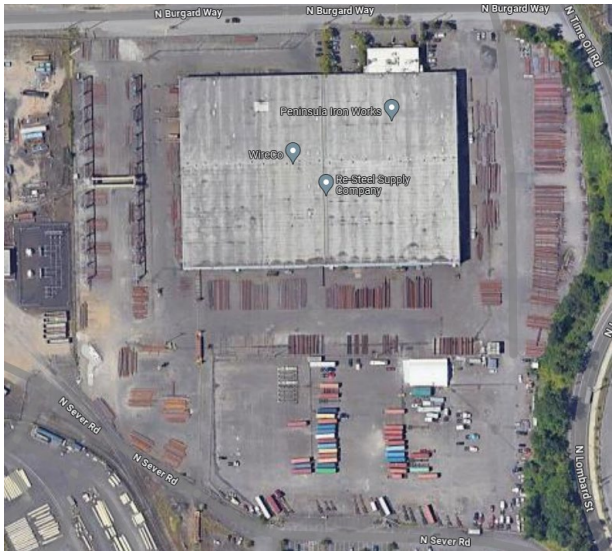
EVREN NORTHWEST INC.
environmental & natural resource consultants

STORM WATER SOURCE CONTROL EVALUATION
WITH SOURCE CONTROL MEASURES PERFORMANCE MONITORING



Lampros Steel

9040 North Burgard Way
Portland, Oregon 97203

Agency Information

NPDES 1200-Z Permit
DEQ File No. 125660
EPA Permit # ORR127248
ECSI File No. 2441

Prepared for:

Johnson-Lampros Warehouse LLC
9040 North Burgard Way
Portland, Oregon 97203

Issued on:

April 5, 2024

Project No. 1355-19001-02

This

Storm Water Source Control Evaluation with Source Control Measures Performance Monitoring

Report for:

Lampros Steel

9040 North Burgard Way
Portland, Oregon 97203

Has been prepared for the sole benefit and use of our Client:

Johnson-Lampros Warehouse LLC
9040 North Burgard Way
Portland, Oregon 97203

and its assignees

Issued April 5, 2024 *by:*

Victoria Bennett

Victoria Bennett
Principal Environmental Scientist

EXP. 2/1/2025

Lynn D. Green, C.E.G.
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Table of Contents

1.0 Introduction 1
1.1 Purpose 1
1.2 Source Control Objectives 1
1.3 Regulatory Framework 1
1.4 Report Organization 1

2.0 Site Background 2
2.1 Site Description 2
2.2 Description of Storm Water Conveyance System 2
2.3 Site Ownership and Operating History 4
2.4 Regulatory History 4
2.5 Previous Investigations 4
2.5.1 Previous Source Control Evaluation 4
2.5.2 NPDES 1200-Z Permit Sampling 5
2.5.3 Subsurface Investigations 6
2.6 Implementation of Source Control Measures 6
2.6.1 Under Previous Ownership 6
2.6.2 Under Current Ownership 7
2.6.3 Additional Source Control Measures – 2021 8

3.0 Potential Sources and Contaminants of Interest 9
3.1 Evaluation of Potential Contaminant Migration Pathways 9
3.2 Potential Sources 10
3.3 Contaminants of Interest 11

4.0 Ongoing Storm Water Management Measures 11

5.0 Data Collection and Interpretation 12
5.1 Storm Water Sampling 12
5.1.1 Conveyance Line Cleaning 12
5.1.2 Sampling Objectives and Framework 12
5.1.3 Documentation 13
5.2 Data Summary 14
5.3 Data Interpretation 14
5.3.1 Method Detection Level and QA/QC Issues 14
5.3.2 SLV Exceedances 15
5.3.3 Discussion 17

6.0 Source Control Measures 17

7.0 Source Control Evaluation 18
7.1 Data Evaluation 18
7.2 Other Lines of Evidence 19
8.0 Findings and Conclusions 20
9.0 Limitations 23

List of Tables, Figures and Attachments

Tables (in text)

7-1 Storm Event Data
7-2 TEQ Values

Tables (after text)

1 Summary of Analytical Data, Storm Water
2 Summary of Analytical Data for Dioxins and Furans, Storm Water

Figures (after text)

1 Site Vicinity Map
2 Site Plan
3 Storm Water System
4 Storm Water Conveyance Map (Distal)

Appendices (after text)

A Precipitation Hydrographs
B Laboratory Analytical Results
C Comparison of Detected Storm Water Sample Analytical Results to Typical Industrial Sites

Acronyms and Abbreviations

bgs	below ground surface
BMPs	best management practices
Client	Johnson-Lampros Warehouse LLC (JLW)
COI	constituent of interest
COPCs	constituents of potential concern
ECSI	Environmental Cleanup Site Information
ENW	EVREN Northwest, Inc.
EPA	US Environmental Protection Agency
JSCS	Joint Source Control Strategy
LUST	Leaking Underground Storage Tank
µg/L	micrograms per liter
mg/L	milligrams per liter
NFA	no further action
NPDES	National Pollutant Discharge Elimination System
ODEQ	Oregon Department of Environmental Quality
PAHs	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
Report	Storm Water Source Control Measures Performance Monitoring Report
SCE	Source Control Evaluation
SCMs	source control measures
SLV	screening level value
TEF	Toxicity Equivalency Factor
TSS	total suspended solids
VOC	volatile organic constituent
Work Plan	ENW's May 2021 *Work Plan for Storm Water Source Control Measure and Performance Monitoring*

1.0 Introduction

At the request of Johnson-Lampros Warehouse LLC (JLW; Client), EVREN Northwest, Inc. (ENW) has prepared this **Storm Water Source Control Evaluation with Source Control Measures Performance Monitoring** (Report) for the Lampros Steel facility located at 9040 North Burgard Way, Portland, Oregon (subject site; see Figures 1 and 2).

1.1 Purpose

This Report presents the results of a 2023 storm water source control evaluation (SCE) for the subject site. This SCE was performed in response to a request by Oregon Department of Environmental Quality (ODEQ) to identify, evaluate, and control sources of contamination that may reach the Willamette River in a manner consistent with ODEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites.*[1]

As described in Section 2, previous SCEs were conducted by others, resulting in the implementation of source control measures (SCMs). Following complete implementation of the SCMs, ENW conducted performance monitoring according to the protocol methods described in their ODEQ-approved Work Plan.[2] This Report provides a basis for determining source control effectiveness through the results of performance monitoring.

1.2 Source Control Objectives

The objective of this storm water SCE is to demonstrate that existing and potential sources of contamination at the site have been addressed and no additional characterization or source control measures are needed at the site.

1.3 Regulatory Framework

In May 2011, Lampros Steel entered into a Voluntary Agreement with the ODEQ to conduct a SCE of the storm water pathway at its property.[3] In May 2021, ENW submitted a Work Plan[2] for SCMs and performance monitoring which ODEQ approved.

This Report follows ODEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites*, dated January 2009 (updated October 2010).

1.4 Report Organization

This Report is organized to be generally consistent with ODEQ's *Template for a Stormwater Source Control Evaluation Report.*[4] Specifically, this report includes: an introduction, a discussion of the site background, implementation of source control measures, an examination of potential sources and contaminants of

[1] ODEQ, January 2009. *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (updated October 2010).

[2] ENW, May 27, 2021. *Work Plan for Storm Water Source Control Measures and Performance Monitoring, Lampros Steel, 9040 North Burgard Way, Portland, Oregon 97203*.

[3] ODEQ, March 10, 2011. Letter agreement for a source control evaluation of the storm water pathway at Lampros Steel (ECSI #2441).

[4] https://www.oregon.gov/deq/FilterDocs/cu-stormwaterSitesAppC.pdf

interest, an evaluation of discharge pathways, presentation of ongoing storm-water management measures, the results of the source control evaluation, and findings and conclusions.

2.0 Site Background

2.1 Site Description

The subject site is a 25.2-acre parcel of industrial property located in an industrial area of North Portland, Oregon. The site lies 2,800 feet east of the Willamette River and approximately 2.7 miles upstream (south) of its confluence with the Columbia River. The site is bordered to the north by N Burgard Way, to the south by N Sever Road, to the west by industrial properties, and to the east by N Time Oil Road and N Lombard Street. The City of Portland has zoned the subject property IH – Heavy Industrial. All adjacent properties are similarly zoned IH – Heavy Industrial. The subject site is shown relative to surrounding physical features on Figure 1. The subject site layout and adjacent properties are shown on Figure 2. The storm water system is shown on Figure 3.

Lampros Steel provides specialty structural steel warehousing from approximately 13.5-acres of the approximately 25-acre property (Figure 3). No steel manufacturing takes place at the site, only loading/unloading, and storage. Manufactured steel products are transported to and from the site using either semi-trailers or rail (two rail spurs are present on the southwest portion of the site). Onsite loading and unloading of manufactured steel are completed by hydraulic forklift. Other supplemental industrial activities include some value-added processing (steel sawing and cambering services), and equipment maintenance and fueling (described below). A covered fuel station, designed to minimize exposure to storm water, is present in the central eastern area of the site.

Exterior areas are mostly used for storage of structural steel products. Shippers Transport Express leases a 6-acre portion of the subject site for storing trailers and conducts some routine trailer maintenance, specifically: minor brakes repair, replacing wheel/tire assemblies with preassembled wheel/new tire assemblies, electrical service, air pressure testing, lockdown and landing gear service (see Figure 3)

The subject site is located within the US Geological Survey Linnton, Oregon 7.5-minute quadrangle, at an approximate elevation of 31 feet above mean sea level (see Figure 1). The subject property is generally level and the surrounding area slopes gently to the northwest and northeast. The site lies slightly lower than industrial properties to the north, south and west, and significantly lower than roadways to the east.

Ground water on site is expected to be less than 10 feet below ground surface according to previous environmental investigations on site and was observed to be at approximately eight (8) feet depth during most shallow soil investigation.[5]

2.2 Description of Storm Water Conveyance System

Please refer to Figure 3 – Storm System. The current storm water conveyance system was installed as part of the SCMs being evaluated in this report. For details regarding installation see Section 2.6.

The subject site is one large drainage basin that is greater than 90 percent impervious. A small pervious area of land is present along the eastern property boundary where storm water infiltrates the ground

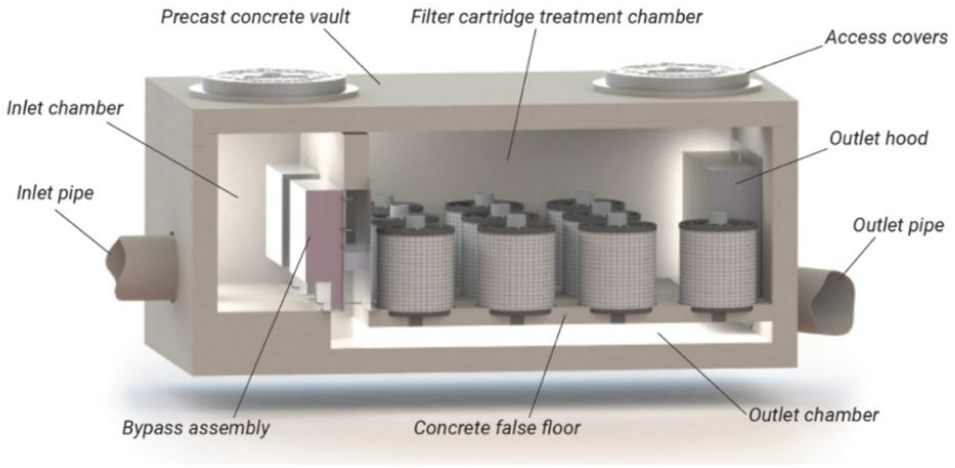
[5] ENW, November 4, 2020. *Shallow Soil Investigation*. Lampros Steel Property.

surfaces or flows to paved areas and is directed into catch basins. In two areas, barriers have been installed to prevent surface flow run-on from offsite sources at two locations:

- An asphalt berm located along N. Burgard way on the northeastern property boundary.
- A concrete retention wall along the western property boundary where an electrical substation is present.

Storm water collection is accomplished via 29 catch basins, two trench drains and roof drains located on the south side of the building. Lynch-style catch basins provide pre-treatment by trapping debris and sediment.

All water entering the storm water collection system is conveyed to a storm water management vault at the southwestern property margin for treatment prior to discharge offsite. Treatment uses PerkFilter™ cartridges. The PerkFilter is a media-filled cartridge filtration device designed to capture and retain sediment, gross solids, metals, nutrients, hydrocarbons, and trash and debris. Below is a general schematic of the storm water quality vault.



Discharge from the storm water management vault is conveyed to a manhole directly adjacent to the vault (storm water sampling location) and then to a second manhole where it joins offsite storm water[6] immediately prior to leaving the site and entering the City of Portland Bureau of Environmental Service (BES) storm system. In the BES storm sewer water is conveyed a short distance to discharge to Outfall WR-123 into the Willamette River at the International Slip (IT Slip), which is approximately 600 feet west of the subject site (see Figure 4).

The storm water system on site, including primary source control measures and best management practices, are described in detail in the *Storm Water Pollution Control Plan*[7] prepared by ENW.

[6] Storm water from off-site is conveyed underground in a pre-existing storm system across the subject site at the southern boundary and is routed to the discharge point on the southwestern property margin. It is important to note that off-site storm water does not comingle with onsite storm water until after the monitoring point.

[7] ENW, May 2022. *Storm Water Pollution Control Plan, Johnson-Lampros Warehouse, 9040 North Burgard Way, Portland, Oregon.*

2.3 Site Ownership and Operating History

The subject site was vacant marshland until the late 1940's, when it was filled and developed with a structure in the southeast corner of the site. Based on information reported by others,[8] the site had been undeveloped until the mid-1940s, when a small building was constructed at the south end of the property and used as storage for World War II military operations at the nearby Port of Portland Terminal. After World War II, the site was used as storage space by several industrial tenants and as part of a larger industrial park. By the early 1960s, the previously existing structure on site had been removed. The building currently on site was constructed in the early 1980s and has consistently been used as a warehouse, with a crane and outdoor open-air storage, up through 2010.

Currently, Lampros Steel provides specialty structural steel warehousing. No steel manufacturing takes place at the site, only loading/unloading, and storage. Manufactured steel products are transported to and from the site using either semi-trailers or rail (two rail spurs are present on the southwest portion of the site). Onsite loading and unloading of manufactured steel is completed by hydraulic forklift. Other supplemental industrial activities include some value-added processing (steel sawing and cambering services), and equipment maintenance and fueling (described below).

2.4 Regulatory History

2010. The site is listed on ODEQ's Leaking Underground Storage Tank (LUST) database (LUST File No. 26-10-0019). ODEQ has issued a No Further Action (NFA) for the petroleum release discovered in 2010. It should be noted that although this LUST listing is associated with the address 12005 N Burgard Way, it relates to a former fuel island on the subject site that the offsite property at 12005 N Burgard Way operated.

2011. Lampros Steel entered into a Voluntary Agreement with ODEQ in May 2011 to conduct a SCE of the storm water pathway at its property.[9] ODEQ has assigned the subject site Environmental Cleanup Site Information (ECSI) Site #2441.

2.5 Previous Investigations

2.5.1 Previous Source Control Evaluation

Since entering into the 2011 Voluntary Agreement, Lampros Steel:[10]

- Completed several investigations of contaminants of interest (COIs) in storm water runoff and storm drain solids on the Lampros property.
- Implemented a series of responsive storm water best management practices (BMPs).

[8] Adapt Engineering, Inc., September 20, 2010. *Phase I Environmental Site Assessment: Lampros Steel – 9040 North Burgard Way*

[9] ODEQ, March 10, 2011. Letter agreement for a source control evaluation of the storm water pathway at Lampros Steel (ECSI #2441).

[10] Integral Consulting Inc., August 9, 2019. *Draft Stormwater Source Control Evaluation,* Lampros Steel, 9040 N Burgard Way, Portland, Oregon. Prepared for Lampros Properties Portland, Oregon.

- Submitted a SCE letter report prepared by SLR International Corporation to ODEQ in September 2015.[11] ODEQ's January and March 2017 response letters required that Lampros Properties prepare and submit a work plan identifying additional storm water SCE and source control measures (SCMs) to meet the objectives of the Voluntary Agreement.
- Submitted a storm water source control work plan prepared by Integral Consulting Inc. to ODEQ in May 2017.[12]
- Submitted a Draft SCE report[10] prepared by Integral Consulting to ODEQ in August 2019 that summarized source control work completed in accordance with the work plan. According to Integral Consulting:

  > *Storm water and catch basin solids[13] analytical data collected in accordance with the work plan, in addition to data collected prior to 2017, sufficiently characterize storm water-related COIs for the property for identifying and estimating potential SCM(s).*

- Submitted a storm water source control work plan prepared by ENW to ODEQ in May 2021.[2]

Sampling activities conducted for the previous SCE process occurred between 2012 and 2018 and included both catch basin sediment sampling and storm water sampling. Results of this work are described in the August 2019 *Draft Stormwater Source Control Evaluation* report prepared by Integral Consulting.[10] Based on these results, total suspended solids (TSS), polynuclear aromatic hydrocarbons (PAHs), nickel, and chromium were retained as constituents of concern in storm water at the subject site.

2.5.2 NPDES 1200-Z Permit Sampling

Storm water sampling activities have also been conducted in accordance with the site's National Pollutant Discharge Elimination System (NPDES) 1200-Z permit. Under JLW's ownership, storm water sampling results have been submitted to ODEQ from storm water sampling year 2018-2019 up through the third quarter of the 2022-2023 sampling year. The subject site recently received a waiver from ODEQ that allows them to stop sampling storm water as part of their NPDES 1200-Z permit until the 2025-2026 storm water sampling year. Discharge monitoring reports have included analytical results and documentation of any deviations from permit requirements. Storm water sample collection is required by permit to represent 'first flush' samples.

[11] SLR International Corporation, September 8, 2015. *Source Control Evaluation Report* Lampros Properties, 9040 N Burgard Way, Portland, Oregon. Prepared for Lampros Properties, Portland, Oregon by SLR International Corporation, West Linn, Oregon.

[12] Integral Consulting Inc., May 18, 2017. *Stormwater Source Control Work Plan,* Lampros Steel, 9040 N Burgard Way, Portland, Oregon. Prepared for Lampros Properties Portland, Oregon.

[13] Due to the manner in which sediment was assessed (sampling directly from catch basins), this prior assessment likely over-estimates contributions of sediment in storm-water discharge since only suspended sediment would be discharged.

2.5.3 Subsurface Investigations

The complete subsurface investigation history of the site can be referenced in the following documents:

- *Phase I Environmental Site Assessment*, prepared by Adapt Engineering for Lampros Steel, September 20, 2010.
- *Soil Matrix Closure Report* (LUST File No. 26-10-0019), prepared by Construction and Environmental Services for Schnitzer Investment Corporation, January 2010.
- *Phase II Environmental Site Assessment*, prepared by Cascadia Associated, Inc. for Lampros Steel, April 25, 2019.
- *Shallow Soil Investigation*, prepared by ENW for Johnson-Lampros Warehouse, LLC in November 2020.

ODEQ issued a No Further Action (NFA) for the petroleum release discovered in 2010.

In 2019, Cascadia advanced 10 soil borings across a broad portion of the site including one boring at the former and current fueling facilities. Soil and ground water samples were collected and analyzed for storm water COIs.

The findings indicated that constituent concentrations in soil are protective of human health at the site. Several chemicals in ground water exceeded risk-based concentrations for *Ingestion & Inhalation from Tap Water*; however, this exposure pathway is likely incomplete at the site.

An evaluation of risk to the Willamette River indicated no risk via hazardous substances migrating in ground water due to low concentrations detected and distance to the International Slip. Soil impacts were determined to pose a limited risk to the Willamette River if storm water is exposed to soil that contains hazardous substances since exposure of contaminants in buried soil or by migrations of contaminated soil could cause chemical concentrations to exceed NPDES 1200-Z storm water permit benchmarks.

Shallow composite samples from 0 to 3 feet below ground surface (bgs) and 3 to 8 feet bgs were collected in areas proximate to the subject building and analyzed for total petroleum hydrocarbons and select total metals as part of the 2020 Shallow Soil Assessment performed by ENW. The levels of analyzed constituents in 10 samples did not exceed conservative human health risk-based concentrations under the most-stringent land use scenario (i.e., residential). Therefore, detected constituent concentrations in soil do not pose a significant or unacceptable human health risk and do not warrant management during any future excavation activities.

2.6 Implementation of Source Control Measures

2.6.1 Under Previous Ownership

Source control measures and BMPs implemented prior to JLW's ownership are described by Integral Consulting in 1) their August 2019 *Draft Stormwater Source Control Evaluation* report, 2) their NPDES 1200-Z Tier I corrective action reports and include:

- Storm water catch basin and conveyance line cleaning.
- Installation of berms and a concrete barrier to prevent run-on from adjacent properties.

- Catch basin retrofits, including the installation of Clean Way filters in the northeast and northwest drainage basins (catch basins CB-1, CB-6, CB-7, CB-9, CB-11, and CB-13 on Figure 3).
- Asphalt cleaning and asphalt patching in areas of heavily degraded asphalt.
- Implementation of BMPs (see referenced document for the complete list).
- Surface sweeping to reduce sediments.
- Filtration booms/bags place around catch basins.

2.6.2 Under Current Ownership

ENW is aware of sustained efforts to address storm water quality implemented by the current property owner (JLW) beginning in Fall 2019 through the NPDES 1200-Z requirements.

- In late 2019, the site's *Storm Water Pollution Control Plan* was completely revised and written to address City of Portland BES comments. This included:
    - A thorough review and update of BMPs being used at the site and implementation of BMPs designed to address all requirements of the NPDES 1200-Z permit.
    - A program of employee education and consulting support for monthly site inspections designed to look for potential storm water impacts.
    - Dividing the site into four different sub-basins allowing for more focused source control solutions and performance monitoring.
    - Preventative maintenance schedules and procedures.
    - Site-specific monthly and annual site inspection forms, as well as storm system maintenance documentation forms.
    - Requiring scrap steel bins and recycling/waste dumpsters to be covered and located away from catch basins.
    - Prohibiting vehicle cleaning, maintenance, and repair activities.
    - Monthly sweeping to remove sediment and debris that might otherwise be transported to the storm water system including vacuuming of paved surfaces in and near truck-travelled areas.
    - Tracking routine cleaning of storm water catch basins and inserts to prevent buildup of silt, leaves, and other debris.
    - Involved all exterior personnel to immediately identify, contain, report, and remove accidental spills.
    - Required annual training of employees in BMPs along with training upon any new hire.
- In November 2019 installation of Krystar filter inserts in all catch basins in the southern drainage basin (see Figure 3). In December 2019 installation of a Krystar catch basin insert in CB-6.
- In November 2019, contracted with a new pavement sweeping company.
- In December 2019, increased catch basin cleaning frequency to at least every two months.

- In March 2020, catch basins CB-27 and CB-30 were replaced (upgraded).
- In April 2020, a camera survey was conducted to evaluation the condition (and scaling) of storm water conveyance pipes.
- In Summer 2020, areas where storm water flow-on from adjoining properties were mitigated with additional curb, berms or similar.
- In Summer 2020, opened conversations with adjacent property owners regarding re-routing storm flow from their properties, as applicable.
- Ongoing monthly sweeping and monthly cleaning of catch basins on site.
- Engineering design of a phased NPDES 1200-Z Tier II Corrective Action Response (described in next section).

2.6.3 Additional Source Control Measures – 2021

Additional SCMs, consistent with the NPDES 1200-Z Tier II Corrective Action Plan for the subject site, were implemented on site in a phased approach in 2021. These SCMs included replacement of all storm water catch basins and conveyance lines at the site and treatment of storm water by a properly sized (engineered) Oldcastle PerkFilter™ storm water treatment vault. Figure 3 shows the current storm water conveyance system on site following implementation of additional source control measures. This phased approach was carried out as follows:

- **Phase 1** *(Winter/Spring 2021)*. New catch basins and conveyance lines were installed in the northwest drainage basin. A PerkFilter™ treatment system (sized for discharge from both Phase 1 and Phase 2 construction) was installed near the existing discharge point.
- **Phase 2** *(Summer 2021).*
    - New catch basins, trench drains, and conveyance lines were installed in the balance of exterior areas (north, east, and south) of the subject property and all storm water discharge from the site (including roof drains) was connected to the PerkFilter™ treatment vault.
    - Storm water lines that have historically introduced offsite contributions from properties to the north were disconnected and rerouted under a separate permit.

The prior storm system components that Lampros Steel discharged into was abandoned by Pinnacle Engineering as follows:

- Existing pipe that was encountered and cut was plugged with concrete/slurry mix and abandoned in place.
- Existing storm manholes were abandoned in place by plugging all inlets/outlets with a concrete/slurry mix, removal of the manhole cone and lid, backfilled with 1-inch aggregate rock and finished to the surface with pavement.
- Storm water from off-site is conveyed underground in the pre-existing storm system across the subject site at the southern boundary. The new storm water system installed in 2021 connects to this line at the southwestern property margin, after the monitoring location.

Since completion of the 2021 source control measure implementation, offsite sources have been controlled (through elimination) and onsite sources are controlled by treatment via the PerkFilter™ treatment vault prior to discharge.

3.0 Potential Sources and Contaminants of Interest

3.1 Evaluation of Potential Contaminant Migration Pathways

Storm Water. The primary pathway identified for contaminants to migrate to the Willamette River is through the storm water conveyance system (Discharge Point 001 on Figures). Any surface erosion or hazardous material spills have the potential to leave the site via the storm water conveyance system.

Both the SCE process and NPDES 1200-Z sampling have identified TSS as exceeding applicable screening levels, and therefore requiring source control. Integral Consulting noted that the additional COIs they identified were only elevated in samples with elevated TSS.[12]

Ground Water. ODEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites*[1] requires evaluation of the potential migration of impacted ground water to the Willamette River. In April 2019, Cascadia Associates, LLC, conducted a *Phase II Environmental Site Assessment*.[14]

They reported:

- In general, a brown medium sand present at depths of 2 to 8 feet bgs inferred to be imported dredged material.
- Beneath this a gray silt with sand was encountered and inferred to be native material.
- Ground water was encountered at approximate depths of 5 to 8 feet bgs.
- The IT Slip of the Willamette River is 600 feet to the west.
- No source area was identified for contaminants that were detected in soil and ground water at the site. Rather, very low concentrations of constituents were distributed across the site at depths ranging between 1 and 10 feet bgs, suggesting that the imported fill may be the source.
- Certain PAHs and dissolved metals were detected in ground water at concentrations above Portland Harbor Cleanup Levels. Cascadia noted:
    - The ground water samples were collected from temporary borings and not from properly installed and developed monitoring wells. This can result in a higher level of entrained solids in the ground water sample and results are likely biased high.
    - The PAHs in site ground water are unlikely to migrate to the Willamette River at significant concentrations because: (1) PAH concentrations are relatively low at the site, and (2) concentrations are expected to further attenuate between the site and the Willamette River.
    - With the exception of manganese, dissolved metals that exceeded ground water cleanup levels (chromium, lead and zinc) were detected in only a single sample collected from the southeast corner of the site and weren't detected at downgradient locations from this

point. The data indicates that the site is not a significant source of chromium, lead or zinc to the Willamette River.

- Manganese is ubiquitous in ground water at the site (and at other sites in the Portland Harbor region) indicating that the concentrations of manganese in site ground water is naturally occurring.

Potential pathways for impacted ground water to reach the Willamette River include:

- **Included.** *Ground water infiltration of the storm water conveyance system*. While this is a potential pathway, it is unlikely that this will occur due to the installation of the new, watertight storm water conveyance system. In the unlikely case that ground water infiltration did occur, the ground water would be treated at the storm water treatment vault prior to discharge.
- **Excluded.** *Ground water migration*. Cascadia's evaluation[14] shows that ground water migrating to the Willamette River from the subject site is unlikely to be a significant source of contamination. This is further supported with data collected on the adjacent Schnitzer Steel property, where they concluded "During shoreline groundwater monitoring detailed in Groundwater Investigation Report and Work Plan Addendum[15], groundwater contamination was not observed downgradient of Lampros Steel".
- **Excluded.** *Ground water migration through utility corridors*. The imported dredge fill where shallow ground water is present is noted to be brown sand, a relatively permeable soil. While migration through utility corridors is possible, it is unlikely that this would be a preferential route given the permeable nature of surrounding soils. Additionally, as noted above, Cascadia's evaluation[13] concluded that ground water migration is unlikely to be a signification source of contamination to the Willamette River and data collected on the adjacent down-gradient property[15] did not suggest ground-water contaminated downgradient of the subject property.

3.2 Potential Sources

Probable and potential sources of storm water contamination onsite include:

- Solids/particulates associated with steel storage.
- Degraded asphalt.
- Equipment and vehicle movement and parking in exterior areas of the site.

Off-site sources that may contribute to storm water contamination on site include:

- Overland flow of storm water and sediment from adjacent properties.
- Track-on from vehicles entering the property from limited-maintenance private roadways.
- Inundation of the storm water system by turbid Willamette River water during high river stages.
- Particulate matter in dust form settling on the property from nearby roadways and industrial operations.

Adjacent properties are industrial in use and include storage yards to the north, east and west, industrial offices and storage yard to the south, and an electric substation to the northeast. Storm water discharging

[14] Cascadia Associated, Inc., April 25, 2019. *Phase II Environmental Site Assessment.*

[15] Floyd|Snider, September 2023, Groundwater Investigation Report and Work Plan Addendum. Prepared for Schnitzer Steel Industries, Inc.

at Outfall WR-123 into the Willamette River represents comingled storm water from several industrial and commercial properties in the area.

3.3 Contaminants of Interest

Contaminants of interest (COIs) in storm water discharging from the subject site were previously identified and approved by ODEQ.[16] The following COIs in storm water were detected above screening levels during previous SCEs:

- TSS
- PAHs, specifically: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene.
- Total polychlorinated biphenyls (PCBs), as congeners.
- Total metals, specifically: aluminum, arsenic, cadmium, chromium, copper, lead, manganese, silver and zinc.
- Phthalates, specifically bis(2-ethylhexyl)phthalate

Additionally, ODEQ requested the following be included in this evaluation:

- 2,3,7,8-Tetrachlorodibenzodioxin (TCDD) equivalents, per ODEQ, using toxicity equivalents for the following Dioxins and Furans: 2,3,7,8-TCDD/TCDF (tetrachlorodibenzofuran), 1,2,3,7,8-PeCDD/PeCDF, 1,2,3,4,7,8-HxCDD/HxCDF, 1,2,3,6,7,8-HxCDD/HxCDF, 1,2,3,7,8,9-HxCDD/HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDD/HpCDF, 1,2,3,4,7,8,9-HpCDF (where Pe = penta, Hx = hexa and Hp = hepta).

4.0 Ongoing Storm Water Management Measures

The following best management practices (BMPs) are employed to minimize pollutant contact with storm water runoff. These practices are outlined in the facility's *Storm Water Pollution Control Plan.*[7]

- Recycling/waste dumpsters are covered and located away from catch basins.
- Vehicle cleaning, maintenance, and repair activities are prohibited.
- Routine inspection of parking areas to collect refuse and identify excessive oil and grease accumulation.
- Monthly sweeping to remove sediment and debris that might otherwise be transported to the storm water system.
- Routine cleaning of storm water features to prevent buildup of silt, leaves, and other debris.
- Routine inspections to identify, contain, report, and remove accidental spills.
- Ongoing maintenance of the storm water collection, conveyance and treatment system following City of Portland recommended BMPs for catch basins and trench drains as well as manufacturer

[16] COIs in Integral's Draft SCE included those approved by ODEQ in *a Stormwater Sampling and Analysis Plan* initially prepared in September 2017 and revised in February 2018, at ODEQ's request.

recommendations for the PerkFilter™ treatment system. Sediment accumulation within the storm water collection features, if any, is removed and disposed of following these BMPs.

- Annual training of employees in BMPs.

5.0 Data Collection and Interpretation

5.1 Storm Water Sampling

5.1.1 Conveyance Line Cleaning

As conveyance lines were installed new as part of the recent SCMs implemented on site, cleaning of the lines was not performed prior to sampling.

5.1.2 Sampling Objectives and Framework

Storm water samples were collected and analyzed following the methodology described in the Work Plan.

Number of Samples Collected. A total of four storm water sampling events were conducted.

Target Storm Event Criteria. Two storm water confirmation samples were collected to represent a first-flush condition and the other two storm water confirmation samples were collected to represent a longer rain event. In accordance with ODEQ guidance,[Error! Bookmark not defined.] specific conditions necessary to support first-flush sampling include the following:

- Antecedent dry period of at least 24 hours preceding the sample event (as defined by <0.1 inch precipitation over the previous 24 hours).
- Minimum predicted rainfall volume of 0.2 inch per storm event.
- Expected duration of storm event of at least three hours.
- Samples collected within the first 30 minutes of observed storm water flow.

