hydrocarbon (C16-C21)	107	40.0	100.0	0	107	80	120				
Aliphatic Hydrocarbon (C21-C34)	101	40.0	100.0	0	101	80	120				
Surr: 1-Chlorooctadecane	44.1		40.00		110	60	140				
Surr: o-Terphenyl	44.0		40.00		110	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672874**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C16-C21)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: 1-Chlorooctadecane	328		400.0		82.1	50	150				

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672875**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	301	80.0	1,000	0	30.1	5.88	130				
Aliphatic Hydrocarbon (C10-C12)	320	40.0	500.0	0	63.9	25.3	107				
Aliphatic Hydrocarbon (C12-C16)	383	40.0	500.0	0	76.5	42.5	113				
Aliphatic Hydrocarbon (C16-C21)	399	40.0	500.0	0	79.8	42.7	118				
Aliphatic Hydrocarbon (C21-C34)	298	40.0	500.0	0	59.7	27.8	137				
Surr: 1-Chlorooctadecane	320		400.0		80.1	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672876**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	367	80.0	1,000	0	36.7	5.88	130	300.7	19.9	20	
Aliphatic Hydrocarbon (C10-C12)	343	40.0	500.0	0	68.6	25.3	107	319.5	7.13	20	
Aliphatic Hydrocarbon (C12-C16)	400	40.0	500.0	0	79.9	42.5	113	382.6	4.36	20	
Aliphatic Hydrocarbon (C16-C21)	411	40.0	500.0	0	82.3	42.7	118	398.8	3.09	20	
Aliphatic Hydrocarbon (C21-C34)	301	40.0	500.0	0	60.1	27.8	137	298.5	0.694	20	
Surr: 1-Chlorooctadecane	325		400.0		81.2	50	150		0		

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672880**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	423	85.3	1,066	0	39.7	5	130				
Aliphatic Hydrocarbon (C10-C12)	345	42.6	533.1	0	64.7	17.1	108				
Aliphatic Hydrocarbon (C12-C16)	397	42.6	533.1	0	74.5	35.7	111				
Aliphatic Hydrocarbon (C16-C21)	400	42.6	533.1	0	75.1	41.1	110				
Aliphatic Hydrocarbon (C21-C34)	299	42.6	533.1	0	56.1	31.4	125				
Surr: 1-Chlorooctadecane	331		426.5		77.7	50	150				

Sample ID: **ALI-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672888**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	250	80.0	200.0	0	125	80	120				S
Aliphatic Hydrocarbon (C10-C12)	126	40.0	100.0	0	126	80	120				S
Aliphatic Hydrocarbon (C12-C16)	118	40.0	100.0	0	118	80	120				
Aliphatic Hydrocarbon (C16-C21)	114	40.0	100.0	0	114	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	40.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	46.2		40.00		116	60	140				
Surr: o-Terphenyl	45.3		40.00		113	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	248	80.0	200.0	0	124	80	120				S
Aromatic Hydrocarbon (C10-C12)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C12-C16)	117	40.0	100.0	0	117	80	120				
Aromatic Hydrocarbon (C16-C21)	84.9	40.0	100.0	0	84.9	80	120				
Aromatic Hydrocarbon (C21-C34)	85.5	40.0	100.0	0	85.5	80	120				
Surr: 1-Chlorooctadecane	32.2		40.00		80.6	60	140				
Surr: o-Terphenyl	32.1		40.00		80.4	60	140				

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803A**	SampType: **CCV**	Units: **µg/L**	Prep Date: **12/30/2022**	RunNo: **80861**
Client ID: **CCV**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **MB-38803**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **MBLKW**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672890**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aromatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aromatic Hydrocarbon (C16-C21)	ND	40.0		0	0						Q
Aromatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: o-Terphenyl	296		400.0		74.0	50	150				

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Sample ID: **LCS-38803**	SampType: **LCS**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **LCSW**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	462	80.0	1,000	0	46.2	25.2	130				
Aromatic Hydrocarbon (C10-C12)	290	40.0	500.0	0	57.9	46.2	130				
Aromatic Hydrocarbon (C12-C16)	312	40.0	500.0	0	62.3	39.9	107				
Aromatic Hydrocarbon (C16-C21)	366	40.0	500.0	0	73.3	53.4	125				
Aromatic Hydrocarbon (C21-C34)	399	40.0	500.0	0	79.8	46.5	138				
Surr: o-Terphenyl	253		400.0		63.2	50	150				

Sample ID: **LCSD-38803**	SampType: **LCSD**	Units: **µg/L**	Prep Date: **12/12/2022**	RunNo: **80861**
Client ID: **LCSW02**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	623	80.0	1,000	0	62.3	25.2	130	461.8	29.6	20	R

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C10-C12)	348	40.0	500.0	0	69.5	46.2	130	289.5	18.2	20	
Aromatic Hydrocarbon (C12-C16)	415	40.0	500.0	0	83.0	39.9	107	311.6	28.5	20	R
Aromatic Hydrocarbon (C16-C21)	420	40.0	500.0	0	84.0	53.4	125	366.5	13.6	20	
Aromatic Hydrocarbon (C21-C34)	384	40.0	500.0	0	76.9	46.5	138	398.8	3.67	20	
Surr: o-Terphenyl	317		400.0		79.2	50	150		0		

NOTES:
R - High RPD observed, spike recovery is within range.

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	588	85.3	1,066	82.09	47.5	9.66	130				
Aromatic Hydrocarbon (C10-C12)	307	42.6	533.1	0	57.5	18	105				
Aromatic Hydrocarbon (C12-C16)	389	42.6	533.1	0	73.1	45.3	109				
Aromatic Hydrocarbon (C16-C21)	309	42.6	533.1	40.30	50.5	40.6	118				
Aromatic Hydrocarbon (C21-C34)	335	42.6	533.1	0	62.8	38.1	137				
Surr: o-Terphenyl	250		426.5		58.6	50	150				

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	262	80.0	200.0	0	131	80	120				S
Aromatic Hydrocarbon (C10-C12)	99.6	40.0	100.0	0	99.6	80	120				
Aromatic Hydrocarbon (C12-C16)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C16-C21)	73.3	40.0	100.0	0	73.3	80	120				S
Aromatic Hydrocarbon (C21-C34)	86.4	40.0	100.0	0	86.4	80	120				
Surr: 1-Chlorooctadecane	26.4		40.00		66.0	60	140				
Surr: o-Terphenyl	26.7		40.00		66.7	60	140				

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample ID: **ALI-CCV-38803C** SampType: **CCV** Units: **µg/L** Prep Date: **1/9/2023** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **1/9/2023** SeqNo: **1676626**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	230	80.0	200.0	0	115	80	120				
Aliphatic Hydrocarbon (C10-C12)	115	40.0	100.0	0	115	80	120				
Aliphatic Hydrocarbon (C12-C16)	112	40.0	100.0	0	112	80	120				
Aliphatic Hydrocarbon (C16-C21)	109	40.0	100.0	0	109	80	120				
Aliphatic Hydrocarbon (C21-C34)	114	40.0	100.0	0	114	80	120				
Surr: 1-Chlorooctadecane	42.5		40.00		106	60	140				
Surr: o-Terphenyl	40.8		40.00		102	60	140				

Sample ID: **ALI-CCV-38803E** SampType: **CCV** Units: **µg/L** Prep Date: **1/9/2023** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **1/9/2023** SeqNo: **1676639**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	227	80.0	200.0	0	113	80	120				
Aliphatic Hydrocarbon (C10-C12)	114	40.0	100.0	0	114	80	120				
Aliphatic Hydrocarbon (C12-C16)	110	40.0	100.0	0	110	80	120				
Aliphatic Hydrocarbon (C16-C21)	105	40.0	100.0	0	105	80	120				
Aliphatic Hydrocarbon (C21-C34)	114	40.0	100.0	0	114	80	120				
Surr: 1-Chlorooctadecane	65.6		40.00		164	60	140				S
Surr: o-Terphenyl	63.5		40.00		159	60	140				S

NOTES:
S - Outlying surrogate recovery observed (high bias).

Work Order: 2212238
CLIENT: Friedman & Bruya
Project: 212176

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803E** SampType: **CCV** Units: **µg/L** Prep Date: **1/10/2023** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **1/10/2023** SeqNo: **1676911**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	189	80.0	200.0	0	94.3	80	120				
Aromatic Hydrocarbon (C10-C12)	81.6	40.0	100.0	0	81.6	80	120				
Aromatic Hydrocarbon (C12-C16)	102	40.0	100.0	0	102	80	120				
Aromatic Hydrocarbon (C16-C21)	88.9	40.0	100.0	0	88.9	80	120				
Aromatic Hydrocarbon (C21-C34)	117	40.0	100.0	0	117	80	120				
Surr: 1-Chlorooctadecane	37.0		40.00		92.6	60	140				
Surr: o-Terphenyl	35.2		40.00		88.1	60	140				

Sample ID: **ARO-CCV-38803F** SampType: **CCV** Units: **µg/L** Prep Date: **1/10/2023** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **1/10/2023** SeqNo: **1676920**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	204	80.0	200.0	0	102	80	120				
Aromatic Hydrocarbon (C10-C12)	88.3	40.0	100.0	0	88.3	80	120				
Aromatic Hydrocarbon (C12-C16)	113	40.0	100.0	0	113	80	120				
Aromatic Hydrocarbon (C16-C21)	80.6	40.0	100.0	0	80.6	80	120				
Aromatic Hydrocarbon (C21-C34)	93.1	40.0	100.0	0	93.1	80	120				
Surr: 1-Chlorooctadecane	40.4		40.00		101	60	140				
Surr: o-Terphenyl	39.5		40.00		98.8	60	140				

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2212238
Logged by:	Clare Griggs	Date Received:	12/12/2022 11:17:00 AM

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	1.4

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

22122S0

Page # _____ of _____

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 212176

PO # D-50

REMARKS -Tier IV

Please Email Results -EIM EDD

TURNAROUND TIME

X Standard TAT

RUSH _____

Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
CCW-5B-1222		12/8/22	1425	water			X									
CCW-9-SB-1222		↓	1430				X									
CCW-8B-1222		12/9/22	1255	↓			X									

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/12/22	0915AM
Received by:	Clare O'Connor	Clare O'Connor	FAI	12/12/22	11:17
Relinquished by:					
Received by:					

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 22, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 212176
Laboratory Reference No. 2212-111

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on December 12, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

Case Narrative

Samples were collected on December 8 and 9, 2022 and received by the laboratory on December 12, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CCW-5B-1222**					
Laboratory ID:	12-111-01					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**54**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**54**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**200**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**190**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**200**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**590**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**25**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**12**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**46**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**7.2**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**12**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CCW-9-5B-1222**					
Laboratory ID:	12-111-02					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**53**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**53**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**200**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**190**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**220**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**610**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**25**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**12**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**43**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**7.4**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**12**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*102*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**CCW-8B-1222**					
Laboratory ID:	12-111-03					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**120**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**350**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**470**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*94*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

VOLATILE PETROLEUM HYDROCARBONS
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1219W1					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1219W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**53.8**	**55.9**	50.0	50.0		**108**	**112**	80-116	4	12	
Toluene	**52.8**	**54.8**	50.0	50.0		**106**	**110**	82-118	4	12	
Ethylbenzene	**52.4**	**54.4**	50.0	50.0		**105**	**109**	82-118	4	12	
m,p-Xylene	**52.3**	**54.1**	50.0	50.0		**105**	**108**	81-118	3	12	
o-Xylene	**53.0**	**54.6**	50.0	50.0		**106**	**109**	81-116	3	11	
Surrogate:											
Fluorobenzene						*94*	*99*	*65-122*			

Date of Report: December 22, 2022
Samples Submitted: December 12, 2022
Laboratory Reference: 2212-111
Project: 212176

VOLATILE PETROLEUM HYDROCARBONS
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
MTBE	CCVD1219V-1	50.0	57.2	-14.378	+/- 15%
Benzene	CCVD1219V-1	50.0	56.6	-13.228	+/- 15%
Toluene	CCVD1219V-1	50.0	56.2	-12.34	+/- 15%
Ethylbenzene	CCVD1219V-1	50.0	55.7	-11.344	+/- 15%
m,p-Xylene	CCVD1219V-1	50.0	56.5	-13.052	+/- 15%
o-Xylene	CCVD1219V-1	50.0	56.0	-12.092	+/- 15%
MTBE	CCVD1219V-2	50.0	56.4	-12.762	+/- 15%
Benzene	CCVD1219V-2	50.0	53.5	-6.936	+/- 15%
Toluene	CCVD1219V-2	50.0	52.8	-5.651	+/- 15%
Ethylbenzene	CCVD1219V-2	50.0	52.5	-5.042	+/- 15%
m,p-Xylene	CCVD1219V-2	50.0	52.7	-5.492	+/- 15%
o-Xylene	CCVD1219V-2	50.0	53.1	-6.126	+/- 15%
MTBE	CCVD1219V-3	50.0	56.4	-12.824	+/- 15%
Benzene	CCVD1219V-3	50.0	55.9	-11.736	+/- 15%
Toluene	CCVD1219V-3	50.0	54.8	-9.64	+/- 15%
Ethylbenzene	CCVD1219V-3	50.0	54.6	-9.182	+/- 15%
m,p-Xylene	CCVD1219V-3	50.0	54.6	-9.228	+/- 15%
o-Xylene	CCVD1219V-3	50.0	54.9	-9.748	+/- 15%
MTBE	CCVD1219V-4	50.0	53.5	-7.032	+/- 15%
Benzene	CCVD1219V-4	50.0	53.8	-7.654	+/- 15%
Toluene	CCVD1219V-4	50.0	52.8	-5.542	+/- 15%
Ethylbenzene	CCVD1219V-4	50.0	52.4	-4.756	+/- 15%
m,p-Xylene	CCVD1219V-4	50.0	52.3	-4.574	+/- 15%
o-Xylene	CCVD1219V-4	50.0	53.0	-5.966	+/- 15%

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite 12-111

PROJECT NAME/NO.	PO #
212176	D-51

REMARKS -Tier IV

Please Email Results -EIM EDD

Page # 1 of 1

TURNAROUND TIME

X Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
CCW-5B-1222	1	12/8/22	1425	water	3			X								
CCW-9-SB-1222	2	↓	1430		3			X								
CCW-8B-1222	3	12/9/22	1255	↓	3			X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/12/22	0915AM
Received by:		M. VOLN	OSE	12/12/22	1510
Relinquished by:					
Received by:					

Sample/Cooler Receipt and Acceptance Checklist

Client: FBI

Client Project Name/Number: 212176

OnSite Project Number: 12-111

Initiated by: MV

Date Initiated: 12/12/21

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	**Yes**	(No)	**N/A**	1 2 3 4	
1.2 Were the custody seals intact?	**Yes**	No	(N/A)	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	**Yes**	No	(N/A)	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No	**N/A**	1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	**N/A**	Temperature: 3	
1.6 Have shipping bills (if any) been attached to the back of this form?	(Yes)	N/A			
1.7 How were the samples delivered?	**Client**	**Courier**	(UPS/FedEx)	**OSE Pickup**	**Other**

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No		1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No		1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No		1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No		1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No		1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)		1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	**N/A**	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	**N/A**	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	**Yes**	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	**#**		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 5, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the results from the testing of material submitted on December 6, 2022 from the TWAAFA M0615.20.007, F&BI 212076 project. There are 62 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
MFA0105R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 6, 2022 by Friedman & Bruya, Inc. from the Maul Foster Alongi TWAAFA M0615.20.007, F&BI 212076 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
212076 -01	TWA-1-1222
212076 -02	TWA-1-1222
212076 -03	TWA-2-1222
212076 -04	TWA-3-1222
212076 -05	TWA-10D-1222
212076 -06	SB-2A-1222
212076 -07	FieldBlank1-1222
212076 -08	TripBlank1-1222
212076 -09	SB-1A-1222
212076 -10	SB-3A-1222

Sample TWA-1-1222 was sent to Fremont Analytical for EPH anlaysis, and to Onsite Environmental for VPH analysis. The reports are enclosed.