One of the first-flush samples (Sampling Event #1) met the above criteria. As allowed by the Work Plan, the second sample considered representative of first-flush sampling (Sampling Event #4) was collected in general accordance with the current NPDES 1200-Z general permit. The sample timing according to the NPDES 1200-Z permit is described below.

> *Sample the discharge during the first 12 hours of the discharge event, which is a measurable storm event resulting in an actual discharge from a site. If it is not practicable to collect the sample within this period, collect the sample as soon as practicable. Sample collection is not required outside of regular business hours or during unsafe conditions. Regular business hours will be from 8 a.m. to 5 p.m. on weekdays.*

Rationale for Selecting Sampling Location. A manhole immediately downstream of the storm water treatment vault was designated as the sampling point (ML001) as this flow represents treated storm water discharge entering the City of Portland storm sewer system.

Rationale for Sample Analysis. The COIs identified in Section 3.3 were selected for analysis. The results of sampling were intended to evaluate the performance of the SCMs in addition to being used for the SCE.

Sample Collection Methodology. Storm water sampling methods were completed consistent with the Work Plan. Grab samples were collected from ML001 using a peristaltic pump and disposable polyethylene tubing lowered into the central portion of the flow stream. Samples were transferred directly into laboratory-supplied containers. The sampler wore disposable nitrile gloves during sampling activities. The sample containers were placed in a cooler with ice and transported to an analytical laboratory under standard chain-of-custody procedures.

5.1.3 Documentation

Sampling Events. Storm water sampling events related to the SCE process were completed on November 22, 2022, December 9, 2022, January 13, 2023, and March 23, 2023. All samples were collected at ML001 when storm water was flowing.

Hydrographs. Precipitation Hydrographs are presented in Appendix A for each of the sampling events.

Presumed Representativeness of the Sampling Results and Additional Information. According to rainfall data gathered from City of Portland's Hydra Network, the four storm events lasted between 6 and 46 hours in duration and produced between 0.16 inches and 1.25 inches of total measurable precipitation. Storm data for each event, including time of onset, duration, total precipitation, and sample times are summarized below in Table 5-1.

Table 5-1. Storm Event Data

Storm Event No.	Beginning of Storm Event [1]		Duration (hrs)	Total Precip (in)	Sample		Notes/Observations
	Date	Time			Date	Time	
#1	11/22/2022	8:15	5.45	0.27	11/22/2022	8:40	Storm water discharging upon arrival
#2	12/8/2022	19:00	46	1.25	12/9/2022	9:30	Storm water discharging upon arrival
#3	1/13/2023	1:00	25	0.29	1/13/2023	12:15	Storm water discharging upon arrival
#4	3/23/2023	7:00	6	0.16	3/23/2023	11:10	Storm water discharging upon arrival
Notes:							
[1] Based on data from Shipyard Rain Gauge, 8900 N Sever Road, Portland, OR							

A brief summary of the nature of each of the sampling storm events regarding storm event criteria is presented below.

- **Storm event #1 (November 22, 2022).** The storm event began with steady precipitation around 8:00 am on November 22, 2022, and lasted approximately 6 hours, with a short break in rainfall around 10 to 11 am. A total of 0.27 inches of rain was produced during the storm event. The sample was collected at 8:40 am.
- **Storm Event #2 (December 9, 2022).** Storm event #2 consisted of several rain events separated by dry periods lasting 1 to 4 hours. The sample was collected at 9:30 am on December 9, 2022, following the third rain event. Storm event #2 lasted approximately 46 hours and produced approximately 1.25 inches of rain. Storm water was flowing upon arrival to the site.
- **Storm Event #3 (January 13, 2023).** The storm event began with steady precipitation at 1:00 am on January 13, 2023, and lasted 25 hours, with three short breaks in rainfall on the afternoon and night of January 13 ranging from 1 to three hours. A total of 0.29 inches of rain was produced during the storm event. The sample was collected at 12:15 pm. Storm water was flowing upon arrival to the site.

- **Storm Event #4 (March 23, 2023).** Storm event #4 began at 7 am with a small break in rainfall around 8 to 9 am. The sample was collected at 11:10 am on March 23, 2023, during particularly heavy rainfall. Storm event #4 lasted approximately 6 hours and produced approximately 0.16 inches of rain.

In general, storm and sampling criteria were met during the sampling events, except for Storm Event #4, which saw slightly less rainfall than the required 0.2 inches per storm event. Sampling events #1 and #4 were preceded by a full 24-hour dry period. Based on sample time, Samples #1 and #4 are considered to represent first flush conditions and samples #2 and #3 represent stabilized storm water flow conditions.

During each sampling event, the paved areas of the project site were generally free of debris. Storage, parking, and traveled areas appeared generally clean and in order. Rainfall was present during the sampling activities and storm-water conveyances were observed to have active flow. Before sample collection, the antecedent dry period (less than 0.1 inch of rain in the 24 hours preceding the sampling storm) was met during sampling events #1 and #4.

Deviations from Work Plan. There was one deviation from the Work Plan regarding sampling methodology. The Work Plan called for using a peristaltic pump and disposable polyethylene tubing lowered into the central portion of the flow stream. Instead, samples were collected by using a decontaminated sampling "scoop" lowered into the central portion of the flow stream.

It is our opinion that the analytical data are appropriate for the intended purpose. Data quality exceptions are noted in Appendix B. These limited exceptions do not interfere with the evaluation of source control because consistent and replicated data are available with respect to the COIs.

5.2 Data Summary

Table 1, behind the text, summarizes the analytical results of the four storm water sampling events. All samples were collected at sample location ML001, shown on Figure 3. Laboratory analytical reports are presented as Appendix B. The analytical results for storm-water samples were compared to the Joint Source Control Strategy (JSCS) Portland Harbor Sites screening table located in ODEQ's *Guidance for Evaluating Stormwater Pathway at Upland Sites*.

5.3 Data Interpretation

5.3.1 Method Detection Level and QA/QC Issues

The following constituents had method detection levels exceeding JSCS SLVs:

- Bis(2-ethylhexyl)phthalate, during Sample Event #2: the MLD was 3.2 micrograms per Liter (μg/L), exceeding the SLV of 2.2 μg/L. *Note this constituent was not detected in the other three samples at or above the MDL of 1.6 μg/L which is below the SLV.*
- PAHs, during Sample Event #2:
    - Benzo(a)anthracene's MDL of 0.2 μg/L only slightly exceeded the SLV of 0.018 μg/L.
    - Benzo(b)fluoranthene's MDL of 0.0.048 μg/L exceeded the SLV of 0.018 μg/L. *Note that this constituent was not detected at or above the MDL of 0.01 in Sample Events #1 and #4, and was detected at an estimated concentration of 0.026 μg/L.*
    - Benzo(k)fluoranthene's MDL of 0.2 μg/L slightly only exceeded the SLV of 0.018 μg/L.
    - Dibenz(a,h)anthracene's MDL of 0.2 μg/L slightly only exceeded the SLV of 0.018 μg/L.

- Metals:
    - Copper's MDL of 5 µg/L exceeded its SLV of 3.6 µg/L during Sample Event #1. *During the other three sampling events copper was detected at concentrations ranging from 2.28 to 8.5 µg/L.*
    - Silver's MDLs of 0.2 µg/L exceeded the SLV of 0.12 µg/L during all four sampling events.

5.3.2 SLV Exceedances

The following constituents had detections exceeding their JSCS SLVs:

- PAHs (all exceedances were order of magnitude <1):
    - Benzo(a)pyrene was detected at up to 0.04 µg/L, exceeding its JSCS SLV during sampling events #2 and #3.
    - Benzo(b)fluoranthene was detected at up to 0.071 µg/L, exceeding its JSCS SLV during sampling event #3.
    - Benzo(k)fluoranthene was detected at up to 0.026 µg/L, exceeding its JSCS SLV during sampling event #3.
    - Chrysene was detected at up to 0.058 µg/L, exceeding its JSCS SLV during sampling events #2 and #3.
    - Indeno(1,2,3-cd)pyrene was detected at up to 0.025 µg/L, exceeding its JSCS SLV during sampling events #2 and #3.
    - Pyrene was detected at up to 0.22 µg/L, exceeding its JSCS SLV during sampling events #1 and #4.
- PCBs as congeners were detected at up to 1.1×10^{-2} µg/L, exceeding its JSCS SLV during all four sampling events.
- Metals:
    - Total **aluminum** was detected at up to 780 µg/L, exceeding its JSCS SLV range in samples taken during storm events #2 and #3. The average concentration of total aluminum in storm water discharge exceeded its default background concentration in surface water, suggesting concentrations of total aluminum may be enriched in storm water discharge.
    - Total **arsenic** was detected at up to 32.0 µg/L, exceeding its JSCS SLV in all four sampling events. Total arsenic was highest in samples taken during storm events #1 and #4, where a 24-hour antecedent dry period was present prior to sampling. The average concentration of total arsenic in storm water discharge exceeded its default background concentration in surface water, suggesting concentrations of total arsenic may be enriched in storm water discharge.
    - Total **copper** was detected at up to 14.7 µg/L, exceeding its JSCS SLV during sampling events #2 and #3. The average concentration of total copper in storm water discharge was just below its default background concentration in surface water, suggesting concentrations of total copper are not enriched in storm water discharge.
    - Total **lead** was detected at up to 5.62 µg/L, exceeding its JSCS SLV during sampling events #2 and #3. The average concentration of total lead in storm water discharge was below its default background concentration in surface water, suggesting concentrations of total lead are not enriched in storm water discharge.

- Total **manganese** was detected at up to 646 µg/L, exceeding its JSCS SLV during all sampling events. No background concentration in surface water has been established for total manganese.
- Total **zinc** was detected at up to 90.7 µg/L, exceeding its JSCS SLV during sampling events #2 and #3. The average concentration of total zinc in storm water discharge exceeded its default background concentration in surface water, suggesting concentrations of total zinc may be enriched in storm water discharge.

- 2,3,7,8-TCDD (dioxin), as toxic equivalents, was detected at up to 0.649 picograms per liter, exceeding its JSCS SLV during all four sampling events (see Table 2).

Additional information on protocol used to evaluate dioxins. According to ODEQ's *Human Health Risk Assessment Guidance* (October 2010), toxicity equivalency factors (TEFs) can be used to evaluate toxic effects of polychlorinated dibenzo-p-dioxins (CDDs), polychlorinated dibenzofurans (CDFs), and co-planar (dioxin-like) PCBs congeners relative to 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). Concentrations of congeners are multiplied by their TEFs to estimate the toxicity of these congeners relative to 2,3,7,8-TCDD; the resulting concentrations may be summed into a total of 2,3,7,8-TCDD toxicity equivalence (TEQ) concentration. The TEQ equation is present below for *n* compounds with congeners represented by compound *i*=1:

$$TEQ = \sum_{i=1}^{n} (C_i * TEF_i)$$

Where: *TEQ* = Toxicity Equivalence
Ci = concentration of the *i*th individual compound
TEFi = *i*th compound's TEF

TEF values are provided in the following table:

Table 7-2. TEQ Values

Compound	TEF
Polychlorinated dibenzo-*p*-dioxins (PCDDs)	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.0003
Polychlorinated dibenzofurans (PCDFs)	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.03
2,3,4,7,8-PeCDF	0.3
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.0003

Source: van den Berg et al. (2006); WHO's website on dioxin TEFs, available at http://www.who.int/pcs/assessment/tef_update/en/

5.3.3 Discussion

The following data patterns are suggested by the performance monitoring results:

- There was a clear difference between representative 'first flush samples' (Event #1 and Event #4) and the other two samples. Where detected, most (but not all) metal COIs were present at higher concentrations during Event #2 and Event #3. These two events also had the highest TSS concentrations, suggesting a correlation. Interestingly, the two exceptions to this correlation were arsenic and manganese, which reported higher concentrations with the lower TSS concentrations of (Event #1 and Event #4).

The samples were taken after installation of the new storm water system components, including the storm water treatment vaults. The samples are presumed to be representative of storm water leaving the facility after treatment.

6.0 Source Control Measures

No additional source control measures were implemented during the course of performance monitoring for this evaluation.

7.0 Source Control Evaluation

The following sections summarize the evidence used to support our opinion that the storm-water source control at the project site is adequate and that the site does not represent a significant current or future source of contaminant to the Willamette River. Data evaluation and other lines of evidence are discussed below.

7.1 Data Evaluation

Evaluation of Current Storm Water Data with DEQ's *Tool for Evaluating Storm Water.* ENW first compared the analytical data from the 2022 and 2023 storm-water sampling activities to the charts presented in Appendix E of ODEQ's Upland Guidance document[1] to evaluate if the concentrations of contaminants were representative of typical industrial storm water. Of the 13 constituents with charts, eight of the constituents (arsenic, chromium, copper, lead, zinc, TSS, total PCBs, and total PAHs) were detected in two or more of the four storm water monitoring events and were retained as constituents of potential concern (COPCs) in storm water discharge. Five constituents (cadmium, mercury, nickel, silver, and bis[2-ethylhexyl]phthalate) were not retained as COPCs, since they were either not detected, not considered a COI, or the detected concentrations did not exceed screening criteria.

The typical industrial storm water charts provided by ODEQ identify "a predictable concentration range even when good stormwater management practices are being implemented." The concentrations are charted in a curve, which includes a flat portion and a steep portion. The transition area is called the "knee" of the curve. Concentrations within the flat area of the curve are considered typical of industrial sites, while concentrations higher than the knee may represent elevated concentrations.

The comparison of project site storm water sample analytical results to other industrial sites using the ODEQ tool is presented in Appendix C. Results indicate:

- Seven of the eight constituents evaluated had detected concentrations within the low range of the lower/flatter portions of the curves suggesting that storm water is not being unusually impacted by contaminants at the site and is therefore representative of "typical" industrial storm water.
- Arsenic showed a different pattern. The samples representative of first-flush (Events #1 and #4) were above the knee of the typical curve, however samples from Events #2 and #3 had detected concentrations within the low range of the lower/flatter portions of the curve.

Manganese, aluminum, and 2,3,7,8-TCDD (dioxin) equivalents were the only constituents above JSCS SLVs, for which an ODEQ curve "knee" range has not been established.

Effect of Implementing SCMs. After implementation of SCMs, most constituents have shown an average decrease in concentration when compared to the average concentration of the 2018, pre-SCM sampling events, as shown in Table 1. No average percent difference was able to be calculated for aluminum, silver, and dioxins, as these constituents were not sampled for as part of the 2018 SCE. The few exceptions to this are briefly discussed below:

- Arsenic: Although average arsenic concentration during post-SCM implementation sampling events was on average higher than the average concentration of arsenic during pre-SCM

implementation sampling, total arsenic was at least an order of magnitude below permit benchmark for industrial activity and iron ore subsector storm water permitting in Oregon.

- Manganese: Although average manganese concentration during post-SCM implementation sampling events was on average higher than the average concentration of manganese during pre-SCM implementation sampling, total manganese only exceeds its JSCS SLV by an order of magnitude up to 1. It is important to note that ODEQ has not established curve "knee" range for manganese.
- Anthracene: Anthracene was not detected above laboratory MRLs during sampling events after SCM implementation. Therefore, although average concentrations of anthracene were shown to be higher after SCM implementation when compared to the 2018 pre-SCM implementation SCE sampling, because all post-SCM implementation samples were below laboratory detection limits and below the SLV for Portland Harbor, this is not a cause for concern.
- Fluorene: Fluorene was not detected above its SLV for Portland Harbor during sampling events after SCM implementation. Therefore, although average concentrations of fluorene were shown to be higher after SCM implementation when compared to the 2018 pre-SCM implementation SCE sampling, this is not a cause for concern.
- Naphthalene: Naphthalene was not detected above laboratory MRLs during sampling events after SCM implementation. Therefore, although average concentrations of naphthalene were shown to be higher after SCM implementation when compared to the 2018 pre-SCM implementation SCE sampling, because all post-SCM implementation samples were below laboratory detection limits and below the SLV for Portland Harbor, this is not a cause for concern.
- TSS: Average concentrations of TSS were shown to be higher after SCM implementation, when compared to the 2018 pre-SCM implementation SCE sampling. However, levels of TSS in samples collected after SCM implementation remain below the ODEQ Rank Order curve "knee" range.

Additional Discussion. Constituents detected above the SLVs during the source control sampling can sometimes be associated with particulate deposition, which may be an intermittent source to subject site storm water. Additionally, arsenic and manganese were noted to be at elevated levels during sampling that were taken as a "first flush" after at least a 24-hour antecedent dry period. This suggests that a buildup of these metals on the pavement could be a contributing. Similarly, aluminum was above its JSCS SLV in samples taken during storm events #2 and #3, during which TSS was also at its highest levels.

7.2 Other Lines of Evidence

The 2017 EPA Portland Harbor Record of Decision and subsequent sediment sampling indicate that select dioxins/furans congeners are risk drivers of sediment remediation in some areas of the Willamette River. These congeners are identified as 1,2,3,7,8-PeCDD, 2.,3,4,7,8-PeCDF, 2,3,7,8-TCDF, 1,2,3,4,7,8-HxCDF, and 2,3,7,8-TCDD.[17] As shown in Table 2, while a few dioxins/furans congeners have been detected above laboratory method reporting limits in storm water from the subject site, none of the detected congeners include the identified congeners that drive risk (i.e., 1,2,3,7,8-PeCDD, 2.,3,4,7,8-PeCDF, 2,3,7,8-TCDF,

[17] ODEQ, Staff Report: Conditional Source Control Decision City of Portland Outfalls Project in Portland Harbor, 2021.

1,2,3,4,7,8-HxCDF, or 2,3,7,8-TCDD). Therefore, it can be reasonably assumed that storm water from the subject site is not a source of identified dioxins/furans congeners driving risk in the river sediment.

Additionally, the following lines of evidence suggest that contaminants in storm water will be continued to be controlled into the future:

- The subject property is completely covered with impermeable surfaces except for the eastern edge where no industrial activities have taken place.
- All storm water from the site is directed to the storm water treatment vault prior to discharge.
- The storm system and treatment vault are maintained according to manufacturer or City of Portland guidance to prevent the buildup or discharge of COIs in storm water.
- Ongoing implementation of the BMPs described by the SWPCP should continue to effectively control the site's current, typical commercial storm water contaminant sources.
- Any changes to site operations with the potential to impact storm water would be conducted according to ODEQ's NPDES program. At a minimum, changes would require updating the SWPCP thereby ensuring appropriate storm water source control measures are in place.

8.0 Findings and Conclusions

Arsenic concentrations in first-flush samples, while above the ODEQ curve "knee" range for concentrations typical of industrial storm water discharge, was at least an order of magnitude below the 0.34 mg/L (340 µg/L) permit benchmark for industrial activity and iron ore subsector storm water permitting in Oregon. Given the higher concentrations were noted in first-flush samples, it can be concluded that additional sweeping would help to mitigate elevated levels of arsenic.

Lampros Steel has implemented source control measures and conducted performance monitoring activities at the project site located at 9040 North Burgard Way in Portland, Oregon. These activities were performed in accordance with an ODEQ work plan, ODEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites,* dated January 2009 (updated October 2010). The results of these activities indicate the following:

1. Existing and potential facility-related contaminant sources have been identified and characterized.

Potential sources have been fully characterized by investigations performed pursuant to ODEQ-approved work plans. Data evaluation has shown that facility-related COIs (identified in Section 3.3) in storm water are likely sourced from general site operations, and not one specific location or activity.

As presented in Section 7.1, sampling results were compared to the charts presented in Appendix E of ODEQ's Upland Guidance document[1] to evaluate if the concentrations of contaminants were representative of typical industrial storm water. The guidance document indicates:

> *Industrial stormwater is likely to contain a somewhat predictable list of contaminants within a predictable concentration range even when good stormwater management practices are being implemented.*
>
> *This is based on the premise that many kinds of industrial materials and activities have the potential to result in minor releases of contaminants, such as petroleum products in drips of oils, greases and fuels used for vehicles and machinery, phthalates off-gassing from paints and PVC piping, and zinc from galvanized building materials. Off-site sources, including highway traffic, operations at neighboring sites and atmospheric deposition, can also contribute to the contaminant load in stormwater runoff from a site.*

When COIs detected at concentrations exceeding their JSCS SLV were compared to the charts:

- For constituents with charts, only arsenic, in the two samples representative of 'first flush' conditions, was detected at concentrations exceeding what are considered typical of industrial storm water. However, these arsenic concentrations were also noted to be at least an order of magnitude below what the permit benchmark for industrial activity and iron ore subsector storm water permitting in Oregon. The other two performance monitoring samples had arsenic detections two orders of magnitude lower, suggesting the source of elevated levels of arsenic in storm water is likely general site use with related build up accumulated on paved surfaces between rain events.
- Aluminum, manganese and 2,3,7,8-TCDD (dioxin) equivalents do not yet have charts of typical industrial storm water values established.
    - Detections of aluminum and manganese were not substantially elevated above the JSCS SLV (manganese was up to one order of magnitude and aluminum was less than one order of magnitude) and therefore don't suggest a point source onsite. Interestingly, aluminum was elevated in the two samples with higher TSS, while manganese was elevated in the other two samples representative of 'first flush'.
    - Dioxin detections exceeded the JSCS SLV from one to three orders of magnitude. EPA's *Inventory of Dioxin Sources and Environmental Releases*[18] lists six primary categories of sources of dioxins: combustion sources, metals smelting, refining and process sources, chemical manufacturing sources, natural sources, and environmental reservoirs. None of the industrial sources described are conducted at the Lampros Steel site, and in particular no metal smelting is conducted onsite. Therefore, the dioxins detected in site storm water are likely from local or regional

[18] https://www.epa.gov/dioxin/inventory-dioxin-sources-and-environmental-releases

deposition sources (e.g. vehicle engine combustion exhaust, residential wood combustion, regional wildfires, etc.). Additionally, none of the dioxins/furans congeners detected in storm water from the subject site include the congeners ODEQ has identified as risk drivers in the Willamette River sediment, suggesting the subject site is not a source of these dioxins/furans that are driving sediment risk.

2. Potential storm-water contaminant sources are being controlled to the extent feasible:

General Industrial Site Use is the facility-related source identified above as contributing COIs to storm water. With the implementation of the most recent SCMs, this source is being effectively controlled by:

- BMPs as described in the site's SWPCP, including Good Housekeeping Measures.
- Routine inspection and maintenance of the storm water collection and treatment system.
- Treatment of all storm water before it leaves the site by the PerkFilter™ treatment vault.

These SCMs limit contaminant load in storm water, as demonstrated by performance monitoring sampling (see Section 7.1 for discussion).

Performance sampling showed that the following COIs continue to exceed their JSCS SLVs in spite of the implemented SCMs:

- PAHs. All exceedances were less than one order of magnitude and total PAHs were typical of industrial storm water concentrations based on the comparison to ODEQ's Upland Guidance charts.
    - Benzo(a)pyrene
    - Benzo(b)fluoranthene
    - Benzo(k)fluoranthene
    - Chrysene
    - Indeno(1,2,3-cd)pyrene
    - Pyrene
- PCBs as congeners. Exceedances ranged from 2 to 4 orders of magnitude; however, they were also at the low end of typical industrial storm water concentrations based on the comparison to ODEQ's Upland Guidance charts.
- Metals:
    - Total aluminum (order of magnitude <1)
    - Total arsenic (order of magnitude ranged from 1 to 3)
    - Total copper (order of magnitude up to 1)
    - Total lead (one order of magnitude)
    - Total manganese (order of magnitude up to 1)
    - Total zinc (order of magnitude <1)
- 2,3,7,8-TCDD (dioxin) equivalents (order of magnitude ranged from 1 to 3)

The above constituents have been identified as deriving from either *General Industrial Site Use* or local or regional deposition sources (especially dioxin). The existing SCMs have been identified as appropriate for the site and effective. Installation of the storm water treatment vault has effectively reduced average concentrations of most COIs.

While additional SCMs (e.g., increased frequencies of site sweeping, and cleaning/removal of sediment from catch basins and the storm water treatment vault) could potentially further reduce concentrations of COIs in site storm water, they would likely bring only minimal further reductions, as compared to the reductions realized through the newly implemented SCMs.

3. **If pre- and post-SCM data was collected, post-SCM data supports the conclusion that the SCM is effective.**

Most of the post-SCM data is, on average, lower when compared to corresponding data collected in 2018, prior to SCM implementation. For constituents that have, on average, increased in concentration following SCM implementation, most remain below laboratory detection limits and/or their respective SLVs/ODEQ curve "knee" range. For the two constituents that exceed their SLV, one (manganese) does not have an established rank order curve and only exceeds its JSCS SLV by an order of magnitude up to 1. The other (arsenic), is at least an order of magnitude below permit benchmark for industrial activity and iron ore subsector storm water permitting in Oregon.

4. **Adequate measures are in place to ensure source control and good stormwater management measures occur in the future.**

The subject site currently operates under a storm water discharge permit, which requires ongoing monitoring to ensure the system meets permit benchmarks.

5. **Contaminants in stormwater that continue to exceed SLVs in spite of SCMs and stormwater management measures are not likely to result in sediment contamination in the receiving waterbody or contribute to unacceptable risk.**

- Constituents that continue to exceed SLVs have been shown to do so at minimal levels (e.g., 2x or 3x the SLV) and/or below applicable stormwater permit benchmarks.
- TSS concentrations are typical of industrial sites, based on ODEQ rank curve and no SLV has been established for TSS. This suggests TSS, which can be an indicator of other pollutant loads, is appropriately managed at the subject site.

9.0 Limitations

The scope of this report is limited to observations made during on-site work; interviews with knowledgeable sources; and review of readily available published and unpublished reports and literature. As a result, these conclusions are based on information supplied by others as well as interpretations by qualified parties.

The focus of the work does not extend to the presence of the following conditions:

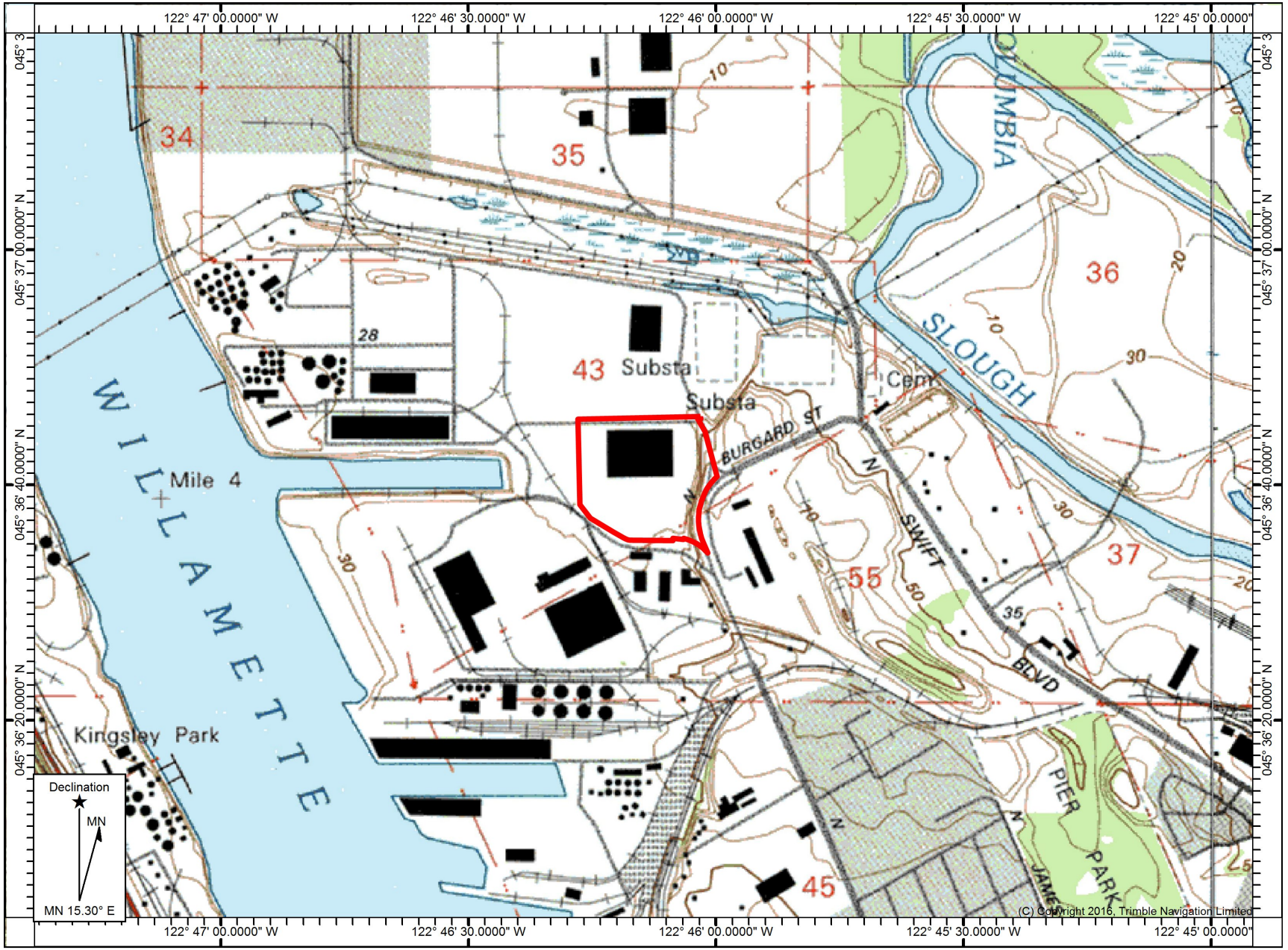
1. Naturally occurring toxic or hazardous substances in the subsurface soils, geology and water,
2. Toxicity of substances common in current habitable environments, such as stored chemicals, products, building materials and consumables,
3. Contaminants or contaminant concentrations that are not a concern now but may be under future regulatory standards,
4. Unpredictable events that may occur after ENW's site work, such as illegal dumping or accidental spillage.

There is no practice that is thorough enough to absolutely identify the presence of all hazardous substances that may be present at a given site. ENW's investigation has been focused only on the potential for contamination that was specifically identified in the Scope of Work. Therefore, if contamination other than that specifically mentioned is present and not identified as part of a limited Scope of Work, ENW's environmental investigation shall not be construed as a guaranteed absence of such materials. ENW has endeavored to collect representative analytical samples for the locations and depths indicated in this report. However, no sampling program can thoroughly identify all variations in contaminant distribution.

We have performed our services for this project in accordance with our agreement and understanding with the client. This document and the information contained herein have been prepared solely for the use of the client.

ENW performed this study under a limited scope of services per our agreement. ENW assumes no responsibility for conditions that we did not specifically evaluate or conditions that were not generally recognized as environmentally unacceptable at the time this report was prepared.

Figures



Name: LINNTON
Date: Jan 1, 1990

0 1000 2000
Feet

Location: 045° 36' 40.8547" N, 122° 46' 08.7935" W
Contour Interval: 10 ft

EVREN NORTHWEST INC environmental, natural resource consultants	Date Drawn: 7/8/2019 CAD File Name: 1355-19001-fig1sv_map(v01) Drawn By: JOB Approved By: LDG	Lampros Steel 9040 N Burgard Way Portland, Oregon	**Site Vicinity Map**	Project No. 1355-19001 Figure No. **1**

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
C. ROSEBROOK 07/06/2021	T. BENNETT 07/06/2021	L. GREEN 04/18/2022	1355-19001(v01)

PORTLAND CONTAINER

N BURGARD WAY

ELECTRICAL SUB-STATION

ENTRANCE

PARKING

COVERED SCRAP METAL STORAGE

OFFICE

CRANE STRUCTURE (NOT IN SERVICE)

STORAGE YARD

GARBAGE AND RECYCLING BINS

BAY 6

GARBAGE AND RECYCLING BINS

CHEMICAL STORAGE

BAY 5

CHEMICAL STORAGE AND EQUIPMENT MAINTINENCE AREA

DEF TOTE

N TIME OIL RD

BAY 4

BAY 3

HYDRAULIC LIFT AND MACHINERY STORAGE

BAY 2

HYDRAULIC LIFT MAINTENANCE

RECYCLING BINS

BAY 1

ELECTRICAL SUB-STATION

SMALL SHED

RAILROAD SPUR

STEEL BEAM STORAGE

COVERED SCRAP METAL STORAGE

N BURGARD

WELL

STORAGE YARD

TRAILER

N LOMBARD STREET

TRAILER STORAGE

N SEVER RD

NW PIPE CO.