Manganese in the 6020B matrix spike and matrix spike duplicate failed the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8260D calibration standard failed the acceptance criteria for acetone in sample TWA-1-1222. The data were flagged accordingly.

Methylene chloride was detected in the 8260D analysis of sample FieldBlank1-1222. The data were flagged as due to laboratory contamination.

Bis(2-ethylhexyl)phthalate and phenanthrene were detected in the 8270E method blank and the field samples. The data were flagged accordingly.

Several 8270E compounds exceeded the acceptance criteria in the matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

The 8270E samples were filtered prior to extraction. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 01/05/23
Date Received: 12/06/22
Project: TWAAFA M0615.20.007, F&BI 212076
Date Extracted: 12/08/22
Date Analyzed: 12/09/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TWA-1-1222 212076-01	<100	116
TWA-2-1222 212076-03	<100	115
TWA-3-1222 212076-04	<100	115
TWA-10D-1222 212076-05	<100	115
SB-2A-1222 212076-06	<100	112
FieldBlank1-1222 212076-07	<100	116
TripBlank1-1222 212076-08	<100	112
SB-1A-1222 212076-09	<100	111
SB-3A-1222 212076-10	<100	113
Method Blank 02-2839 MB	<100	100

Date of Report: 01/05/23
Date Received: 12/06/22
Project: TWAAFA M0615.20.007, F&BI 212076
Date Extracted: 12/08/22
Date Analyzed: 12/08/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
TWA-1-1222 212076-01	650 x	460 x	123
TWA-2-1222 212076-03	190 x	510 x	117
TWA-3-1222 212076-04	<50	<250	127
TWA-10D-1222 212076-05	<50	<250	127
SB-2A-1222 212076-06	<50	<250	118
FieldBlank1-1222 212076-07 1/1.2	<60	<300	135
SB-1A-1222 212076-09	<50	<250	122
SB-3A-1222 212076-10	910 x	940 x	134
Method Blank 02-2913 MB	<50	<250	115

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-02
Date Analyzed:	12/13/22	Data File:	212076-02.065
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	4.83
Cadmium	<1
Chromium	<1
Copper	3.40
Lead	<1
Manganese	912
Nickel	8.62
Zinc	5.13

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-2-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-03
Date Analyzed:	12/13/22	Data File:	212076-03.066
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	17.3
Cadmium	<1
Chromium	<1
Copper	5.48
Lead	<1
Manganese	794
Nickel	8.62
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-3-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-04 x5
Date Analyzed:	12/12/22	Data File:	212076-04 x5.129
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	27.1
Cadmium	<5
Chromium	35.0
Copper	8.28
Lead	<5
Manganese	1,060
Nickel	25.5
Zinc	<25

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-10D-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-05
Date Analyzed:	12/13/22	Data File:	212076-05.122
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	12.0
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-10D-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-05 x5
Date Analyzed:	12/12/22	Data File:	212076-05 x5.130
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<5
Copper	<5
Manganese	70.4
Nickel	<5
Zinc	<25

Analysis For Total Metals By EPA Method 6020B

Client ID:	SB-2A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-06
Date Analyzed:	12/13/22	Data File:	212076-06.067
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.31
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	552
Nickel	2.53
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	FieldBlank1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-07
Date Analyzed:	12/13/22	Data File:	212076-07.072
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	1.53
Copper	1.48
Lead	<1
Manganese	1.87
Nickel	<1
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	SB-1A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-09
Date Analyzed:	12/13/22	Data File:	212076-09.073
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.27
Cadmium	<1
Chromium	<1
Copper	3.45
Lead	<1
Manganese	153
Nickel	2.73
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	SB-3A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-10
Date Analyzed:	12/13/22	Data File:	212076-10.076
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.24
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	167
Nickel	1.98
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	NA	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	I2-890 mb
Date Analyzed:	12/12/22	Data File:	I2-890 mb.060
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 01/05/23
Date Received: 12/06/22
Project: TWAAFA M0615.20.007, F&BI 212076
Date Extracted: 12/09/22
Date Analyzed: 12/14/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E**

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
TWA-1-1222 212076-01	<0.02
TWA-2-1222 212076-03	<0.02
TWA-3-1222 212076-04	<0.02
TWA-10D-1222 212076-05	<0.02
SB-2A-1222 212076-06	<0.02
FieldBlank1-1222 212076-07	<0.02
SB-1A-1222 212076-09	<0.02
SB-3A-1222 212076-10	<0.02
Method Blank i2-887 MB	<0.02

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-01
Date Analyzed:	12/15/22	Data File:	121533.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	96	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	0.49

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-2-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-03
Date Analyzed:	12/15/22	Data File:	121526.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	91	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-3-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-04
Date Analyzed:	12/15/22	Data File:	121527.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	101	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-10D-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-05
Date Analyzed:	12/15/22	Data File:	121528.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	99	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	SB-2A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-06
Date Analyzed:	12/15/22	Data File:	121529.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	102	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	FieldBlank1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-07
Date Analyzed:	12/15/22	Data File:	121530.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	50	150
Toluene-d8	100	50	150
4-Bromofluorobenzene	101	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	SB-1A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-09
Date Analyzed:	12/15/22	Data File:	121531.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	101	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	SB-3A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-10
Date Analyzed:	12/15/22	Data File:	121532.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	97	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	02-2960 mb
Date Analyzed:	12/15/22	Data File:	121525.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/15/22	Lab ID:	212076-01
Date Analyzed:	12/15/22	Data File:	121521.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50 ca	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	0.53	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-2-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-03
Date Analyzed:	12/13/22	Data File:	121322.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-3-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-04
Date Analyzed:	12/13/22	Data File:	121323.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-10D-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-05
Date Analyzed:	12/13/22	Data File:	121324.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SB-2A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-06
Date Analyzed:	12/14/22	Data File:	121325.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	FieldBlank1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-07
Date Analyzed:	12/14/22	Data File:	121326.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	19 lc	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TripBlank1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-08
Date Analyzed:	12/14/22	Data File:	121327.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	104	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SB-1A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-09
Date Analyzed:	12/14/22	Data File:	121328.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	99	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SB-3A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	212076-10
Date Analyzed:	12/14/22	Data File:	121329.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	78	126
Toluene-d8	102	84	115
4-Bromofluorobenzene	94	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/13/22	Lab ID:	02-2956 mb
Date Analyzed:	12/13/22	Data File:	121308.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-1-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-01 1/0.5
Date Analyzed:	12/12/22	Data File:	121218.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	11	65
Phenol-d6	29	11	65
Nitrobenzene-d5	69	11	173
2-Fluorobiphenyl	59	44	108
2,4,6-Tribromophenol	88	10	140
Terphenyl-d14	93	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	1.7
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.37
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.024 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.012
Hexachlorobutadiene	<0.1	Pyrene	0.014
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.012
2-Methylnaphthalene	<0.1	Chrysene	0.011
1-Methylnaphthalene	0.32	Bis(2-ethylhexyl) phthalate	1.2 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.015
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.024
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.017
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.018
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.013
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-2-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-03 1/0.5
Date Analyzed:	12/12/22	Data File:	121219.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	39	11	65
Phenol-d6	28	11	65
Nitrobenzene-d5	76	11	173
2-Fluorobiphenyl	73	44	108
2,4,6-Tribromophenol	102	10	140
Terphenyl-d14	104	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.010
2-Methylnaphthalene	<0.1	Chrysene	0.011
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.80 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.011
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.013
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.015
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.013
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.013
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-3-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-04 1/0.5
Date Analyzed:	12/12/22	Data File:	121220.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	41	11	65
Phenol-d6	31	11	65
Nitrobenzene-d5	80	11	173
2-Fluorobiphenyl	78	44	108
2,4,6-Tribromophenol	109	10	140
Terphenyl-d14	104	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.010 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.012
2-Methylnaphthalene	<0.1	Chrysene	0.014
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.64 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.011
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.023
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.019
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.021
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.021
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	0.023

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-10D-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-05 1/0.5
Date Analyzed:	12/12/22	Data File:	121221.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	25	11	65
Phenol-d6	21	11	65
Nitrobenzene-d5	71	11	173
2-Fluorobiphenyl	64	44	108
2,4,6-Tribromophenol	79	10	140
Terphenyl-d14	89	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.024
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.019
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.014 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	0.013
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.43 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.012
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.012
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.013
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.013
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SB-2A-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-06 1/0.5
Date Analyzed:	12/12/22	Data File:	121222.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45	11	65
Phenol-d6	31	11	65
Nitrobenzene-d5	89	11	173
2-Fluorobiphenyl	82	44	108
2,4,6-Tribromophenol	103	10	140
Terphenyl-d14	101	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.012 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	0.010
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.51 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.011
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.011
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.011
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.011
Acenaphthylene	0.014	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	FieldBlank1-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-07 1/0.5
Date Analyzed:	12/12/22	Data File:	121223.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	34	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	83	11	173
2-Fluorobiphenyl	81	44	108
2,4,6-Tribromophenol	90	10	140
Terphenyl-d14	106	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.45 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SB-1A-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-09 1/0.5
Date Analyzed:	12/12/22	Data File:	121214.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	32	10	60
Phenol-d6	27	10	49
Nitrobenzene-d5	82	15	144
2-Fluorobiphenyl	81	25	128
2,4,6-Tribromophenol	82	10	142
Terphenyl-d14	111	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.016
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.020
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.058 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	0.031
Hexachlorobutadiene	<0.1	Pyrene	0.037
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	0.016
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.93 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.018
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.015
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.014
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.014
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	SB-3A-1222 f	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	212076-10 1/0.5
Date Analyzed:	12/13/22	Data File:	121224.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	36	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	71	11	173
2-Fluorobiphenyl	51	44	108
2,4,6-Tribromophenol	73	10	140
Terphenyl-d14	90	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.014
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.012
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	0.011
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.58 j fb
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.017
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.018
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.016
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.015
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank f	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/12/22	Lab ID:	02-2945 mb 1/0.5
Date Analyzed:	12/12/22	Data File:	121212.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	26	10	60
Phenol-d6	20	10	49
Nitrobenzene-d5	60	15	144
2-Fluorobiphenyl	66	25	128
2,4,6-Tribromophenol	75	10	142
Terphenyl-d14	94	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-01 1/0.5
Date Analyzed:	12/14/22	Data File:	121414.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	52	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-2-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-03 1/0.5
Date Analyzed:	12/14/22	Data File:	121415.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	42	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-3-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-04 1/0.5
Date Analyzed:	12/14/22	Data File:	121416.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	53	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-10D-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-05 1/0.5
Date Analyzed:	12/14/22	Data File:	121417.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	51	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SB-2A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-06 1/0.5
Date Analyzed:	12/14/22	Data File:	121418.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	38	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	FieldBlank1-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-07 1/0.5
Date Analyzed:	12/14/22	Data File:	121419.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	29	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SB-1A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-09 1/0.5
Date Analyzed:	12/14/22	Data File:	121420.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	26	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	SB-3A-1222	Client:	Maul Foster Alongi
Date Received:	12/06/22	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	212076-10 1/0.5
Date Analyzed:	12/14/22	Data File:	121421.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212076
Date Extracted:	12/14/22	Lab ID:	02-2995 mb2 1/0.5
Date Analyzed:	12/14/22	Data File:	121413.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	31	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Date of Report: 01/05/23
Date Received: 12/06/22
Project: TWAAFA M0615.20.007, F&BI 212076

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 212076-09 Matrix Spike

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	<100	110	100	50-150	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	120	70-130

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	<50	104	96	70-130	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	116	70-130

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212076-09 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<10	95	90	75-125	5
Cadmium	ug/L (ppb)	5	<10	96	94	75-125	2
Chromium	ug/L (ppb)	20	<10	94	94	75-125	0
Copper	ug/L (ppb)	20	<50	101	98	75-125	3
Lead	ug/L (ppb)	10	<10	98	96	75-125	2
Manganese	ug/L (ppb)	20	149	66 vo	44 vo	75-125	40 vo
Nickel	ug/L (ppb)	20	<10	100	97	75-125	3
Zinc	ug/L (ppb)	50	<50	101	97	75-125	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	86	80-120
Cadmium	ug/L (ppb)	5	97	80-120
Chromium	ug/L (ppb)	20	98	80-120
Copper	ug/L (ppb)	20	100	80-120
Lead	ug/L (ppb)	10	97	80-120
Manganese	ug/L (ppb)	20	91	80-120
Nickel	ug/L (ppb)	20	99	80-120
Zinc	ug/L (ppb)	50	96	80-120

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.02	97	97	71-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	93	68-125