PARTNER INDUSTRIAL

NW PIPE CO.

LEGEND:

- SUBJECT BUILDINGS
- SUBJECT PROPERTY BOUNDARIES
- MANUFACTURED STEEL STORAGE LOCATION
- PERVIOUS SURFACE
- SURFACE BARRIERS TO REDUCE OFF SITE SURFACE WATER RUN-ON
- POLE TRANSFORMER
- PAD TRANSFORMER
- WELL
- DEF: DIESEL EXHAUST FLUID
- CHAIN LINK FENCE

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2018 AND ENW FIELD NOTES.
2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.
3. SYMBOLS REPRESENT LOCATION AND DO NOT ALWAYS REPRESENT EXACT SHAPE, SIZE, OR ORIENTATION.

APPROXIMATE SCALE

0 150 300 FEET

N

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FIGURE 2

SITE PLAN

LAMPROS STEEL
9040 N BURGARD WAY
PORTLAND, OREGON

DRAWING NUMBER	APPROVED BY	CHECKED BY	DRAWN BY
1355-19001(v01)	L. GREEN 11/28/2022	E. BRUGGEMAN 04/01/2022	C. ROSEBROOK 04/01/2022

N BURGARD WAY
CAPPED
ENTRANCE
ELECTRICAL SUB-STATION
PARKING
CB-14
CB-13
CB-15
CB-16
CB-1
STORAGE YARD
CB-09
CB-12
CB-2
N TIME OIL RD
CB-08
CB-11
CB-3
CB-07
CB-10
CB-4
ELECTRICAL SUB-STATION
RAILROAD SPUR
ROOF DRAIN DISCHARGE
STEEL BEAM STORAGE
DB1
CONCRETE PAD
CB-19
CB-5
STORMWATER MANAGEMENT VAULT
CB-22
CB-25
CB-29
CB-6
O/W
WELL
CB-30
MP001
CB-26
COVERED MAINTENANCE
STORAGE
TRAILER
CB-17
DISCHARGE POINT 001
CB-23
CB-20
N LOMBARD STREET
TRAILER STORAGE
CB-21
CB-27
CB-18
CB-24
CB-28
STORMWATER MANAGEMENT VAULT
MH
MP001
MH
N SEVER RD
NW PIPE CO.
45.6095, -122.7692
PARTNER INDUSTRIAL
DISCHARGE POINT 001

SPILL KIT CONTENTS:
-ABSORBENT BOOMS
-ABSORBENT PADS
-GRANULAR MATERIAL
-CAUTION TAPE
-PLASTIC SHOVEL
-TRASH BAGS
-BROOM & DUSTPAN
-RUBBER GLOVES
-RUBBER CATCH BASIN COVER

LEGEND:

- SUBJECT BUILDINGS
- SUBJECT PROPERTY BOUNDARIES
- DRAINAGE BASIN
- PERVIOUS SURFACE
- SURFACE FLOW DIRECTION
- POLE TRANSFORMER
- MANHOLE
- PAD TRANSFORMER
- WELL
- CHAIN LINK FENCE
- OIL WATER SEPARATOR
- ONSITE STORM WATER SEWER
- CATCH BASIN
- MP001 MONITORING POINT
- SK SPILL KIT (DISPOSAL DRUM, FILTER SOCKS, ABSORBANT MEDIA, AND PADS)
- SDMH: STORM DRAIN MANHOLE
- SURFACE BARRIERS TO REDUCE OFF SITE SURFACE WATER RUN-ON
- OFFSITE STORM WATER (NO ONSITE CONTRIBUTION)
- LEASED AREAS

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2018 AND ENW FIELD NOTES.
2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.
3. SYMBOLS REPRESENT LOCATION AND DO NOT ALWAYS REPRESENT EXACT SHAPE, SIZE, OR ORIENTATION.

APPROXIMATE SCALE

0 140 280 FEET

N

EVREN NORTHWEST INC.
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FIGURE 3

STORM WATER SYSTEM

LAMPROS STEEL
9040 N BURGARD WAY
PORTLAND, OREGON

DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
H. ROMER 7/10/2023	T. BENNETT 7/10/2023	L. GREEN 7/10/2023	1355-19001(V01)

LEGEND:

- SUBJECT PROPERTY BOUNDARY
- SUBJECT BUILDING
- STORM WATER LINE
- OUTFALL
- MONITORING POINT

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2021 AND ENW FIELD NOTES.
2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.
3. SYMBOLS REPRESENT LOCATION AND DO NOT ALWAYS REPRESENT EXACT SHAPE, SIZE, OR ORIENTATION

0 137.5 275 550

Feet

N

EVREN NORTHWEST INC.
environmental natural resource consultants

FIGURE 4

STORM WATER CONVEYANCE MAP (DISTAL)

LAMPROS STEEL
9040 N BURGARD WAY
PORTLAND, OREGON

Tables

Table 1 - Summary of Analytical Data, Storm Water

Sample ID		ML001-SW-221122	ML001-SW-221209	ML001-SW-230113	ML001-SW-230323	Maximum Storm Water Concentration
Date Sampled		11/22/22	12/9/22	1/13/23	3/23/23	
Depth Sampled (feet)		---	---	---	---	
Sampled By		ENW	ENW	ENW	ENW	
Location		ML001				
Constituent of Interest	Note	µg/L (ppb)	µg/L (ppb)	µg/L (ppb)	µg/L (ppb)	
Metals						
Aluminum		53.6	519	780	16.6	780
Arsenic	c, nv	32.0	0.330	0.814	14.0	32.0
Cadmium	nc, nv	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)
Chromium (total)		<1 (ND)	2.08	3.42	<1 (ND)	3.42
Copper	nc, nv	<5 (ND)	8.5	14.7	2.28	14.7
Lead	NA, nv	<0.2 (ND)	3.36	5.62	<0.2 (ND)	5.62
Manganese	nc, nv	646	72.1	116	535	646
Silver	nc, nv	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)	<0.2 (ND)
Zinc		<5 (ND)	67.4	90.7	3.37	90.7
Semivolatile Organic Constituents						
Bis(2-ethylhexyl)phthalate	c, nv	<1.6 (ND)	<3.2 (ND)	<1.6 (ND)	<1.6 (ND)	<3.2 (ND)
Polychlorinated biphenyls (Total PCBs)	c, v	1.44E-03	1.09E-02	9.62E-03	7.01E-04	1.09E-02
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	nc, v	<0.01 (ND)	<0.02 (ND)	<0.01 (ND)	<0.01 (ND)	<0.02 (ND)
Anthracene	nc, v	<0.01 (ND)	<0.02 (ND)	<0.1 (ND)	<0.01 (ND)	<0.1 (ND)
Benzo[a]anthracene	#N/A	<0.01 (ND)	<0.02 (ND)	<0.017 (ND)	<0.01 (ND)	<0.02 (ND)
Benzo[a]pyrene (BaP equivalents)	c, nv	<0.01 (ND)	0.025	0.04 J	<0.01 (ND)	0.04 J
Benzo[b]fluoranthene	c, nv	<0.01 (ND)	<0.048 (ND)	0.071 J	<0.01 (ND)	0.071 J
Benzo(g,h,i)perylene		<0.02 (ND)	<0.04 (ND)	0.038 J	<0.01 (ND)	0.038 J
Benzo[k]fluoranthene	c, nv	<0.01 (ND)	<0.02 (ND)	0.026 J	<0.01 (ND)	0.026 J
Chrysene	c, nv	<0.01 (ND)	0.042	0.058	<0.01 (ND)	0.058
Dibenz[a,h]anthracene	c, nv	<0.01 (ND)	<0.02 (ND)	<0.01 (ND) J	<0.01 (ND)	<0.02 (ND)
Fluoranthene	nc, nv	0.033	0.043	0.076	0.029	0.076
Fluorene	nc, v	0.017	<0.02 (ND)	<0.1 (ND)	0.015	0.017
Indeno[1,2,3-cd]pyrene	c, nv	<0.01 (ND)	0.022	0.025 J	<0.01 (ND)	0.025 J
Naphthalene		<0.1 (ND)	<0.2 (ND)	<0.1 (ND)	<0.1 (ND)	<0.2 (ND)
Phenanthrene		0.072	0.045	<0.1 (ND)	0.057	0.057
Pyrene	nc, v	0.22	0.078	0.14	0.21	0.22
Total PAHs		0.342	0.255	0.474 J	0.311	0.474 J
2,3,7,8-TCDD (dioxin) equivalents	c, v	1.0E-09	4.8E-09	6.3E-07	8.9E-09	6.3E-07
Conventionals						
Total Suspended Solids		15000	26000	93000	7600	93000

Notes:
ug/L = micrograms per Liter or parts per billion (ppb).
<# (ND) = not detected at or above the laboratory method reporting limit shown.
NE = not established.
[1] Lowest Risk-Based Concentration for ground water (screening level assumes residential use, from ODEQ RBCs dated May 2018).
— = not analyzed or not applicable.
c = carcinogenic
nc = noncarcinogenic
v = volatile
nv = nonvolatile
[1] Lowest Risk-Based Concentration for ground water (screening level).
(Y) indicates analyte not detected, but detection limit is above screening concentration.
N/A - not applicable
J = indicates the internal standard associated with the analyte is out of control limits; the reported concentration is an estimate.

Table 1 - Summary of Analytical Data, Storm Water

Sample ID / Date Sampled / Depth Sampled (feet) / Sampled By / Location	Note	Average percent difference between pre-SCM (2018) and post-SCM sampling results	SLV for Portland Harbor	ODEQ SG Appendix E Curve "Knee" Range	Background Concentrations (metals)	Exceeds Background Concentrations (metals)? TRUE OR Y FALSE OR N	COPC (exceeds SLV for Portland Harbor)? TRUE OR Y FALSE OR N	COC (exceeds ODEQ SG Appendix E Curve "Knee" Range)? TRUE OR Y FALSE OR N
Constituent of Interest		µg/L (ppb)						
Metals								
Aluminum		N/A	50-200	--	2	Y	Y	--
Arsenic	c, nv	149424.2%	0.045	2-4	2	Y	Y	Y
Cadmium	nc, nv	-3249.8%	0.38	0.5-1.5	1	N	N	N
Chromium (total)		-7259.7%	100	7-15	--	--	N	N
Copper	nc, nv	-5904.8%	3.6	40-150	9	Y	Y	N
Lead	NA, nv	-6662.8%	0.54	30-100	13.3	N	Y	N
Manganese	nc, nv	16237.3%	50	--	NE	--	Y	--
Silver	nc, nv	N/A	0.12	0.1-0.25	1	N	(Y)	N
Zinc		-7281.2%	33	350-1000	1	Y	Y	N
Semivolatile Organic Constituents								
Bis(2-ethylhexyl)phthalate	c, nv	-8652.6%	2.2	2-6	NE	--	(Y)	N
Polychlorinated biphenyls (Total PCBs)	c, v	-9517.1%	0.0000064	0.2-0.6	NE	--	Y	N
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	nc, v	-4801.1%	0.2	--	NE	--	N	--
Anthracene	nc, v	3416.7%	0.2	--	NE	--	N	--
Benzo[a]anthracene	#N/A	-9312.5%	0.018	--	NE	--	N	--
Benzo[a]pyrene (BaP equivalents)	c, nv	-8243.7%	0.018	--	NE	--	Y	--
Benzo[b]fluoranthene	c, nv	-7896.7%	0.018	--	NE	--	Y	--
Benzo(g,h,i)perylene		-7560.9%	0.2	--	NE	--	N	--
Benzo[k]fluoranthene	c, nv	-6544.7%	0.018	--	NE	--	Y	--
Chrysene	c, nv	-8919.7%	0.018	--	NE	--	Y	--
Dibenz[a,h]anthracene	c, nv	-8013.1%	0.018	--	NE	--	(Y)	--
Fluoranthene	nc, nv	-6536.0%	0.2	--	NE	--	N	--
Fluorene	nc, v	8400.0%	0.2	--	NE	--	N	--
Indeno[1,2,3-cd]pyrene	c, nv	-7401.9%	0.018	--	NE	--	Y	--
Naphthalene		41679.6%	0.2	--	NE	--	N	--
Phenanthrene		-2877.6%	0.2	--	NE	--	N	--
Pyrene	nc, v	-3630.2%	0.2	--	NE	--	Y	--
Total PAHs		-1574.6%	--	1-3	NE	--	--	N
2,3,7,8-TCDD (dioxin) equivalents	c, v	N/A	5.00E-10	--	NE		Y	--
Conventionals								
Total Suspended Solids		3041724.1%	--	50,000-100,000	NE	--	--	N

Notes:
ug/L = micrograms per Liter or parts per billion (ppb).
<# (ND) = not detected at or above the laboratory method reporting limit shown.
NE = not established.
[1] Lowest Risk-Based Concentration for ground water (screening level assumes residential use, from ODEQ RBCs dated May 2018).
— = not analyzed or not applicable.
c = carcinogenic
nc = noncarcinogenic
v = volatile
nv = nonvolatile
[1] Lowest Risk-Based Concentration for ground water (screening level).
(Y) indicates analyte not detected, but detection limit is above screening concentration.
N/A - not applicable
J = indicates the internal standard associated with the analyte is out of control limits; the reported concentration is an estimate.

Table 2 - Summary of Analytical Data for Dioxins and Furans, Storm Water

Sample ID	ML001-SW-221122		ML001-SW-221209		ML001-SW-230113		ML001-SW-230323		Toxicity Equivalence Quotient (TEQ)
Date Sampled	11/22/22	TEQ	12/9/22	TEQ	1/13/23	TEQ	3/23/23	TEQ	
Depth Sampled (feet)	---		---		---		---		
Sampled By	ENW		ENW		ENW		ENW		
Location	ML001 (southwest of fueling area)								
Constituent of Interest	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	pg/L	
Dioxins/Furans									
2,3,7,8-TCDD eq	---	0.110	---	0.583	---	0.649	---	0.0816	1
2,3,7,8-TCDD	<1.31 (ND)	<1.31 (ND)	<0.79 (ND)	<0.79 (ND)	<1.62 (ND)	<1.62 (ND)	<1.18 (ND)	<1.18 (ND)	1
1,2,3,7,8-PeCDD	<3.41 (ND)	<3.41 (ND)	<1.53 (ND)	<1.53 (ND)	<1.4 (ND)	<1.4 (ND)	<1.54 (ND)	<1.54 (ND)	1
1,2,3,4,7,8-HxCDD	<3.1 (ND)	<0.31 (ND)	<2.52 (ND)	<0.252 (ND)	<1.97 (ND)	<0.197 (ND)	<2.18 (ND)	<0.218 (ND)	0.1
1,2,3,6,7,8-HxCDD	<3.2 (ND)	<0.32 (ND)	<2.25 (ND)	<0.225 (ND)	<2.23 (ND)	<0.223 (ND)	<2.46 (ND)	<0.246 (ND)	0.1
1,2,3,7,8,9-HxCDD	<2.94 (ND)	<0.294 (ND)	<2.33 (ND)	<0.233 (ND)	<2.27 (ND)	<0.227 (ND)	<2.58 (ND)	<0.258 (ND)	0.1
1,2,3,4,6,7,8-HpCDD	10.4 J	0.104 J	35.9	0.359	44.2	0.442	7.98 EMPC	0.0798 EMPC	0.01
OCDD	19.00 J	0.0057 J	316	0.0948	398	0.1194	5.84 J	0.001752 J	0.0003
2,3,7,8-TCDF	<1.33 (ND)	<0.133 (ND)	<0.875 (ND)	<0.0875 (ND)	<0.381 (ND)	<0.0381 (ND)	<0.589 (ND)	<0.0589 (ND)	0.1
1,2,3,7,8-PeCDF	<2.4 (ND)	<0.072 (ND)	<1.46 (ND)	<0.0438 (ND)	<1.08 (ND)	<0.0324 (ND)	<1.07 (ND)	<0.0321 (ND)	0.03
2,3,4,7,8-PeCDF	<2.74 (ND)	<0.822 (ND)	<1.53 (ND)	<0.459 (ND)	<1.06 (ND)	<0.318 (ND)	<0.975 (ND)	<0.2925 (ND)	0.3
1,2,3,4,7,8-HxCDF	<2.56 (ND)	<0.256 (ND)	<1.76 (ND)	<0.176 (ND)	<0.978 (ND)	<0.0978 (ND)	<0.983 (ND)	<0.0983 (ND)	0.1
1,2,3,6,7,8-HxCDF	<2.7 (ND)	<0.27 (ND)	<1.87 (ND)	<0.187 (ND)	<1.06 (ND)	<0.106 (ND)	<0.944 (ND)	<0.0944 (ND)	0.1
2,3,4,6,7,8-HxCDF	<2.74 (ND)	<0.274 (ND)	<1.89 (ND)	<0.189 (ND)	<1.34 (ND)	<0.134 (ND)	<1.09 (ND)	<0.109 (ND)	0.1
1,2,3,7,8,9-HxCDF	<3.77 (ND)	<0.377 (ND)	<2.69 (ND)	<0.269 (ND)	<1.58 (ND)	<0.158 (ND)	<1.48 (ND)	<0.148 (ND)	0.1
1,2,3,4,6,7,8-HpCDF	<2.83 (ND)	<0.0283 (ND)	11.8 J	0.118 J	7.98 EMPC	0.0798 EMPC	<1.15 (ND)	<0.0115 (ND)	0.01
1,2,3,4,7,8,9-HpCDF	<5.15 (ND)	<0.0515 (ND)	<2.24 (ND)	<0.0224 (ND)	<4.12 (ND)	<0.0412 (ND)	<1.76 (ND)	<0.0176 (ND)	0.01
OCDF	<8.43 (ND)	<0.002529 (ND)	36.7 J	0.011 J	26.5	0.00795	<4.88 (ND)	<0.001464 (ND)	0.0003

Notes:

ng/L = nanograms per Liter or parts per quadrillion (ppq).

<# (ND) = not detected at or above the laboratory detection or estimated detection limit shown.

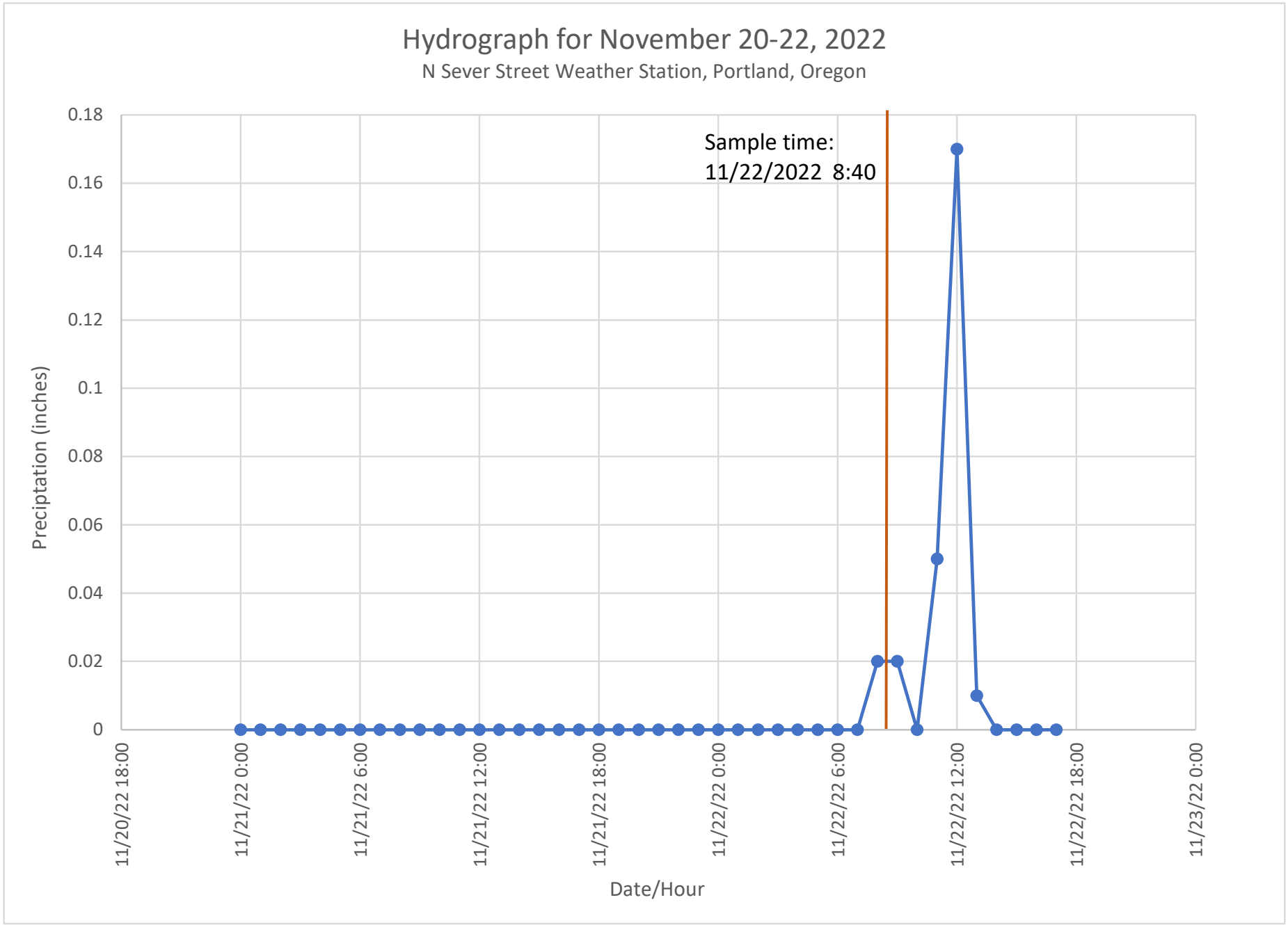
J = indicates the internal standard associated with the analyte is out of control limits; the reported concentration is an estimate

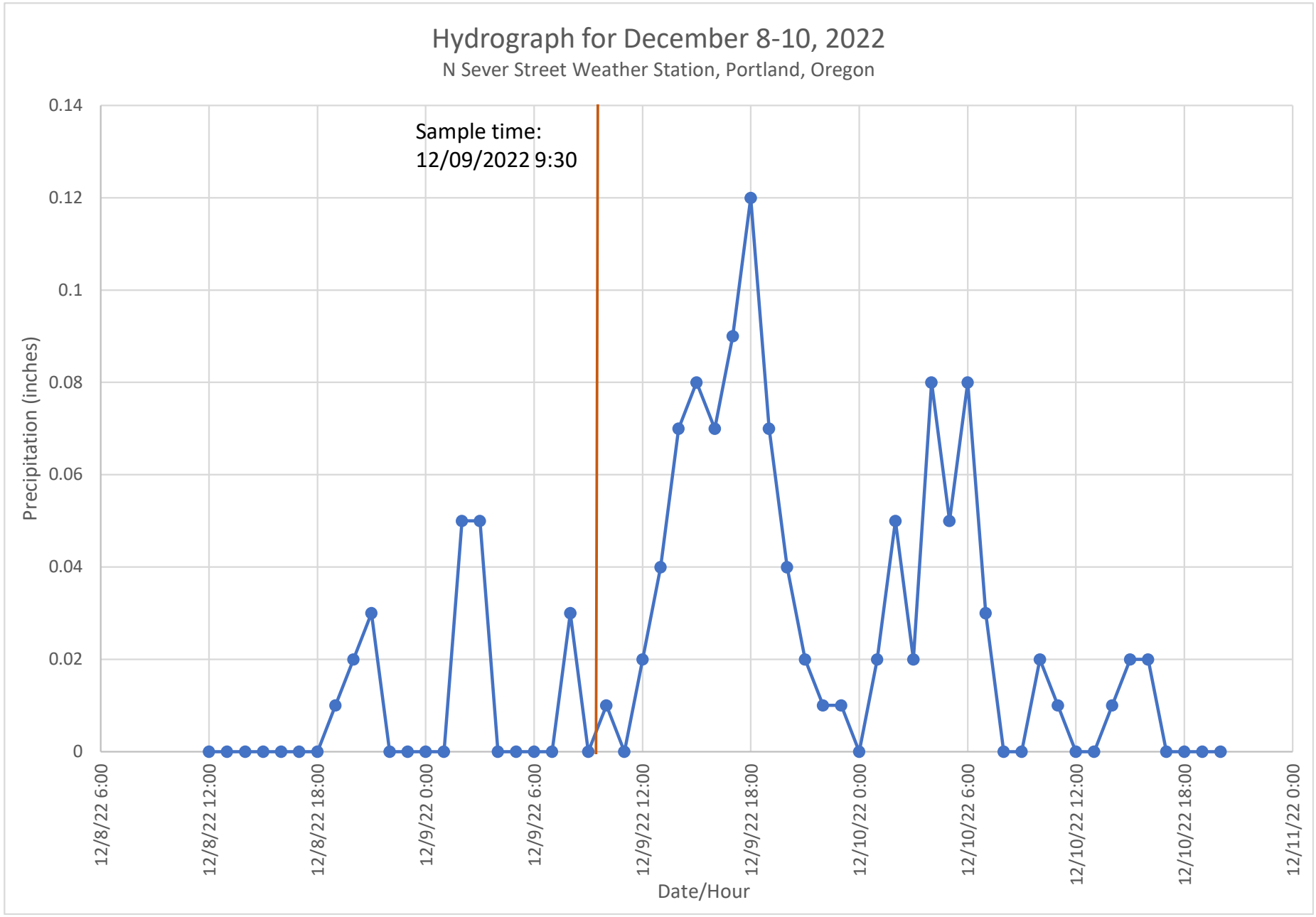
EMPC = estimated maximum possible concentration

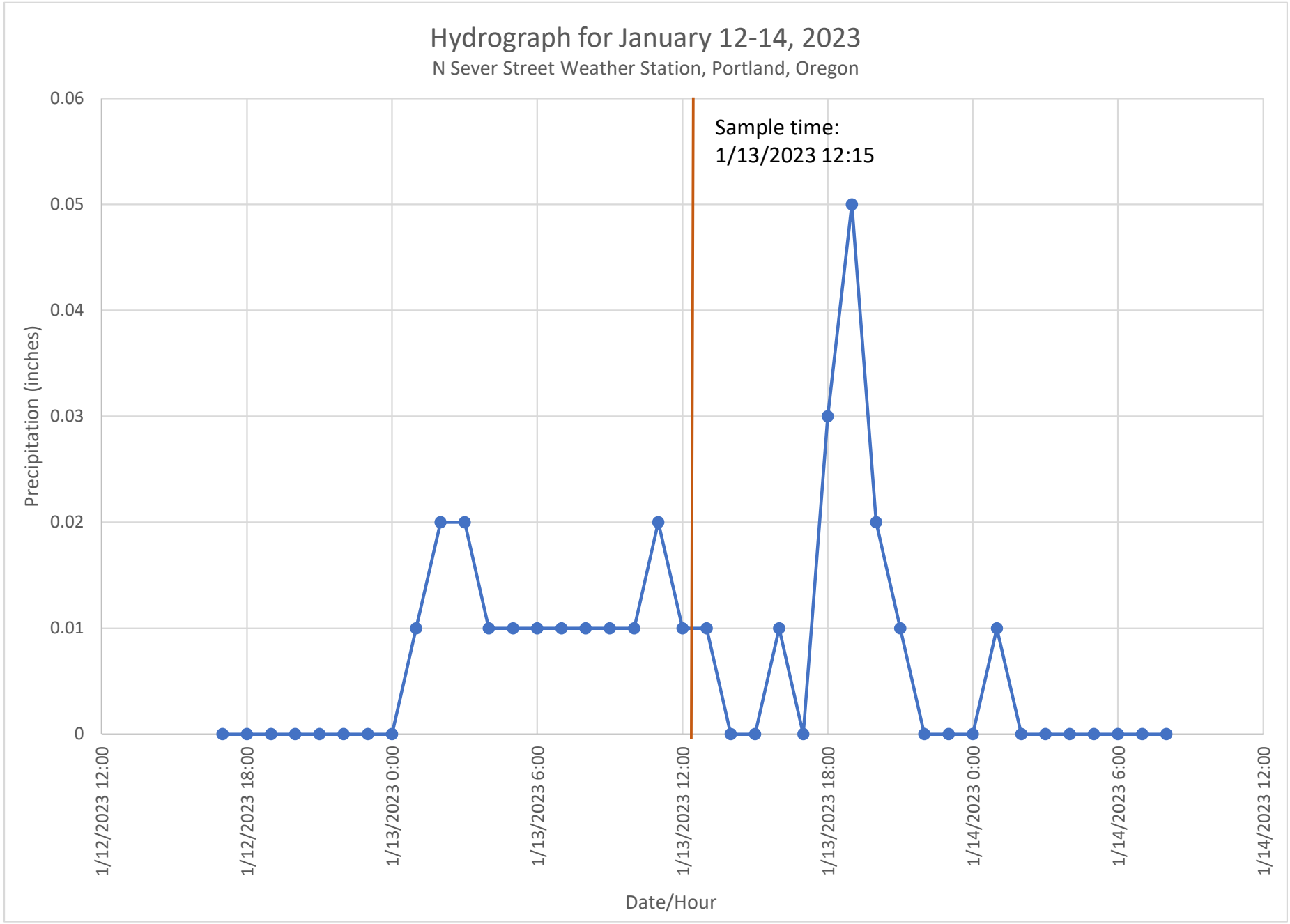
yellow highlighted cells indicate congener of concern in river according to ODEQ

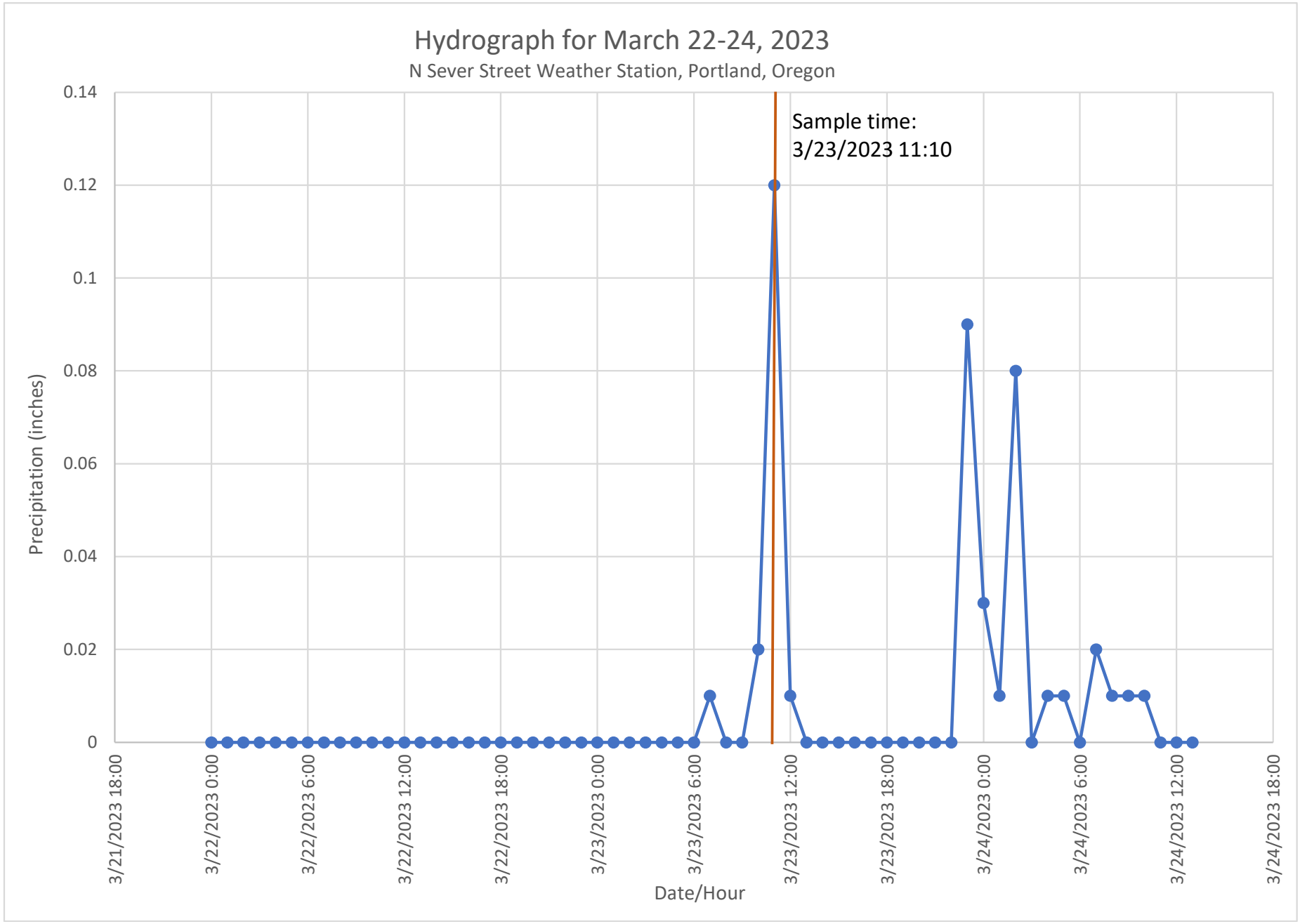
Appendix A

Precipitation Hydrographs


Hydrograph for November 20-22, 2022
N Sever Street Weather Station, Portland, Oregon
Sample time:
11/22/2022 8:40
Preciptation (inches)
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
11/20/22 18:00
11/21/22 0:00
11/21/22 6:00
11/21/22 12:00
11/21/22 18:00
11/22/22 0:00
11/22/22 6:00
11/22/22 12:00
11/22/22 18:00
11/23/22 0:00
Date/Hour