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	<0.4	103	91	50-150	12

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	79	84	70-130	6

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	109	106	50-150	3
Chloromethane	ug/L (ppb)	10	<10	100	96	50-150	4
Vinyl chloride	ug/L (ppb)	10	<0.2	106	103	50-150	3
Bromomethane	ug/L (ppb)	10	<1	121	130	50-150	7
Chloroethane	ug/L (ppb)	10	<1	110	106	50-150	4
Trichlorofluoromethane	ug/L (ppb)	10	<1	102	105	50-150	3
Acetone	ug/L (ppb)	50	<10	73	73	50-150	0
1,1-Dichloroethene	ug/L (ppb)	10	<1	103	100	50-150	3
Hexane	ug/L (ppb)	10	<1	110	106	50-150	4
Methylene chloride	ug/L (ppb)	10	<5	96	93	50-150	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	103	101	50-150	2
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
2,2-Dichloropropane	ug/L (ppb)	10	<1	109	108	50-150	1
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	99	50-150	3
Chloroform	ug/L (ppb)	10	<1	98	93	50-150	5
2-Butanone (MEK)	ug/L (ppb)	50	<10	87	87	50-150	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	98	96	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloropropene	ug/L (ppb)	10	<1	101	99	50-150	2
Carbon tetrachloride	ug/L (ppb)	10	<1	106	103	50-150	3
Benzene	ug/L (ppb)	10	<0.35	100	99	50-150	1
Trichloroethene	ug/L (ppb)	10	<1	94	93	50-150	1
1,2-Dichloropropane	ug/L (ppb)	10	<1	101	98	50-150	3
Bromodichloromethane	ug/L (ppb)	10	<1	98	97	50-150	1
Dibromomethane	ug/L (ppb)	10	<1	106	102	50-150	4
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	100	97	50-150	3
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	95	99	50-150	4
Toluene	ug/L (ppb)	10	<1	96	96	50-150	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	99	101	50-150	2
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	98	98	50-150	0
2-Hexanone	ug/L (ppb)	50	<10	98	97	50-150	1
1,3-Dichloropropane	ug/L (ppb)	10	<1	95	98	50-150	3
Tetrachloroethene	ug/L (ppb)	10	<1	96	97	50-150	1
Dibromochloromethane	ug/L (ppb)	10	<1	100	99	50-150	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	97	98	50-150	1
Chlorobenzene	ug/L (ppb)	10	<1	98	100	50-150	2
Ethylbenzene	ug/L (ppb)	10	<1	98	99	50-150	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	101	99	50-150	2
m,p-Xylene	ug/L (ppb)	20	<2	98	99	50-150	1
o-Xylene	ug/L (ppb)	10	<1	98	99	50-150	1
Styrene	ug/L (ppb)	10	<1	100	99	50-150	1
Isopropylbenzene	ug/L (ppb)	10	<1	99	101	50-150	2
Bromoform	ug/L (ppb)	10	<1	101	101	50-150	0
n-Propylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
Bromobenzene	ug/L (ppb)	10	<1	100	96	50-150	4
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	99	98	50-150	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	110	105	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	99	99	50-150	0
2-Chlorotoluene	ug/L (ppb)	10	<1	101	98	50-150	3
4-Chlorotoluene	ug/L (ppb)	10	<1	99	98	50-150	1
tert-Butylbenzene	ug/L (ppb)	10	<1	100	98	50-150	2
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	100	96	50-150	4
sec-Butylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
p-Isopropyltoluene	ug/L (ppb)	10	<1	103	100	50-150	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	100	96	50-150	4
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	102	101	50-150	1

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	98	98	46-206	0
Chloromethane	ug/L (ppb)	10	95	96	70-142	1
Vinyl chloride	ug/L (ppb)	10	100	103	70-130	3
Bromomethane	ug/L (ppb)	10	128	125	56-197	2
Chloroethane	ug/L (ppb)	10	106	111	70-130	5
Trichlorofluoromethane	ug/L (ppb)	10	92	94	70-130	2
Acetone	ug/L (ppb)	50	77	78	10-140	1
1,1-Dichloroethene	ug/L (ppb)	10	100	101	70-130	1
Hexane	ug/L (ppb)	10	108	105	54-136	3
Methylene chloride	ug/L (ppb)	10	93	94	43-134	1
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	103	103	70-130	0
trans-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
1,1-Dichloroethane	ug/L (ppb)	10	103	103	70-130	0
2,2-Dichloropropane	ug/L (ppb)	10	109	107	70-130	2
cis-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
Chloroform	ug/L (ppb)	10	100	98	70-130	2
2-Butanone (MEK)	ug/L (ppb)	50	88	85	17-154	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	99	98	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	103	102	70-130	1
1,1-Dichloropropene	ug/L (ppb)	10	100	99	70-130	1
Carbon tetrachloride	ug/L (ppb)	10	104	109	70-130	5
Benzene	ug/L (ppb)	10	102	101	70-130	1
Trichloroethene	ug/L (ppb)	10	96	96	70-130	0
1,2-Dichloropropane	ug/L (ppb)	10	100	100	70-130	0
Bromodichloromethane	ug/L (ppb)	10	104	100	70-130	4
Dibromomethane	ug/L (ppb)	10	107	104	70-130	3
4-Methyl-2-pentanone	ug/L (ppb)	50	101	93	68-130	8
cis-1,3-Dichloropropene	ug/L (ppb)	10	99	98	69-131	1
Toluene	ug/L (ppb)	10	101	100	70-130	1
trans-1,3-Dichloropropene	ug/L (ppb)	10	108	106	70-130	2
1,1,2-Trichloroethane	ug/L (ppb)	10	102	101	70-130	1
2-Hexanone	ug/L (ppb)	50	102	88	45-138	15
1,3-Dichloropropane	ug/L (ppb)	10	105	103	70-130	2
Tetrachloroethene	ug/L (ppb)	10	100	100	70-130	0
Dibromochloromethane	ug/L (ppb)	10	102	106	60-148	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	101	105	70-130	4
Chlorobenzene	ug/L (ppb)	10	104	101	70-130	3
Ethylbenzene	ug/L (ppb)	10	103	102	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	102	105	70-130	3
m,p-Xylene	ug/L (ppb)	20	103	101	70-130	2
o-Xylene	ug/L (ppb)	10	103	102	70-130	1
Styrene	ug/L (ppb)	10	102	100	70-130	2
Isopropylbenzene	ug/L (ppb)	10	103	102	70-130	1
Bromoform	ug/L (ppb)	10	104	102	69-138	2
n-Propylbenzene	ug/L (ppb)	10	105	108	70-130	3
Bromobenzene	ug/L (ppb)	10	102	105	70-130	3
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	106	70-130	6
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	113	120	70-130	6
1,2,3-Trichloropropane	ug/L (ppb)	10	104	105	70-130	1
2-Chlorotoluene	ug/L (ppb)	10	103	109	70-130	6
4-Chlorotoluene	ug/L (ppb)	10	101	102	70-130	1
tert-Butylbenzene	ug/L (ppb)	10	102	107	70-130	5
1,2,4-Trimethylbenzene	ug/L (ppb)	10	101	104	70-130	3
sec-Butylbenzene	ug/L (ppb)	10	103	107	70-130	4
p-Isopropyltoluene	ug/L (ppb)	10	104	107	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	104	107	70-130	3
1,2,3-Trichlorobenzene	ug/L (ppb)	10	102	108	70-130	6

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	<1	23	10-76
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	<0.1	53	35-104
2-Chlorophenol	ug/L (ppb)	2.5	<1	50	18-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	51	34-90
1,4-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	53	36-90
1,2-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	54	38-90
Benzyl alcohol	ug/L (ppb)	12.5	<1	53	27-89
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	<0.1	56	30-109
2-Methylphenol	ug/L (ppb)	2.5	<1	51	25-95
Hexachloroethane	ug/L (ppb)	2.5	<0.1	52	38-88
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	<0.1	67	50-150
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	<2	48	15-95
Nitrobenzene	ug/L (ppb)	2.5	<0.1	58	41-114
Isophorone	ug/L (ppb)	2.5	<0.1	66	50-150
2-Nitrophenol	ug/L (ppb)	2.5	<1	66	21-113
2,4-Dimethylphenol	ug/L (ppb)	2.5	<1	59	50-150
Benzoic acid	ug/L (ppb)	20	<5	25	10-73
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	<0.1	62	50-150
2,4-Dichlorophenol	ug/L (ppb)	2.5	<1	63	26-110
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	<0.1	60	42-95
Naphthalene	ug/L (ppb)	2.5	<0.1	58	46-95
Hexachlorobutadiene	ug/L (ppb)	2.5	<0.1	61	39-94
4-Chloroaniline	ug/L (ppb)	12.5	<10	55	16-114
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	<1	70	46-123
2-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	62	50-150
1-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	64	50-150
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	<0.3	62	28-122
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	<1	72	10-149
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	<1	71	10-143
2-Chloronaphthalene	ug/L (ppb)	2.5	<0.1	65	50-150
2-Nitroaniline	ug/L (ppb)	12.5	<0.5	80	41-139
Dimethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Acenaphthylene	ug/L (ppb)	2.5	<0.01	69	50-150
2,6-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	83	50-150
3-Nitroaniline	ug/L (ppb)	12.5	<10	63	21-124
Acenaphthene	ug/L (ppb)	2.5	0.016	69	50-150
2,4-Dinitrophenol	ug/L (ppb)	5	<3	98	10-182
Dibenzofuran	ug/L (ppb)	2.5	<0.1	64	46-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	81	50-150
4-Nitrophenol	ug/L (ppb)	5	<3	35	10-86
Diethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Fluorene	ug/L (ppb)	2.5	0.020	73	50-150
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	72	50-150
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	<0.1	75	50-150
4-Nitroaniline	ug/L (ppb)	12.5	<10	59	46-105
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	<3	99	10-223
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	81	50-150
Hexachlorobenzene	ug/L (ppb)	2.5	<0.1	78	50-150
Pentachlorophenol	ug/L (ppb)	2.5	<0.5	80	10-207
Phenanthrene	ug/L (ppb)	2.5	0.058	77	50-150
Anthracene	ug/L (ppb)	2.5	<0.01	76	50-150
Carbazole	ug/L (ppb)	2.5	<0.1	79	50-150
Di-n-butyl phthalate	ug/L (ppb)	2.5	<1	57	50-150
Fluoranthene	ug/L (ppb)	2.5	0.031	77	50-150
Pyrene	ug/L (ppb)	2.5	0.037	82	50-150
Benzyl butyl phthalate	ug/L (ppb)	2.5	<1	78	50-150
Benz(a)anthracene	ug/L (ppb)	2.5	<0.01	79	50-150
Chrysene	ug/L (ppb)	2.5	0.016	82	50-150
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	0.93 j	61	46-157
Di-n-octyl phthalate	ug/L (ppb)	2.5	<1	89	50-150
Benzo(a)pyrene	ug/L (ppb)	2.5	<0.01	80	50-150
Benzo(b)fluoranthene	ug/L (ppb)	2.5	0.018	79	50-150
Benzo(k)fluoranthene	ug/L (ppb)	2.5	0.015	78	50-150
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	0.014	85	50-150
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	0.014	85	50-150
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	<0.02	81	50-150

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	28	10-30
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	66	43-117
2-Chlorophenol	ug/L (ppb)	2.5	63	21-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	65	39-102
1,4-Dichlorobenzene	ug/L (ppb)	2.5	66	41-103
1,2-Dichlorobenzene	ug/L (ppb)	2.5	70	43-105
Benzyl alcohol	ug/L (ppb)	12.5	59	14-82
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	73	51-110
2-Methylphenol	ug/L (ppb)	2.5	52	19-77
Hexachloroethane	ug/L (ppb)	2.5	64	39-104
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	77	60-114
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	53	14-63
Nitrobenzene	ug/L (ppb)	2.5	73	53-114
Isophorone	ug/L (ppb)	2.5	101	62-113
2-Nitrophenol	ug/L (ppb)	2.5	81	41-117
2,4-Dimethylphenol	ug/L (ppb)	2.5	30	23-105
Benzoic acid	ug/L (ppb)	20	14	10-25
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	74	56-111
2,4-Dichlorophenol	ug/L (ppb)	2.5	70	34-113
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	74	48-104
Naphthalene	ug/L (ppb)	2.5	71	50-104
Hexachlorobutadiene	ug/L (ppb)	2.5	75	40-107
4-Chloroaniline	ug/L (ppb)	12.5	65	34-120
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	73	34-111
2-Methylnaphthalene	ug/L (ppb)	2.5	75	54-109
1-Methylnaphthalene	ug/L (ppb)	2.5	77	55-108
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	73	34-126
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	78	28-125
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	83	39-120
2-Chloronaphthalene	ug/L (ppb)	2.5	78	57-130
2-Nitroaniline	ug/L (ppb)	12.5	92	51-146
Dimethyl phthalate	ug/L (ppb)	2.5	84	64-118
Acenaphthylene	ug/L (ppb)	2.5	82	60-114
2,6-Dinitrotoluene	ug/L (ppb)	2.5	102	66-121
3-Nitroaniline	ug/L (ppb)	12.5	77	42-134
Acenaphthene	ug/L (ppb)	2.5	82	57-110
2,4-Dinitrophenol	ug/L (ppb)	5	73	10-171
Dibenzofuran	ug/L (ppb)	2.5	75	52-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	94	55-127
4-Nitrophenol	ug/L (ppb)	5	34	10-46
Diethyl phthalate	ug/L (ppb)	2.5	83	63-118
Fluorene	ug/L (ppb)	2.5	83	61-115
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	82	61-112
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	80	63-116
4-Nitroaniline	ug/L (ppb)	12.5	72	42-150
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	100	13-152
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	84	62-115
Hexachlorobenzene	ug/L (ppb)	2.5	85	60-113
Pentachlorophenol	ug/L (ppb)	2.5	58	14-137
Phenanthrene	ug/L (ppb)	2.5	85	63-113
Anthracene	ug/L (ppb)	2.5	82	65-117
Carbazole	ug/L (ppb)	2.5	80	67-131
Di-n-butyl phthalate	ug/L (ppb)	2.5	53	37-135
Fluoranthene	ug/L (ppb)	2.5	85	68-121
Pyrene	ug/L (ppb)	2.5	87	66-125
Benzyl butyl phthalate	ug/L (ppb)	2.5	81	56-128
Benz(a)anthracene	ug/L (ppb)	2.5	87	70-130
Chrysene	ug/L (ppb)	2.5	93	67-119
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	90	57-124
Di-n-octyl phthalate	ug/L (ppb)	2.5	93	43-132
Benzo(a)pyrene	ug/L (ppb)	2.5	86	68-126
Benzo(b)fluoranthene	ug/L (ppb)	2.5	85	62-130
Benzo(k)fluoranthene	ug/L (ppb)	2.5	87	67-125
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	88	63-131
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	90	62-133
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	87	57-133

Date of Report: 01/05/23
Date Received: 12/06/22
Project: TWAAFA M0615.20.007, F&BI 212076

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.25	<0.0035 j	55	29-125
Aroclor 1260	mg/kg (ppm)	0.25	<0.0035 j	62	25-137

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	62	60	25-111	3
Aroclor 1260	ug/L (ppb)	0.25	71	68	23-123	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY

212076 — 12/06/22 — N4/I2/VW4

Page # 1 of 1

Report To Audrey Hackett
Company Maul Foster & Alongi
Address 2815 2nd Ave, Suite 540
City, State, ZIP Seattle WA 98121
Phone 206-556-2015 Email ahackett@maulfoster.com

SAMPLERS (*signature*): Amanda Bixby

PROJECT NAME: TWAAFA

PO #: M0615.20.007

REMARKS: Project specific RLs? - Yes / No

INVOICE TO: Audrey Hackett

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx (silica gel)	NWTPH-Gx	1,4-Dioxane 8260D	NWEPH+NWVPH (NWTPH-HCID)	VOCs EPA 8260	SVOCs + cPAHs EPA 8270	PCBs EPA 8082	Total Metals (see Bottle Order)	Mercury EPA 1631			Notes
TWA-1-1222	01 A-R	12/5/22	11:30	water	18	X	X	X	X	X	X	X		X			Hold "FF" Poly marked
TWA-1-1222	02	12/6/22	8:30	water	1								X				
TWA-2-1222	03 A-N	12/5/22	12:30	water	14	X	X	X		X	X	X	X	X			
TWA-3-1222	04	12/5/22	13:30	water	14	X	X	X		X	X	X	X	X			
TWA-10D-1222	05	12/5/22	16:10	water	14	X	X	X		X	X	X	X	X			
SB-2A-1222	06	12/5/22	16:00	water	14	X	X	X		X	X	X	X	X			
FieldBlank1-1222	07 A-R	12/5/22	16:30	water	18	X	X	X		X	X	X	X	X			
TripBlank1-1222	08 A-B	12/5/22	NA	water	2		X			X							
SB-1A-1222	09 A-C	12/5/22	10:30	water	30	X	X	X		X	X	X	X	X			MS/MSD
SB-3A-1222	10 A-N	12/6/22	10:45	water	14 30	X	X	X		X	X	X	X	X			

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Amanda Bixby	Amanda Bixby	MFA	12/6/22	1405
Received by:	UNK	FBI	12-6-22	1405
Relinquished by:				
Received by:		Samples received at 4 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 22, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 212076
Laboratory Reference No. 2212-068

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on December 7, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 22, 2022
Samples Submitted: December 7, 2022
Laboratory Reference: 2212-068
Project: 212076

Case Narrative

Samples were collected on December 5, 2022 and received by the laboratory on December 7, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 22, 2022
Samples Submitted: December 7, 2022
Laboratory Reference: 2212-068
Project: 212076

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TWA-1-1222**					
Laboratory ID:	12-068-01					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*98*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 7, 2022
Laboratory Reference: 2212-068
Project: 212076

VOLATILE PETROLEUM HYDROCARBONS
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1219W1					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1219W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**53.8**	**55.9**	50.0	50.0		**108**	**112**	80-116	4	12	
Toluene	**52.8**	**54.8**	50.0	50.0		**106**	**110**	82-118	4	12	
Ethylbenzene	**52.4**	**54.4**	50.0	50.0		**105**	**109**	82-118	4	12	
m,p-Xylene	**52.3**	**54.1**	50.0	50.0		**105**	**108**	81-118	3	12	
o-Xylene	**53.0**	**54.6**	50.0	50.0		**106**	**109**	81-116	3	11	
Surrogate:											
Fluorobenzene						*94*	*99*	*65-122*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite 12-068

PROJECT NAME/NO. 212076

PO # D-51

REMARKS

Please Email Results

- Tier IV data package needed.
- EQuIS EDD

TURNAROUND TIME

☑ Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
TWA-1-1222	1	12/5/12	1130	H_2O	3			X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
~~Relinquished by:~~		Michael Erdahl	Friedman & Bruya	12/7/12	0915AM
Received by:		M. VOLN	OSE	12/7/12	1610
Relinquished by:					
Received by:					

Sample/Cooler Receipt and Acceptance Checklist

Client: FBI

Client Project Name/Number: 212076

OnSite Project Number: 12-068

Initiated by: MV

Date Initiated: 12/7/12

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	(No)	N/A	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	(N/A)	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	(N/A)	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No	N/A	1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	N/A	Temperature:	0
1.6 Have shipping bills (if any) been attached to the back of this form?	(Yes)	N/A			
1.7 How were the samples delivered?	Client	Courier	(UPS/FedEx)	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No		1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No		1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No		1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No		1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No		1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)		1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	Yes	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 212076
Work Order Number: 2212147

January 03, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 12/7/2022 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *01/03/2023*

CLIENT: Friedman & Bruya
Project: 212076
Work Order: 2212147

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2212147-001	TWA-1-1222	12/05/2022 11:30 AM	12/07/2022 2:33 PM

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

Original

Case Narrative

WO#: **2212147**
Date: **1/3/2023**

CLIENT: Friedman & Bruya
Project: 212076

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

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2212147**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/5/2022 11:30:00 AM
Project: 212076
Lab ID: 2212147-001
Matrix: Water
Client Sample ID: **TWA-1-1222**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	78.9		µg/L	1	12/30/2022 10:50:13 AM
Aliphatic Hydrocarbon (C10-C12)	ND	39.5		µg/L	1	12/30/2022 10:50:13 AM
Aliphatic Hydrocarbon (C12-C16)	ND	39.5		µg/L	1	12/30/2022 10:50:13 AM
Aliphatic Hydrocarbon (C16-C21)	ND	39.5		µg/L	1	12/30/2022 10:50:13 AM
Aliphatic Hydrocarbon (C21-C34)	ND	39.5		µg/L	1	12/30/2022 10:50:13 AM
Aromatic Hydrocarbon (C8-C10)	ND	78.9		µg/L	1	12/30/2022 5:47:49 PM
Aromatic Hydrocarbon (C10-C12)	ND	39.5		µg/L	1	12/30/2022 5:47:49 PM
Aromatic Hydrocarbon (C12-C16)	ND	39.5		µg/L	1	12/30/2022 5:47:49 PM
Aromatic Hydrocarbon (C16-C21)	40.2	39.5	Q	µg/L	1	12/30/2022 5:47:49 PM
Aromatic Hydrocarbon (C21-C34)	ND	39.5		µg/L	1	12/30/2022 5:47:49 PM
Surr: 1-Chlorooctadecane	69.8	50 - 150		%Rec	1	12/30/2022 10:50:13 AM
Surr: o-Terphenyl	86.1	50 - 150		%Rec	1	12/30/2022 5:47:49 PM

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ALI ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	42.6		40.00		107	60	140				
Surr: o-Terphenyl	43.8		40.00		109	60	140				

Sample ID: **ALI ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	212	20.0	200.0	0	106	80	120				
Aliphatic Hydrocarbon (C10-C12)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C12-C16)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C16-C21)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	10.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	42.7		40.00		107	60	140				
Surr: o-Terphenyl	43.3		40.00		108	60	140				

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	53.1		40.00		133	60	140				
Surr: o-Terphenyl	52.5		40.00		131	60	140				

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **ARO ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/2/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/2/2022** SeqNo: **1587175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	220	20.0	200.0	0	110	80	120				
Aromatic Hydrocarbon (C10-C12)	99.4	10.0	100.0	0	99.4	80	120				
Aromatic Hydrocarbon (C12-C16)	110	10.0	100.0	0	110	80	120				
Aromatic Hydrocarbon (C16-C21)	88.2	10.0	100.0	0	88.2	80	120				
Aromatic Hydrocarbon (C21-C34)	104	10.0	100.0	0	104	80	120				
Surr: 1-Chlorooctadecane	39.8		40.00		99.4	60	140				
Surr: o-Terphenyl	39.7		40.00		99.3	60	140				

Sample ID: **ALI-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672873**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	247	80.0	200.0	0	124	80	120				S
Aliphatic Hydrocarbon (C10-C12)	123	40.0	100.0	0	123	80	120				S
Aliphatic Hydrocarbon (C12-C16)	115	40.0	100.0	0	115	80	120				
Aliphatic Hydrocarbon (C16-C21)	107	40.0	100.0	0	107	80	120				
Aliphatic Hydrocarbon (C21-C34)	101	40.0	100.0	0	101	80	120				
Surr: 1-Chlorooctadecane	44.1		40.00		110	60	140				
Surr: o-Terphenyl	44.0		40.00		110	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672874**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C16-C21)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: 1-Chlorooctadecane	328		400.0		82.1	50	150				

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672875**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	301	80.0	1,000	0	30.1	5.88	130				
Aliphatic Hydrocarbon (C10-C12)	320	40.0	500.0	0	63.9	25.3	107				
Aliphatic Hydrocarbon (C12-C16)	383	40.0	500.0	0	76.5	42.5	113				
Aliphatic Hydrocarbon (C16-C21)	399	40.0	500.0	0	79.8	42.7	118				
Aliphatic Hydrocarbon (C21-C34)	298	40.0	500.0	0	59.7	27.8	137				
Surr: 1-Chlorooctadecane	320		400.0		80.1	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672876**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	367	80.0	1,000	0	36.7	5.88	130	300.7	19.9	20	
Aliphatic Hydrocarbon (C10-C12)	343	40.0	500.0	0	68.6	25.3	107	319.5	7.13	20	
Aliphatic Hydrocarbon (C12-C16)	400	40.0	500.0	0	79.9	42.5	113	382.6	4.36	20	
Aliphatic Hydrocarbon (C16-C21)	411	40.0	500.0	0	82.3	42.7	118	398.8	3.09	20	
Aliphatic Hydrocarbon (C21-C34)	301	40.0	500.0	0	60.1	27.8	137	298.5	0.694	20	
Surr: 1-Chlorooctadecane	325		400.0		81.2	50	150		0		

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672880**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	423	85.3	1,066	0	39.7	5	130				
Aliphatic Hydrocarbon (C10-C12)	345	42.6	533.1	0	64.7	17.1	108				
Aliphatic Hydrocarbon (C12-C16)	397	42.6	533.1	0	74.5	35.7	111				
Aliphatic Hydrocarbon (C16-C21)	400	42.6	533.1	0	75.1	41.1	110				
Aliphatic Hydrocarbon (C21-C34)	299	42.6	533.1	0	56.1	31.4	125				
Surr: 1-Chlorooctadecane	331		426.5		77.7	50	150				

Sample ID: **ALI-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672888**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	250	80.0	200.0	0	125	80	120				S
Aliphatic Hydrocarbon (C10-C12)	126	40.0	100.0	0	126	80	120				S
Aliphatic Hydrocarbon (C12-C16)	118	40.0	100.0	0	118	80	120				
Aliphatic Hydrocarbon (C16-C21)	114	40.0	100.0	0	114	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	40.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	46.2		40.00		116	60	140				
Surr: o-Terphenyl	45.3		40.00		113	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	248	80.0	200.0	0	124	80	120				S
Aromatic Hydrocarbon (C10-C12)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C12-C16)	117	40.0	100.0	0	117	80	120				
Aromatic Hydrocarbon (C16-C21)	84.9	40.0	100.0	0	84.9	80	120				
Aromatic Hydrocarbon (C21-C34)	85.5	40.0	100.0	0	85.5	80	120				
Surr: 1-Chlorooctadecane	32.2		40.00		80.6	60	140				
Surr: o-Terphenyl	32.1		40.00		80.4	60	140				

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672890**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aromatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aromatic Hydrocarbon (C16-C21)	ND	40.0		0	0						Q
Aromatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: o-Terphenyl	296		400.0		74.0	50	150				

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	462	80.0	1,000	0	46.2	25.2	130				
Aromatic Hydrocarbon (C10-C12)	290	40.0	500.0	0	57.9	46.2	130				
Aromatic Hydrocarbon (C12-C16)	312	40.0	500.0	0	62.3	39.9	107				
Aromatic Hydrocarbon (C16-C21)	366	40.0	500.0	0	73.3	53.4	125				
Aromatic Hydrocarbon (C21-C34)	399	40.0	500.0	0	79.8	46.5	138				
Surr: o-Terphenyl	253		400.0		63.2	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	623	80.0	1,000	0	62.3	25.2	130	461.8	29.6	20	R

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C10-C12)	348	40.0	500.0	0	69.5	46.2	130	289.5	18.2	20	
Aromatic Hydrocarbon (C12-C16)	415	40.0	500.0	0	83.0	39.9	107	311.6	28.5	20	R
Aromatic Hydrocarbon (C16-C21)	420	40.0	500.0	0	84.0	53.4	125	366.5	13.6	20	
Aromatic Hydrocarbon (C21-C34)	384	40.0	500.0	0	76.9	46.5	138	398.8	3.67	20	
Surr: o-Terphenyl	317		400.0		79.2	50	150		0		

NOTES:
R - High RPD observed, spike recovery is within range.

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **BATCH** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	588	85.3	1,066	82.09	47.5	9.66	130				
Aromatic Hydrocarbon (C10-C12)	307	42.6	533.1	0	57.5	18	105				
Aromatic Hydrocarbon (C12-C16)	389	42.6	533.1	0	73.1	45.3	109				
Aromatic Hydrocarbon (C16-C21)	309	42.6	533.1	40.30	50.5	40.6	118				
Aromatic Hydrocarbon (C21-C34)	335	42.6	533.1	0	62.8	38.1	137				
Surr: o-Terphenyl	250		426.5		58.6	50	150				

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	262	80.0	200.0	0	131	80	120				S
Aromatic Hydrocarbon (C10-C12)	99.6	40.0	100.0	0	99.6	80	120				
Aromatic Hydrocarbon (C12-C16)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C16-C21)	73.3	40.0	100.0	0	73.3	80	120				S
Aromatic Hydrocarbon (C21-C34)	86.4	40.0	100.0	0	86.4	80	120				
Surr: 1-Chlorooctadecane	26.4		40.00		66.0	60	140				
Surr: o-Terphenyl	26.7		40.00		66.7	60	140				

Work Order: 2212147
CLIENT: Friedman & Bruya
Project: 212076

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803B**	SampType: **CCV**	Units: **µg/L**	Prep Date: **12/30/2022**	RunNo: **80861**	
Client ID: **CCV**	Batch ID: **38803**		Analysis Date: **12/30/2022**	SeqNo: **1672900**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**2212147**
Logged by:	**Clare Griggs**	Date Received:	**12/7/2022 2:33:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.4

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

22.12147

Send Report To Michael Erdahl
Company Friedman and Bruya, Inc.
Address 3012 16th Ave W
City, State, ZIP Seattle, WA 98119
Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO.	PO #
212076	D-34

REMARKS
Please Email Results
- Tier IV data package needed.
- EQuIS EDD

TURNAROUND TIME
☑ Standard TAT
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
TWA-1-1222		12/5/22	1130	H_2O			x									

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/7/22	0915 AM
Received by:		Lily Baumgart	FAI	12/7/22	14:33
Relinquished by:					
Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 5, 2023

Audrey Hackett, Project Manager
Maul Foster Alongi
2815 2nd Ave, Suite 540
Seattle, WA 98121

Dear Ms Hackett:

Included are the results from the testing of material submitted on December 7, 2022 from the TWAAFA M0615.20.007, F&BI 212106 project. There are 45 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
MFA0105R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on December 7, 2022 by Friedman & Bruya, Inc. from the Maul Foster Alongi TWAAFA M0615.20.007, F&BI 212106 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
212106 -01	TWA-5D-1222
212106 -02	TWA-6D-1222
212106 -03	MW-1-1222
212106 -04	MW-9-1-1222
212106 -05	Trip Blank2-1222

Samples TWA-5D-1222, MW-1-1222, and MW-9-1-1222 were sent to Fremont Analytical for EPH anlaysis, and to Onsite Environmental for VPH analysis. The reports are enclosed.