Hydrograph for December 8-10, 2022
N Sever Street Weather Station, Portland, Oregon
Sample time:
12/09/2022 9:30
Precipitation (inches)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
12/8/22 6:00
12/8/22 12:00
12/8/22 18:00
12/9/22 0:00
12/9/22 6:00
12/9/22 12:00
12/9/22 18:00
12/10/22 0:00
12/10/22 6:00
12/10/22 12:00
12/10/22 18:00
12/11/22 0:00
Date/Hour


Hydrograph for January 12-14, 2023
N Sever Street Weather Station, Portland, Oregon
Sample time:
1/13/2023 12:15
Precipitation (inches)
0.06
0.05
0.04
0.03
0.02
0.01
0
1/12/2023 12:00
1/12/2023 18:00
1/13/2023 0:00
1/13/2023 6:00
1/13/2023 12:00
1/13/2023 18:00
1/14/2023 0:00
1/14/2023 6:00
1/14/2023 12:00
Date/Hour


Hydrograph for March 22-24, 2023
N Sever Street Weather Station, Portland, Oregon
Sample time:
3/23/2023 11:10
Precipitation (inches)
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
3/21/2023 18:00
3/22/2023 0:00
3/22/2023 6:00
3/22/2023 12:00
3/22/2023 18:00
3/23/2023 0:00
3/23/2023 6:00
3/23/2023 12:00
3/23/2023 18:00
3/24/2023 0:00
3/24/2023 6:00
3/24/2023 12:00
3/24/2023 18:00
Date/Hour

Appendix B

Laboratory Analytical Results

Summary: DATA VALID? ☒YES

Analytical Laboratory Data Validation Check Sheet

Project Name: Lampros Steel-9040 N Burgard Way-Portland Project Number: 1355-19001-02

Date of Review: 3/14/2023 Lab. Name: Enthalpy Analytical Lab Batch ID #: 2301182

Chain of Custody

1.) Are all requested analyses reported?	☒yes	☐no	
2.) Were the requested methods used?	☒yes	☐no	
3.) Trip blank submitted?	☐yes	☒no	
4.) Field blank submitted?	☐yes	☒no	

Timing

5.) Samples extracted within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
6.) Analysis performed within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA

Quality Assurance/Quality Control

7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs)	☒yes	☐no	
8.) Are all reported values above either MRL or MDL?	☒yes	☐no	
9.) Are all values between the MDL & PQL tagged as trace?	☐yes	☐no	☒NA
10a.) Are reporting limits raised for other reason besides high analyte conc.?	☐yes	☒no	
10b.) If so, are they footnoted?	☐yes	☐no	☒NA
11.) Lab method blank completed?	☒yes	☐no	
12.) Lab, Field, or Trip Blank(s) report detections?	☐yes	☒no	

If yes, indicate blank type, chemical(s) and concentration(s): _____

13.) For inorganics and metals, is there one method blank for each analyte?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
14.) For VOCs, is there one method blank for each day of analysis?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
15.) For SVOC's, is there one method blank for each extraction batch?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	

Accuracy

16.) Is there a surrogate spike recovery for all VOC & SVOC samples?	☒yes	☐no	☐NA
Do all surrogate spike recoveries meet accepted criteria?	☐yes	☒no	
If not, are all discrepancies footnoted?	☒yes	☐no	☐NA

The surrogate spike recovery for 13C-2,3,7,8-TCDD was outside laboratory acceptance limits. (H)

17.) Is there a spike recovery for all Laboratory Control Samples?	☒yes	☐no	☐NA
Do all LCS/LCSD spike recoveries meet accepted criteria?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
18.) Are all LCS/LCSD RPDs within acceptable limits?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA

Precision

19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
20.) Are all matrix spike/matrix spike duplicate RPDs within acceptable limits?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
21.) Do all RPD calculations for Field Duplicates meet accepted criteria?	☐yes	☐no	☒NA

Comments:

The Cleanup Recovery Standard for 37C1-2,3,7,8-TCDD was outside laboratory acceptance limits. (H)

Several analytes were detected below the limit of quantitation. (J)

Matrix spike/matrix spike duplicate recoveries were not required by either method, so they were not performed.

Initial Review By: LP_____ **Final** Review By:_____

Summary: DATA VALID? ☒YES

Analytical Laboratory Data Validation Check Sheet

Project Name: Lampros Steel- 9040 N Burgard Way, Portland

Project Number: 1355-19001-03

Date of Review: 6/13/23 Lab. Name: EDH Lab Batch ID #: 2303225

Chain of Custody

1.) Are all requested analyses reported?	☒yes	☐no	
2.) Were the requested methods used?	☒yes	☐no	
3.) Trip blank submitted?	☐yes	☒no	
4.) Field blank submitted?	☐yes	☒no	

Timing

5.) Samples extracted within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
6.) Analysis performed within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA

Quality Assurance/Quality Control

7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs)	☒yes	☐no	
8.) Are all reported values above either MRL or MDL?	☒yes	☐no	
9.) Are all values between the MDL & PQL tagged as trace?	☐yes	☐no	☒NA
10a.) Are reporting limits raised for other reasons besides high analyte conc.?	☐yes	☒no	
10b.) If so, are they footnoted?	☐yes	☐no	☒NA
11.) Lab method blank completed?	☒yes	☐no	
12.) Lab, Field, or Trip Blank(s) report detections?	☒yes	☐no	

If yes, indicate blank type, chemical(s) and concentration(s):

Method Blank:

PCB 1 detection reported (no flag)

The amount detected for PCBs 20, 21, 28, 31, 33, 43, 44, 49, 90, 101, 138, 153, 163, 164 are below the Reporting Limit/LOQ (J)

13.) For inorganics and metals, is there one method blank for each analyte?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
14.) For VOCs, is there one method blank for each day of analysis?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
15.) For SVOC's, is there one method blank for each extraction batch?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	

Accuracy

16.) Is there a surrogate spike recovery for all VOC & SVOC samples?	☒yes	☐no	☐NA
Do all surrogate spike recoveries meet accepted criteria?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
17.) Is there a spike recovery for all Laboratory Control Samples?	☒yes	☐no	☐NA
Do all LCS/LCSD spike recoveries meet accepted criteria?	☐yes	☒no	
If not, are all discrepancies footnoted?	☒yes	☐no	☐NA

PCB 1 was also detected in the method blank (B)

PCB 126 recovery and/or RPD was outside laboratory acceptance limits (H)

18.) Are all LCS/LCSD RPDs within acceptable limits?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA

Precision

19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits? ☐yes ☐no ☒NA

If not, are all discrepancies footnoted? ☐yes ☐no ☒NA

20.) Are all matrix spike/matrix spike duplicate RPDs within acceptable limits? ☐yes ☐no ☒NA

If not, are all discrepancies footnoted? ☐yes ☐no ☒NA

21.) Do all RPD calculations for Field Duplicates meet accepted criteria? ☐yes ☐no ☒NA

Comments:

The amounts detected for OCDD and PCBs 41, 43, 47, 49, 56, 60, 64, 66, 71, 72, 76, 82, 85, 108, 112, 116, 134, 136, 138, 141, 143, 163, 164, 195, 196 & 203 are below the Reporting Limit/LOQ (J)
PCBs 20, 21, 31, 33, 43, 44, 49, 90, 101, 138, 153, 163, 164 were also detected in the method blank (B)

Initial Review By: AR _____ **Final** Review By: _____

Summary: DATA VALID? ☒YES

Analytical Laboratory Data Validation Check Sheet

Project Name: Lampros Steel- 9040 N Burgard Way, Portland

Project Number: 1355-19001-03

Date of Review: 6/13/23 Lab. Name: F&BI Lab Batch ID #: 303396

Chain of Custody

1.) Are all requested analyses reported?	☒yes	☐no	
2.) Were the requested methods used?	☒yes	☐no	
3.) Trip blank submitted?	☐yes	☒no	
4.) Field blank submitted?	☐yes	☒no	

Timing

5.) Samples extracted within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
6.) Analysis performed within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA

Quality Assurance/Quality Control

7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs)	☒yes	☐no	
8.) Are all reported values above either MRL or MDL?	☒yes	☐no	
9.) Are all values between the MDL & PQL tagged as trace?	☐yes	☐no	☒NA
10a.) Are reporting limits raised for other reason besides high analyte conc.?	☐yes	☒no	
10b.) If so, are they footnoted?	☐yes	☐no	☒NA
11.) Lab method blank completed?	☒yes	☐no	
12.) Lab, Field, or Trip Blank(s) report detections?	☐yes	☒no	

If yes, indicate blank type, chemical(s) and concentration(s):

13.) For inorganics and metals, is there one method blank for each analyte?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	
14.) For VOCs, is there one method blank for each day of analysis?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
15.) For SVOC's, is there one method blank for each extraction batch?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	

Accuracy

16.) Is there a surrogate spike recovery for all VOC & SVOC samples?	☒yes	☐no	☐NA
Do all surrogate spike recoveries meet accepted criteria?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
17.) Is there a spike recovery for all Laboratory Control Samples?	☒yes	☐no	☐NA
Do all LCS/LCSD spike recoveries meet accepted criteria?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
18.) Are all LCS/LCSD RPDs within acceptable limits?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☒yes	☐no	☐NA

TSS was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable (nm).

Precision

19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☒yes	☐no	☐NA

Arsenic, Copper, Manganese & Zinc were spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful (b).

20.) Are all matrix spike/matrix spike duplicate RPDs within
acceptable limits? ☒yes ☐no ☐NA
If not, are all discrepancies footnoted? ☒yes ☐no ☐NA

Arsenic, Copper, Manganese & Zinc were spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful (b).

21.) Do all RPD calculations for Field Duplicates meet accepted criteria? ☐yes ☐no ☒NA

Comments:
N/A

Initial Review By: AR_____ **Final** Review By:_____

Summary: DATA VALID? ☒YES

Analytical Laboratory Data Validation Check Sheet

Project Name: Lampros Steel- 9040 N Burgard Way, Portland

Project Number: 1355-19001-03

Date of Review: 6/13/23 Lab. Name: Fremont Lab Batch ID #: 2303580

Chain of Custody			
1.) Are all requested analyses reported?	☒yes	☐no	
2.) Were the requested methods used?	☒yes	☐no	
3.) Trip blank submitted?	☐yes	☒no	
4.) Field blank submitted?	☐yes	☒no	
Timing			
5.) Samples extracted within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
6.) Analysis performed within holding times?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
Quality Assurance/Quality Control			
7.) Are the required reporting limits reported? (MRLs vs MDLs/PQLs)	☒yes	☐no	
8.) Are all reported values above either MRL or MDL?	☒yes	☐no	
9.) Are all values between the MDL & PQL tagged as trace?	☐yes	☐no	☒NA
10a.) Are reporting limits raised for other reasons besides high analyte conc.?	☐yes	☒no	
10b.) If so, are they footnoted?	☐yes	☐no	☒NA
11.) Lab method blank completed?	☒yes	☐no	
12.) Lab, Field, or Trip Blank(s) report detections?	☐yes	☒no	
If yes, indicate blank type, chemical(s) and concentration(s):			
13.) For inorganics and metals, is there one method blank for each analyte?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	
14.) For VOCs, is there one method blank for each day of analysis?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
15.) For SVOC's, is there one method blank for each extraction batch?	☐yes	☐no	☒NA
If not, are all discrepancies footnoted?	☐yes	☐no	
Accuracy			
16.) Is there a surrogate spike recovery for all VOC & SVOC samples?	☐yes	☐no	☒NA
Do all surrogate spike recoveries meet accepted criteria?	☐yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
17.) Is there a spike recovery for all Laboratory Control Samples?	☒yes	☐no	☐NA
Do all LCS/LCSD spike recoveries meet accepted criteria?	☒yes	☐no	
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
18.) Are all LCS/LCSD RPDs within acceptable limits?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
Precision			
19.) Are all matrix spike/matrix spike duplicate recoveries within acceptable limits?	☒yes	☐no	☐NA
If not, are all discrepancies footnoted?	☐yes	☐no	☒NA
20.) Are all matrix spike/matrix spike duplicate RPDs within acceptable limits?	☒yes	☐no	☐NA

If not, are all discrepancies footnoted? ☐yes ☐no ☒NA

21.) Do all RPD calculations for Field Duplicates meet accepted criteria? ☐yes ☐no ☒NA

Comments:
N/A

Initial Review By: AR_____ **Final** Review 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 26, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included is the amended report from the testing of material submitted on November 23, 2022 from the 1355-19001-02, F&BI 211352 project. Per your request, task number has been updated to -02.

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: Neil Woller, Paul Trone, Evan Bruggeman
ENW0124R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
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Eric Young, B.S.

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(206) 285-8282
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www.friedmanandbruya.com

January 24, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the additional results from the testing of material submitted on November 23, 2022 from the 1355-19001-02, F&BI 211352 project. There is 1 page included in this report.

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: Neil Woller, Paul Trone, Evan Bruggeman
ENW0124R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 23, 2022 by Friedman & Bruya, Inc. from the Evren Northwest 1355-19001-02, F&BI 211352 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Evren Northwest
211352 -01	M1001-SW-221122

Sample M1001-SW-221122 was sent to Frontier Analytical for dioxin and furan and PCB congener analyses. The report is enclosed.

Test Report

January 12, 2023

Frontier Analytical Laboratory Project: 14849

Mr. Michael Erdahl
Friedman and Bruya, Inc.
3012 16th Ave. W
Seattle, WA 98119

Dear Mr. Erdahl,

The following results are associated with Frontier Analytical Laboratory project **14849**. This corresponds to your project number **211352** and purchase order number **D-85**. One aqueous sample was received on 12/28/2022 in good condition. This sample was extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. In addition, this sample was extracted and analyzed by EPA Method 1668 for all 209 polychlorinated biphenyls (PCBs). The Toxic Equivalency (TEQ) for your sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs).

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custody, our sample login form and a sample photo. The enclosed results and electronic data deliverable (EDD) are specifically for the sample referenced in this report only. These results meet all NELAP requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041**, our State of California ELAP certificate number is **2934** and our State of Washington certificate number is **C844**. This report along with the associated EDD has been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **14849**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Bradley B. Silverbush
Laboratory Director

FRONTIER ANALYTICAL LABORATORY
5172 Hillsdale Circle * El Dorado Hills, CA 95762
Tel (916) 934-0900 * Fax (916) 934-0999
www.frontieranalytical.com

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **14849**

Received on: **12/28/2022** Project Due: **01/20/2023** Storage: **R-4**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
14849-001-SA	0	211352	M1001-SW-221122	EPA 1613 D/F	Aqueous	11/22/2022	08:40 am	11/22/2023
14849-001-SA	0	211352	M1001-SW-221122	EPA 1668 PCB	Aqueous	11/22/2022	08:40 am	11/22/2023

EPA Method 1613
PCDD/F

FAL ID: 14849-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: NA
Amount: 1.00 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: pg/L

Acquired: 01-11-2023
2005 WHO TEQ: 0.0

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.866		-	0.640				
1,2,3,7,8-PeCDD	ND	1.36		-	0.783				
1,2,3,4,7,8-HxCDD	ND	1.90		-	1.30				
1,2,3,6,7,8-HxCDD	ND	1.99		-	1.39	Total TCDD	ND	0.866	
1,2,3,7,8,9-HxCDD	ND	1.80		-	1.28	Total PeCDD	ND	1.36	
1,2,3,4,6,7,8-HpCDD	ND	2.19		-	1.17	Total HxCDD	ND	1.99	
OCDD	ND	2.95		-	2.00	Total HpCDD	ND	2.19	
2,3,7,8-TCDF	ND	0.965		-	0.624				
1,2,3,7,8-PeCDF	ND	1.46		-	0.751				
2,3,4,7,8-PeCDF	ND	1.47		-	0.793				
1,2,3,4,7,8-HxCDF	ND	0.961		-	0.781				
1,2,3,6,7,8-HxCDF	ND	0.992		-	0.803				
2,3,4,6,7,8-HxCDF	ND	1.08		-	0.827				
1,2,3,7,8,9-HxCDF	ND	1.50		-	0.973	Total TCDF	ND	0.965	
1,2,3,4,6,7,8-HpCDF	ND	1.52		-	0.773	Total PeCDF	ND	1.47	
1,2,3,4,7,8,9-HpCDF	ND	2.23		-	0.978	Total HxCDF	ND	1.50	
OCDF	ND	3.25		-	1.71	Total HpCDF	ND	2.23	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	78.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	67.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	81.9	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	81.9	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	76.2	23.0 - 140	
13C-OCDD	68.8	17.0 - 157	
13C-2,3,7,8-TCDF	78.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	73.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	75.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	77.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	80.2	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	77.0	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	74.8	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	76.7	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	69.3	26.0 - 138	
13C-OCDF	67.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	84.0	35.0 - 197	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 1/12/2023

Reviewed By: _____

Date: 1/12/2023

EPA Method 1613
PCDD/F

FAL ID: 14849-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: NA
Amount: 1.000 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: ng/ml

Acquired: 01-11-2023
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	8.52	6.70 - 15.8	
1,2,3,7,8-PeCDD	44.6	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	45.8	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	47.9	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	44.4	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	46.7	35.0 - 70.0	
OCDD	98.0	78.0 - 144	
2,3,7,8-TCDF	8.42	7.50 - 15.8	
1,2,3,7,8-PeCDF	45.0	40.0 - 67.0	
2,3,4,7,8-PeCDF	45.4	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	45.3	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	46.2	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	46.5	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	46.1	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	48.5	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	46.7	39.0 - 69.0	
OCDF	92.8	63.0 - 170	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	83.8	20.0 - 175	
13C-1,2,3,7,8-PeCDD	75.6	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	79.1	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	79.4	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	70.7	26.0 - 166	
13C-OCDD	69.4	13.0 - 198	
13C-2,3,7,8-TCDF	87.6	22.0 - 152	
13C-1,2,3,7,8-PeCDF	78.6	21.0 - 192	
13C-2,3,4,7,8-PeCDF	81.8	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	73.9	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	75.0	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	73.7	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	71.3	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	69.2	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	65.6	20.0 - 186	
13C-OCDF	68.9	13.0 - 198	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	92.4	31.0 - 191	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/12/2023

Reviewed By: _____
Date: 1/12/2023

EPA Method 1613
PCDD/F

FAL ID: 14849-001-SA
Client ID: M1001-SW-221122
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: 12-28-2022
Amount: 0.949 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: pg/L

Acquired: 01-11-2023
2005 WHO TEQ: 0.110

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	1.31		-	0.640				
1,2,3,7,8-PeCDD	ND	3.41		-	0.783				
1,2,3,4,7,8-HxCDD	ND	3.10		-	1.30				
1,2,3,6,7,8-HxCDD	ND	3.20		-	1.39	Total TCDD	5.26	-	
1,2,3,7,8,9-HxCDD	ND	2.91		-	1.28	Total PeCDD	12.3	-	J
1,2,3,4,6,7,8-HpCDD	10.4	-	J	0.104	1.17	Total HxCDD	15.8	-	J
OCDD	19.0	-	J	0.00570	2.00	Total HpCDD	18.6	-	J
2,3,7,8-TCDF	ND	1.33		-	0.624				
1,2,3,7,8-PeCDF	ND	2.40		-	0.751				
2,3,4,7,8-PeCDF	ND	2.74		-	0.793				
1,2,3,4,7,8-HxCDF	ND	2.56		-	0.781				
1,2,3,6,7,8-HxCDF	ND	2.70		-	0.803				
2,3,4,6,7,8-HxCDF	ND	2.74		-	0.827				
1,2,3,7,8,9-HxCDF	ND	3.77		-	0.973	Total TCDF	16.7	-	
1,2,3,4,6,7,8-HpCDF	ND	2.83		-	0.773	Total PeCDF	ND	2.74	
1,2,3,4,7,8,9-HpCDF	ND	5.16		-	0.978	Total HxCDF	ND	3.77	
OCDF	ND	8.43		-	1.71	Total HpCDF	ND	5.16	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	74.0	25.0 - 164	
13C-1,2,3,7,8-PeCDD	67.8	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	81.3	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	84.9	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	72.7	23.0 - 140	
13C-OCDD	56.3	17.0 - 157	
13C-2,3,7,8-TCDF	77.5	24.0 - 169	
13C-1,2,3,7,8-PeCDF	75.9	24.0 - 185	
13C-2,3,4,7,8-PeCDF	73.1	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	76.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	78.0	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	74.9	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	66.3	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	71.5	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	57.1	26.0 - 138	
13C-OCDF	48.9	17.0 - 157	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	93.7	35.0 - 197	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/12/2023

Reviewed By: _____
Date: 1/12/2023

EPA Method 1668
PCBs

FAL ID: 14849-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023
Total Conc: 0.0

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-1	ND	3.61			PCB-51	ND	5.82		
PCB-2	ND	5.62			PCB-52	ND	5.78	C	69
PCB-3	ND	7.07			PCB-53	ND	6.11		
PCB-4	ND	7.71			PCB-54	ND	4.85		
PCB-5	ND	9.59			PCB-55	ND	4.27		
PCB-6	ND	9.58			PCB-56	ND	7.88	C	60
PCB-7	ND	9.75			PCB-57	ND	4.58		
PCB-8	ND	9.68			PCB-58	ND	4.68		
PCB-9	ND	9.53			PCB-59	-	-	C042	42
PCB-10	ND	9.09			PCB-60	-	-	C056	56
PCB-11	ND	11.1			PCB-61	ND	4.90	C	70
PCB-12	ND	10.7			PCB-62	ND	4.53		
PCB-13	ND	11.0			PCB-63	ND	4.41		
PCB-14	ND	9.60			PCB-64	-	-	C041	41/71/72
PCB-15	ND	15.3			PCB-65	ND	4.78		
PCB-16	ND	6.30			PCB-66	ND	4.24	C	76
PCB-17	ND	7.06			PCB-67	ND	4.51		
PCB-18	ND	7.73			PCB-68	ND	4.28		
PCB-19	ND	8.18			PCB-69	-	-	C052	52
PCB-20	ND	12.5	C	21/33	PCB-70	-	-	C061	61
PCB-21	-	-	C020	20/33	PCB-71	-	-	C041	41/64/72
PCB-22	ND	11.7			PCB-72	-	-	C041	41/64/71
PCB-23	ND	11.0			PCB-73	ND	4.30		
PCB-24	ND	5.27			PCB-74	ND	4.53		
PCB-25	ND	12.0			PCB-75	-	-	C048	48
PCB-26	ND	12.3			PCB-76	-	-	C066	66
PCB-27	ND	5.24			PCB-77	ND	9.55		
PCB-28	ND	9.80			PCB-78	ND	7.97		
PCB-29	ND	12.4			PCB-79	ND	7.58		
PCB-30	ND	5.10			PCB-80	ND	3.90		
PCB-31	ND	12.9			PCB-81	ND	6.93		
PCB-32	ND	6.27			PCB-82	ND	10.6		
PCB-33	-	-	C020	20/21	PCB-83	ND	7.99	C	112
PCB-34	ND	11.0			PCB-84	ND	9.46	C	92
PCB-35	ND	15.6			PCB-85	ND	7.19	C	116
PCB-36	ND	13.4			PCB-86	ND	9.55		
PCB-37	ND	14.1			PCB-87	ND	7.01	C	117/125
PCB-38	ND	12.7			PCB-88	ND	7.30	C	91
PCB-39	ND	13.5			PCB-89	ND	9.28		
PCB-40	ND	7.60			PCB-90	ND	8.09	C	101
PCB-41	ND	4.87	C	64/71/72	PCB-91	-	-	C088	88
PCB-42	ND	5.47	C	59	PCB-92	-	-	C084	84
PCB-43	ND	6.25	C	49	PCB-93	ND	8.20		
PCB-44	ND	7.21			PCB-94	ND	8.44		
PCB-45	ND	6.85			PCB-95	ND	8.04		
PCB-46	ND	7.34			PCB-96	ND	5.90		
PCB-47	ND	6.09			PCB-97	ND	9.56		
PCB-48	ND	4.82	C	75	PCB-98	ND	7.98	C	102
PCB-49	-	-	C043	43	PCB-99	ND	6.87		
PCB-50	ND	6.09			PCB-100	ND	7.01		

EPA Method 1668
PCBs

FAL ID: 14849-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-101	-	-	C090	90	PCB-151	ND	8.70		
PCB-102	-	-	C098	98	PCB-152	ND	5.04		
PCB-103	ND	7.11			PCB-153	ND	6.47		
PCB-104	ND	5.81			PCB-154	ND	5.62		
PCB-105	ND	6.46			PCB-155	ND	4.70		
PCB-106	ND	6.62	C	118	PCB-156	ND	6.36		
PCB-107	ND	6.06	C	108	PCB-157	ND	6.92		
PCB-108	-	-	C107	107	PCB-158	ND	5.91	C	160
PCB-109	ND	6.43			PCB-159	ND	6.03		
PCB-110	ND	6.07			PCB-160	-	-	C158	158
PCB-111	ND	6.43	C	115	PCB-161	-	-	C132	132
PCB-112	-	-	C083	83	PCB-162	-	-	C128	128
PCB-113	ND	7.51			PCB-163	-	-	C138	138/164
PCB-114	ND	6.23			PCB-164	-	-	C138	138/163
PCB-115	-	-	C111	111	PCB-165	-	-	C146	146
PCB-116	-	-	C085	85	PCB-166	ND	6.24		
PCB-117	-	-	C087	87/125	PCB-167	ND	6.52		
PCB-118	-	-	C	106	PCB-168	ND	6.10		
PCB-119	ND	6.17			PCB-169	ND	7.87		
PCB-120	ND	6.04			PCB-170	ND	7.58		
PCB-121	ND	6.08			PCB-171	ND	6.80		
PCB-122	ND	6.16			PCB-172	ND	7.51		
PCB-123	ND	5.78			PCB-173	ND	7.71		
PCB-124	ND	3.03			PCB-174	ND	6.69		
PCB-125	-	-	C087	87/117	PCB-175	ND	6.67		
PCB-126	ND	9.73			PCB-176	ND	4.88		
PCB-127	ND	6.49			PCB-177	ND	7.20		
PCB-128	ND	7.17	C	162	PCB-178	ND	6.85		
PCB-129	ND	9.51			PCB-179	ND	4.77		
PCB-130	ND	8.15			PCB-180	ND	6.97		
PCB-131	ND	9.35	C	133	PCB-181	ND	6.68		
PCB-132	ND	7.36	C	161	PCB-182	ND	5.97	C	187
PCB-133	-	-	C131	131	PCB-183	ND	5.96		
PCB-134	ND	9.36	C	143	PCB-184	ND	4.56		
PCB-135	ND	8.78			PCB-185	ND	6.64		
PCB-136	ND	5.05			PCB-186	ND	4.86		
PCB-137	ND	9.11			PCB-187	-	-	C182	182
PCB-138	ND	6.61	C	163/164	PCB-188	ND	5.83		
PCB-139	ND	7.65	C	149	PCB-189	ND	4.90		
PCB-140	ND	7.55			PCB-190	ND	5.48		
PCB-141	ND	8.15			PCB-191	ND	5.22		
PCB-142	ND	9.05			PCB-192	ND	5.39		
PCB-143	-	-	C134	134	PCB-193	ND	5.00		
PCB-144	ND	8.13			PCB-194	ND	3.58		
PCB-145	ND	5.04			PCB-195	ND	3.97		
PCB-146	ND	6.78	C	165	PCB-196	ND	6.28	C	203
PCB-147	ND	7.65			PCB-197	ND	4.60		
PCB-148	ND	6.82			PCB-198	ND	7.55		
PCB-149	-	-	C139	139	PCB-199	ND	6.20		
PCB-150	ND	4.79			PCB-200	ND	4.78		

EPA Method 1668
PCBs

FAL ID: 14849-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters
PCB-201	ND	4.65		
PCB-202	ND	5.18		
PCB-203	-	-	C196	196
PCB-204	ND	4.82		
PCB-205	ND	2.95		
PCB-206	ND	5.79		
PCB-207	ND	3.99		
PCB-208	ND	3.66		
PCB-209	ND	4.81		

Internal Standards	% Rec	QC Limits	Qual
13C-PCB-1	85.7	5.00 - 145	
13C-PCB-3	73.8	5.00 - 145	
13C-PCB-4	93.6	5.00 - 145	
13C-PCB-15	71.6	5.00 - 145	
13C-PCB-19	81.4	5.00 - 145	
13C-PCB-37	78.3	5.00 - 145	
13C-PCB-54	92.0	5.00 - 145	
13C-PCB-77	88.4	10.0 - 145	
13C-PCB-81	85.0	10.0 - 145	
13C-PCB-104	77.1	10.0 - 145	
13C-PCB-105	93.5	10.0 - 145	
13C-PCB-114	91.7	10.0 - 145	
13C-PCB-118	95.0	10.0 - 145	
13C-PCB-123	84.4	10.0 - 145	
13C-PCB-126	95.1	10.0 - 145	
13C-PCB-155	84.9	10.0 - 145	
13C-PCB-156	92.5	10.0 - 145	
13C-PCB-157	93.9	10.0 - 145	
13C-PCB-167	89.7	10.0 - 145	
13C-PCB-169	98.5	10.0 - 145	
13C-PCB-188	79.7	10.0 - 145	
13C-PCB-189	98.2	10.0 - 145	
13C-PCB-202	81.8	10.0 - 145	
13C-PCB-205	82.5	10.0 - 145	
13C-PCB-206	75.1	10.0 - 145	
13C-PCB-208	73.0	10.0 - 145	
13C-PCB-209	73.8	10.0 - 145	

Cleanup Surrogates	% Rec	QC Limits	Qual
13C-PCB-28	90.7	5.00 - 145	
13C-PCB-111	80.5	10.0 - 145	
13C-PCB-178	80.3	10.0 - 145	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Coelution
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/6/2023

Reviewed By: _____
Date: 1/6/2023

EPA Method 1668
PCBs

FAL ID: 14849-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: ng/ml

Acquired: 01-05-2023

Compound	% Recovery	QC Limits	Qual
PCB-1	111	60.0 - 135	
PCB-3	107	60.0 - 135	
PCB-4	116	60.0 - 135	
PCB-15	94.4	60.0 - 135	
PCB-19	110	60.0 - 135	
PCB-37	110	60.0 - 135	
PCB-54	106	60.0 - 135	
PCB-77	116	60.0 - 135	
PCB-81	104	60.0 - 135	
PCB-104	109	60.0 - 135	
PCB-105	101	60.0 - 135	
PCB-114	104	60.0 - 135	
PCB-118	106	60.0 - 135	
PCB-123	103	60.0 - 135	
PCB-126	106	60.0 - 135	
PCB-155	110	60.0 - 135	
PCB-156	102	60.0 - 135	
PCB-157	104	60.0 - 135	
PCB-167	102	60.0 - 135	
PCB-169	108	60.0 - 135	
PCB-188	109	60.0 - 135	
PCB-189	108	60.0 - 135	
PCB-202	112	60.0 - 135	
PCB-205	102	60.0 - 135	
PCB-206	101	60.0 - 135	
PCB-208	105	60.0 - 135	
PCB-209	98.2	60.0 - 135	

Internal Standards	% Recovery	QC Limits	Qual
13C-PCB-1	79.7	15.0 - 145	
13C-PCB-3	73.7	15.0 - 145	
13C-PCB-4	83.8	15.0 - 145	
13C-PCB-15	72.6	15.0 - 145	
13C-PCB-19	77.0	15.0 - 145	
13C-PCB-37	80.2	15.0 - 145	
13C-PCB-54	84.6	15.0 - 145	
13C-PCB-77	83.2	40.0 - 145	
13C-PCB-81	82.0	40.0 - 145	
13C-PCB-104	71.7	40.0 - 145	
13C-PCB-105	86.7	40.0 - 145	
13C-PCB-114	85.8	40.0 - 145	
13C-PCB-118	85.5	40.0 - 145	
13C-PCB-123	82.2	40.0 - 145	
13C-PCB-126	87.6	40.0 - 145	
13C-PCB-155	76.6	40.0 - 145	
13C-PCB-156	83.6	40.0 - 145	
13C-PCB-157	88.5	40.0 - 145	
13C-PCB-167	86.4	40.0 - 145	
13C-PCB-169	93.3	40.0 - 145	
13C-PCB-188	74.6	40.0 - 145	
13C-PCB-189	90.1	40.0 - 145	
13C-PCB-202	77.3	40.0 - 145	
13C-PCB-205	79.0	40.0 - 145	
13C-PCB-206	73.4	40.0 - 145	
13C-PCB-208	74.5	40.0 - 145	
13C-PCB-209	74.6	40.0 - 145	

Cleanup Surrogate	% Recovery	QC limits	Qual
13C-PCB-28	83.4	15.0 - 145	
13C-PCB-111	77.9	40.0 - 145	
13C-PCB-178	76.6	40.0 - 145	

Analyst: _____

Date: 1/6/2023

Reviewed By: _____

Date: 1/6/2023

EPA Method 1668
PCBs

FAL ID: 14849-001-SA
Client ID: M1001-SW-221122
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023
Total Conc: 1440

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-1	ND	5.49			PCB-51	15.8	-	J	
PCB-2	ND	7.87			PCB-52	62.8	-	C	69
PCB-3	ND	9.22			PCB-53	ND	10.0		
PCB-4	63.4	-			PCB-54	ND	7.94		
PCB-5	22.1	-			PCB-55	ND	6.99		
PCB-6	ND	8.33			PCB-56	ND	14.2	C	60
PCB-7	ND	8.48			PCB-57	ND	7.50		
PCB-8	44.1	-			PCB-58	ND	7.66		
PCB-9	ND	8.29			PCB-59	-	-	C042	42
PCB-10	ND	7.90			PCB-60	-	-	C056	56
PCB-11	309	-			PCB-61	50.2	-	C	70
PCB-12	ND	9.28			PCB-62	ND	7.42		
PCB-13	ND	9.57			PCB-63	ND	7.21		
PCB-14	ND	8.34			PCB-64	-	-	C041	41/71/72
PCB-15	ND	11.4			PCB-65	ND	7.82		
PCB-16	13.5	-	J		PCB-66	25.3	-	C	76
PCB-17	26.5	-			PCB-67	ND	7.38		
PCB-18	75.0	-			PCB-68	ND	7.00		
PCB-19	15.8	-	J		PCB-69	-	-	C052	52
PCB-20	42.2	-	C	21/33	PCB-70	-	-	C061	61
PCB-21	-	-	C020	20/33	PCB-71	-	-	C041	41/64/72
PCB-22	28.1	-			PCB-72	-	-	C041	41/64/71
PCB-23	ND	4.42			PCB-73	ND	7.04		
PCB-24	ND	4.27			PCB-74	20.6	-		
PCB-25	ND	4.79			PCB-75	-	-	C048	48
PCB-26	9.50	-	J		PCB-76	-	-	C066	66
PCB-27	ND	4.24			PCB-77	ND	8.25		
PCB-28	45.9	-			PCB-78	ND	7.07		
PCB-29	ND	4.95			PCB-79	ND	6.72		
PCB-30	ND	4.14			PCB-80	ND	6.37		
PCB-31	43.2	-			PCB-81	ND	6.36		
PCB-32	26.2	-			PCB-82	ND	9.65		
PCB-33	-	-	C020	20/21	PCB-83	ND	7.25	C	112
PCB-34	ND	5.97			PCB-84	22.3	-	C	92
PCB-35	ND	6.24			PCB-85	ND	6.53	C	116
PCB-36	ND	5.37			PCB-86	ND	8.67		
PCB-37	15.6	-	J		PCB-87	20.9	-	C	117/125
PCB-38	ND	5.08			PCB-88	ND	6.29	C	91
PCB-39	ND	5.41			PCB-89	ND	8.43		
PCB-40	ND	12.4			PCB-90	51.8	-	C	101
PCB-41	29.2	-	C	64/71/72	PCB-91	-	-	C088	88
PCB-42	ND	8.95	C	59	PCB-92	-	-	C084	84
PCB-43	26.8	-	C	49	PCB-93	ND	7.06		
PCB-44	46.3	-			PCB-94	ND	7.27		
PCB-45	ND	11.2			PCB-95	40.6	-		
PCB-46	ND	12.0			PCB-96	ND	5.08		
PCB-47	32.5	-			PCB-97	21.6	-		
PCB-48	ND	7.89	C	75	PCB-98	ND	6.87	C	102
PCB-49	-	-	C043	43	PCB-99	21.3	-		
PCB-50	ND	9.96			PCB-100	ND	6.03		

EPA Method 1668
PCBs

FAL ID: 14849-001-SA
Client ID: M1001-SW-221122
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-101	-	-	C090	90	PCB-151	ND	8.97		
PCB-102	-	-	C098	98	PCB-152	ND	5.15		
PCB-103	ND	6.12			PCB-153	20.7	-		
PCB-104	ND	5.00			PCB-154	ND	5.75		
PCB-105	18.9	-	J		PCB-155	ND	4.80		
PCB-106	46.1	-	C	118	PCB-156	ND	6.52		
PCB-107	ND	8.14	C	108	PCB-157	ND	7.02		
PCB-108	-	-	C107	107	PCB-158	ND	6.09	C	160
PCB-109	ND	5.83			PCB-159	ND	6.22		
PCB-110	45.3	-			PCB-160	-	-	C158	158
PCB-111	ND	5.84	C	115	PCB-161	-	-	C132	132
PCB-112	-	-	C083	83	PCB-162	-	-	C128	128
PCB-113	ND	6.82			PCB-163	-	-	C138,J	138/164
PCB-114	ND	8.23			PCB-164	-	-	C138,J	138/163
PCB-115	-	-	C111	111	PCB-165	-	-	C146	146
PCB-116	-	-	C085	85	PCB-166	ND	6.43		
PCB-117	-	-	C087	87/125	PCB-167	ND	6.75		
PCB-118	-	-	C	106	PCB-168	ND	6.30		
PCB-119	ND	5.61			PCB-169	ND	8.28		
PCB-120	ND	5.48			PCB-170	ND	7.57		
PCB-121	ND	5.23			PCB-171	ND	6.79		
PCB-122	ND	8.27			PCB-172	ND	7.50		
PCB-123	ND	8.57			PCB-173	ND	7.70		
PCB-124	ND	8.53			PCB-174	ND	6.68		
PCB-125	-	-	C087	87/117	PCB-175	ND	6.66		
PCB-126	ND	12.0			PCB-176	ND	4.87		
PCB-127	ND	8.71			PCB-177	ND	7.19		
PCB-128	ND	7.39	C	162	PCB-178	ND	6.84		
PCB-129	ND	9.81			PCB-179	ND	4.76		
PCB-130	ND	8.41			PCB-180	ND	6.96		
PCB-131	ND	9.64	C	133	PCB-181	ND	6.67		
PCB-132	ND	7.60	C	161	PCB-182	ND	5.96	C	187
PCB-133	-	-	C131	131	PCB-183	ND	5.95		
PCB-134	ND	9.65	C	143	PCB-184	ND	4.55		
PCB-135	ND	9.06			PCB-185	ND	6.63		
PCB-136	ND	5.16			PCB-186	ND	4.85		
PCB-137	ND	9.39			PCB-187	-	-	C182	182
PCB-138	18.0	-	C,J	163/164	PCB-188	ND	5.81		
PCB-139	18.1	-	C,J	149	PCB-189	ND	4.86		
PCB-140	ND	7.79			PCB-190	ND	5.48		
PCB-141	ND	8.41			PCB-191	ND	5.22		
PCB-142	ND	9.34			PCB-192	ND	5.38		
PCB-143	-	-	C134	134	PCB-193	ND	4.99		
PCB-144	ND	8.39			PCB-194	ND	3.76		
PCB-145	ND	5.15			PCB-195	ND	4.17		
PCB-146	ND	6.99	C	165	PCB-196	ND	7.62	C	203
PCB-147	ND	7.89			PCB-197	ND	5.58		
PCB-148	ND	6.97			PCB-198	ND	9.17		
PCB-149	-	-	C139,J	139	PCB-199	ND	7.53		
PCB-150	ND	4.90			PCB-200	ND	5.81		

EPA Method 1668
PCBs

FAL ID: 14849-001-SA
Client ID: M1001-SW-221122
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters
PCB-201	ND	5.64		
PCB-202	ND	6.29		
PCB-203	-	-	C196	196
PCB-204	ND	5.85		
PCB-205	ND	3.09		
PCB-206	ND	5.37		
PCB-207	ND	3.54		
PCB-208	ND	3.11		
PCB-209	ND	4.53		

Internal Standards	% Rec	QC Limits	Qual
13C-PCB-1	79.5	5.00 - 145	
13C-PCB-3	73.3	5.00 - 145	
13C-PCB-4	87.0	5.00 - 145	
13C-PCB-15	70.3	5.00 - 145	
13C-PCB-19	73.7	5.00 - 145	
13C-PCB-37	82.8	5.00 - 145	
13C-PCB-54	80.2	5.00 - 145	
13C-PCB-77	76.7	10.0 - 145	
13C-PCB-81	76.9	10.0 - 145	
13C-PCB-104	71.0	10.0 - 145	
13C-PCB-105	84.3	10.0 - 145	
13C-PCB-114	83.6	10.0 - 145	
13C-PCB-118	83.8	10.0 - 145	
13C-PCB-123	75.3	10.0 - 145	
13C-PCB-126	84.5	10.0 - 145	
13C-PCB-155	76.8	10.0 - 145	
13C-PCB-156	81.7	10.0 - 145	
13C-PCB-157	84.7	10.0 - 145	
13C-PCB-167	79.9	10.0 - 145	
13C-PCB-169	86.1	10.0 - 145	
13C-PCB-188	74.4	10.0 - 145	
13C-PCB-189	83.6	10.0 - 145	
13C-PCB-202	78.1	10.0 - 145	
13C-PCB-205	75.3	10.0 - 145	
13C-PCB-206	68.9	10.0 - 145	
13C-PCB-208	68.7	10.0 - 145	
13C-PCB-209	68.9	10.0 - 145	

Cleanup Surrogates	% Rec	QC Limits	Qual
13C-PCB-28	85.2	5.00 - 145	
13C-PCB-111	75.5	10.0 - 145	
13C-PCB-178	74.7	10.0 - 145	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Coelution
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/6/2023

Reviewed By: _____
Date: 1/6/2023

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 Frontier

PROJECT NAME/NO.	PO #
Z 11352	D-85

REMARKS

Please Email Results

14849 EDC

TURNAROUND TIME

~~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	PCB Congeners	D/F 1613						Notes
						ANALYSES REQUESTED										
M1001-SW-221122		11/22/12	0840	water	2				X	X						* see attached

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	12/27/12	1011
Received by:	Kathy Zipp	Kathy Zipp	Frontier	12/28/12	1030
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Michael Erdahl

From: "Lynn Green" <lynng@evren-nw.com>
Date: Tuesday, December 27, 2022 10:13 AM
To: "Michael Erdahl" <merdahl@friedmanandbruya.com>
Cc: "Tori Bennett" <torib@evren-nw.com>; "Evan Bruggeman" <evanb@evren-nw.com>
Subject: RE: 1355-19001-02

We need the following Dioxins and Furans:

- 2,3,7,8-TCDD/TCDF,
- 1,2,3,7,8-PeCDD/PeCDF,
- 1,2,3,4,7,8-HxCDD/HxCDF,
- 1,2,3,6,7,8-HxCDD/HxCDF,
- 1,2,3,7,8,9-HxCDD/HxCDF,
- 2,3,4,6,7,8-HxCDF,
- 1,2,3,4,6,7,8-HpCDD/HpCDF, and
- 1,2,3,4,7,8,9-HpCDF

You previously reported MRLS between 0.000000304 - 0.000000732 ug/L for these constituents. Which method was that?

Lynn D. Green, Ph. D.
P.G./R.G./L.G./C.E.G./L.E.G.
Principal Engineering Geologist / Hydrologist
EVREN Northwest, Inc
Environmental and Natural Resource Consulting
><))))°> ><))))°> ><))))°> ><))))°>

From: Michael Erdahl <merdahl@friedmanandbruya.com>
Sent: Tuesday, December 27, 2022 10:10 AM
To: Lynn Green <lynng@evren-nw.com>
Cc: Tori Bennett <torib@evren-nw.com>; Evan Bruggeman <evanb@evren-nw.com>
Subject: Re: 1355-19001-02

The list was provided with this one.

1) Do you only want 2,3,7,8-TCDD eq only for both of these samples?

2) Which method--EPA 1613 or 8290?

Michael Erdahl
Senior Project Manager
Friedman and Bruya
(206) 285-8282 x 247
(206) 446-5926 (cell)

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **14849**

Client:	Friedman & Bruya, Inc.
Client Project ID:	211352
Date Received:	12/28/2022
Time Received:	10:30 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R-4

Method of Delivery:	Fed-Ex
Tracking Number:	813795597453
Shipping Container Received Intact	Yes
Custody seals(s) present?	No
Custody seals(s) intact?	No
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice/Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	Yes
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	Between 4 and 9
Anomalies or additional comments:	


Frontier Analytical Laboratory
14849-001-SA
DIOXIN & Furans
Client ID:M1001-SW-221122
Storage: R-4
(01 of 01)
Client: ENW 1352-01B
Sample ID: M1001-SW-221122
Date/Time: 11-22-22
Project: 1355-M001-03
Frontier Analytical Laboratory
14849-001-SA PCBs
Client ID:M1001-SW-221122
Storage: R-4
(01 of 01)
Client: ENW 1352-01C
Sample ID: M1001-SW-221122
Date/Time: 11-22-22
Project: 1355-M001-03
SUBCONTRACTER Frontier
PROJECT NAME/NO. 2 11352
Send Report To Michael Erdahl
Company Friedman and
Address
City, State, ZIP
Phone #
TURNAROUND TIME
Page # 1 of 1
2023/01/04

21352

~~21352~~ NP

SAMPLE CHAIN OF CUSTODY

11/23/22 M1/C3

Page # 01 of 01

Report To Lynn Green

Company EVREN-NW

Address 40 SE 24th Ave

City, State, ZIP Portland, Oregon 97214

Phone 503-452-5561 Email lynng@evren-nw.com

SAMPLERS (*signature*)

PROJECT NAME: 1355-19001-0302 pc LG 1/26/23

PO #

REMARKS: ★ SEE ATTACHED FORM FOR ME ANALYTES & MRLS

Project Specific RLs - Yes / No

INVOICE TO

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	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TSS ★	SELECT METALS ★	PAHs ★	Phthalates ★	sVOCs ★	Notes
M1001-SW-221122	01A-H	11-22-22	8:40	Water	8						~~X~~	X	X	X	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		EVRN	11-22-22	17:00
Received by:				
Relinquished by:				
Received by:	ANH PHAN	FSB	11/23/22	10:05

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
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 26, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included is the amended report from the testing of material submitted on November 23, 2022 from the 1355-19001-02, F&BI 211352 project. Per your request, the task number has been changed to -02.

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: Neil Woller, Paul Trone, Evan Bruggeman
ENW1207R.DOC

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

December 7, 2022

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the results from the testing of material submitted on November 23, 2022 from the 1355-19001-02, F&BI 211352 project. There are 11 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: Neil Woller, Paul Trone, Evan Bruggeman
ENW1207R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 23, 2022 by Friedman & Bruya, Inc. from the Evren Northwest 1355-19001-02, F&BI 211352 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Evren Northwest
211352 -01	M1001-SW-221122

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 200.8

Client ID:	M1001-SW-221122	Client:	Evren Northwest
Date Received:	11/23/22	Project:	1355-19001-02, F&BI 211352
Date Extracted:	11/29/22	Lab ID:	211352-01
Date Analyzed:	12/01/22	Data File:	211352-01.294
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	32.0
Cadmium	<0.2
Chromium	<1
Copper	<5
Lead	<0.2
Silver	<0.2
Zinc	<5

Analysis For Total Metals By EPA Method 200.8

Client ID:	M1001-SW-221122	Client:	Evren Northwest
Date Received:	11/23/22	Project:	1355-19001-02, F&BI 211352
Date Extracted:	11/29/22	Lab ID:	211352-01 x10
Date Analyzed:	12/01/22	Data File:	211352-01 x10.133
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Manganese	646

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-02, F&BI 211352
Date Extracted:	11/28/22	Lab ID:	I2-843 mb
Date Analyzed:	11/29/22	Data File:	I2-843 mb.117
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.2
Cadmium	<0.2
Chromium	<1
Copper	<5
Lead	<0.2
Manganese	<1
Silver	<0.2
Zinc	<5

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	M1001-SW-221122	Client:	Evren Northwest
Date Received:	11/23/22	Project:	1355-19001-02, F&BI 211352
Date Extracted:	11/28/22	Lab ID:	211352-01 1/0.5
Date Analyzed:	11/29/22	Data File:	112913.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	64	15	144
2-Fluorobiphenyl	72	25	128
2,4,6-Tribromophenol	83	10	142
Terphenyl-d14	113	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
2-Methylnaphthalene	<0.1
1-Methylnaphthalene	<0.1
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	0.017
Phenanthrene	0.072
Anthracene	<0.01
Fluoranthene	0.033
Pyrene	0.22
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.02
Dibenz(a,h)anthracene	<0.01
Bis(2-ethylhexyl) phthalate	<1.6

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-02, F&BI 211352
Date Extracted:	11/28/22	Lab ID:	02-2878 mb 1/0.5
Date Analyzed:	11/29/22	Data File:	112908.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	88	15	144
2-Fluorobiphenyl	85	25	128
2,4,6-Tribromophenol	74	10	142
Terphenyl-d14	115	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
2-Methylnaphthalene	<0.1
1-Methylnaphthalene	<0.1
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.02
Dibenz(a,h)anthracene	<0.01
Bis(2-ethylhexyl) phthalate	<1.6

Date of Report: 12/07/22
Date Received: 11/23/22
Project: 1355-19001-02, F&BI 211352
Date Extracted: 11/23/22
Date Analyzed: 11/29/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SUSPENDED SOLIDS
BY METHOD 2540D**

Results Reported as mg/L (ppm)

Sample ID Laboratory ID	Total Suspended Solids
M1001-SW-221122 211352-01	15
Method Blank 02-2871 mb	<5

Date of Report: 12/07/22
Date Received: 11/23/22
Project: 1355-19001-02, F&BI 211352

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 211362-02 (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	<1	91	91	70-130	0
Cadmium	ug/L (ppb)	5	<1	100	98	70-130	2
Chromium	ug/L (ppb)	20	<1	95	95	70-130	0
Copper	ug/L (ppb)	20	15.0	95	95	70-130	0
Lead	ug/L (ppb)	10	1.94	94	95	70-130	1
Manganese	ug/L (ppb)	20	6.87	94	94	70-130	0
Silver	ug/L (ppb)	5	<1	94	93	70-130	1
Zinc	ug/L (ppb)	50	109	91	95	70-130	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	93	85-115
Cadmium	ug/L (ppb)	5	98	85-115
Chromium	ug/L (ppb)	20	95	85-115
Copper	ug/L (ppb)	20	100	85-115
Lead	ug/L (ppb)	10	100	85-115
Manganese	ug/L (ppb)	20	94	85-115
Silver	ug/L (ppb)	5	99	85-115
Zinc	ug/L (ppb)	50	97	85-115

Date of Report: 12/07/22
Date Received: 11/23/22
Project: 1355-19001-02, F&BI 211352

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)
Naphthalene	ug/L (ppb)	5	77	75	50-104	3
2-Methylnaphthalene	ug/L (ppb)	5	77	78	54-109	1
1-Methylnaphthalene	ug/L (ppb)	5	76	77	55-108	1
Acenaphthylene	ug/L (ppb)	5	91	94	60-114	3
Acenaphthene	ug/L (ppb)	5	88	91	57-110	3
Fluorene	ug/L (ppb)	5	92	95	61-115	3
Phenanthrene	ug/L (ppb)	5	92	93	63-113	1
Anthracene	ug/L (ppb)	5	93	95	65-117	2
Fluoranthene	ug/L (ppb)	5	102	102	68-121	0
Pyrene	ug/L (ppb)	5	105	112	66-125	6
Benz(a)anthracene	ug/L (ppb)	5	106	110	70-130	4
Chrysene	ug/L (ppb)	5	101	104	67-119	3
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	5	86	94	57-124	9
Benzo(a)pyrene	ug/L (ppb)	5	101	103	68-126	2
Benzo(b)fluoranthene	ug/L (ppb)	5	110	112	62-130	2
Benzo(k)fluoranthene	ug/L (ppb)	5	104	108	67-125	4
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	92	96	63-131	4
Dibenz(a,h)anthracene	ug/L (ppb)	5	98	99	62-133	1
Benzo(g,h,i)perylene	ug/L (ppb)	5	92	92	57-133	0

Date of Report: 12/07/22
Date Received: 11/23/22
Project: 1355-19001-02, F&BI 211352

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
TSS	mg/L (ppm)	50	80	90	35-146	11

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.

21352

~~21352~~ NP

SAMPLE CHAIN OF CUSTODY

11/23/22 M1/C3

Page # 01 of 01

Report To Lynn Green

Company EVREN-NW

Address 40 SE 24th Ave

City, State, ZIP Portland, Oregon 97214

Phone 503-452-5561 Email lynng@evren-nw.com

SAMPLERS (*signature*)

PROJECT NAME: 1355-19001-0302 pc LG 1/26/23

PO #

REMARKS: ★ SEE ATTACHED FORM FOR ME ANALYTES & MRLS

Project Specific RLs - Yes / No

INVOICE TO

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	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TSS ★	SELECT METALS ★	PAHs ★	Phthalates ★	sVOCs ★	Notes
M1001-SW-221122	01A-H	11-22-22	8:40	Water	8						~~X~~	X	X	X	X	X	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		EVRN	11-22-22	17:00
Received by:				
Relinquished by:				
Received by:	ANH PHAN	FSB	11/23/22	10:05

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
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 24, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the results from the testing of material submitted on December 10, 2022 from the 1355-19001-03, F&BI 212185 project. There are 10 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: Neil Woller, Paul Trone, Evan Bruggeman
ENW0124R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 10, 2022 by Friedman & Bruya, Inc. from the Evren Northwest 1355-19001-03, F&BI 212185 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Evren Northwest
212185 -01	M1001-SW-221209

Sample M1001-SW-221209 was sent to Frontier Analytical for dioxin and furan and PCB congener analyses. The report is enclosed.

The 8270E calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 200.8

Client ID:	M1001-SW-221209	Client:	Evren Northwest
Date Received:	12/10/23	Project:	1355-19001-03, F&BI 212185
Date Extracted:	12/12/22	Lab ID:	212185-01
Date Analyzed:	12/16/22	Data File:	212185-01.170
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	0.330
Cadmium	<0.2
Chromium	2.08
Copper	8.50
Lead	3.36
Manganese	72.1
Silver	<0.2
Zinc	67.4

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-03, F&BI 212185
Date Extracted:	12/12/22	Lab ID:	I2-889 mb
Date Analyzed:	12/12/22	Data File:	I2-889 mb.036
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.2
Cadmium	<0.2
Chromium	<1
Copper	<5
Lead	<0.2
Manganese	<1
Silver	<0.2
Zinc	<5

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	M1001-SW-221209	Client:	Evren Northwest
Date Received:	12/10/22	Project:	1355-19001-03, F&BI 212185
Date Extracted:	12/13/22	Lab ID:	212185-01
Date Analyzed:	12/15/22	Data File:	121511.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	17	10	60
Phenol-d6	12	10	49
Nitrobenzene-d5	37	15	144
2-Fluorobiphenyl	35	25	128
2,4,6-Tribromophenol	47	10	142
Terphenyl-d14	51	41	138

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Phenol	<2	2,6-Dinitrotoluene	<1
Bis(2-chloroethyl) ether	<0.2	3-Nitroaniline	<20
2-Chlorophenol	<2	Acenaphthene	<0.02
1,3-Dichlorobenzene	<0.2	2,4-Dinitrophenol	<6
1,4-Dichlorobenzene	<0.2	Dibenzofuran	<0.2
1,2-Dichlorobenzene	<0.2	2,4-Dinitrotoluene	<1
Benzyl alcohol	<2	4-Nitrophenol	<6
2,2'-Oxybis(1-chloropropane)	<0.2	Diethyl phthalate	<2
2-Methylphenol	<2	Fluorene	<0.02
Hexachloroethane	<0.2	4-Chlorophenyl phenyl ether	<0.2
N-Nitroso-di-n-propylamine	<0.2	N-Nitrosodiphenylamine	<0.2
3-Methylphenol + 4-Methylphenol	<4	4-Nitroaniline	<20
Nitrobenzene	<0.2	4,6-Dinitro-2-methylphenol	<6
Isophorone	<0.2	4-Bromophenyl phenyl ether	<0.2
2-Nitrophenol	<2	Hexachlorobenzene	<0.2
2,4-Dimethylphenol	<2	Pentachlorophenol	<1
Benzoic acid	<10	Phenanthrene	0.045
Bis(2-chloroethoxy)methane	<0.2	Anthracene	<0.02
2,4-Dichlorophenol	<2	Carbazole	<0.2
1,2,4-Trichlorobenzene	<0.2	Di-n-butyl phthalate	<2 ca
Naphthalene	<0.2	Fluoranthene	0.043
Hexachlorobutadiene	<0.2	Pyrene	0.078
4-Chloroaniline	<20	Benzyl butyl phthalate	<2
4-Chloro-3-methylphenol	<2	Benz(a)anthracene	<0.02
2-Methylnaphthalene	<0.2	Chrysene	0.042
1-Methylnaphthalene	<0.2	Bis(2-ethylhexyl) phthalate	<3.2
Hexachlorocyclopentadiene	<0.6	Di-n-octyl phthalate	<2
2,4,6-Trichlorophenol	<2	Benzo(a)pyrene	0.025
2,4,5-Trichlorophenol	<2	Benzo(b)fluoranthene	0.048
2-Chloronaphthalene	<0.2	Benzo(k)fluoranthene	<0.02
2-Nitroaniline	<1	Indeno(1,2,3-cd)pyrene	0.022
Dimethyl phthalate	<2	Dibenz(a,h)anthracene	<0.02
Acenaphthylene	<0.02	Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-03, F&BI 212185
Date Extracted:	12/13/22	Lab ID:	02-2950 mb 1/0.5
Date Analyzed:	12/13/22	Data File:	121308.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	JCM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	34	10	60
Phenol-d6	24	10	49
Nitrobenzene-d5	76	15	144
2-Fluorobiphenyl	71	25	128
2,4,6-Tribromophenol	74	10	142
Terphenyl-d14	88	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 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	<0.01
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	<1.6
Hexachlorocyclopentadiene	<0.3 ca	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

Date of Report: 01/24/23
Date Received: 12/10/22
Project: 1355-19001-03, F&BI 212185
Date Extracted: 12/13/22
Date Analyzed: 12/16/22

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SUSPENDED SOLIDS
BY METHOD 2540D**

Results Reported as mg/L (ppm)

Sample ID Laboratory ID	Total Suspended Solids
M1001-SW-221209 212185-01	26
Method Blank O2-2955 mb	<5

Date of Report: 01/24/23
Date Received: 12/10/22
Project: 1355-19001-03, F&BI 212185

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 212165-01 (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	<1	92	91	70-130	1
Cadmium	ug/L (ppb)	5	<1	98	98	70-130	0
Chromium	ug/L (ppb)	20	<1	93	98	70-130	5
Copper	ug/L (ppb)	20	<5	95	98	70-130	3
Lead	ug/L (ppb)	10	<1	93	93	70-130	0
Manganese	ug/L (ppb)	20	14.3	86	94	70-130	9
Silver	ug/L (ppb)	5	<1	93	92	70-130	1
Zinc	ug/L (ppb)	50	19.8	95	99	70-130	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	93	85-115
Cadmium	ug/L (ppb)	5	97	85-115
Chromium	ug/L (ppb)	20	96	85-115
Copper	ug/L (ppb)	20	101	85-115
Lead	ug/L (ppb)	10	100	85-115
Manganese	ug/L (ppb)	20	93	85-115
Silver	ug/L (ppb)	5	96	85-115
Zinc	ug/L (ppb)	50	98	85-115

Date of Report: 01/24/23
Date Received: 12/10/22
Project: 1355-19001-03, F&BI 212185

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)	5	28	25	10-86	11
Bis(2-chloroethyl) ether	ug/L (ppb)	5	75	65	60-108	14
2-Chlorophenol	ug/L (ppb)	5	72	62	10-97	15
1,3-Dichlorobenzene	ug/L (ppb)	5	68	57	48-96	18
1,4-Dichlorobenzene	ug/L (ppb)	5	69	57	48-96	19
1,2-Dichlorobenzene	ug/L (ppb)	5	71	58	52-96	20
Benzyl alcohol	ug/L (ppb)	25	62	56	10-76	10
2,2'-Oxybis(1-chloropropane)	ug/L (ppb)	5	77	67	59-101	14
2-Methylphenol	ug/L (ppb)	5	64	57	10-80	12
Hexachloroethane	ug/L (ppb)	5	70	57	47-97	20
N-Nitroso-di-n-propylamine	ug/L (ppb)	5	85	74	71-106	14
3-Methylphenol + 4-Methylphenol	ug/L (ppb)	5	60	54	10-66	11
Nitrobenzene	ug/L (ppb)	5	80	71	60-90	12
Isophorone	ug/L (ppb)	5	81	73	71-110	10
2-Nitrophenol	ug/L (ppb)	5	88	81	27-120	8
2,4-Dimethylphenol	ug/L (ppb)	5	61	56	10-106	9
Benzoic acid	ug/L (ppb)	40	12	11	10-102	9
Bis(2-chloroethoxy)methane	ug/L (ppb)	5	79	70	55-117	12
2,4-Dichlorophenol	ug/L (ppb)	5	78	72	23-116	8
1,2,4-Trichlorobenzene	ug/L (ppb)	5	71	60	56-98	17
Naphthalene	ug/L (ppb)	5	75	64	62-97	16
Hexachlorobutadiene	ug/L (ppb)	5	70	58	48-100	19
4-Chloroaniline	ug/L (ppb)	25	65	61	28-121	6
4-Chloro-3-methylphenol	ug/L (ppb)	5	81	75	18-113	8
2-Methylnaphthalene	ug/L (ppb)	5	78	69	64-101	12
1-Methylnaphthalene	ug/L (ppb)	5	78	68	64-93	14
Hexachlorocyclopentadiene	ug/L (ppb)	5	57	55	49-113	4
2,4,6-Trichlorophenol	ug/L (ppb)	5	75	72	16-131	4
2,4,5-Trichlorophenol	ug/L (ppb)	5	79	78	26-129	1
2-Chloronaphthalene	ug/L (ppb)	5	75	69	67-102	8
2-Nitroaniline	ug/L (ppb)	25	82	80	31-168	2
Dimethyl phthalate	ug/L (ppb)	5	85	80	70-130	6
Acenaphthylene	ug/L (ppb)	5	81	74	70-130	9
2,6-Dinitrotoluene	ug/L (ppb)	5	90	86	70-130	5
3-Nitroaniline	ug/L (ppb)	25	76	75	33-128	1
Acenaphthene	ug/L (ppb)	5	79	74	70-130	7
2,4-Dinitrophenol	ug/L (ppb)	10	80	81	10-137	1
Dibenzofuran	ug/L (ppb)	5	81	76	67-114	6
2,4-Dinitrotoluene	ug/L (ppb)	5	95	90	53-132	5
4-Nitrophenol	ug/L (ppb)	10	35	33	10-89	6
Diethyl phthalate	ug/L (ppb)	5	88	82	60-128	7
Fluorene	ug/L (ppb)	5	82	78	70-130	5
4-Chlorophenyl phenyl ether	ug/L (ppb)	5	77	75	70-130	3
N-Nitrosodiphenylamine	ug/L (ppb)	5	79	76	70-130	4
4-Nitroaniline	ug/L (ppb)	25	70	71	32-124	1
4,6-Dinitro-2-methylphenol	ug/L (ppb)	5	87	94	10-146	8
4-Bromophenyl phenyl ether	ug/L (ppb)	5	77	75	70-130	3
Hexachlorobenzene	ug/L (ppb)	5	78	75	61-112	4
Pentachlorophenol	ug/L (ppb)	5	69	72	10-144	4
Phenanthrene	ug/L (ppb)	5	81	79	70-130	2
Anthracene	ug/L (ppb)	5	84	80	70-130	5
Carbazole	ug/L (ppb)	5	85	84	70-130	1
Di-n-butyl phthalate	ug/L (ppb)	5	87	87	28-147	0
Fluoranthene	ug/L (ppb)	5	85	84	70-130	1
Pyrene	ug/L (ppb)	5	87	81	70-130	7
Benzyl butyl phthalate	ug/L (ppb)	5	96	92	34-142	4
Benz(a)anthracene	ug/L (ppb)	5	85	81	70-130	5
Chrysene	ug/L (ppb)	5	85	81	70-130	5
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	5	89	89	44-140	0
Di-n-octyl phthalate	ug/L (ppb)	5	93	92	33-147	1
Benzo(a)pyrene	ug/L (ppb)	5	87	84	70-130	4
Benzo(b)fluoranthene	ug/L (ppb)	5	84	79	70-130	6
Benzo(k)fluoranthene	ug/L (ppb)	5	84	81	70-130	4
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	92	99	70-130	7
Dibenz(a,h)anthracene	ug/L (ppb)	5	88	98	70-130	11
Benzo(g,h,i)perylene	ug/L (ppb)	5	86	98	70-130	13

Date of Report: 01/24/23
Date Received: 12/10/22
Project: 1355-19001-03, F&BI 212185

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
TSS	mg/L (ppm)	20	88	84	35-146	5

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.