Mercury in the 1631E matrix spike duplicate did not meet the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were due to matrix effect.

The 8270E calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly.

Several 8270E compounds exceeded the acceptance criteria in the matrix spike samples. The laboratory control samples met the acceptance criteria, therefore the data were likely due to sample matrix effect.

Bis(2-ethylhexyl)phthalate and phenanthrene were detected in the 8270E method blank and the field samples. The data were qualified accordingly.

The 8270E samples were filtered prior to extraction. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106
Date Extracted: 12/08/22
Date Analyzed: 12/09/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TWA-5D-1222 212106-01	<100	117
TWA-6D-1222 212106-02	<100	114
MW-1-1222 212106-03	200	117
MW-9-1-1222 212106-04	210	113
Trip Blank2-1222 212106-05	<100	108
Method Blank 02-2839 MB	<100	100

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106
Date Extracted: 12/08/22
Date Analyzed: 12/08/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
TWA-5D-1222 212106-01 1/0.4	1,000 x	1,100 x	109
TWA-6D-1222 212106-02 1/0.4	600 x	660 x	ip
MW-1-1222 212106-03 1/0.48	18,000	6,000 x	133
MW-9-1-1222 212106-04 1/0.48	20,000	6,700 x	168
Method Blank 02-2917 MB	<50	<250	119

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-5D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-01
Date Analyzed:	12/13/22	Data File:	212106-01.123
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	6.27
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-5D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-01
Date Analyzed:	12/14/22	Data File:	212106-01.261
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	6.02
Copper	2.82
Manganese	176
Nickel	1.83
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-6D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-02
Date Analyzed:	12/13/22	Data File:	212106-02.124
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	9.49
Cadmium	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	TWA-6D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-02
Date Analyzed:	12/14/22	Data File:	212106-02.262
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	29.2
Copper	3.95
Manganese	806
Nickel	3.01
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-03
Date Analyzed:	12/13/22	Data File:	212106-03.125
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.18
Cadmium	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-03
Date Analyzed:	12/14/22	Data File:	212106-03.254
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	1.00
Copper	3.95
Lead	<1
Manganese	121
Nickel	5.99
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-9-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-04
Date Analyzed:	12/13/22	Data File:	212106-04.126
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	1.02
Cadmium	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	MW-9-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-04
Date Analyzed:	12/14/22	Data File:	212106-04.253
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	1.07
Copper	3.43
Lead	1.44
Manganese	139
Nickel	6.21
Zinc	6.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	NA	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	I2-891 mb
Date Analyzed:	12/12/22	Data File:	I2-891 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Nickel	<1
Zinc	<5

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106
Date Extracted: 12/09/22
Date Analyzed: 12/14/22

RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
TWA-5D-1222 212106-01	<0.02
TWA-6D-1222 212106-02	<0.02
MW-1-1222 212106-03	<0.02
MW-9-1-1222 212106-04	<0.02
Method Blank i2-885 MB	<0.02

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-5D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/15/22	Lab ID:	212106-01
Date Analyzed:	12/15/22	Data File:	121534.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	97	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	0.50

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	TWA-6D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/15/22	Lab ID:	212106-02
Date Analyzed:	12/16/22	Data File:	121542.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	50	150
Toluene-d8	97	50	150
4-Bromofluorobenzene	93	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	5.3

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	MW-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/15/22	Lab ID:	212106-03
Date Analyzed:	12/16/22	Data File:	121535.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	50	150
Toluene-d8	96	50	150
4-Bromofluorobenzene	98	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	MW-9-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/15/22	Lab ID:	212106-04
Date Analyzed:	12/16/22	Data File:	121536.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	50	150
Toluene-d8	98	50	150
4-Bromofluorobenzene	94	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D SIM

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/15/22	Lab ID:	02-2960 mb
Date Analyzed:	12/15/22	Data File:	121525.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	50	150
Toluene-d8	102	50	150
4-Bromofluorobenzene	99	50	150

Compounds:	Concentration ug/L (ppb)
1,4-Dioxane	<0.4

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-5D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	212106-01
Date Analyzed:	12/14/22	Data File:	121330.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	TWA-6D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	212106-02
Date Analyzed:	12/14/22	Data File:	121331.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	107	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	MW-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	212106-03
Date Analyzed:	12/14/22	Data File:	121332.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	98	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	7.2	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	MW-9-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	212106-04
Date Analyzed:	12/14/22	Data File:	121333.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	78	126
Toluene-d8	101	84	115
4-Bromofluorobenzene	100	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	8.4	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Trip Blank2-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	212106-05
Date Analyzed:	12/13/22	Data File:	121317.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	78	126
Toluene-d8	97	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/13/22	Lab ID:	02-2956 mb
Date Analyzed:	12/13/22	Data File:	121308.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	LM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	95	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	96	72	130

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,2-Dibromo-3-chloropropane	<10
Bromodichloromethane	<0.5	1,2,3-Trichlorobenzene	<1
Dibromomethane	<1	trans-1,3-Dichloropropene	<0.4
4-Methyl-2-pentanone	<10	1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.4	2-Hexanone	<10
Toluene	<1		

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-5D-1222 f	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-01 1/0.5
Date Analyzed:	12/13/22	Data File:	121310.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	27	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	57	11	173
2-Fluorobiphenyl	50	44	108
2,4,6-Tribromophenol	77	10	140
Terphenyl-d14	74	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.022
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3 ca
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.036
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.054 fb
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.032
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.055
Hexachlorobutadiene	<0.1	Pyrene	0.060
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.050
2-Methylnaphthalene	<0.1	Chrysene	0.058
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	0.83 j fb
Hexachlorocyclopentadiene	<0.3 ca	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.047
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.062
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.057
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.052
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.052
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	0.050

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	TWA-6D-1222 f	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-02 1/0.5
Date Analyzed:	12/13/22	Data File:	121311.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	33	11	65
Phenol-d6	29	11	65
Nitrobenzene-d5	57	11	173
2-Fluorobiphenyl	41 ip	44	108
2,4,6-Tribromophenol	73	10	140
Terphenyl-d14	72	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3 ca
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.020
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.060
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.025
Hexachlorobutadiene	<0.1	Pyrene	0.020
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.030
2-Methylnaphthalene	<0.1	Chrysene	0.040
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	5.8 fc
Hexachlorocyclopentadiene	<0.3 ca	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.028
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.059
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.061
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.045
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.049
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	0.044

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-1-1222 f	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-03 1/0.5
Date Analyzed:	12/13/22	Data File:	121312.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	72	11	173
2-Fluorobiphenyl	58	44	108
2,4,6-Tribromophenol	81	10	140
Terphenyl-d14	102	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.30
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3 ca
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.43
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	0.12
Bis(2-chloroethoxy)methane	<0.1	Anthracene	0.093
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.064
Hexachlorobutadiene	<0.1	Pyrene	0.16
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.019
2-Methylnaphthalene	<0.1	Chrysene	0.025
1-Methylnaphthalene	2.0	Bis(2-ethylhexyl) phthalate	0.80 j fb
Hexachlorocyclopentadiene	<0.3 ca	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.014
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.020
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.020
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.015
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.017
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	MW-9-1-1222 f	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	212106-04 1/0.5
Date Analyzed:	12/13/22	Data File:	121313.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	36	11	65
Phenol-d6	25	11	65
Nitrobenzene-d5	71	11	173
2-Fluorobiphenyl	57	44	108
2,4,6-Tribromophenol	78	10	140
Terphenyl-d14	101	50	150

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	2.0	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	0.33
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3 ca
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	0.30
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1
Naphthalene	<0.1	Fluoranthene	0.060
Hexachlorobutadiene	<0.1	Pyrene	0.17
4-Chloroaniline	<10	Benzyl butyl phthalate	<1
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	0.022
2-Methylnaphthalene	<0.1	Chrysene	0.032
1-Methylnaphthalene	1.8	Bis(2-ethylhexyl) phthalate	0.67 j fb
Hexachlorocyclopentadiene	<0.3 ca	Di-n-octyl phthalate	<1
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	0.018
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	0.023
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	0.022
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	0.017
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	0.019
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank f	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/12/22	Lab ID:	02-2945 mb 1/0.5
Date Analyzed:	12/12/22	Data File:	121212.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	ya

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	26	10	60
Phenol-d6	20	10	49
Nitrobenzene-d5	60	15	144
2-Fluorobiphenyl	66	25	128
2,4,6-Tribromophenol	75	10	142
Terphenyl-d14	94	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<1	2,6-Dinitrotoluene	<0.5
Bis(2-chloroethyl) ether	<0.1	3-Nitroaniline	<10
2-Chlorophenol	<1	Acenaphthene	<0.01
1,3-Dichlorobenzene	<0.1	2,4-Dinitrophenol	<3
1,4-Dichlorobenzene	<0.1	Dibenzofuran	<0.1
1,2-Dichlorobenzene	<0.1	2,4-Dinitrotoluene	<0.5
Benzyl alcohol	<1	4-Nitrophenol	<3
2,2'-Oxybis(1-chloropropane)	<0.1	Diethyl phthalate	<1
2-Methylphenol	<1	Fluorene	<0.01
Hexachloroethane	<0.1	4-Chlorophenyl phenyl ether	<0.1
N-Nitroso-di-n-propylamine	<0.1	N-Nitrosodiphenylamine	<0.1
3-Methylphenol + 4-Methylphenol	<2	4-Nitroaniline	<10
Nitrobenzene	<0.1	4,6-Dinitro-2-methylphenol	<3
Isophorone	<0.1	4-Bromophenyl phenyl ether	<0.1
2-Nitrophenol	<1	Hexachlorobenzene	<0.1
2,4-Dimethylphenol	<1	Pentachlorophenol	<0.5
Benzoic acid	<5	Phenanthrene	<0.01
Bis(2-chloroethoxy)methane	<0.1	Anthracene	<0.01
2,4-Dichlorophenol	<1	Carbazole	<0.1
1,2,4-Trichlorobenzene	<0.1	Di-n-butyl phthalate	<1 ca
Naphthalene	<0.1	Fluoranthene	<0.01
Hexachlorobutadiene	<0.1	Pyrene	<0.01
4-Chloroaniline	<10	Benzyl butyl phthalate	<1 ca
4-Chloro-3-methylphenol	<1	Benz(a)anthracene	<0.01
2-Methylnaphthalene	<0.1	Chrysene	<0.01
1-Methylnaphthalene	<0.1	Bis(2-ethylhexyl) phthalate	<0.32 j
Hexachlorocyclopentadiene	<0.3	Di-n-octyl phthalate	<1 ca
2,4,6-Trichlorophenol	<1	Benzo(a)pyrene	<0.01
2,4,5-Trichlorophenol	<1	Benzo(b)fluoranthene	<0.01
2-Chloronaphthalene	<0.1	Benzo(k)fluoranthene	<0.01
2-Nitroaniline	<0.5	Indeno(1,2,3-cd)pyrene	<0.01
Dimethyl phthalate	<1	Dibenz(a,h)anthracene	<0.01
Acenaphthylene	<0.01	Benzo(g,h,i)perylene	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-5D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/14/22	Lab ID:	212106-01 1/0.5
Date Analyzed:	12/14/22	Data File:	121432.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	33	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	TWA-6D-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/14/22	Lab ID:	212106-02 1/0.5
Date Analyzed:	12/15/22	Data File:	121433.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	23	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/14/22	Lab ID:	212106-03 1/0.5
Date Analyzed:	12/15/22	Data File:	121434.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	29	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	MW-9-1-1222	Client:	Maul Foster Alongi
Date Received:	12/07/22	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/14/22	Lab ID:	212106-04 1/0.5
Date Analyzed:	12/15/22	Data File:	121435.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	32	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	TWAAFA M0615.20.007, F&BI 212106
Date Extracted:	12/14/22	Lab ID:	02-2995 mb2 1/0.5
Date Analyzed:	12/14/22	Data File:	121413.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	31	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.0035 j
Aroclor 1232	<0.0035 j
Aroclor 1016	<0.0035 j
Aroclor 1242	<0.0035 j
Aroclor 1248	<0.0035 j
Aroclor 1254	<0.0035 j
Aroclor 1260	<0.0035 j
Aroclor 1262	<0.0035 j
Aroclor 1268	<0.0035 j

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 212076-09 Matrix Spike

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	<100	110	100	50-150	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	120	70-130

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	640	70	78	70-130	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	110	70-130

Date of Report: 01/05/23
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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 212108-01 x10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	10.4	93	89	75-125	4
Cadmium	ug/L (ppb)	5	<10	94	93	75-125	1
Chromium	ug/L (ppb)	20	<10	100	96	75-125	4
Copper	ug/L (ppb)	20	<10	94	93	75-125	1
Lead	ug/L (ppb)	10	<10	87	85	75-125	2
Manganese	ug/L (ppb)	20	70.4	88	81	75-125	8
Nickel	ug/L (ppb)	20	<10	96	95	75-125	1
Zinc	ug/L (ppb)	50	<50	96	98	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	85	80-120
Cadmium	ug/L (ppb)	5	99	80-120
Chromium	ug/L (ppb)	20	98	80-120
Copper	ug/L (ppb)	20	101	80-120
Lead	ug/L (ppb)	10	97	80-120
Manganese	ug/L (ppb)	20	91	80-120
Nickel	ug/L (ppb)	20	100	80-120
Zinc	ug/L (ppb)	50	97	80-120

Date of Report: 01/05/23
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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL MERCURY USING EPA METHOD 1631E

Laboratory Code: 212108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.02	86	63 vo	71-125	31 vo

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	101	68-125

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D SIM

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	<0.4	103	91	50-150	12

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
1,4-Dioxane	ug/L (ppb)	2	79	84	70-130	6