212185

SAMPLE CHAIN OF CUSTODY

12/10/22 N4/T4/01

Page # 01 of 01

Report To Lynn Green

Company EVREN-NW

Address 40 SE 24th Ave

City, State, ZIP Portland, Oregon 97214

Phone 503-452-5561 Email lynng@evren-nw.com

SAMPLERS (*signature*)

PROJECT NAME: 1355-1900-03

PO #

REMARKS: ASCE Attached form for sample details

Project Specific RLs - Yes / No

INVOICE TO

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	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270 D/F	PCBs EPA 8082 Congener	TSS	Select Metals Total	PAHs	Phthalates	SVOCs	Notes
MW01-SW-221209	01A-G	12-09-22	09:30	water	~~10~~ 9 BE					(1)	(1)	X	X	X	X	X	(1) per LG 12/[illegible]/22 MG

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Bailey Farrer	ENW	12-09-22	17:00
Received by:	ANDREWS	F&B	12/10/22	1100
Relinquished by:				
Received by:		Samples received at 6 °C		

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

AV

Test Report

January 12, 2023

Frontier Analytical Laboratory Project: 14850

Mr. Michael Erdahl
Friedman and Bruya, Inc.
3012 16th Ave. W
Seattle, WA 98119

Dear Mr. Erdahl,

The following results are associated with Frontier Analytical Laboratory project **14850**. This corresponds to your project number **212185** and purchase order number **D-85**. One aqueous sample was received on 12/28/2022 in good condition. This sample was extracted and analyzed by EPA Method 1613 for tetra through octa chlorinated dibenzo dioxins and furans. In addition, this sample was extracted and analyzed by EPA Method 1668 for all 209 polychlorinated biphenyls (PCBs). The Toxic Equivalency (TEQ) for your sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs).

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custody, our sample login form and a sample photo. The enclosed results and electronic data deliverable (EDD) are specifically for the sample referenced in this report only. These results meet all NELAP requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041**, our State of California ELAP certificate number is **2934** and our State of Washington certificate number is **C844**. This report along with the associated EDD has been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **14850**, please feel free to contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

Bradley B. Silverbush
Laboratory Director

FRONTIER ANALYTICAL LABORATORY
5172 Hillsdale Circle * El Dorado Hills, CA 95762
Tel (916) 934-0900 * Fax (916) 934-0999
www.frontieranalytical.com

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **14850**

Received on: **12/28/2022** Project Due: **01/20/2023** Storage: **R-4**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
14850-001-SA	0	212185	M1001-SW-221209	EPA 1613 D/F	Aqueous	12/09/2022	09:30 am	12/11/2023
14850-001-SA	0	212185	M1001-SW-221209	EPA 1668 PCB	Aqueous	12/09/2022	09:30 am	12/11/2023

EPA Method 1613
PCDD/F

FAL ID: 14850-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: NA
Amount: 1.00 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: pg/L

Acquired: 01-11-2023
2005 WHO TEQ: 0.0

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.866		-	0.640				
1,2,3,7,8-PeCDD	ND	1.36		-	0.783				
1,2,3,4,7,8-HxCDD	ND	1.90		-	1.30				
1,2,3,6,7,8-HxCDD	ND	1.99		-	1.39	Total TCDD	ND	0.866	
1,2,3,7,8,9-HxCDD	ND	1.80		-	1.28	Total PeCDD	ND	1.36	
1,2,3,4,6,7,8-HpCDD	ND	2.19		-	1.17	Total HxCDD	ND	1.99	
OCDD	ND	2.95		-	2.00	Total HpCDD	ND	2.19	
2,3,7,8-TCDF	ND	0.965		-	0.624				
1,2,3,7,8-PeCDF	ND	1.46		-	0.751				
2,3,4,7,8-PeCDF	ND	1.47		-	0.793				
1,2,3,4,7,8-HxCDF	ND	0.961		-	0.781				
1,2,3,6,7,8-HxCDF	ND	0.992		-	0.803				
2,3,4,6,7,8-HxCDF	ND	1.08		-	0.827				
1,2,3,7,8,9-HxCDF	ND	1.50		-	0.973	Total TCDF	ND	0.965	
1,2,3,4,6,7,8-HpCDF	ND	1.52		-	0.773	Total PeCDF	ND	1.47	
1,2,3,4,7,8,9-HpCDF	ND	2.23		-	0.978	Total HxCDF	ND	1.50	
OCDF	ND	3.25		-	1.71	Total HpCDF	ND	2.23	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	78.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	67.1	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	81.9	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	81.9	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	76.2	23.0 - 140	
13C-OCDD	68.8	17.0 - 157	
13C-2,3,7,8-TCDF	78.9	24.0 - 169	
13C-1,2,3,7,8-PeCDF	73.8	24.0 - 185	
13C-2,3,4,7,8-PeCDF	75.6	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	77.7	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	80.2	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	77.0	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	74.8	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	76.7	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	69.3	26.0 - 138	
13C-OCDF	67.7	17.0 - 157	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	84.0	35.0 - 197	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 1/12/2023

Reviewed By: _____

Date: 1/12/2023

EPA Method 1613
PCDD/F

FAL ID: 14850-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: NA
Amount: 1.000 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: ng/ml

Acquired: 01-11-2023
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	8.52	6.70 - 15.8	
1,2,3,7,8-PeCDD	44.6	35.0 - 71.0	
1,2,3,4,7,8-HxCDD	45.8	35.0 - 82.0	
1,2,3,6,7,8-HxCDD	47.9	38.0 - 67.0	
1,2,3,7,8,9-HxCDD	44.4	32.0 - 81.0	
1,2,3,4,6,7,8-HpCDD	46.7	35.0 - 70.0	
OCDD	98.0	78.0 - 144	
2,3,7,8-TCDF	8.42	7.50 - 15.8	
1,2,3,7,8-PeCDF	45.0	40.0 - 67.0	
2,3,4,7,8-PeCDF	45.4	34.0 - 80.0	
1,2,3,4,7,8-HxCDF	45.3	36.0 - 67.0	
1,2,3,6,7,8-HxCDF	46.2	42.0 - 65.0	
2,3,4,6,7,8-HxCDF	46.5	35.0 - 78.0	
1,2,3,7,8,9-HxCDF	46.1	39.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	48.5	41.0 - 61.0	
1,2,3,4,7,8,9-HpCDF	46.7	39.0 - 69.0	
OCDF	92.8	63.0 - 170	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	83.8	20.0 - 175	
13C-1,2,3,7,8-PeCDD	75.6	21.0 - 227	
13C-1,2,3,4,7,8-HxCDD	79.1	21.0 - 193	
13C-1,2,3,6,7,8-HxCDD	79.4	25.0 - 163	
13C-1,2,3,4,6,7,8-HpCDD	70.7	26.0 - 166	
13C-OCDD	69.4	13.0 - 198	
13C-2,3,7,8-TCDF	87.6	22.0 - 152	
13C-1,2,3,7,8-PeCDF	78.6	21.0 - 192	
13C-2,3,4,7,8-PeCDF	81.8	13.0 - 328	
13C-1,2,3,4,7,8-HxCDF	73.9	19.0 - 202	
13C-1,2,3,6,7,8-HxCDF	75.0	21.0 - 159	
13C-2,3,4,6,7,8-HxCDF	73.7	22.0 - 176	
13C-1,2,3,7,8,9-HxCDF	71.3	17.0 - 205	
13C-1,2,3,4,6,7,8-HpCDF	69.2	21.0 - 158	
13C-1,2,3,4,7,8,9-HpCDF	65.6	20.0 - 186	
13C-OCDF	68.9	13.0 - 198	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	92.4	31.0 - 191	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 1/12/2023

Reviewed By: _____

Date: 1/12/2023

EPA Method 1613
PCDD/F

FAL ID: 14850-001-SA
Client ID: M1001-SW-221209
Matrix: Aqueous
Batch No: X6329

Date Extracted: 01-06-2023
Date Received: 12-28-2022
Amount: 0.973 L

ICal: PCDDFAL3-4-29-22
GC Column: DB5MS
Units: pg/L

Acquired: 01-11-2023
2005 WHO TEQ: 0.583

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.790		-	0.640				
1,2,3,7,8-PeCDD	ND	1.53		-	0.783				
1,2,3,4,7,8-HxCDD	ND	2.52		-	1.30				
1,2,3,6,7,8-HxCDD	ND	2.52		-	1.39	Total TCDD	ND	0.790	
1,2,3,7,8,9-HxCDD	ND	2.33		-	1.28	Total PeCDD	ND	1.53	
1,2,3,4,6,7,8-HpCDD	35.9	-		0.359	1.17	Total HxCDD	10.3	-	J
OCDD	316	-		0.0948	2.00	Total HpCDD	76.8	-	
2,3,7,8-TCDF	ND	0.875		-	0.624				
1,2,3,7,8-PeCDF	ND	1.46		-	0.751				
2,3,4,7,8-PeCDF	ND	1.53		-	0.793				
1,2,3,4,7,8-HxCDF	ND	1.76		-	0.781				
1,2,3,6,7,8-HxCDF	ND	1.87		-	0.803				
2,3,4,6,7,8-HxCDF	ND	1.89		-	0.827				
1,2,3,7,8,9-HxCDF	ND	2.69		-	0.973	Total TCDF	4.44	-	J
1,2,3,4,6,7,8-HpCDF	11.8	-	J	0.118	0.773	Total PeCDF	5.23	-	D,J,M
1,2,3,4,7,8,9-HpCDF	ND	2.24		-	0.978	Total HxCDF	14.2	-	D,J,M
OCDF	36.7	-	J	0.0110	1.71	Total HpCDF	27.7	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	90.1	25.0 - 164	
13C-1,2,3,7,8-PeCDD	78.7	25.0 - 181	
13C-1,2,3,4,7,8-HxCDD	91.4	32.0 - 141	
13C-1,2,3,6,7,8-HxCDD	95.5	28.0 - 130	
13C-1,2,3,4,6,7,8-HpCDD	84.0	23.0 - 140	
13C-OCDD	78.3	17.0 - 157	
13C-2,3,7,8-TCDF	89.4	24.0 - 169	
13C-1,2,3,7,8-PeCDF	84.4	24.0 - 185	
13C-2,3,4,7,8-PeCDF	83.5	21.0 - 178	
13C-1,2,3,4,7,8-HxCDF	85.8	26.0 - 152	
13C-1,2,3,6,7,8-HxCDF	89.7	26.0 - 123	
13C-2,3,4,6,7,8-HxCDF	85.2	28.0 - 136	
13C-1,2,3,7,8,9-HxCDF	79.6	29.0 - 147	
13C-1,2,3,4,6,7,8-HpCDF	81.3	28.0 - 143	
13C-1,2,3,4,7,8,9-HpCDF	73.2	26.0 - 138	
13C-OCDF	73.6	17.0 - 157	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	96.8	35.0 - 197	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/12/2023

Reviewed By: _____
Date: 1/12/2023

EPA Method 1668
PCBs

FAL ID: 14850-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023
Total Conc: 0.0

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-1	ND	3.61			PCB-51	ND	5.82		
PCB-2	ND	5.62			PCB-52	ND	5.78	C	69
PCB-3	ND	7.07			PCB-53	ND	6.11		
PCB-4	ND	7.71			PCB-54	ND	4.85		
PCB-5	ND	9.59			PCB-55	ND	4.27		
PCB-6	ND	9.58			PCB-56	ND	7.88	C	60
PCB-7	ND	9.75			PCB-57	ND	4.58		
PCB-8	ND	9.68			PCB-58	ND	4.68		
PCB-9	ND	9.53			PCB-59	-	-	C042	42
PCB-10	ND	9.09			PCB-60	-	-	C056	56
PCB-11	ND	11.1			PCB-61	ND	4.90	C	70
PCB-12	ND	10.7			PCB-62	ND	4.53		
PCB-13	ND	11.0			PCB-63	ND	4.41		
PCB-14	ND	9.60			PCB-64	-	-	C041	41/71/72
PCB-15	ND	15.3			PCB-65	ND	4.78		
PCB-16	ND	6.30			PCB-66	ND	4.24	C	76
PCB-17	ND	7.06			PCB-67	ND	4.51		
PCB-18	ND	7.73			PCB-68	ND	4.28		
PCB-19	ND	8.18			PCB-69	-	-	C052	52
PCB-20	ND	12.5	C	21/33	PCB-70	-	-	C061	61
PCB-21	-	-	C020	20/33	PCB-71	-	-	C041	41/64/72
PCB-22	ND	11.7			PCB-72	-	-	C041	41/64/71
PCB-23	ND	11.0			PCB-73	ND	4.30		
PCB-24	ND	5.27			PCB-74	ND	4.53		
PCB-25	ND	12.0			PCB-75	-	-	C048	48
PCB-26	ND	12.3			PCB-76	-	-	C066	66
PCB-27	ND	5.24			PCB-77	ND	9.55		
PCB-28	ND	9.80			PCB-78	ND	7.97		
PCB-29	ND	12.4			PCB-79	ND	7.58		
PCB-30	ND	5.10			PCB-80	ND	3.90		
PCB-31	ND	12.9			PCB-81	ND	6.93		
PCB-32	ND	6.27			PCB-82	ND	10.6		
PCB-33	-	-	C020	20/21	PCB-83	ND	7.99	C	112
PCB-34	ND	11.0			PCB-84	ND	9.46	C	92
PCB-35	ND	15.6			PCB-85	ND	7.19	C	116
PCB-36	ND	13.4			PCB-86	ND	9.55		
PCB-37	ND	14.1			PCB-87	ND	7.01	C	117/125
PCB-38	ND	12.7			PCB-88	ND	7.30	C	91
PCB-39	ND	13.5			PCB-89	ND	9.28		
PCB-40	ND	7.60			PCB-90	ND	8.09	C	101
PCB-41	ND	4.87	C	64/71/72	PCB-91	-	-	C088	88
PCB-42	ND	5.47	C	59	PCB-92	-	-	C084	84
PCB-43	ND	6.25	C	49	PCB-93	ND	8.20		
PCB-44	ND	7.21			PCB-94	ND	8.44		
PCB-45	ND	6.85			PCB-95	ND	8.04		
PCB-46	ND	7.34			PCB-96	ND	5.90		
PCB-47	ND	6.09			PCB-97	ND	9.56		
PCB-48	ND	4.82	C	75	PCB-98	ND	7.98	C	102
PCB-49	-	-	C043	43	PCB-99	ND	6.87		
PCB-50	ND	6.09			PCB-100	ND	7.01		

EPA Method 1668
PCBs

FAL ID: 14850-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-101	-	-	C090	90	PCB-151	ND	8.70		
PCB-102	-	-	C098	98	PCB-152	ND	5.04		
PCB-103	ND	7.11			PCB-153	ND	6.47		
PCB-104	ND	5.81			PCB-154	ND	5.62		
PCB-105	ND	6.46			PCB-155	ND	4.70		
PCB-106	ND	6.62	C	118	PCB-156	ND	6.36		
PCB-107	ND	6.06	C	108	PCB-157	ND	6.92		
PCB-108	-	-	C107	107	PCB-158	ND	5.91	C	160
PCB-109	ND	6.43			PCB-159	ND	6.03		
PCB-110	ND	6.07			PCB-160	-	-	C158	158
PCB-111	ND	6.43	C	115	PCB-161	-	-	C132	132
PCB-112	-	-	C083	83	PCB-162	-	-	C128	128
PCB-113	ND	7.51			PCB-163	-	-	C138	138/164
PCB-114	ND	6.23			PCB-164	-	-	C138	138/163
PCB-115	-	-	C111	111	PCB-165	-	-	C146	146
PCB-116	-	-	C085	85	PCB-166	ND	6.24		
PCB-117	-	-	C087	87/125	PCB-167	ND	6.52		
PCB-118	-	-	C	106	PCB-168	ND	6.10		
PCB-119	ND	6.17			PCB-169	ND	7.87		
PCB-120	ND	6.04			PCB-170	ND	7.58		
PCB-121	ND	6.08			PCB-171	ND	6.80		
PCB-122	ND	6.16			PCB-172	ND	7.51		
PCB-123	ND	5.78			PCB-173	ND	7.71		
PCB-124	ND	3.03			PCB-174	ND	6.69		
PCB-125	-	-	C087	87/117	PCB-175	ND	6.67		
PCB-126	ND	9.73			PCB-176	ND	4.88		
PCB-127	ND	6.49			PCB-177	ND	7.20		
PCB-128	ND	7.17	C	162	PCB-178	ND	6.85		
PCB-129	ND	9.51			PCB-179	ND	4.77		
PCB-130	ND	8.15			PCB-180	ND	6.97		
PCB-131	ND	9.35	C	133	PCB-181	ND	6.68		
PCB-132	ND	7.36	C	161	PCB-182	ND	5.97	C	187
PCB-133	-	-	C131	131	PCB-183	ND	5.96		
PCB-134	ND	9.36	C	143	PCB-184	ND	4.56		
PCB-135	ND	8.78			PCB-185	ND	6.64		
PCB-136	ND	5.05			PCB-186	ND	4.86		
PCB-137	ND	9.11			PCB-187	-	-	C182	182
PCB-138	ND	6.61	C	163/164	PCB-188	ND	5.83		
PCB-139	ND	7.65	C	149	PCB-189	ND	4.90		
PCB-140	ND	7.55			PCB-190	ND	5.48		
PCB-141	ND	8.15			PCB-191	ND	5.22		
PCB-142	ND	9.05			PCB-192	ND	5.39		
PCB-143	-	-	C134	134	PCB-193	ND	5.00		
PCB-144	ND	8.13			PCB-194	ND	3.58		
PCB-145	ND	5.04			PCB-195	ND	3.97		
PCB-146	ND	6.78	C	165	PCB-196	ND	6.28	C	203
PCB-147	ND	7.65			PCB-197	ND	4.60		
PCB-148	ND	6.82			PCB-198	ND	7.55		
PCB-149	-	-	C139	139	PCB-199	ND	6.20		
PCB-150	ND	4.79			PCB-200	ND	4.78		

EPA Method 1668
PCBs

FAL ID: 14850-001-MB
Client ID: Method Blank
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters
PCB-201	ND	4.65		
PCB-202	ND	5.18		
PCB-203	-	-	C196	196
PCB-204	ND	4.82		
PCB-205	ND	2.95		
PCB-206	ND	5.79		
PCB-207	ND	3.99		
PCB-208	ND	3.66		
PCB-209	ND	4.81		

Internal Standards	% Rec	QC Limits	Qual
13C-PCB-1	85.7	5.00 - 145	
13C-PCB-3	73.8	5.00 - 145	
13C-PCB-4	93.6	5.00 - 145	
13C-PCB-15	71.6	5.00 - 145	
13C-PCB-19	81.4	5.00 - 145	
13C-PCB-37	78.3	5.00 - 145	
13C-PCB-54	92.0	5.00 - 145	
13C-PCB-77	88.4	10.0 - 145	
13C-PCB-81	85.0	10.0 - 145	
13C-PCB-104	77.1	10.0 - 145	
13C-PCB-105	93.5	10.0 - 145	
13C-PCB-114	91.7	10.0 - 145	
13C-PCB-118	95.0	10.0 - 145	
13C-PCB-123	84.4	10.0 - 145	
13C-PCB-126	95.1	10.0 - 145	
13C-PCB-155	84.9	10.0 - 145	
13C-PCB-156	92.5	10.0 - 145	
13C-PCB-157	93.9	10.0 - 145	
13C-PCB-167	89.7	10.0 - 145	
13C-PCB-169	98.5	10.0 - 145	
13C-PCB-188	79.7	10.0 - 145	
13C-PCB-189	98.2	10.0 - 145	
13C-PCB-202	81.8	10.0 - 145	
13C-PCB-205	82.5	10.0 - 145	
13C-PCB-206	75.1	10.0 - 145	
13C-PCB-208	73.0	10.0 - 145	
13C-PCB-209	73.8	10.0 - 145	

Cleanup Surrogates	% Rec	QC Limits	Qual
13C-PCB-28	90.7	5.00 - 145	
13C-PCB-111	80.5	10.0 - 145	
13C-PCB-178	80.3	10.0 - 145	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Coelution
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/6/2023

Reviewed By: _____
Date: 1/6/2023

EPA Method 1668
PCBs

FAL ID: 14850-001-OPR
Client ID: OPR
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: NA
Amount: 1.000 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: ng/ml

Acquired: 01-05-2023

Compound	% Recovery	QC Limits	Qual
PCB-1	111	60.0 - 135	
PCB-3	107	60.0 - 135	
PCB-4	116	60.0 - 135	
PCB-15	94.4	60.0 - 135	
PCB-19	110	60.0 - 135	
PCB-37	110	60.0 - 135	
PCB-54	106	60.0 - 135	
PCB-77	116	60.0 - 135	
PCB-81	104	60.0 - 135	
PCB-104	109	60.0 - 135	
PCB-105	101	60.0 - 135	
PCB-114	104	60.0 - 135	
PCB-118	106	60.0 - 135	
PCB-123	103	60.0 - 135	
PCB-126	106	60.0 - 135	
PCB-155	110	60.0 - 135	
PCB-156	102	60.0 - 135	
PCB-157	104	60.0 - 135	
PCB-167	102	60.0 - 135	
PCB-169	108	60.0 - 135	
PCB-188	109	60.0 - 135	
PCB-189	108	60.0 - 135	
PCB-202	112	60.0 - 135	
PCB-205	102	60.0 - 135	
PCB-206	101	60.0 - 135	
PCB-208	105	60.0 - 135	
PCB-209	98.2	60.0 - 135	

Internal Standards	% Recovery	QC Limits	Qual
13C-PCB-1	79.7	15.0 - 145	
13C-PCB-3	73.7	15.0 - 145	
13C-PCB-4	83.8	15.0 - 145	
13C-PCB-15	72.6	15.0 - 145	
13C-PCB-19	77.0	15.0 - 145	
13C-PCB-37	80.2	15.0 - 145	
13C-PCB-54	84.6	15.0 - 145	
13C-PCB-77	83.2	40.0 - 145	
13C-PCB-81	82.0	40.0 - 145	
13C-PCB-104	71.7	40.0 - 145	
13C-PCB-105	86.7	40.0 - 145	
13C-PCB-114	85.8	40.0 - 145	
13C-PCB-118	85.5	40.0 - 145	
13C-PCB-123	82.2	40.0 - 145	
13C-PCB-126	87.6	40.0 - 145	
13C-PCB-155	76.6	40.0 - 145	
13C-PCB-156	83.6	40.0 - 145	
13C-PCB-157	88.5	40.0 - 145	
13C-PCB-167	86.4	40.0 - 145	
13C-PCB-169	93.3	40.0 - 145	
13C-PCB-188	74.6	40.0 - 145	
13C-PCB-189	90.1	40.0 - 145	
13C-PCB-202	77.3	40.0 - 145	
13C-PCB-205	79.0	40.0 - 145	
13C-PCB-206	73.4	40.0 - 145	
13C-PCB-208	74.5	40.0 - 145	
13C-PCB-209	74.6	40.0 - 145	

Cleanup Surrogate	% Recovery	QC limits	Qual
13C-PCB-28	83.4	15.0 - 145	
13C-PCB-111	77.9	40.0 - 145	
13C-PCB-178	76.6	40.0 - 145	

Analyst: _____

Date: 1/6/2023

Reviewed By: _____

Date: 1/6/2023

EPA Method 1668
PCBs

FAL ID: 14850-001-SA
Client ID: M1001-SW-221209
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023
Total Conc: 10900

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-1	ND	7.59			PCB-51	15.7	-	J	
PCB-2	ND	6.71			PCB-52	311	-	C	69
PCB-3	ND	8.19			PCB-53	37.7	-		
PCB-4	60.7	-			PCB-54	ND	6.89		
PCB-5	ND	12.0			PCB-55	ND	6.07		
PCB-6	29.3	-			PCB-56	187	-	C	60
PCB-7	ND	12.2			PCB-57	ND	6.51		
PCB-8	142	-			PCB-58	ND	6.64		
PCB-9	ND	11.9			PCB-59	-	-	C042	42
PCB-10	ND	11.3			PCB-60	-	-	C056	56
PCB-11	773	-			PCB-61	303	-	C	70
PCB-12	ND	13.3			PCB-62	ND	6.44		
PCB-13	ND	13.7			PCB-63	ND	6.26		
PCB-14	ND	12.0			PCB-64	-	-	C041	41/71/72
PCB-15	104	-			PCB-65	ND	6.79		
PCB-16	69.7	-			PCB-66	235	-	C	76
PCB-17	87.0	-			PCB-67	ND	6.41		
PCB-18	202	-			PCB-68	ND	6.07		
PCB-19	23.2	-			PCB-69	-	-	C052	52
PCB-20	262	-	C	21/33	PCB-70	-	-	C061	61
PCB-21	-	-	C020	20/33	PCB-71	-	-	C041	41/64/72
PCB-22	157	-			PCB-72	-	-	C041	41/64/71
PCB-23	ND	9.88			PCB-73	ND	6.11		
PCB-24	ND	6.05			PCB-74	116	-		
PCB-25	31.5	-			PCB-75	-	-	C048	48
PCB-26	48.2	-			PCB-76	-	-	C066	66
PCB-27	ND	6.00			PCB-77	41.9	-		
PCB-28	327	-			PCB-78	ND	9.81		
PCB-29	ND	11.1			PCB-79	ND	9.33		
PCB-30	ND	5.85			PCB-80	ND	5.53		
PCB-31	430	-			PCB-81	ND	8.52		
PCB-32	75.2	-			PCB-82	68.5	-		
PCB-33	-	-	C020	20/21	PCB-83	ND	12.8	C	112
PCB-34	ND	9.88			PCB-84	137	-	C	92
PCB-35	ND	13.9			PCB-85	65.6	-	C	116
PCB-36	ND	12.0			PCB-86	ND	15.3		
PCB-37	130	-			PCB-87	144	-	C	117/125
PCB-38	ND	11.4			PCB-88	47.8	-	C	91
PCB-39	ND	12.1			PCB-89	ND	14.9		
PCB-40	69.7	-			PCB-90	350	-	C	101
PCB-41	256	-	C	64/71/72	PCB-91	-	-	C088	88
PCB-42	107	-	C	59	PCB-92	-	-	C084	84
PCB-43	187	-	C	49	PCB-93	3.49	-		
PCB-44	280	-			PCB-94	ND	9.78		
PCB-45	45.7	-			PCB-95	279	-		
PCB-46	26.1	-			PCB-96	ND	6.84		
PCB-47	94.9	-			PCB-97	128	-		
PCB-48	66.3	-	C	75	PCB-98	ND	9.25	C	102
PCB-49	-	-	C043	43	PCB-99	125	-		
PCB-50	ND	8.64			PCB-100	ND	8.12		

EPA Method 1668
PCBs

FAL ID: 14850-001-SA
Client ID: M1001-SW-221209
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters	Compound	Conc	DL	Qual	Coeluters
PCB-101	-	-	C090	90	PCB-151	69.0	-		
PCB-102	-	-	C098	98	PCB-152	ND	5.89		
PCB-103	ND	8.24			PCB-153	296	-		
PCB-104	ND	6.73			PCB-154	ND	6.58		
PCB-105	166	-			PCB-155	ND	5.49		
PCB-106	374	-	C	118	PCB-156	56.9	-		
PCB-107	27.5	-	C	108	PCB-157	18.9	-	J	
PCB-108	-	-	C107	107	PCB-158	68.7	-	C	160
PCB-109	ND	10.3			PCB-159	ND	5.10		
PCB-110	404	-			PCB-160	-	-	C158	158
PCB-111	ND	10.3	C	115	PCB-161	-	-	C132	132
PCB-112	-	-	C083	83	PCB-162	-	-	C128	128
PCB-113	ND	12.1			PCB-163	-	-	C138	138/164
PCB-114	ND	5.17			PCB-164	-	-	C138	138/163
PCB-115	-	-	C111	111	PCB-165	-	-	C146	146
PCB-116	-	-	C085	85	PCB-166	ND	5.27		
PCB-117	-	-	C087	87/125	PCB-167	21.9	-		
PCB-118	-	-	C	106	PCB-168	ND	5.16		
PCB-119	ND	9.91			PCB-169	ND	6.27		
PCB-120	ND	9.69			PCB-170	105	-		
PCB-121	ND	7.05			PCB-171	34.5	-		
PCB-122	ND	5.18			PCB-172	26.5	-		
PCB-123	ND	4.97			PCB-173	ND	8.85		
PCB-124	8.11	-	J		PCB-174	95.9	-		
PCB-125	-	-	C087	87/117	PCB-175	130	-		
PCB-126	ND	7.54			PCB-176	12.8	-	J	
PCB-127	ND	5.46			PCB-177	56.7	-		
PCB-128	79.8	-	C	162	PCB-178	19.1	-	J	
PCB-129	34.9	-			PCB-179	37.5	-		
PCB-130	35.2	-			PCB-180	261	-		
PCB-131	ND	7.90	C	133	PCB-181	ND	7.67		
PCB-132	119	-	C	161	PCB-182	117	-	C	187
PCB-133	-	-	C131	131	PCB-183	65.0	-		
PCB-134	24.6	-	C	143	PCB-184	ND	5.23		
PCB-135	42.9	-			PCB-185	ND	7.62		
PCB-136	47.2	-			PCB-186	ND	5.57		
PCB-137	32.2	-			PCB-187	-	-	C182	182
PCB-138	428	-	C	163/164	PCB-188	ND	6.32		
PCB-139	277	-	C	149	PCB-189	ND	6.00		
PCB-140	ND	6.38			PCB-190	26.4	-		
PCB-141	91.2	-			PCB-191	ND	6.00		
PCB-142	ND	7.65			PCB-192	ND	6.18		
PCB-143	-	-	C134	134	PCB-193	20.1	-	J	
PCB-144	22.4	-			PCB-194	49.1	-		
PCB-145	ND	5.89			PCB-195	25.9	-		
PCB-146	49.4	-	C	165	PCB-196	88.5	-	C	203
PCB-147	ND	6.46			PCB-197	ND	7.76		
PCB-148	ND	7.98			PCB-198	82.6	-		
PCB-149	-	-	C139	139	PCB-199	67.8	-		
PCB-150	ND	5.60			PCB-200	ND	8.07		

EPA Method 1668
PCBs

FAL ID: 14850-001-SA
Client ID: M1001-SW-221209
Matrix: Aqueous
Batch No: X6325

Date Extracted: 01-04-2023
Date Received: 12-28-2022
Amount: 0.979 L

ICal: DAILY209FAL4-1-5-23
GC Column: DB1MS
Units: pg/L

Acquired: 01-05-2023

Compound	Conc	DL	Qual	Coeluters
PCB-201	ND	7.84		
PCB-202	ND	8.75		
PCB-203	-	-	C196	196
PCB-204	ND	8.13		
PCB-205	ND	4.58		
PCB-206	38.0	-		
PCB-207	ND	4.95		
PCB-208	10.3	-	J	
PCB-209	13.7	-	J	

Internal Standards	% Rec	QC Limits	Qual
13C-PCB-1	78.1	5.00 - 145	
13C-PCB-3	68.2	5.00 - 145	
13C-PCB-4	89.2	5.00 - 145	
13C-PCB-15	69.9	5.00 - 145	
13C-PCB-19	77.4	5.00 - 145	
13C-PCB-37	78.5	5.00 - 145	
13C-PCB-54	81.0	5.00 - 145	
13C-PCB-77	86.5	10.0 - 145	
13C-PCB-81	85.2	10.0 - 145	
13C-PCB-104	71.0	10.0 - 145	
13C-PCB-105	88.0	10.0 - 145	
13C-PCB-114	86.0	10.0 - 145	
13C-PCB-118	85.3	10.0 - 145	
13C-PCB-123	84.3	10.0 - 145	
13C-PCB-126	90.6	10.0 - 145	
13C-PCB-155	74.2	10.0 - 145	
13C-PCB-156	80.4	10.0 - 145	
13C-PCB-157	86.6	10.0 - 145	
13C-PCB-167	83.8	10.0 - 145	
13C-PCB-169	90.8	10.0 - 145	
13C-PCB-188	70.6	10.0 - 145	
13C-PCB-189	85.7	10.0 - 145	
13C-PCB-202	72.0	10.0 - 145	
13C-PCB-205	76.9	10.0 - 145	
13C-PCB-206	74.2	10.0 - 145	
13C-PCB-208	74.9	10.0 - 145	
13C-PCB-209	75.8	10.0 - 145	

Cleanup Surrogates	% Rec	QC Limits	Qual
13C-PCB-28	91.8	5.00 - 145	
13C-PCB-111	83.1	10.0 - 145	
13C-PCB-178	75.8	10.0 - 145	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Coelution
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 1/6/2023

Reviewed By: _____
Date: 1/6/2023

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 Frontier

PROJECT NAME/NO.	PO #
212185	D-85

REMARKS 14850

Please Email Results 00C

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	PCB Congeners	D/F 1613						Notes
M1001-SW-221209		12/9/22	0930	water	2				x	x						* see attached

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	12/12/22	1011
Received by:	Kathy Z PP	Frontier	12/13/22	1030
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Michael Erdahl

From: "Lynn Green" <lynng@evren-nw.com>
Date: Tuesday, December 27, 2022 10:13 AM
To: "Michael Erdahl" <merdahl@friedmanandbruya.com>
Cc: "Tori Bennett" <torib@evren-nw.com>; "Evan Bruggeman" <evanb@evren-nw.com>
Subject: RE: 1355-19001-02

We need the following Dioxins and Furans:

- 2,3,7,8-TCDD/TCDF,
- 1,2,3,7,8-PeCDD/PeCDF,
- 1,2,3,4,7,8-HxCDD/HxCDF,
- 1,2,3,6,7,8-HxCDD/HxCDF,
- 1,2,3,7,8,9-HxCDD/HxCDF,
- 2,3,4,6,7,8-HxCDF,
- 1,2,3,4,6,7,8-HpCDD/HpCDF, and
- 1,2,3,4,7,8,9-HpCDF

You previously reported MRLS between 0.000000304 - 0.000000732 ug/L for these constituents. Which method was that?

Lynn D. Green, Ph. D.
P.G./R.G./L.G./C.E.G./L.E.G.
Principal Engineering Geologist / Hydrologist
EVREN Northwest, Inc
Environmental and Natural Resource Consulting
><))))°> 🚲 ><))))°> 🚲 ><))))°> 🚲 ><))))°>

From: Michael Erdahl <merdahl@friedmanandbruya.com>
Sent: Tuesday, December 27, 2022 10:10 AM
To: Lynn Green <lynng@evren-nw.com>
Cc: Tori Bennett <torib@evren-nw.com>; Evan Bruggeman <evanb@evren-nw.com>
Subject: Re: 1355-19001-02

The list was provided with this one.

1) Do you only want 2,3,7,8-TCDD eq only for both of these samples?

2) Which method--EPA 1613 or 8290?

Michael Erdahl
Senior Project Manager
Friedman and Bruya
(206) 285-8282 x 247
(206) 446-5926 (cell)

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **14850**

Client:	Friedman & Bruya, Inc.
Client Project ID:	212185
Date Received:	12/28/2022
Time Received:	10:30 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R-4

Method of Delivery:	Fed-Ex
Tracking Number:	813795597453
Shipping Container Received Intact	Yes
Custody seals(s) present?	No
Custody seals(s) intact?	No
Sample Arrival Temperature (C)	0
Cooling Method	Blue Ice/Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	Yes
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	Yes
pH Range of Aqueous Sample	Between 4 and 9
Anomalies or additional comments:	


Frontier Analytical Laboratory
14850-001-SA
Client ID: M1001-SW-221209
Storage: R-4
(01 of 01)
Dioxin +Furans
FRIEDMAN & BRUYA, INC.
212185
Client: ENV
Sample ID: M1001-SW-221209
Date Sampled: 12-09-22
Time: 09:30
Project: 1355-19001-03
Analysis Request:
01 C
FRIEDMAN & BRUYA, INC.
212185
Client: ENV
Sample ID: M1001-SW-221209
Date Sampled: 12-09-22
Time: 09:30
Project: 1355-19001-03
Analysis Request:
01 D
Frontier Analytical Laboratory
14850-001-SA
Client ID:M1001-SW-221209
Storage: R-4
(01 of 01)
PCB's
2023/01/04

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: 212185
Work Order Number: 2212239

December 16, 2022

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 12/12/2022 for the analyses presented in the following report.

Total Metals by EPA Method 200.8

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: *12/16/2022*

CLIENT: Friedman & Bruya
Project: 212185
Work Order: 2212239

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2212239-001	M1001-SW-221209	12/09/2022 9:30 AM	12/12/2022 11:17 AM

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

Original

Case Narrative

WO#: **2212239**
Date: **12/16/2022**

CLIENT: Friedman & Bruya
Project: 212185

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: **2212239**
Date Reported: **12/16/2022**

Client: Friedman & Bruya
Collection Date: 12/9/2022 9:30:00 AM
Project: 212185
Lab ID: 2212239-001
Matrix: Water
Client Sample ID: **M1001-SW-221209**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 200.8				Batch ID: 38834		Analyst: EH
Aluminum	519	50.0		µg/L	1	12/14/2022 1:59:26 PM

Work Order: 2212239
CLIENT: Friedman & Bruya
Project: 212185

QC SUMMARY REPORT

Total Metals by EPA Method 200.8

Sample ID: **MB-38834**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **12/14/2022**		RunNo: **80478**		
Client ID: **MBLKW**	Batch ID: **38834**					Analysis Date: **12/14/2022**		SeqNo: **1663793**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	50.0									

Sample ID: **LCS-38834**	SampType: **LCS**			Units: **µg/L**		Prep Date: **12/14/2022**		RunNo: **80478**		
Client ID: **LCSW**	Batch ID: **38834**					Analysis Date: **12/14/2022**		SeqNo: **1663794**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	913	50.0	1,000	0	91.3	85	115				

Sample ID: **2212268-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **12/14/2022**		RunNo: **80478**		
Client ID: **BATCH**	Batch ID: **38834**					Analysis Date: **12/14/2022**		SeqNo: **1663796**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	50.0						0		30	

Sample ID: **2212268-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **12/14/2022**		RunNo: **80478**		
Client ID: **BATCH**	Batch ID: **38834**					Analysis Date: **12/14/2022**		SeqNo: **1663797**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	964	50.0	1,000	26.29	93.7	70	130				

Sample ID: **2212271-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **12/14/2022**		RunNo: **80478**		
Client ID: **BATCH**	Batch ID: **38834**					Analysis Date: **12/14/2022**		SeqNo: **1663805**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1,140	50.0	1,000	185.7	95.4	70	130				

Sample Log-In Check List

Client Name:	FB	Work Order Number:	2212239
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 ☐ HNO3
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

22,12239

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.	PO #
212185	D-58

REMARKS

Please Email Results

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	Total Aluminum 200.8						Notes
M1001-SW-221209		12/9/22	0930	water	1				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	0900 AM
Received by:	Clare O'Connor	Clare O'Connor	FAI	12/12/22	11:17
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

March 13, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the results from the testing of material submitted on January 17, 2023 from the 1355-19001-02, F&BI 301237 project. There are 12 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: Neil Woller, Paul Trone, Evan Bruggeman
ENW0313R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 17, 2023 by Friedman & Bruya, Inc. from the Evren Northwest 1355-19001-02, F&BI 301237 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Evren Northwest
301237 -01	M1001-SW-230113

The sample was sent to Enthalpy Anlaytical for dioxin and furan and PCB congener analyses. In addition, the sample was sent to Fremont Analytical for total aluminum analysis. The reports are enclosed.

An 8270E internal standard failed the acceptance criteria for sample M1001-SW-230113. The sample was diluted and reanalyzed with acceptable results. Both data sets were reported.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 200.8

Client ID:	M1001-SW-230113	Client:	Evren Northwest
Date Received:	01/17/23	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/17/23	Lab ID:	301237-01
Date Analyzed:	01/17/23	Data File:	301237-01.135
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Cadmium	<0.2
Chromium	3.42
Copper	14.7
Lead	5.62
Manganese	116
Silver	<0.2
Zinc	90.7

Analysis For Total Metals By EPA Method 200.8

Client ID:	M1001-SW-230113	Client:	Evren Northwest
Date Received:	01/17/23	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/17/23	Lab ID:	301237-01
Date Analyzed:	01/18/23	Data File:	301237-01.063
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	0.814

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/18/23	Lab ID:	I3-33 mb2
Date Analyzed:	01/18/23	Data File:	I3-33 mb2.057
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.2
Cadmium	<0.2
Chromium	<1
Copper	<5
Lead	<0.2
Manganese	<1
Silver	<0.2
Zinc	<5

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	M1001-SW-230113	Client:	Evren Northwest
Date Received:	01/17/23	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/17/23	Lab ID:	301237-01 1/0.5
Date Analyzed:	01/19/23	Data File:	011922.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	50	11	173
2-Fluorobiphenyl	57	44	108
2,4,6-Tribromophenol	74	10	140
Terphenyl-d14	94	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
Acenaphthene	<0.01
Fluoranthene	0.076
Pyrene	0.14
Benz(a)anthracene	0.017
Chrysene	0.058
Benzo(a)pyrene	0.040 J
Benzo(b)fluoranthene	0.071 J
Benzo(k)fluoranthene	0.026 J
Indeno(1,2,3-cd)pyrene	0.025 J
Dibenz(a,h)anthracene	<0.01 J
Benzo(g,h,i)perylene	0.038 J
Dibenz(a,h)anthracene	<0.01 J
Bis(2-ethylhexyl) phthalate	<1.6

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	M1001-SW-230113	Client:	Evren Northwest
Date Received:	01/17/23	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/17/23	Lab ID:	301237-01 1/5
Date Analyzed:	01/17/23	Data File:	011722.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	46 d	16	137
2-Fluorobiphenyl	55 d	46	122
2,4,6-Tribromophenol	91 d	17	154
Terphenyl-d14	77 d	31	167

Compounds:	ug/L (ppb)
Fluorene	<0.1
Phenanthrene	<0.1
Anthracene	<0.1
Benzo(a)pyrene	<0.1
Benzo(b)fluoranthene	<0.1
Benzo(k)fluoranthene	<0.1
Indeno(1,2,3-cd)pyrene	<0.1
Dibenz(a,h)anthracene	<0.1
Benzo(g,h,i)perylene	<0.2
Dibenz(a,h)anthracene	<0.1

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-02, F&BI 301237
Date Extracted:	01/17/23	Lab ID:	03-161 mb3 1/0.5
Date Analyzed:	01/17/23	Data File:	011714.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	89	11	173
2-Fluorobiphenyl	94	44	108
2,4,6-Tribromophenol	85	10	140
Terphenyl-d14	103	50	150

Compounds:	ug/L (ppb)
Naphthalene	<0.1
Acenaphthene	<0.01
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.02
Dibenz(a,h)anthracene	<0.01
Bis(2-ethylhexyl) phthalate	<1.6

Date of Report: 03/13/23
Date Received: 01/17/23
Project: 1355-19001-02, F&BI 301237
Date Extracted: 01/23/23
Date Analyzed: 01/25/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL SUSPENDED SOLIDS
BY METHOD 2540D**

Results Reported as mg/L (ppm)

Sample ID Laboratory ID	Total Suspended Solids
M1001-SW-230113 301237-01	93
Method Blank 03-203 mb	<5

Date of Report: 03/13/23
Date Received: 01/17/23
Project: 1355-19001-02, F&BI 301237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 301203-01 (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	7.31	79	81	70-130	2
Cadmium	ug/L (ppb)	5	<1	98	97	70-130	1
Chromium	ug/L (ppb)	20	<1	87	92	70-130	6
Copper	ug/L (ppb)	20	<5	76	71	70-130	7
Lead	ug/L (ppb)	10	<1	88	87	70-130	1
Manganese	ug/L (ppb)	20	957	64 b	0 b	70-130	200 b
Silver	ug/L (ppb)	5	<1	92	92	70-130	0
Zinc	ug/L (ppb)	50	<5	77	75	70-130	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	94	85-115
Cadmium	ug/L (ppb)	5	103	85-115
Chromium	ug/L (ppb)	20	102	85-115
Copper	ug/L (ppb)	20	106	85-115
Lead	ug/L (ppb)	10	101	85-115
Manganese	ug/L (ppb)	20	97	85-115
Silver	ug/L (ppb)	5	100	85-115
Zinc	ug/L (ppb)	50	104	85-115

Date of Report: 03/13/23
Date Received: 01/17/23
Project: 1355-19001-02, F&BI 301237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	73	76	62-97	4
Acenaphthene	ug/L (ppb)	5	82	83	70-130	1
Fluorene	ug/L (ppb)	5	88	90	70-130	2
Phenanthrene	ug/L (ppb)	5	94	96	70-130	2
Anthracene	ug/L (ppb)	5	93	95	70-130	2
Fluoranthene	ug/L (ppb)	5	99	101	70-130	2
Pyrene	ug/L (ppb)	5	96	95	70-130	1
Benz(a)anthracene	ug/L (ppb)	5	99	97	70-130	2
Chrysene	ug/L (ppb)	5	97	95	70-130	2
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	5	95	98	44-140	3
Benzo(a)pyrene	ug/L (ppb)	5	101	101	70-130	0
Benzo(b)fluoranthene	ug/L (ppb)	5	101	102	70-130	1
Benzo(k)fluoranthene	ug/L (ppb)	5	97	99	70-130	2
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	114	109	70-130	4
Dibenz(a,h)anthracene	ug/L (ppb)	5	105	104	70-130	1
Benzo(g,h,i)perylene	ug/L (ppb)	5	100	99	70-130	1

Date of Report: 03/13/23
Date Received: 01/17/23
Project: 1355-19001-02, F&BI 301237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
TSS	mg/L (ppm)	20	86	94	35-146	9

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, biased high; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 standard reporting limit. 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.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

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.

301237

SAMPLE CHAIN OF CUSTODY

01/17/23 C3/J1

Page # 01 of 01

Report To Lynn Green

Company Evren NW

Address PO 14488

City, State, ZIP Portland, OR 97214

Phone 503-452-5561 Email Lynn@evren-nw.com

SAMPLERS (*signature*)	
PROJECT NAME 1355-19001-~~03~~02	PO # per EB 2/27/23 ME
REMARKS ✱ See Attached form for sample details Project specific RLs? - Yes / No	INVOICE TO

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	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	2,3,7,8 TCDD D/F ~~PAHs EPA 8270~~	PCBs as Congeners ~~EPA 8082~~	TSS ✱	Select total metals ✱	PAHs ✱	Phthalates ✱	SVOC's ✱	Notes
M1001-SW-230113	01A-H	1-13-23	12:15	Water	8						⊗	⊗	X	X	X	X	X	
																		metals: Al, As,
																		Cd, Cr, Cu, Pb,
																		Mn, Ag, Zn.
																		⊗ per attached
																		JSC screening
																		levels ME

Friedman & Bruya, Inc.
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Bailey Fawver	ENW	1-13-23	17:00
Received by:	ANH PHAN	F&B	01/17/23	10:20
Relinquished by:				
Received by:		Samples received at 4 °C		

March 09, 2023

Enthalpy Analytical - El Dorado Hills
Work Order No. 2301182

Mr. Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119

Dear Mr. Erdahl,

Enclosed are the results for the sample set received at Enthalpy Analytical - EDH on January 18, 2023 under your Project Name '301237'.

Enthalpy Analytical - EDH is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at kathy.zipp@enthalpy.com.

Thank you for choosing Enthalpy Analytical - EDH as part of your analytical support team.

Sincerely,

Kathy Zipp
Project Manager

Enthalpy Analytical - EDH certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Enthalpy Analytical - EDH .

Enthalpy Analytical - EDH Work Order No. 2301182
Case Narrative

Sample Condition on Receipt:

One aqueous sample was received and stored securely in accordance with Enthalpy Analytical - EDH standard operating procedures and EPA methodology. The sample was received in good condition and within the method temperature requirements.

Analytical Notes:

EPA Method 1613B

This sample was extracted and analyzed for tetra-through-octa chlorinated dioxins and furans by EPA Method 1613B using a ZB-DIOXIN GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are flagged with an "H" qualifier.

EPA Method 1668C

The sample was extracted and analyzed for 209 PCB congeners by EPA Method 1668C using a ZB-1 GC column.

Holding Times

The method holding time criteria were met for this sample.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limit in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

TABLE OF CONTENTS

Case Narrative..... 1

Table of Contents..... 4

Sample Inventory..... 5

Analytical Results..... 6

Qualifiers..... 22

Certifications..... 23

Sample Receipt..... 24

Sample Inventory Report

Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2301182-01	M1001-SW-230113	13-Jan-23 12:15	18-Jan-23 08:47	Amber Glass NM Bottle, 1L Amber Glass NM Bottle, 1L Amber Glass NM Bottle, 1L

ANALYTICAL RESULTS

Sample ID: Method Blank **EPA Method 1613B**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B040-BLK1
QC Batch: B23B040
Sample Size: 1.00 L
Date Extracted: 06-Feb-23
Column: ZB-DIOXIN

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	ND	1.81	1.78			08-Feb-23 13:02	1
1,2,3,7,8-PeCDD	ND	1.04	5.63			08-Feb-23 13:02	1
1,2,3,4,7,8-HxCDD	ND	1.17	4.18			08-Feb-23 13:02	1
1,2,3,6,7,8-HxCDD	ND	1.28	3.51			08-Feb-23 13:02	1
1,2,3,7,8,9-HxCDD	ND	1.25	4.46			08-Feb-23 13:02	1
1,2,3,4,6,7,8-HpCDD	ND	1.26	4.84			08-Feb-23 13:02	1
OCDD	ND	3.02	16.4			08-Feb-23 13:02	1
2,3,7,8-TCDF	ND	0.233	1.78			08-Feb-23 13:02	1
1,2,3,7,8-PeCDF	ND	0.674	5.01			08-Feb-23 13:02	1
2,3,4,7,8-PeCDF	ND	0.726	4.99			08-Feb-23 13:02	1
1,2,3,4,7,8-HxCDF	ND	0.554	6.87			08-Feb-23 13:02	1
1,2,3,6,7,8-HxCDF	ND	0.572	6.31			08-Feb-23 13:02	1
2,3,4,6,7,8-HxCDF	ND	0.649	5.80			08-Feb-23 13:02	1
1,2,3,7,8,9-HxCDF	ND	0.902	5.33			08-Feb-23 13:02	1
1,2,3,4,6,7,8-HpCDF	ND	0.519	5.96			08-Feb-23 13:02	1
1,2,3,4,7,8,9-HpCDF	ND	0.734	5.34			08-Feb-23 13:02	1
OCDF	ND	1.62	11.3			08-Feb-23 13:02	1
Toxic Equivalent							
TEQMinWHO2005Dioxin	0.00						
Totals							
Total TCDD	ND	1.81					
Total PeCDD	ND	1.04					
Total HxCDD	ND	1.28					
Total HpCDD	ND	1.26					
Total TCDF	ND	0.233					
Total PeCDF	ND	0.726					
Total HxCDF	ND	0.902					
Total HpCDF	ND	0.734					

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	20.0	25 - 164	H	08-Feb-23 13:02	1
13C-1,2,3,7,8-PeCDD	IS	81.2	25 - 181		08-Feb-23 13:02	1
13C-1,2,3,4,7,8-HxCDD	IS	101	32 - 141		08-Feb-23 13:02	1
13C-1,2,3,6,7,8-HxCDD	IS	96.1	28 - 130		08-Feb-23 13:02	1
13C-1,2,3,7,8,9-HxCDD	IS	97.2	32 - 141		08-Feb-23 13:02	1
13C-1,2,3,4,6,7,8-HpCDD	IS	93.7	23 - 140		08-Feb-23 13:02	1
13C-OCDD	IS	65.2	17 - 157		08-Feb-23 13:02	1
13C-2,3,7,8-TCDF	IS	91.8	24 - 169		08-Feb-23 13:02	1
13C-1,2,3,7,8-PeCDF	IS	92.7	24 - 185		08-Feb-23 13:02	1
13C-2,3,4,7,8-PeCDF	IS	82.3	21 - 178		08-Feb-23 13:02	1
13C-1,2,3,4,7,8-HxCDF	IS	103	26 - 152		08-Feb-23 13:02	1
13C-1,2,3,6,7,8-HxCDF	IS	99.2	26 - 123		08-Feb-23 13:02	1
13C-2,3,4,6,7,8-HxCDF	IS	95.2	28 - 136		08-Feb-23 13:02	1
13C-1,2,3,7,8,9-HxCDF	IS	94.6	29 - 147		08-Feb-23 13:02	1
13C-1,2,3,4,6,7,8-HpCDF	IS	90.5	28 - 143		08-Feb-23 13:02	1
13C-1,2,3,4,7,8,9-HpCDF	IS	81.9	26 - 138		08-Feb-23 13:02	1
13C-OCDF	IS	75.1	17 - 157		08-Feb-23 13:02	1
37Cl-2,3,7,8-TCDD	CRS	15.9	35 - 197	H	08-Feb-23 13:02	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: OPR **EPA Method 1613B**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B040-BS1
QC Batch: B23B040 Date Extracted: 06-Feb-23 08:03
Sample Size: 1.00 L Column: ZB-DIOXIN

Analyte	Amt Found (pg/L)	Spike Amt	% Recovery	Limits	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	175	200	87.5	67-158		08-Feb-23 11:32	1
1,2,3,7,8-PeCDD	982	1000	98.2	70-142		08-Feb-23 11:32	1
1,2,3,4,7,8-HxCDD	903	1000	90.3	70-164		08-Feb-23 11:32	1
1,2,3,6,7,8-HxCDD	990	1000	99.0	76-134		08-Feb-23 11:32	1
1,2,3,7,8,9-HxCDD	994	1000	99.4	64-162		08-Feb-23 11:32	1
1,2,3,4,6,7,8-HpCDD	865	1000	86.5	70-140		08-Feb-23 11:32	1
OCDD	2110	2000	105	78-144		08-Feb-23 11:32	1
2,3,7,8-TCDF	162	200	81.1	75-158		08-Feb-23 11:32	1
1,2,3,7,8-PeCDF	992	1000	99.2	80-134		08-Feb-23 11:32	1
2,3,4,7,8-PeCDF	1040	1000	104	68-160		08-Feb-23 11:32	1
1,2,3,4,7,8-HxCDF	1020	1000	102	72-134		08-Feb-23 11:32	1
1,2,3,6,7,8-HxCDF	1020	1000	102	84-130		08-Feb-23 11:32	1
2,3,4,6,7,8-HxCDF	970	1000	97.0	70-156		08-Feb-23 11:32	1
1,2,3,7,8,9-HxCDF	909	1000	90.9	78-130		08-Feb-23 11:32	1
1,2,3,4,6,7,8-HpCDF	985	1000	98.5	82-122		08-Feb-23 11:32	1
1,2,3,4,7,8,9-HpCDF	1040	1000	104	78-138		08-Feb-23 11:32	1
OCDF	1950	2000	97.4	63-170		08-Feb-23 11:32	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	26.8	20-175		08-Feb-23 11:32	1
13C-1,2,3,7,8-PeCDD	IS	92.5	21-227		08-Feb-23 11:32	1
13C-1,2,3,4,7,8-HxCDD	IS	106	21-193		08-Feb-23 11:32	1
13C-1,2,3,6,7,8-HxCDD	IS	100	25-163		08-Feb-23 11:32	1
13C-1,2,3,7,8,9-HxCDD	IS	104	21-193		08-Feb-23 11:32	1
13C-1,2,3,4,6,7,8-HpCDD	IS	104	26-166		08-Feb-23 11:32	1
13C-OCDD	IS	76.5	13-199		08-Feb-23 11:32	1
13C-2,3,7,8-TCDF	IS	96.8	22-152		08-Feb-23 11:32	1
13C-1,2,3,7,8-PeCDF	IS	96.2	21-192		08-Feb-23 11:32	1
13C-2,3,4,7,8-PeCDF	IS	97.5	13-328		08-Feb-23 11:32	1
13C-1,2,3,4,7,8-HxCDF	IS	98.1	19-202		08-Feb-23 11:32	1
13C-1,2,3,6,7,8-HxCDF	IS	96.7	21-159		08-Feb-23 11:32	1
13C-2,3,4,6,7,8-HxCDF	IS	96.7	22-176		08-Feb-23 11:32	1
13C-1,2,3,7,8,9-HxCDF	IS	99.9	17-205		08-Feb-23 11:32	1
13C-1,2,3,4,6,7,8-HpCDF	IS	98.2	21-158		08-Feb-23 11:32	1
13C-1,2,3,4,7,8,9-HpCDF	IS	87.0	20-186		08-Feb-23 11:32	1
13C-OCDF	IS	87.6	13-199		08-Feb-23 11:32	1
37Cl-2,3,7,8-TCDD	CRS	23.0	31-191	H	08-Feb-23 11:32	1

Sample ID: M1001-SW-230113 **EPA Method 1613B**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data
Lab Sample: 2301182-01
QC Batch: B23B040
Sample Size: 0.975 L
Date Received: 18-Jan-23 08:47
Date Extracted: 06-Feb-23
Column: ZB-DIOXIN

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	ND	1.62	1.83			08-Feb-23 13:47	1
1,2,3,7,8-PeCDD	ND	1.40	5.78			08-Feb-23 13:47	1
1,2,3,4,7,8-HxCDD	ND	1.97	4.29			08-Feb-23 13:47	1
1,2,3,6,7,8-HxCDD	ND	2.23	3.60			08-Feb-23 13:47	1
1,2,3,7,8,9-HxCDD	ND	2.27	4.58			08-Feb-23 13:47	1
1,2,3,4,6,7,8-HpCDD	44.2		4.96			08-Feb-23 13:47	1
OCDD	398		16.8			08-Feb-23 13:47	1
2,3,7,8-TCDF	ND	0.381	1.83			08-Feb-23 13:47	1
1,2,3,7,8-PeCDF	ND	1.08	5.14			08-Feb-23 13:47	1
2,3,4,7,8-PeCDF	ND	1.06	5.12			08-Feb-23 13:47	1
1,2,3,4,7,8-HxCDF	ND	0.978	7.05			08-Feb-23 13:47	1
1,2,3,6,7,8-HxCDF	ND	1.06	6.47			08-Feb-23 13:47	1
2,3,4,6,7,8-HxCDF	ND	1.34	5.95			08-Feb-23 13:47	1
1,2,3,7,8,9-HxCDF	ND	1.58	5.47			08-Feb-23 13:47	1
1,2,3,4,6,7,8-HpCDF	ND		6.11	7.98		08-Feb-23 13:47	1
1,2,3,4,7,8,9-HpCDF	ND	4.12	5.48			08-Feb-23 13:47	1
OCDF	26.5		11.6		J	08-Feb-23 13:47	1
Toxic Equivalent							
TEQMinWHO2005Dioxin	0.569						
Totals							
Total TCDD	ND	1.62					
Total PeCDD	ND	1.40					
Total HxCDD	5.67			11.9	J		
Total HpCDD	116						
Total TCDF	ND	0.381					
Total PeCDF	1.04				J		
Total HxCDF	4.84			9.19	J		
Total HpCDF	14.9			22.8	J		

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	39.6	25 - 164		08-Feb-23 13:47	1
13C-1,2,3,7,8-PeCDD	IS	87.1	25 - 181		08-Feb-23 13:47	1
13C-1,2,3,4,7,8-HxCDD	IS	103	32 - 141		08-Feb-23 13:47	1
13C-1,2,3,6,7,8-HxCDD	IS	96.6	28 - 130		08-Feb-23 13:47	1
13C-1,2,3,7,8,9-HxCDD	IS	97.8	32 - 141		08-Feb-23 13:47	1
13C-1,2,3,4,6,7,8-HpCDD	IS	96.7	23 - 140		08-Feb-23 13:47	1
13C-OCDD	IS	67.1	17 - 157		08-Feb-23 13:47	1
13C-2,3,7,8-TCDF	IS	92.0	24 - 169		08-Feb-23 13:47	1
13C-1,2,3,7,8-PeCDF	IS	89.8	24 - 185		08-Feb-23 13:47	1
13C-2,3,4,7,8-PeCDF	IS	85.5	21 - 178		08-Feb-23 13:47	1
13C-1,2,3,4,7,8-HxCDF	IS	99.1	26 - 152		08-Feb-23 13:47	1
13C-1,2,3,6,7,8-HxCDF	IS	97.5	26 - 123		08-Feb-23 13:47	1
13C-2,3,4,6,7,8-HxCDF	IS	93.0	28 - 136		08-Feb-23 13:47	1
13C-1,2,3,7,8,9-HxCDF	IS	92.6	29 - 147		08-Feb-23 13:47	1
13C-1,2,3,4,6,7,8-HpCDF	IS	89.5	28 - 143		08-Feb-23 13:47	1
13C-1,2,3,4,7,8,9-HpCDF	IS	79.0	26 - 138		08-Feb-23 13:47	1
13C-OCDF	IS	76.0	17 - 157		08-Feb-23 13:47	1
37Cl-2,3,7,8-TCDD	CRS	38.2	35 - 197		08-Feb-23 13:47	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: Method Blank **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BLK1
QC Batch: B23B082 Date Extracted: 08-Feb-23
Sample Size: 1.00 L Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-1	ND	1.42	5.60			11-Feb-23 15:36	1
PCB-2	ND	1.76	3.08			11-Feb-23 15:36	1
PCB-3	ND	1.79	7.64			11-Feb-23 15:36	1
PCB-4/10	ND	14.3	3.15			11-Feb-23 15:36	1
PCB-5/8	ND	11.4	2.61			11-Feb-23 15:36	1
PCB-6	ND	11.2	3.48			11-Feb-23 15:36	1
PCB-7/9	ND	11.9	7.27			11-Feb-23 15:36	1
PCB-11	ND	10.3	19.5			11-Feb-23 15:36	1
PCB-12/13	ND	11.3	1.73			11-Feb-23 15:36	1
PCB-14	ND	11.2	1.88			11-Feb-23 15:36	1
PCB-15	ND	11.3	1.73			11-Feb-23 15:36	1
PCB-16/32	ND	1.16	3.70			11-Feb-23 15:36	1
PCB-17	ND	1.42	2.60			11-Feb-23 15:36	1
PCB-18	ND	1.33	5.95			11-Feb-23 15:36	1
PCB-19	ND	1.48	2.27			11-Feb-23 15:36	1
PCB-20/21/33	ND	1.79	3.75			11-Feb-23 15:36	1
PCB-22	ND	1.73	1.80			11-Feb-23 15:36	1
PCB-23	ND	1.83	2.04			11-Feb-23 15:36	1
PCB-24/27	ND	1.02	4.01			11-Feb-23 15:36	1
PCB-25	ND	1.79	1.87			11-Feb-23 15:36	1
PCB-26	ND	1.79	1.09			11-Feb-23 15:36	1
PCB-28	ND	1.61	4.17			11-Feb-23 15:36	1
PCB-29	ND	1.90	1.85			11-Feb-23 15:36	1
PCB-30	ND	0.934	2.16			11-Feb-23 15:36	1
PCB-31	ND	1.59	3.12			11-Feb-23 15:36	1
PCB-34	ND	1.86	1.41			11-Feb-23 15:36	1
PCB-35	ND	2.67	1.57			11-Feb-23 15:36	1
PCB-36	ND	2.62	1.49			11-Feb-23 15:36	1
PCB-37	ND	2.72	1.04			11-Feb-23 15:36	1
PCB-38	ND	2.66	0.696			11-Feb-23 15:36	1
PCB-39	ND	2.79	0.789			11-Feb-23 15:36	1
PCB-40	ND	2.09	2.95			11-Feb-23 15:36	1
PCB-41/64/71/72	ND	1.07	3.44			11-Feb-23 15:36	1
PCB-42/59	ND	1.23	1.78			11-Feb-23 15:36	1
PCB-43/49	ND	1.25	3.38			11-Feb-23 15:36	1
PCB-44	ND	1.58	8.62			11-Feb-23 15:36	1
PCB-45	ND	1.44	0.638			11-Feb-23 15:36	1
PCB-46	ND	1.50	2.42			11-Feb-23 15:36	1
PCB-47	ND	1.39	13.4			11-Feb-23 15:36	1
PCB-48/75	ND	1.15	2.38			11-Feb-23 15:36	1
PCB-50	ND	1.20	1.97			11-Feb-23 15:36	1
PCB-51	ND	1.16	2.62			11-Feb-23 15:36	1
PCB-52/69	ND	1.07	3.68			11-Feb-23 15:36	1
PCB-53	ND	1.23	2.02			11-Feb-23 15:36	1
PCB-54	ND	0.989	1.34			11-Feb-23 15:36	1
PCB-55	ND	0.903	0.789			11-Feb-23 15:36	1
PCB-56/60	ND	1.02	2.63			11-Feb-23 15:36	1
PCB-57	ND	0.816	1.71			11-Feb-23 15:36	1
PCB-58	ND	0.812	1.97			11-Feb-23 15:36	1
PCB-61/70	ND	0.898	2.45			11-Feb-23 15:36	1
PCB-62	ND	1.15	2.28			11-Feb-23 15:36	1
PCB-63	ND	0.905	1.23			11-Feb-23 15:36	1