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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: 212076-09 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	<10	109	106	50-150	3
Chloromethane	ug/L (ppb)	10	<10	100	96	50-150	4
Vinyl chloride	ug/L (ppb)	10	<0.2	106	103	50-150	3
Bromomethane	ug/L (ppb)	10	<1	121	130	50-150	7
Chloroethane	ug/L (ppb)	10	<1	110	106	50-150	4
Trichlorofluoromethane	ug/L (ppb)	10	<1	102	105	50-150	3
Acetone	ug/L (ppb)	50	<10	73	73	50-150	0
1,1-Dichloroethene	ug/L (ppb)	10	<1	103	100	50-150	3
Hexane	ug/L (ppb)	10	<1	110	106	50-150	4
Methylene chloride	ug/L (ppb)	10	<5	96	93	50-150	3
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	<1	103	101	50-150	2
trans-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
2,2-Dichloropropane	ug/L (ppb)	10	<1	109	108	50-150	1
cis-1,2-Dichloroethene	ug/L (ppb)	10	<1	102	99	50-150	3
Chloroform	ug/L (ppb)	10	<1	98	93	50-150	5
2-Butanone (MEK)	ug/L (ppb)	50	<10	87	87	50-150	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	<1	98	96	50-150	2
1,1,1-Trichloroethane	ug/L (ppb)	10	<1	102	100	50-150	2
1,1-Dichloropropene	ug/L (ppb)	10	<1	101	99	50-150	2
Carbon tetrachloride	ug/L (ppb)	10	<1	106	103	50-150	3
Benzene	ug/L (ppb)	10	<0.35	100	99	50-150	1
Trichloroethene	ug/L (ppb)	10	<1	94	93	50-150	1
1,2-Dichloropropane	ug/L (ppb)	10	<1	101	98	50-150	3
Bromodichloromethane	ug/L (ppb)	10	<1	98	97	50-150	1
Dibromomethane	ug/L (ppb)	10	<1	106	102	50-150	4
4-Methyl-2-pentanone	ug/L (ppb)	50	<10	100	97	50-150	3
cis-1,3-Dichloropropene	ug/L (ppb)	10	<1	95	99	50-150	4
Toluene	ug/L (ppb)	10	<1	96	96	50-150	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	<1	99	101	50-150	2
1,1,2-Trichloroethane	ug/L (ppb)	10	<1	98	98	50-150	0
2-Hexanone	ug/L (ppb)	50	<10	98	97	50-150	1
1,3-Dichloropropane	ug/L (ppb)	10	<1	95	98	50-150	3
Tetrachloroethene	ug/L (ppb)	10	<1	96	97	50-150	1
Dibromochloromethane	ug/L (ppb)	10	<1	100	99	50-150	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	<1	97	98	50-150	1
Chlorobenzene	ug/L (ppb)	10	<1	98	100	50-150	2
Ethylbenzene	ug/L (ppb)	10	<1	98	99	50-150	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	<1	101	99	50-150	2
m,p-Xylene	ug/L (ppb)	20	<2	98	99	50-150	1
o-Xylene	ug/L (ppb)	10	<1	98	99	50-150	1
Styrene	ug/L (ppb)	10	<1	100	99	50-150	1
Isopropylbenzene	ug/L (ppb)	10	<1	99	101	50-150	2
Bromoform	ug/L (ppb)	10	<1	101	101	50-150	0
n-Propylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
Bromobenzene	ug/L (ppb)	10	<1	100	96	50-150	4
1,3,5-Trimethylbenzene	ug/L (ppb)	10	<1	99	98	50-150	1
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	<1	110	105	50-150	5
1,2,3-Trichloropropane	ug/L (ppb)	10	<1	99	99	50-150	0
2-Chlorotoluene	ug/L (ppb)	10	<1	101	98	50-150	3
4-Chlorotoluene	ug/L (ppb)	10	<1	99	98	50-150	1
tert-Butylbenzene	ug/L (ppb)	10	<1	100	98	50-150	2
1,2,4-Trimethylbenzene	ug/L (ppb)	10	<1	100	96	50-150	4
sec-Butylbenzene	ug/L (ppb)	10	<1	101	99	50-150	2
p-Isopropyltoluene	ug/L (ppb)	10	<1	103	100	50-150	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	<10	100	96	50-150	4
1,2,3-Trichlorobenzene	ug/L (ppb)	10	<1	102	101	50-150	1

Date of Report: 01/05/23
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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	98	98	46-206	0
Chloromethane	ug/L (ppb)	10	95	96	70-142	1
Vinyl chloride	ug/L (ppb)	10	100	103	70-130	3
Bromomethane	ug/L (ppb)	10	128	125	56-197	2
Chloroethane	ug/L (ppb)	10	106	111	70-130	5
Trichlorofluoromethane	ug/L (ppb)	10	92	94	70-130	2
Acetone	ug/L (ppb)	50	77	78	10-140	1
1,1-Dichloroethene	ug/L (ppb)	10	100	101	70-130	1
Hexane	ug/L (ppb)	10	108	105	54-136	3
Methylene chloride	ug/L (ppb)	10	93	94	43-134	1
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	103	103	70-130	0
trans-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
1,1-Dichloroethane	ug/L (ppb)	10	103	103	70-130	0
2,2-Dichloropropane	ug/L (ppb)	10	109	107	70-130	2
cis-1,2-Dichloroethene	ug/L (ppb)	10	102	103	70-130	1
Chloroform	ug/L (ppb)	10	100	98	70-130	2
2-Butanone (MEK)	ug/L (ppb)	50	88	85	17-154	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	99	98	70-130	1
1,1,1-Trichloroethane	ug/L (ppb)	10	103	102	70-130	1
1,1-Dichloropropene	ug/L (ppb)	10	100	99	70-130	1
Carbon tetrachloride	ug/L (ppb)	10	104	109	70-130	5
Benzene	ug/L (ppb)	10	102	101	70-130	1
Trichloroethene	ug/L (ppb)	10	96	96	70-130	0
1,2-Dichloropropane	ug/L (ppb)	10	100	100	70-130	0
Bromodichloromethane	ug/L (ppb)	10	104	100	70-130	4
Dibromomethane	ug/L (ppb)	10	107	104	70-130	3
4-Methyl-2-pentanone	ug/L (ppb)	50	101	93	68-130	8
cis-1,3-Dichloropropene	ug/L (ppb)	10	99	98	69-131	1
Toluene	ug/L (ppb)	10	101	100	70-130	1
trans-1,3-Dichloropropene	ug/L (ppb)	10	108	106	70-130	2
1,1,2-Trichloroethane	ug/L (ppb)	10	102	101	70-130	1
2-Hexanone	ug/L (ppb)	50	102	88	45-138	15
1,3-Dichloropropane	ug/L (ppb)	10	105	103	70-130	2
Tetrachloroethene	ug/L (ppb)	10	100	100	70-130	0
Dibromochloromethane	ug/L (ppb)	10	102	106	60-148	4
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	101	105	70-130	4
Chlorobenzene	ug/L (ppb)	10	104	101	70-130	3
Ethylbenzene	ug/L (ppb)	10	103	102	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	102	105	70-130	3
m,p-Xylene	ug/L (ppb)	20	103	101	70-130	2
o-Xylene	ug/L (ppb)	10	103	102	70-130	1
Styrene	ug/L (ppb)	10	102	100	70-130	2
Isopropylbenzene	ug/L (ppb)	10	103	102	70-130	1
Bromoform	ug/L (ppb)	10	104	102	69-138	2
n-Propylbenzene	ug/L (ppb)	10	105	108	70-130	3
Bromobenzene	ug/L (ppb)	10	102	105	70-130	3
1,3,5-Trimethylbenzene	ug/L (ppb)	10	100	106	70-130	6
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	113	120	70-130	6
1,2,3-Trichloropropane	ug/L (ppb)	10	104	105	70-130	1
2-Chlorotoluene	ug/L (ppb)	10	103	109	70-130	6
4-Chlorotoluene	ug/L (ppb)	10	101	102	70-130	1
tert-Butylbenzene	ug/L (ppb)	10	102	107	70-130	5
1,2,4-Trimethylbenzene	ug/L (ppb)	10	101	104	70-130	3
sec-Butylbenzene	ug/L (ppb)	10	103	107	70-130	4
p-Isopropyltoluene	ug/L (ppb)	10	104	107	70-130	3
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	104	107	70-130	3
1,2,3-Trichlorobenzene	ug/L (ppb)	10	102	108	70-130	6

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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	<1	23	10-76
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	<0.1	53	35-104
2-Chlorophenol	ug/L (ppb)	2.5	<1	50	18-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	51	34-90
1,4-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	53	36-90
1,2-Dichlorobenzene	ug/L (ppb)	2.5	<0.1	54	38-90
Benzyl alcohol	ug/L (ppb)	12.5	<1	53	27-89
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	<0.1	56	30-109
2-Methylphenol	ug/L (ppb)	2.5	<1	51	25-95
Hexachloroethane	ug/L (ppb)	2.5	<0.1	52	38-88
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	<0.1	67	50-150
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	<2	48	15-95
Nitrobenzene	ug/L (ppb)	2.5	<0.1	58	41-114
Isophorone	ug/L (ppb)	2.5	<0.1	66	50-150
2-Nitrophenol	ug/L (ppb)	2.5	<1	66	21-113
2,4-Dimethylphenol	ug/L (ppb)	2.5	<1	59	50-150
Benzoic acid	ug/L (ppb)	20	<5	25	10-73
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	<0.1	62	50-150
2,4-Dichlorophenol	ug/L (ppb)	2.5	<1	63	26-110
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	<0.1	60	42-95
Naphthalene	ug/L (ppb)	2.5	<0.1	58	46-95
Hexachlorobutadiene	ug/L (ppb)	2.5	<0.1	61	39-94
4-Chloroaniline	ug/L (ppb)	12.5	<10	55	16-114
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	<1	70	46-123
2-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	62	50-150
1-Methylnaphthalene	ug/L (ppb)	2.5	<0.1	64	50-150
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	<0.3	62	28-122
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	<1	72	10-149
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	<1	71	10-143
2-Chloronaphthalene	ug/L (ppb)	2.5	<0.1	65	50-150
2-Nitroaniline	ug/L (ppb)	12.5	<0.5	80	41-139
Dimethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Acenaphthylene	ug/L (ppb)	2.5	<0.01	69	50-150
2,6-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	83	50-150
3-Nitroaniline	ug/L (ppb)	12.5	<10	63	21-124
Acenaphthene	ug/L (ppb)	2.5	0.016	69	50-150
2,4-Dinitrophenol	ug/L (ppb)	5	<3	98	10-182
Dibenzofuran	ug/L (ppb)	2.5	<0.1	64	46-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	<0.5	81	50-150
4-Nitrophenol	ug/L (ppb)	5	<3	35	10-86
Diethyl phthalate	ug/L (ppb)	2.5	<1	75	50-150
Fluorene	ug/L (ppb)	2.5	0.020	73	50-150
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	72	50-150
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	<0.1	75	50-150
4-Nitroaniline	ug/L (ppb)	12.5	<10	59	46-105
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	<3	99	10-223
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	<0.1	81	50-150
Hexachlorobenzene	ug/L (ppb)	2.5	<0.1	78	50-150
Pentachlorophenol	ug/L (ppb)	2.5	<0.5	80	10-207
Phenanthrene	ug/L (ppb)	2.5	0.058	77	50-150
Anthracene	ug/L (ppb)	2.5	<0.01	76	50-150
Carbazole	ug/L (ppb)	2.5	<0.1	79	50-150
Di-n-butyl phthalate	ug/L (ppb)	2.5	<1	57	50-150
Fluoranthene	ug/L (ppb)	2.5	0.031	77	50-150
Pyrene	ug/L (ppb)	2.5	0.037	82	50-150
Benzyl butyl phthalate	ug/L (ppb)	2.5	<1	78	50-150
Benz(a)anthracene	ug/L (ppb)	2.5	<0.01	79	50-150
Chrysene	ug/L (ppb)	2.5	0.016	82	50-150
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	0.93 j	61	46-157
Di-n-octyl phthalate	ug/L (ppb)	2.5	<1	89	50-150
Benzo(a)pyrene	ug/L (ppb)	2.5	<0.01	80	50-150
Benzo(b)fluoranthene	ug/L (ppb)	2.5	0.018	79	50-150
Benzo(k)fluoranthene	ug/L (ppb)	2.5	0.015	78	50-150
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	0.014	85	50-150
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	0.014	85	50-150
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	<0.02	81	50-150

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Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Phenol	ug/L (ppb)	2.5	28	10-30
Bis(2-chloroethyl) ether	ug/L (ppb)	2.5	66	43-117
2-Chlorophenol	ug/L (ppb)	2.5	63	21-97
1,3-Dichlorobenzene	ug/L (ppb)	2.5	65	39-102
1,4-Dichlorobenzene	ug/L (ppb)	2.5	66	41-103
1,2-Dichlorobenzene	ug/L (ppb)	2.5	70	43-105
Benzyl alcohol	ug/L (ppb)	12.5	59	14-82
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	2.5	73	51-110
2-Methylphenol	ug/L (ppb)	2.5	52	19-77
Hexachloroethane	ug/L (ppb)	2.5	64	39-104
N-Nitroso-di-n-propylamine	ug/L (ppb)	2.5	77	60-114
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	2.5	53	14-63
Nitrobenzene	ug/L (ppb)	2.5	73	53-114
Isophorone	ug/L (ppb)	2.5	101	62-113
2-Nitrophenol	ug/L (ppb)	2.5	81	41-117
2,4-Dimethylphenol	ug/L (ppb)	2.5	30	23-105
Benzoic acid	ug/L (ppb)	20	14	10-25
Bis(2-chloroethoxy)methane	ug/L (ppb)	2.5	74	56-111
2,4-Dichlorophenol	ug/L (ppb)	2.5	70	34-113
1,2,4-Trichlorobenzene	ug/L (ppb)	2.5	74	48-104
Naphthalene	ug/L (ppb)	2.5	71	50-104
Hexachlorobutadiene	ug/L (ppb)	2.5	75	40-107
4-Chloroaniline	ug/L (ppb)	12.5	65	34-120
4-Chloro-3-methylphenol	ug/L (ppb)	2.5	73	34-111
2-Methylnaphthalene	ug/L (ppb)	2.5	75	54-109
1-Methylnaphthalene	ug/L (ppb)	2.5	77	55-108
Hexachlorocyclopentadiene	ug/L (ppb)	2.5	73	34-126
2,4,6-Trichlorophenol	ug/L (ppb)	2.5	78	28-125
2,4,5-Trichlorophenol	ug/L (ppb)	2.5	83	39-120
2-Chloronaphthalene	ug/L (ppb)	2.5	78	57-130
2-Nitroaniline	ug/L (ppb)	12.5	92	51-146
Dimethyl phthalate	ug/L (ppb)	2.5	84	64-118
Acenaphthylene	ug/L (ppb)	2.5	82	60-114
2,6-Dinitrotoluene	ug/L (ppb)	2.5	102	66-121
3-Nitroaniline	ug/L (ppb)	12.5	77	42-134
Acenaphthene	ug/L (ppb)	2.5	82	57-110
2,4-Dinitrophenol	ug/L (ppb)	5	73	10-171
Dibenzofuran	ug/L (ppb)	2.5	75	52-116
2,4-Dinitrotoluene	ug/L (ppb)	2.5	94	55-127
4-Nitrophenol	ug/L (ppb)	5	34	10-46
Diethyl phthalate	ug/L (ppb)	2.5	83	63-118
Fluorene	ug/L (ppb)	2.5	83	61-115
4-Chlorophenyl phenyl ether	ug/L (ppb)	2.5	82	61-112
N-Nitrosodiphenylamine	ug/L (ppb)	2.5	80	63-116
4-Nitroaniline	ug/L (ppb)	12.5	72	42-150
4,6-Dinitro-2-methylphenol	ug/L (ppb)	2.5	100	13-152
4-Bromophenyl phenyl ether	ug/L (ppb)	2.5	84	62-115
Hexachlorobenzene	ug/L (ppb)	2.5	85	60-113
Pentachlorophenol	ug/L (ppb)	2.5	58	14-137
Phenanthrene	ug/L (ppb)	2.5	85	63-113
Anthracene	ug/L (ppb)	2.5	82	65-117
Carbazole	ug/L (ppb)	2.5	80	67-131
Di-n-butyl phthalate	ug/L (ppb)	2.5	53	37-135
Fluoranthene	ug/L (ppb)	2.5	85	68-121
Pyrene	ug/L (ppb)	2.5	87	66-125
Benzyl butyl phthalate	ug/L (ppb)	2.5	81	56-128
Benz(a)anthracene	ug/L (ppb)	2.5	87	70-130
Chrysene	ug/L (ppb)	2.5	93	67-119
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	2.5	90	57-124
Di-n-octyl phthalate	ug/L (ppb)	2.5	93	43-132
Benzo(a)pyrene	ug/L (ppb)	2.5	86	68-126
Benzo(b)fluoranthene	ug/L (ppb)	2.5	85	62-130
Benzo(k)fluoranthene	ug/L (ppb)	2.5	87	67-125
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	2.5	88	63-131
Dibenz(a,h)anthracene	ug/L (ppb)	2.5	90	62-133
Benzo(g,h,i)perylene	ug/L (ppb)	2.5	87	57-133

Date of Report: 01/05/23
Date Received: 12/07/22
Project: TWAAFA M0615.20.007, F&BI 212106

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 212076-09 1/0.5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.25	<0.0035 j	55	29-125
Aroclor 1260	mg/kg (ppm)	0.25	<0.0035 j	62	25-137

Laboratory Code: Laboratory Control Sample 1/0.5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	62	60	25-111	3
Aroclor 1260	ug/L (ppb)	0.25	71	68	23-123	4

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

212106

SAMPLE CHAIN OF CUSTODY

12/07/22

VWS | G4 | M2

Page # 1 of 1

Report To Audrey Hackett

Company Maul Foster & Alongi, Inc

Address 2815 2nd Ave, Suite 540

City, State, ZIP Seattle WA 98121

Phone 2065562015 Email ahackett@maulfoster.com

SAMPLERS (signature)

PROJECT NAME: TWAAFA

PO #: M0615.20.007

REMARKS

Project specific RLs? - Yes / No

INVOICE TO: Audrey Hackett

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx w/ Si Gel	NWTPH-Gx	1,4-Dioxane 6010D BTEX EPA 8021	VOCs EPA 8260 NWTPH-HCID	VOCs EPA 8260	SVOCs + cPAHs PAHs EPA 8270	PCBs EPA 8082	Total Metals (see Bottle Order)	Mercury EPA 1631			Notes
TWA-5D-1222	01A-R	12/6/22	14:00	water	18	X	X	X	X	X	X	X	X	X			
TWA-6D-1222	02A-N	12/6/22	13:20	water	14	X	X	X		X	X	X	X	X			
MW1-1222	03A-R	12/6/22	15:30	water	18	X	X	X	X	X	X	X	X	X			
MW-9-1-1222	04	12/6/22	15:30	water	18	X	X	X	X	X	X	X	X	X			
TripBlank2-1222	05A-B	12/6/22	NA	water	2		X			X							

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Christian Sifford	MFA	12/7/22	16:30
Received by:	ANH PHAN	F&B	12/07/22	16:30
Relinquished by:				
Received by:		Samples received at 1 °C		

Friedman & Bruya, Inc.
Ph. (206) 285-8282

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

Friedman & Bruya
Michael Erdahl
5500 4th Ave S
Seattle, WA 98108

RE: 212106
Work Order Number: 2212180

January 03, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 4 sample(s) on 12/8/2022 for the analyses presented in the following report.

Extractable Petroleum Hydrocarbons by NWEPH

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *01/03/2023*

CLIENT: Friedman & Bruya
Project: 212106
Work Order: 2212180

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2212180-001	TWA-5D-1222	12/06/2022 2:00 PM	12/08/2022 1:50 PM
2212180-002	TWA-6D-1222	12/06/2022 1:20 PM	12/08/2022 1:50 PM
2212180-003	MW-1-1222	12/06/2022 3:30 PM	12/08/2022 1:50 PM
2212180-004	MW-9-1-1222	12/06/2022 3:30 PM	12/08/2022 1:50 PM

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

Case Narrative

WO#: **2212180**
Date: **1/3/2023**

CLIENT: Friedman & Bruya
Project: 212106

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

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2212180**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/6/2022 2:00:00 PM
Project: 212106
Lab ID: 2212180-001
Matrix: Water
Client Sample ID: **TWA-5D-1222**

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 38803 Analyst: KJ

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Aliphatic Hydrocarbon (C8-C10)	ND	78.5		µg/L	1	12/30/2022 11:13:12 AM
Aliphatic Hydrocarbon (C10-C12)	ND	39.3		µg/L	1	12/30/2022 11:13:12 AM
Aliphatic Hydrocarbon (C12-C16)	ND	39.3		µg/L	1	12/30/2022 11:13:12 AM
Aliphatic Hydrocarbon (C16-C21)	ND	39.3		µg/L	1	12/30/2022 11:13:12 AM
Aliphatic Hydrocarbon (C21-C34)	ND	39.3		µg/L	1	12/30/2022 11:13:12 AM
Aromatic Hydrocarbon (C8-C10)	ND	78.5		µg/L	1	12/30/2022 6:10:42 PM
Aromatic Hydrocarbon (C10-C12)	ND	39.3		µg/L	1	12/30/2022 6:10:42 PM
Aromatic Hydrocarbon (C12-C16)	ND	39.3		µg/L	1	12/30/2022 6:10:42 PM
Aromatic Hydrocarbon (C16-C21)	ND	39.3	Q	µg/L	1	12/30/2022 6:10:42 PM
Aromatic Hydrocarbon (C21-C34)	ND	39.3		µg/L	1	12/30/2022 6:10:42 PM
Surr: 1-Chlorooctadecane	32.4	50 - 150	S	%Rec	1	12/30/2022 11:13:12 AM
Surr: o-Terphenyl	49.2	50 - 150	S	%Rec	1	12/30/2022 6:10:42 PM

NOTES:
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Analytical Report

Work Order: **2212180**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/6/2022 1:20:00 PM
Project: 212106
Lab ID: 2212180-002
Matrix: Water
Client Sample ID: **TWA-6D-1222**

Extractable Petroleum Hydrocarbons by NWEPH

Batch ID: 38803 Analyst: KJ

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Aliphatic Hydrocarbon (C8-C10)	ND	90.4		µg/L	1	12/30/2022 11:36:11 AM
Aliphatic Hydrocarbon (C10-C12)	ND	45.2		µg/L	1	12/30/2022 11:36:11 AM
Aliphatic Hydrocarbon (C12-C16)	ND	45.2		µg/L	1	12/30/2022 11:36:11 AM
Aliphatic Hydrocarbon (C16-C21)	ND	45.2		µg/L	1	12/30/2022 11:36:11 AM
Aliphatic Hydrocarbon (C21-C34)	ND	45.2		µg/L	1	12/30/2022 11:36:11 AM
Aromatic Hydrocarbon (C8-C10)	ND	90.4		µg/L	1	12/30/2022 6:33:31 PM
Aromatic Hydrocarbon (C10-C12)	ND	45.2		µg/L	1	12/30/2022 6:33:31 PM
Aromatic Hydrocarbon (C12-C16)	ND	45.2		µg/L	1	12/30/2022 6:33:31 PM
Aromatic Hydrocarbon (C16-C21)	ND	45.2	Q	µg/L	1	12/30/2022 6:33:31 PM
Aromatic Hydrocarbon (C21-C34)	ND	45.2		µg/L	1	12/30/2022 6:33:31 PM
Surr: 1-Chlorooctadecane	15.3	50 - 150	S	%Rec	1	12/30/2022 11:36:11 AM
Surr: o-Terphenyl	39.1	50 - 150	S	%Rec	1	12/30/2022 6:33:31 PM

NOTES:
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Analytical Report

Work Order: **2212180**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/6/2022 3:30:00 PM
Project: 212106
Lab ID: 2212180-003
Matrix: Water
Client Sample ID: **MW-1-1222**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.5		µg/L	1	12/30/2022 2:12:01 PM
Aliphatic Hydrocarbon (C10-C12)	ND	39.8		µg/L	1	12/30/2022 2:12:01 PM
Aliphatic Hydrocarbon (C12-C16)	234	39.8		µg/L	1	12/30/2022 2:12:01 PM
Aliphatic Hydrocarbon (C16-C21)	127	39.8		µg/L	1	12/30/2022 2:12:01 PM
Aliphatic Hydrocarbon (C21-C34)	200	39.8		µg/L	1	12/30/2022 2:12:01 PM
Aromatic Hydrocarbon (C8-C10)	ND	79.5		µg/L	1	12/30/2022 7:19:18 PM
Aromatic Hydrocarbon (C10-C12)	ND	39.8		µg/L	1	12/30/2022 7:19:18 PM
Aromatic Hydrocarbon (C12-C16)	96.2	39.8		µg/L	1	12/30/2022 7:19:18 PM
Aromatic Hydrocarbon (C16-C21)	285	39.8	Q	µg/L	1	12/30/2022 7:19:18 PM
Aromatic Hydrocarbon (C21-C34)	370	39.8		µg/L	1	12/30/2022 7:19:18 PM
Surr: 1-Chlorooctadecane	50.0	50 - 150		%Rec	1	12/30/2022 2:12:01 PM
Surr: o-Terphenyl	57.4	50 - 150		%Rec	1	12/30/2022 7:19:18 PM

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Analytical Report

Work Order: **2212180**
Date Reported: **1/3/2023**

Client: Friedman & Bruya
Collection Date: 12/6/2022 3:30:00 PM
Project: 212106
Lab ID: 2212180-004
Matrix: Water
Client Sample ID: **MW-9-1-1222**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 38803		Analyst: KJ
Aliphatic Hydrocarbon (C8-C10)	ND	79.3		µg/L	1	12/30/2022 12:45:10 PM
Aliphatic Hydrocarbon (C10-C12)	ND	39.6		µg/L	1	12/30/2022 12:45:10 PM
Aliphatic Hydrocarbon (C12-C16)	177	39.6		µg/L	1	12/30/2022 12:45:10 PM
Aliphatic Hydrocarbon (C16-C21)	111	39.6		µg/L	1	12/30/2022 12:45:10 PM
Aliphatic Hydrocarbon (C21-C34)	ND	39.6		µg/L	1	12/30/2022 12:45:10 PM
Aromatic Hydrocarbon (C8-C10)	ND	79.3		µg/L	1	12/30/2022 7:42:08 PM
Aromatic Hydrocarbon (C10-C12)	ND	39.6		µg/L	1	12/30/2022 7:42:08 PM
Aromatic Hydrocarbon (C12-C16)	97.6	39.6		µg/L	1	12/30/2022 7:42:08 PM
Aromatic Hydrocarbon (C16-C21)	236	39.6	Q	µg/L	1	12/30/2022 7:42:08 PM
Aromatic Hydrocarbon (C21-C34)	291	39.6		µg/L	1	12/30/2022 7:42:08 PM
Surr: 1-Chlorooctadecane	43.9	50 - 150	S	%Rec	1	12/30/2022 12:45:10 PM
Surr: o-Terphenyl	54.4	50 - 150		%Rec	1	12/30/2022 7:42:08 PM

NOTES:
S - Outlying surrogate recovery(ies) observed.
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ALI ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587164**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	42.6		40.00		107	60	140				
Surr: o-Terphenyl	43.8		40.00		109	60	140				

Sample ID: **ALI ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587165**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	212	20.0	200.0	0	106	80	120				
Aliphatic Hydrocarbon (C10-C12)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C12-C16)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C16-C21)	104	10.0	100.0	0	104	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	10.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	42.7		40.00		107	60	140				
Surr: o-Terphenyl	43.3		40.00		108	60	140				

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	53.1		40.00		133	60	140				
Surr: o-Terphenyl	52.5		40.00		131	60	140				

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO ICB** SampType: **ICB** Units: **mg/Kg** Prep Date: **8/1/2022** RunNo: **77238**
Client ID: **ICB** Batch ID: **38803** Analysis Date: **8/1/2022** SeqNo: **1587174**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **ARO ICV** SampType: **ICV** Units: **mg/Kg** Prep Date: **8/2/2022** RunNo: **77238**
Client ID: **ICV** Batch ID: **38803** Analysis Date: **8/2/2022** SeqNo: **1587175**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	220	20.0	200.0	0	110	80	120				
Aromatic Hydrocarbon (C10-C12)	99.4	10.0	100.0	0	99.4	80	120				
Aromatic Hydrocarbon (C12-C16)	110	10.0	100.0	0	110	80	120				
Aromatic Hydrocarbon (C16-C21)	88.2	10.0	100.0	0	88.2	80	120				
Aromatic Hydrocarbon (C21-C34)	104	10.0	100.0	0	104	80	120				
Surr: 1-Chlorooctadecane	39.8		40.00		99.4	60	140				
Surr: o-Terphenyl	39.7		40.00		99.3	60	140				

Sample ID: **ALI-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672873**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	247	80.0	200.0	0	124	80	120				S
Aliphatic Hydrocarbon (C10-C12)	123	40.0	100.0	0	123	80	120				S
Aliphatic Hydrocarbon (C12-C16)	115	40.0	100.0	0	115	80	120				
Aliphatic Hydrocarbon (C16-C21)	107	40.0	100.0	0	107	80	120				
Aliphatic Hydrocarbon (C21-C34)	101	40.0	100.0	0	101	80	120				
Surr: 1-Chlorooctadecane	44.1		40.00		110	60	140				
Surr: o-Terphenyl	44.0		40.00		110	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672874**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C16-C21)	ND	40.0		0	0						
Aliphatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: 1-Chlorooctadecane	328		400.0		82.1	50	150				

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672875**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	301	80.0	1,000	0	30.1	5.88	130				
Aliphatic Hydrocarbon (C10-C12)	320	40.0	500.0	0	63.9	25.3	107				
Aliphatic Hydrocarbon (C12-C16)	383	40.0	500.0	0	76.5	42.5	113				
Aliphatic Hydrocarbon (C16-C21)	399	40.0	500.0	0	79.8	42.7	118				
Aliphatic Hydrocarbon (C21-C34)	298	40.0	500.0	0	59.7	27.8	137				
Surr: 1-Chlorooctadecane	320		400.0		80.1	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672876**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	367	80.0	1,000	0	36.7	5.88	130	300.7	19.9	20	
Aliphatic Hydrocarbon (C10-C12)	343	40.0	500.0	0	68.6	25.3	107	319.5	7.13	20	
Aliphatic Hydrocarbon (C12-C16)	400	40.0	500.0	0	79.9	42.5	113	382.6	4.36	20	
Aliphatic Hydrocarbon (C16-C21)	411	40.0	500.0	0	82.3	42.7	118	398.8	3.09	20	
Aliphatic Hydrocarbon (C21-C34)	301	40.0	500.0	0	60.1	27.8	137	298.5	0.694	20	
Surr: 1-Chlorooctadecane	325		400.0		81.2	50	150		0		

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **TWA-6D-1222** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672880**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	423	85.3	1,066	0	39.7	5	130				
Aliphatic Hydrocarbon (C10-C12)	345	42.6	533.1	0	64.7	17.1	108				
Aliphatic Hydrocarbon (C12-C16)	397	42.6	533.1	0	74.5	35.7	111				
Aliphatic Hydrocarbon (C16-C21)	400	42.6	533.1	0	75.1	41.1	110				
Aliphatic Hydrocarbon (C21-C34)	299	42.6	533.1	0	56.1	31.4	125				
Surr: 1-Chlorooctadecane	331		426.5		77.7	50	150				

Sample ID: **ALI-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672888**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	250	80.0	200.0	0	125	80	120				S
Aliphatic Hydrocarbon (C10-C12)	126	40.0	100.0	0	126	80	120				S
Aliphatic Hydrocarbon (C12-C16)	118	40.0	100.0	0	118	80	120				
Aliphatic Hydrocarbon (C16-C21)	114	40.0	100.0	0	114	80	120				
Aliphatic Hydrocarbon (C21-C34)	105	40.0	100.0	0	105	80	120				
Surr: 1-Chlorooctadecane	46.2		40.00		116	60	140				
Surr: o-Terphenyl	45.3		40.00		113	60	140				

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	248	80.0	200.0	0	124	80	120				S
Aromatic Hydrocarbon (C10-C12)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C12-C16)	117	40.0	100.0	0	117	80	120				
Aromatic Hydrocarbon (C16-C21)	84.9	40.0	100.0	0	84.9	80	120				
Aromatic Hydrocarbon (C21-C34)	85.5	40.0	100.0	0	85.5	80	120				
Surr: 1-Chlorooctadecane	32.2		40.00		80.6	60	140				
Surr: o-Terphenyl	32.1		40.00		80.4	60	140				

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803A** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672889**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.

Sample ID: **MB-38803** SampType: **MBLK** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **MBLKW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672890**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	80.0		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	40.0		0	0						
Aromatic Hydrocarbon (C12-C16)	ND	40.0		0	0						
Aromatic Hydrocarbon (C16-C21)	ND	40.0		0	0						Q
Aromatic Hydrocarbon (C21-C34)	ND	40.0		0	0						
Surr: o-Terphenyl	296		400.0		74.0	50	150				

NOTES:
Q - Associated calibration verification is below acceptance criteria. Result may be low-biased.

Sample ID: **LCS-38803** SampType: **LCS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672891**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	462	80.0	1,000	0	46.2	25.2	130				
Aromatic Hydrocarbon (C10-C12)	290	40.0	500.0	0	57.9	46.2	130				
Aromatic Hydrocarbon (C12-C16)	312	40.0	500.0	0	62.3	39.9	107				
Aromatic Hydrocarbon (C16-C21)	366	40.0	500.0	0	73.3	53.4	125				
Aromatic Hydrocarbon (C21-C34)	399	40.0	500.0	0	79.8	46.5	138				
Surr: o-Terphenyl	253		400.0		63.2	50	150				

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	623	80.0	1,000	0	62.3	25.2	130	461.8	29.6	20	R

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCSD-38803** SampType: **LCSD** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **LCSW02** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672892**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C10-C12)	348	40.0	500.0	0	69.5	46.2	130	289.5	18.2	20	
Aromatic Hydrocarbon (C12-C16)	415	40.0	500.0	0	83.0	39.9	107	311.6	28.5	20	R
Aromatic Hydrocarbon (C16-C21)	420	40.0	500.0	0	84.0	53.4	125	366.5	13.6	20	
Aromatic Hydrocarbon (C21-C34)	384	40.0	500.0	0	76.9	46.5	138	398.8	3.67	20	
Surr: o-Terphenyl	317		400.0		79.2	50	150		0		

NOTES:
R - High RPD observed, spike recovery is within range.

Sample ID: **2212180-002AMS** SampType: **MS** Units: **µg/L** Prep Date: **12/12/2022** RunNo: **80861**
Client ID: **TWA-6D-1222** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	588	85.3	1,066	82.09	47.5	9.66	130				
Aromatic Hydrocarbon (C10-C12)	307	42.6	533.1	0	57.5	18	105				
Aromatic Hydrocarbon (C12-C16)	389	42.6	533.1	0	73.1	45.3	109				
Aromatic Hydrocarbon (C16-C21)	309	42.6	533.1	40.30	50.5	40.6	118				
Aromatic Hydrocarbon (C21-C34)	335	42.6	533.1	0	62.8	38.1	137				
Surr: o-Terphenyl	250		426.5		58.6	50	150				

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	262	80.0	200.0	0	131	80	120				S
Aromatic Hydrocarbon (C10-C12)	99.6	40.0	100.0	0	99.6	80	120				
Aromatic Hydrocarbon (C12-C16)	105	40.0	100.0	0	105	80	120				
Aromatic Hydrocarbon (C16-C21)	73.3	40.0	100.0	0	73.3	80	120				S
Aromatic Hydrocarbon (C21-C34)	86.4	40.0	100.0	0	86.4	80	120				
Surr: 1-Chlorooctadecane	26.4		40.00		66.0	60	140				
Surr: o-Terphenyl	26.7		40.00		66.7	60	140				

Work Order: 2212180
CLIENT: Friedman & Bruya
Project: 212106

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **ARO-CCV-38803B** SampType: **CCV** Units: **µg/L** Prep Date: **12/30/2022** RunNo: **80861**
Client ID: **CCV** Batch ID: **38803** Analysis Date: **12/30/2022** SeqNo: **1672900**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect; result meets QC requirements.
S - Outlying spike recovery observed (low bias). Samples will be qualified with a Q.

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**2212180**
Logged by:	**Clare Griggs**	Date Received:	**12/8/2022 1:50:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	0.6

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2212180

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Fremont

PROJECT NAME/NO. 212106

PO # D-34

REMARKS - Tier IV Package

Please Email Results - EQuIS EDD

TURNAROUND TIME

(X) Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
TWA-SD-1222		12/6/22	1400	water	1		X									
TWA-6D-1222		"	1320	"	1		X									
MW-1-1222		"	1530	"	1		X									
MW-9-1-1222		"	1530	"	1		X									

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/8/22	0900 AM.
Received by:		Liny Baumgart	FAI	12/8/22	13:50
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 22, 2022

Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029

Re: Analytical Data for Project 212106
Laboratory Reference No. 2212-083

Dear Michael:

Enclosed are the analytical results and associated quality control data for samples submitted on December 8, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

Case Narrative

Samples were collected on December 6, 2022 and received by the laboratory on December 8, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TWA-5D-1222**					
Laboratory ID:	12-083-01					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*91*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TWA-6D-1222**					
Laboratory ID:	12-083-02					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*100*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-1-1222**					
Laboratory ID:	12-083-03					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**69**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**480**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**550**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**5.7**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*96*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW-9-1-1222**					
Laboratory ID:	12-083-04					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**77**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**510**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**590**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**8.7**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*99*	*65-122*				

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1219W1					
Aliphatic C5-C6	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C6-C8	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aliphatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aliphatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Aromatic C8-C10	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C10-C12	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Aromatic C12-C13	**ND**	50	NWTPH-VPH	12-19-22	12-19-22	
Total Aromatic:	**NA**		NWTPH-VPH	12-19-22	12-19-22	
Methyl t-butyl ether	**ND**	10	EPA 8021B	12-19-22	12-19-22	
Benzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Toluene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Ethylbenzene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
m,p-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
o-Xylene	**ND**	1.0	EPA 8021B	12-19-22	12-19-22	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*88*	*65-122*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1219W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**53.8**	**55.9**	50.0	50.0		**108**	**112**	80-116	4	12	
Toluene	**52.8**	**54.8**	50.0	50.0		**106**	**110**	82-118	4	12	
Ethylbenzene	**52.4**	**54.4**	50.0	50.0		**105**	**109**	82-118	4	12	
m,p-Xylene	**52.3**	**54.1**	50.0	50.0		**105**	**108**	81-118	3	12	
o-Xylene	**53.0**	**54.6**	50.0	50.0		**106**	**109**	81-116	3	11	
Surrogate:											
Fluorobenzene						*94*	*99*	*65-122*			

Date of Report: December 22, 2022
Samples Submitted: December 8, 2022
Laboratory Reference: 2212-083
Project: 212106

VOLATILE PETROLEUM HYDROCARBONS
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
MTBE	CCVD1219V-1	50.0	57.2	-14.378	+/- 15%
Benzene	CCVD1219V-1	50.0	56.6	-13.228	+/- 15%
Toluene	CCVD1219V-1	50.0	56.2	-12.34	+/- 15%
Ethylbenzene	CCVD1219V-1	50.0	55.7	-11.344	+/- 15%
m,p-Xylene	CCVD1219V-1	50.0	56.5	-13.052	+/- 15%
o-Xylene	CCVD1219V-1	50.0	56.0	-12.092	+/- 15%
MTBE	CCVD1219V-2	50.0	56.4	-12.762	+/- 15%
Benzene	CCVD1219V-2	50.0	53.5	-6.936	+/- 15%
Toluene	CCVD1219V-2	50.0	52.8	-5.651	+/- 15%
Ethylbenzene	CCVD1219V-2	50.0	52.5	-5.042	+/- 15%
m,p-Xylene	CCVD1219V-2	50.0	52.7	-5.492	+/- 15%
o-Xylene	CCVD1219V-2	50.0	53.1	-6.126	+/- 15%
MTBE	CCVD1219V-3	50.0	56.4	-12.824	+/- 15%
Benzene	CCVD1219V-3	50.0	55.9	-11.736	+/- 15%
Toluene	CCVD1219V-3	50.0	54.8	-9.64	+/- 15%
Ethylbenzene	CCVD1219V-3	50.0	54.6	-9.182	+/- 15%
m,p-Xylene	CCVD1219V-3	50.0	54.6	-9.228	+/- 15%
o-Xylene	CCVD1219V-3	50.0	54.9	-9.748	+/- 15%
MTBE	CCVD1219V-4	50.0	53.5	-7.032	+/- 15%
Benzene	CCVD1219V-4	50.0	53.8	-7.654	+/- 15%
Toluene	CCVD1219V-4	50.0	52.8	-5.542	+/- 15%
Ethylbenzene	CCVD1219V-4	50.0	52.4	-4.756	+/- 15%
m,p-Xylene	CCVD1219V-4	50.0	52.3	-4.574	+/- 15%
o-Xylene	CCVD1219V-4	50.0	53.0	-5.966	+/- 15%

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

X2 - Sample extract treated with a silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

SUBCONTRACT SAMPLE CHAIN OF CUSTODY 12-083

Page # 1 of 1

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER Onsite

PROJECT NAME/NO. 212106

PO # D-51

REMARKS - Tier IV package

Please Email Results - EQuIS EDD

TURNAROUND TIME

(X) Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH								Notes
TWA-SD-1222	1	12/6/22	1400	water	3			X								
TWA-6D-1222	2	"	1320	"	3			X								
MW-1-1222	3	"	1530	"	3			X								
MW-9-1-1222	4	"	1530	"	3			X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/8/22	0900 AM.
Received by:		M. VOLM	OSE	12/8/22	1430
Relinquished by:					
Received by:					

Sample/Cooler Receipt and Acceptance Checklist

Client: FBI

Client Project Name/Number: 212106

OnSite Project Number: 12-083

Initiated by: AMV

Date Initiated: 12/8/22

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	(No)	N/A	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	(N/A)	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	(N/A)	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No	N/A	1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	N/A	Temperature:	4
1.6 Have shipping bills (if any) been attached to the back of this form?	(Yes)	N/A			
1.7 How were the samples delivered?	Client	Courier	(UPS/FedEx)	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No		1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No		1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No		1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No		1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No		1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)		1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	Yes	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

Appendix C

PZ-1 Decommission Form

Well Decommissioning Form

TWAAFA Site

Tacoma, Washington

Well ID: PZ-1 Field Staff: Anthony Cerruti/Elliott Scheumar

Date: 12/9/2022

Ecology ID Tag: NA - Well Report ID #277112

Drilling Contractor: Cascade Drilling

Driller Name: Josh

Overdrilled? **Y** **N**

Number of Bags of Bentonite Chips Used: 1/5 - bag medium chip

Hydrated with Potable Water: **Y** **N**

Water Table Sufficiently High: **Y** **N**

Bentonite Weight/Volume n/a **units:**

(Bentonite Chips) / Pellets (circle one)

Depth to Top of Bentonite Chips: 2 feet below ground surface

Number of Bags of Concrete Used: 1/4 - bag Rapid Set

Hydrated with Potable Water: **Y** **N**

Is suface of concrete flat or mounded with existing ground surface: **Y** **N**

Surface seal should not dip or create a low point in the site cap

Reviewed Historical Log? **Y** **N**

Waste Generated? **Y** **N**

How Was Waste Managed: n/a - monument sealed in place, well chipped in place.