Sample ID: Method Blank **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BLK1
QC Batch: B23B082
Sample Size: 1.00 L
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-65	ND	1.03	1.53			11-Feb-23 15:36	1
PCB-66/76	ND	0.820	2.66			11-Feb-23 15:36	1
PCB-67	ND	0.865	1.19			11-Feb-23 15:36	1
PCB-68	ND	1.01	3.06			11-Feb-23 15:36	1
PCB-73	ND	0.885	1.55			11-Feb-23 15:36	1
PCB-74	ND	0.808	1.22			11-Feb-23 15:36	1
PCB-77	ND	1.11	1.40			11-Feb-23 15:36	1
PCB-78	ND	1.08	1.35			11-Feb-23 15:36	1
PCB-79	ND	0.908	1.45			11-Feb-23 15:36	1
PCB-80	ND	0.892	2.16			11-Feb-23 15:36	1
PCB-81	ND	1.16	1.47			11-Feb-23 15:36	1
PCB-82	ND	1.33	2.66			11-Feb-23 15:36	1
PCB-83	ND	0.869	1.90			11-Feb-23 15:36	1
PCB-84/92	ND	1.49	3.46			11-Feb-23 15:36	1
PCB-85/116	ND	1.10	2.24			11-Feb-23 15:36	1
PCB-86	ND	1.28	2.63			11-Feb-23 15:36	1
PCB-87/117/125	ND	1.01	4.60			11-Feb-23 15:36	1
PCB-88/91	ND	1.55	2.85			11-Feb-23 15:36	1
PCB-89	ND	1.39	2.20			11-Feb-23 15:36	1
PCB-90/101	ND	1.36	4.36			11-Feb-23 15:36	1
PCB-93	ND	1.85	3.77			11-Feb-23 15:36	1
PCB-94	ND	1.70	2.55			11-Feb-23 15:36	1
PCB-95/98/102	ND	1.32	7.56			11-Feb-23 15:36	1
PCB-96	ND	1.15	2.24			11-Feb-23 15:36	1
PCB-97	ND	1.20	1.92			11-Feb-23 15:36	1
PCB-99	ND	1.24	1.95			11-Feb-23 15:36	1
PCB-100	ND	1.40	2.79			11-Feb-23 15:36	1
PCB-103	ND	1.46	2.47			11-Feb-23 15:36	1
PCB-104	ND	1.15	1.17			11-Feb-23 15:36	1
PCB-105	ND	1.19	1.61			11-Feb-23 15:36	1
PCB-106/118	ND	0.899	2.45			11-Feb-23 15:36	1
PCB-107/109	ND	0.768	3.15			11-Feb-23 15:36	1
PCB-108/112	ND	1.09	2.81			11-Feb-23 15:36	1
PCB-110	ND	0.903	2.50			11-Feb-23 15:36	1
PCB-111/115	ND	0.838	3.44			11-Feb-23 15:36	1
PCB-113	ND	0.978	2.68			11-Feb-23 15:36	1
PCB-114	ND	1.09	1.16			11-Feb-23 15:36	1
PCB-119	ND	0.885	2.02			11-Feb-23 15:36	1
PCB-120	ND	0.755	1.85			11-Feb-23 15:36	1
PCB-121	ND	0.963	2.16			11-Feb-23 15:36	1
PCB-122	ND	1.27	0.995			11-Feb-23 15:36	1
PCB-123	ND	0.850	2.85			11-Feb-23 15:36	1
PCB-124	ND	0.789	1.88			11-Feb-23 15:36	1
PCB-126	ND	1.35	1.19			11-Feb-23 15:36	1
PCB-127	ND	1.23	1.07			11-Feb-23 15:36	1
PCB-128/162	ND	0.694	1.38			11-Feb-23 15:36	1
PCB-129	ND	0.935	2.03			11-Feb-23 15:36	1
PCB-130	ND	0.989	1.98			11-Feb-23 15:36	1
PCB-131/133	ND	0.804	1.45			11-Feb-23 15:36	1
PCB-132/161	ND	0.644	2.82			11-Feb-23 15:36	1
PCB-134/143	ND	0.859	2.72			11-Feb-23 15:36	1
PCB-135	ND	0.810	3.63			11-Feb-23 15:36	1

Sample ID: Method Blank **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BLK1
QC Batch: B23B082
Sample Size: 1.00 L
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-136	ND	0.664	2.51			11-Feb-23 15:36	1
PCB-137	ND	0.838	1.40			11-Feb-23 15:36	1
PCB-138/163/164	ND	0.654	3.10			11-Feb-23 15:36	1
PCB-139/149	ND	0.757	5.79			11-Feb-23 15:36	1
PCB-140	ND	0.897	3.49			11-Feb-23 15:36	1
PCB-141	ND	0.852	0.680			11-Feb-23 15:36	1
PCB-142	ND	0.898	2.07			11-Feb-23 15:36	1
PCB-144	ND	0.847	1.58			11-Feb-23 15:36	1
PCB-145	ND	0.596	2.03			11-Feb-23 15:36	1
PCB-146/165	ND	0.654	3.47			11-Feb-23 15:36	1
PCB-147	ND	0.821	3.19			11-Feb-23 15:36	1
PCB-148	ND	0.879	3.37			11-Feb-23 15:36	1
PCB-150	ND	0.627	1.95			11-Feb-23 15:36	1
PCB-151	ND	0.868	2.75			11-Feb-23 15:36	1
PCB-152	ND	0.575	1.37			11-Feb-23 15:36	1
PCB-153	ND	0.623	1.25			11-Feb-23 15:36	1
PCB-154	ND	0.812	3.39			11-Feb-23 15:36	1
PCB-155	ND	0.687	1.54			11-Feb-23 15:36	1
PCB-156	ND	0.579	1.31			11-Feb-23 15:36	1
PCB-157	ND	0.622	1.44			11-Feb-23 15:36	1
PCB-158/160	ND	0.663	2.59			11-Feb-23 15:36	1
PCB-159	ND	0.529	1.02			11-Feb-23 15:36	1
PCB-166	ND	0.563	0.988			11-Feb-23 15:36	1
PCB-167	ND	0.648	1.56			11-Feb-23 15:36	1
PCB-168	ND	0.596	2.33			11-Feb-23 15:36	1
PCB-169	ND	0.791	1.27			11-Feb-23 15:36	1
PCB-170	ND	0.852	1.85			11-Feb-23 15:36	1
PCB-171	ND	0.814	1.73			11-Feb-23 15:36	1
PCB-172	ND	0.789	1.45			11-Feb-23 15:36	1
PCB-173	ND	0.929	2.14			11-Feb-23 15:36	1
PCB-174	ND	0.828	1.79			11-Feb-23 15:36	1
PCB-175	ND	0.795	1.75			11-Feb-23 15:36	1
PCB-176	ND	0.609	0.624			11-Feb-23 15:36	1
PCB-177	ND	0.869	1.43			11-Feb-23 15:36	1
PCB-178	ND	0.817	3.61			11-Feb-23 15:36	1
PCB-179	ND	0.631	2.56			11-Feb-23 15:36	1
PCB-180	ND	0.762	2.46			11-Feb-23 15:36	1
PCB-181	ND	0.746	1.39			11-Feb-23 15:36	1
PCB-182/187	ND	0.720	2.62			11-Feb-23 15:36	1
PCB-183	ND	0.745	1.12			11-Feb-23 15:36	1
PCB-184	ND	0.595	1.54			11-Feb-23 15:36	1
PCB-185	ND	0.801	0.887			11-Feb-23 15:36	1
PCB-186	ND	0.551	1.98			11-Feb-23 15:36	1
PCB-188	ND	0.590	1.77			11-Feb-23 15:36	1
PCB-189	ND	0.543	1.09			11-Feb-23 15:36	1
PCB-190	ND	0.652	1.78			11-Feb-23 15:36	1
PCB-191	ND	0.659	1.26			11-Feb-23 15:36	1
PCB-192	ND	0.614	1.69			11-Feb-23 15:36	1
PCB-193	ND	0.674	1.43			11-Feb-23 15:36	1
PCB-194	ND	0.382	1.30			11-Feb-23 15:36	1
PCB-195	ND	0.423	1.99			11-Feb-23 15:36	1
PCB-196/203	ND	0.375	3.66			11-Feb-23 15:36	1

Sample ID: Method Blank **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BLK1
QC Batch: B23B082
Sample Size: 1.00 L
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-197	ND	0.294	2.02			11-Feb-23 15:36	1
PCB-198	ND	0.407	2.25			11-Feb-23 15:36	1
PCB-199	ND	0.401	4.08			11-Feb-23 15:36	1
PCB-200	ND	0.311	1.58			11-Feb-23 15:36	1
PCB-201	ND	0.313	1.67			11-Feb-23 15:36	1
PCB-202	ND	0.285	2.49			11-Feb-23 15:36	1
PCB-204	ND	0.296	2.04			11-Feb-23 15:36	1
PCB-205	ND	0.319	1.21			11-Feb-23 15:36	1
PCB-206	ND	0.0702	1.93			11-Feb-23 15:36	1
PCB-207	ND	0.0566	1.50			11-Feb-23 15:36	1
PCB-208	ND	0.0559	1.89			11-Feb-23 15:36	1
PCB-209	ND	0.0295	0.754			11-Feb-23 15:36	1
Totals							
Total monoCB	ND	1.79					
Total diCB	ND	14.3					
Total triCB	ND	2.79					
Total tetraCB	ND	2.09					
Total pentaCB	ND	1.85					
Total hexaCB	ND	0.989					
Total heptaCB	ND	0.929					
Total octaCB	ND	0.423					
Total nonaCB	ND	0.0702					
DecaCB	ND	0.0295					
Total PCB	ND						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	46.1	5 - 145		11-Feb-23 15:36	1
13C-PCB-3	IS	36.4	5 - 145		11-Feb-23 15:36	1
13C-PCB-4	IS	50.7	5 - 145		11-Feb-23 15:36	1
13C-PCB-11	IS	54.5	5 - 145		11-Feb-23 15:36	1
13C-PCB-9	IS	52.9	5 - 145		11-Feb-23 15:36	1
13C-PCB-19	IS	57.3	5 - 145		11-Feb-23 15:36	1
13C-PCB-28	IS	76.7	5 - 145		11-Feb-23 15:36	1
13C-PCB-32	IS	67.2	5 - 145		11-Feb-23 15:36	1
13C-PCB-37	IS	63.5	5 - 145		11-Feb-23 15:36	1
13C-PCB-47	IS	52.6	5 - 145		11-Feb-23 15:36	1
13C-PCB-52	IS	57.6	5 - 145		11-Feb-23 15:36	1
13C-PCB-54	IS	51.9	5 - 145		11-Feb-23 15:36	1
13C-PCB-70	IS	63.4	5 - 145		11-Feb-23 15:36	1
13C-PCB-77	IS	62.0	10 - 145		11-Feb-23 15:36	1
13C-PCB-80	IS	57.5	10 - 145		11-Feb-23 15:36	1
13C-PCB-81	IS	62.2	10 - 145		11-Feb-23 15:36	1
13C-PCB-95	IS	54.8	10 - 145		11-Feb-23 15:36	1
13C-PCB-97	IS	64.4	10 - 145		11-Feb-23 15:36	1
13C-PCB-101	IS	57.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-104	IS	50.1	10 - 145		11-Feb-23 15:36	1
13C-PCB-105	IS	74.1	10 - 145		11-Feb-23 15:36	1
13C-PCB-114	IS	68.4	10 - 145		11-Feb-23 15:36	1
13C-PCB-118	IS	70.2	10 - 145		11-Feb-23 15:36	1
13C-PCB-123	IS	67.8	10 - 145		11-Feb-23 15:36	1
13C-PCB-126	IS	65.1	10 - 145		11-Feb-23 15:36	1
13C-PCB-127	IS	71.9	10 - 145		11-Feb-23 15:36	1

Sample ID: Method Blank **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BLK1
QC Batch: B23B082
Sample Size: 1.00 L
Date Extracted: 08-Feb-23
Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-138	IS	67.4	10 - 145		11-Feb-23 15:36	1
13C-PCB-141	IS	66.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-153	IS	67.9	10 - 145		11-Feb-23 15:36	1
13C-PCB-155	IS	46.9	10 - 145		11-Feb-23 15:36	1
13C-PCB-156	IS	74.1	10 - 145		11-Feb-23 15:36	1
13C-PCB-157	IS	77.9	10 - 145		11-Feb-23 15:36	1
13C-PCB-159	IS	74.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-167	IS	72.5	10 - 145		11-Feb-23 15:36	1
13C-PCB-169	IS	69.4	10 - 145		11-Feb-23 15:36	1
13C-PCB-170	IS	75.4	10 - 145		11-Feb-23 15:36	1
13C-PCB-180	IS	70.8	10 - 145		11-Feb-23 15:36	1
13C-PCB-188	IS	60.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-189	IS	79.5	10 - 145		11-Feb-23 15:36	1
13C-PCB-194	IS	67.2	10 - 145		11-Feb-23 15:36	1
13C-PCB-202	IS	73.8	10 - 145		11-Feb-23 15:36	1
13C-PCB-206	IS	67.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-208	IS	68.1	10 - 145		11-Feb-23 15:36	1
13C-PCB-209	IS	82.7	10 - 145		11-Feb-23 15:36	1
13C-PCB-79	CRS	82.6	10 - 145		11-Feb-23 15:36	1
13C-PCB-178	CRS	100	10 - 145		11-Feb-23 15:36	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: OPR **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BS1
QC Batch: B23B082 Date Extracted: 08-Feb-23 13:25
Sample Size: 1.00 L Column: ZB-1

Analyte	Amt Found (pg/L)	Spike Amt	% Recovery	Limits	Qualifiers	Analyzed	Dilution
PCB-1	1040	1000	104	60-135		11-Feb-23 11:31	1
PCB-3	1180	1000	118	60-135		11-Feb-23 11:31	1
PCB-4/10	2250	2000	112	60-135		11-Feb-23 11:31	1
PCB-15	980	1000	98.0	60-135		11-Feb-23 11:31	1
PCB-19	816	1000	81.6	60-135		11-Feb-23 11:31	1
PCB-37	1150	1000	115	60-135		11-Feb-23 11:31	1
PCB-54	950	1000	95.0	60-135		11-Feb-23 11:31	1
PCB-77	927	1000	92.7	60-135		11-Feb-23 11:31	1
PCB-81	891	1000	89.1	60-135		11-Feb-23 11:31	1
PCB-104	906	1000	90.6	60-135		11-Feb-23 11:31	1
PCB-105	1030	1000	103	60-135		11-Feb-23 11:31	1
PCB-106/118	1790	2000	89.4	60-135		11-Feb-23 11:31	1
PCB-114	980	1000	98.0	60-135		11-Feb-23 11:31	1
PCB-123	1060	1000	106	60-135		11-Feb-23 11:31	1
PCB-126	1000	1000	100	60-135		11-Feb-23 11:31	1
PCB-155	966	1000	96.6	60-135		11-Feb-23 11:31	1
PCB-156	945	1000	94.5	60-135		11-Feb-23 11:31	1
PCB-157	1010	1000	101	60-135		11-Feb-23 11:31	1
PCB-167	957	1000	95.7	60-135		11-Feb-23 11:31	1
PCB-169	962	1000	96.2	60-135		11-Feb-23 11:31	1
PCB-188	921	1000	92.1	60-135		11-Feb-23 11:31	1
PCB-189	954	1000	95.4	60-135		11-Feb-23 11:31	1
PCB-202	952	1000	95.2	60-135		11-Feb-23 11:31	1
PCB-205	1240	1000	124	60-135		11-Feb-23 11:31	1
PCB-206	960	1000	96.0	60-135		11-Feb-23 11:31	1
PCB-208	990	1000	99.0	60-135		11-Feb-23 11:31	1
PCB-209	865	1000	86.5	60-135		11-Feb-23 11:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	54.0	15-145		11-Feb-23 11:31	1
13C-PCB-3	IS	47.6	15-145		11-Feb-23 11:31	1
13C-PCB-4	IS	61.9	15-145		11-Feb-23 11:31	1
13C-PCB-11	IS	65.2	15-145		11-Feb-23 11:31	1
13C-PCB-9	IS	61.5	15-145		11-Feb-23 11:31	1
13C-PCB-19	IS	72.0	15-145		11-Feb-23 11:31	1
13C-PCB-28	IS	73.2	15-145		11-Feb-23 11:31	1
13C-PCB-32	IS	71.6	15-145		11-Feb-23 11:31	1
13C-PCB-37	IS	62.3	15-145		11-Feb-23 11:31	1
13C-PCB-47	IS	58.9	15-145		11-Feb-23 11:31	1
13C-PCB-52	IS	63.6	15-145		11-Feb-23 11:31	1
13C-PCB-54	IS	60.6	15-145		11-Feb-23 11:31	1
13C-PCB-70	IS	67.5	15-145		11-Feb-23 11:31	1
13C-PCB-77	IS	70.0	40-145		11-Feb-23 11:31	1
13C-PCB-80	IS	65.8	40-145		11-Feb-23 11:31	1
13C-PCB-81	IS	71.8	40-145		11-Feb-23 11:31	1

Sample ID: OPR **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous

Laboratory Data
Lab Sample: B23B082-BS1
QC Batch: B23B082 Date Extracted: 08-Feb-23 13:25
Sample Size: 1.00 L Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-95	IS	63.3	40-145		11-Feb-23 11:31	1
13C-PCB-97	IS	69.1	40-145		11-Feb-23 11:31	1
13C-PCB-101	IS	64.3	40-145		11-Feb-23 11:31	1
13C-PCB-104	IS	54.8	40-145		11-Feb-23 11:31	1
13C-PCB-105	IS	79.4	40-145		11-Feb-23 11:31	1
13C-PCB-114	IS	75.4	40-145		11-Feb-23 11:31	1
13C-PCB-118	IS	77.0	40-145		11-Feb-23 11:31	1
13C-PCB-123	IS	67.8	40-145		11-Feb-23 11:31	1
13C-PCB-126	IS	69.3	40-145		11-Feb-23 11:31	1
13C-PCB-127	IS	76.4	40-145		11-Feb-23 11:31	1
13C-PCB-138	IS	77.3	40-145		11-Feb-23 11:31	1
13C-PCB-141	IS	73.4	40-145		11-Feb-23 11:31	1
13C-PCB-153	IS	73.0	40-145		11-Feb-23 11:31	1
13C-PCB-155	IS	53.3	40-145		11-Feb-23 11:31	1
13C-PCB-156	IS	77.5	40-145		11-Feb-23 11:31	1
13C-PCB-157	IS	80.6	40-145		11-Feb-23 11:31	1
13C-PCB-159	IS	79.5	40-145		11-Feb-23 11:31	1
13C-PCB-167	IS	77.3	40-145		11-Feb-23 11:31	1
13C-PCB-169	IS	72.3	40-145		11-Feb-23 11:31	1
13C-PCB-170	IS	82.5	40-145		11-Feb-23 11:31	1
13C-PCB-180	IS	80.0	40-145		11-Feb-23 11:31	1
13C-PCB-188	IS	70.1	40-145		11-Feb-23 11:31	1
13C-PCB-189	IS	78.0	40-145		11-Feb-23 11:31	1
13C-PCB-194	IS	69.1	40-145		11-Feb-23 11:31	1
13C-PCB-202	IS	81.0	40-145		11-Feb-23 11:31	1
13C-PCB-206	IS	73.9	40-145		11-Feb-23 11:31	1
13C-PCB-208	IS	73.3	40-145		11-Feb-23 11:31	1
13C-PCB-209	IS	95.8	40-145		11-Feb-23 11:31	1
13C-PCB-79	CRS	85.2	40-145		11-Feb-23 11:31	1
13C-PCB-178	CRS	97.0	40-145		11-Feb-23 11:31	1

Sample ID: M1001-SW-230113 **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data
Lab Sample: 2301182-01
QC Batch: B23B082
Sample Size: 0.963 L
Date Received: 18-Jan-23 08:47
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-1	6.52		5.82			13-Feb-23 19:05	1
PCB-2	ND	0.735	3.20			13-Feb-23 19:05	1
PCB-3	4.68		7.94		J	13-Feb-23 19:05	1
PCB-4/10	59.9		3.27			13-Feb-23 19:05	1
PCB-5/8	169		2.71			13-Feb-23 19:05	1
PCB-6	ND	5.94	3.61			13-Feb-23 19:05	1
PCB-7/9	ND	6.30	7.55			13-Feb-23 19:05	1
PCB-11	136		20.3			13-Feb-23 19:05	1
PCB-12/13	ND	5.81	1.80			13-Feb-23 19:05	1
PCB-14	ND	5.78	1.95			13-Feb-23 19:05	1
PCB-15	84.6		1.80			13-Feb-23 19:05	1
PCB-16/32	137		3.84			13-Feb-23 19:05	1
PCB-17	85.2		2.70			13-Feb-23 19:05	1
PCB-18	187		6.18			13-Feb-23 19:05	1
PCB-19	19.5		2.36			13-Feb-23 19:05	1
PCB-20/21/33	223		3.89			13-Feb-23 19:05	1
PCB-22	126		1.87			13-Feb-23 19:05	1
PCB-23	ND	1.11	2.12			13-Feb-23 19:05	1
PCB-24/27	18.4		4.16			13-Feb-23 19:05	1
PCB-25	27.4		1.94			13-Feb-23 19:05	1
PCB-26	45.9		1.13			13-Feb-23 19:05	1
PCB-28	303		4.33			13-Feb-23 19:05	1
PCB-29	ND		1.92	2.13		13-Feb-23 19:05	1
PCB-30	ND	0.605	2.24			13-Feb-23 19:05	1
PCB-31	220		3.24			13-Feb-23 19:05	1
PCB-34	ND	1.13	1.46			13-Feb-23 19:05	1
PCB-35	10.6		1.63			13-Feb-23 19:05	1
PCB-36	ND	1.19	1.55			13-Feb-23 19:05	1
PCB-37	138		1.08			13-Feb-23 19:05	1
PCB-38	ND	1.21	0.723			13-Feb-23 19:05	1
PCB-39	ND	1.27	0.819			13-Feb-23 19:05	1
PCB-40	62.1		3.06			13-Feb-23 19:05	1
PCB-41/64/71/72	241		3.57			13-Feb-23 19:05	1
PCB-42/59	93.3		1.85			13-Feb-23 19:05	1
PCB-43/49	159		3.51			13-Feb-23 19:05	1
PCB-44	238		8.95			13-Feb-23 19:05	1
PCB-45	42.9		0.663			13-Feb-23 19:05	1
PCB-46	19.3		2.51			13-Feb-23 19:05	1
PCB-47	58.7		13.9			13-Feb-23 19:05	1
PCB-48/75	56.9		2.47			13-Feb-23 19:05	1
PCB-50	ND	1.50	2.05			13-Feb-23 19:05	1
PCB-51	9.75		2.72			13-Feb-23 19:05	1
PCB-52/69	238		3.82			13-Feb-23 19:05	1
PCB-53	31.4		2.10			13-Feb-23 19:05	1
PCB-54	ND	1.23	1.39			13-Feb-23 19:05	1
PCB-55	ND	1.26	0.819			13-Feb-23 19:05	1
PCB-56/60	137		2.73			13-Feb-23 19:05	1
PCB-57	ND	1.14	1.78			13-Feb-23 19:05	1
PCB-58	ND	1.14	2.05			13-Feb-23 19:05	1
PCB-61/70	235		2.54			13-Feb-23 19:05	1
PCB-62	ND	1.33	2.37			13-Feb-23 19:05	1
PCB-63	7.44		1.28			13-Feb-23 19:05	1

Sample ID: M1001-SW-230113 **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data
Lab Sample: 2301182-01
QC Batch: B23B082
Sample Size: 0.963 L
Date Received: 18-Jan-23 08:47
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-65	ND	1.19	1.59			13-Feb-23 19:05	1
PCB-66/76	164		2.76			13-Feb-23 19:05	1
PCB-67	7.84		1.24			13-Feb-23 19:05	1
PCB-68	ND	1.16	3.18			13-Feb-23 19:05	1
PCB-73	2.10		1.61		J	13-Feb-23 19:05	1
PCB-74	82.5		1.27			13-Feb-23 19:05	1
PCB-77	19.6		1.45			13-Feb-23 19:05	1
PCB-78	ND	1.69	1.40			13-Feb-23 19:05	1
PCB-79	4.13		1.51		J	13-Feb-23 19:05	1
PCB-80	ND	1.25	2.24			13-Feb-23 19:05	1
PCB-81	4.80		1.53		J	13-Feb-23 19:05	1
PCB-82	55.4		2.76			13-Feb-23 19:05	1
PCB-83	ND	1.14	1.97			13-Feb-23 19:05	1
PCB-84/92	159		3.59			13-Feb-23 19:05	1
PCB-85/116	60.9		2.33			13-Feb-23 19:05	1
PCB-86	ND	1.67	2.73			13-Feb-23 19:05	1
PCB-87/117/125	153		4.78			13-Feb-23 19:05	1
PCB-88/91	53.0		2.96			13-Feb-23 19:05	1
PCB-89	ND		2.29	4.66		13-Feb-23 19:05	1
PCB-90/101	363		4.53			13-Feb-23 19:05	1
PCB-93	ND	1.90	3.92			13-Feb-23 19:05	1
PCB-94	ND	1.75	2.65			13-Feb-23 19:05	1
PCB-95/98/102	275		7.85			13-Feb-23 19:05	1
PCB-96	ND		2.33	2.94		13-Feb-23 19:05	1
PCB-97	114		1.99			13-Feb-23 19:05	1
PCB-99	131		2.03			13-Feb-23 19:05	1
PCB-100	ND	1.28	2.90			13-Feb-23 19:05	1
PCB-103	ND		2.57	1.72		13-Feb-23 19:05	1
PCB-104	ND	1.05	1.22			13-Feb-23 19:05	1
PCB-105	193		1.67			13-Feb-23 19:05	1
PCB-106/118	357		2.54			13-Feb-23 19:05	1
PCB-107/109	ND		3.27	19.6		13-Feb-23 19:05	1
PCB-108/112	ND		2.92	15.9		13-Feb-23 19:05	1
PCB-110	497		2.60			13-Feb-23 19:05	1
PCB-111/115	10.8		3.57			13-Feb-23 19:05	1
PCB-113	ND		2.78	1.57		13-Feb-23 19:05	1
PCB-114	10.1		1.20			13-Feb-23 19:05	1
PCB-119	ND	1.16	2.10			13-Feb-23 19:05	1
PCB-120	ND	0.989	1.92			13-Feb-23 19:05	1
PCB-121	ND	0.990	2.24			13-Feb-23 19:05	1
PCB-122	ND	2.13	1.03			13-Feb-23 19:05	1
PCB-123	ND		2.96	6.42		13-Feb-23 19:05	1
PCB-124	17.6		1.95			13-Feb-23 19:05	1
PCB-126	ND		1.24	5.57		13-Feb-23 19:05	1
PCB-127	ND	1.78	1.11			13-Feb-23 19:05	1
PCB-128/162	96.3		1.43			13-Feb-23 19:05	1
PCB-129	30.1		2.11			13-Feb-23 19:05	1
PCB-130	35.1		2.06			13-Feb-23 19:05	1
PCB-131/133	11.0		1.51			13-Feb-23 19:05	1
PCB-132/161	142		2.93			13-Feb-23 19:05	1
PCB-134/143	23.2		2.83			13-Feb-23 19:05	1
PCB-135	43.8		3.77			13-Feb-23 19:05	1

Sample ID: M1001-SW-230113 **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data
Lab Sample: 2301182-01
QC Batch: B23B082
Sample Size: 0.963 L
Date Received: 18-Jan-23 08:47
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-136	47.2		2.61			13-Feb-23 19:05	1
PCB-137	24.4		1.45			13-Feb-23 19:05	1
PCB-138/163/164	511		3.22			13-Feb-23 19:05	1
PCB-139/149	305		6.01			13-Feb-23 19:05	1
PCB-140	ND	0.648	3.62			13-Feb-23 19:05	1
PCB-141	89.7		0.706			13-Feb-23 19:05	1
PCB-142	ND	3.07	2.15			13-Feb-23 19:05	1
PCB-144	16.9		1.64			13-Feb-23 19:05	1
PCB-145	ND	0.430	2.11			13-Feb-23 19:05	1
PCB-146/165	50.5		3.60			13-Feb-23 19:05	1
PCB-147	7.08		3.31			13-Feb-23 19:05	1
PCB-148	ND	0.635	3.50			13-Feb-23 19:05	1
PCB-150	ND	0.453	2.03			13-Feb-23 19:05	1
PCB-151	76.8		2.86			13-Feb-23 19:05	1
PCB-152	ND	0.415	1.42			13-Feb-23 19:05	1
PCB-153	351		1.30			13-Feb-23 19:05	1
PCB-154	ND		3.52	2.22		13-Feb-23 19:05	1
PCB-155	ND	0.496	1.60			13-Feb-23 19:05	1
PCB-156	55.1		1.36			13-Feb-23 19:05	1
PCB-157	ND		1.50	8.37		13-Feb-23 19:05	1
PCB-158/160	69.1		2.69			13-Feb-23 19:05	1
PCB-159	ND	2.08	1.06			13-Feb-23 19:05	1
PCB-166	ND	2.21	1.03			13-Feb-23 19:05	1
PCB-167	23.5		1.62			13-Feb-23 19:05	1
PCB-168	ND	2.04	2.42			13-Feb-23 19:05	1
PCB-169	ND	3.05	1.32			13-Feb-23 19:05	1
PCB-170	124		1.92			13-Feb-23 19:05	1
PCB-171	ND		1.80	28.3		13-Feb-23 19:05	1
PCB-172	21.4		1.51			13-Feb-23 19:05	1
PCB-173	ND	1.95	2.22			13-Feb-23 19:05	1
PCB-174	126		1.86			13-Feb-23 19:05	1
PCB-175	ND		1.82	3.77		13-Feb-23 19:05	1
PCB-176	ND		0.648	11.0		13-Feb-23 19:05	1
PCB-177	ND		1.49	64.0		13-Feb-23 19:05	1
PCB-178	20.3		3.75			13-Feb-23 19:05	1
PCB-179	42.5		2.66			13-Feb-23 19:05	1
PCB-180	283		2.56			13-Feb-23 19:05	1
PCB-181	ND	1.57	1.44			13-Feb-23 19:05	1
PCB-182/187	127		2.72			13-Feb-23 19:05	1
PCB-183	62.8		1.16			13-Feb-23 19:05	1
PCB-184	ND	1.02	1.60			13-Feb-23 19:05	1
PCB-185	ND		0.921	12.2		13-Feb-23 19:05	1
PCB-186	ND	0.943	2.06			13-Feb-23 19:05	1
PCB-188	ND	1.01	1.84			13-Feb-23 19:05	1
PCB-189	4.62		1.13		J	13-Feb-23 19:05	1
PCB-190	25.0		1.85			13-Feb-23 19:05	1
PCB-191	ND		1.31	5.81		13-Feb-23 19:05	1
PCB-192	ND	1.29	1.76			13-Feb-23 19:05	1
PCB-193	14.2		1.49			13-Feb-23 19:05	1
PCB-194	80.4		1.35			13-Feb-23 19:05	1
PCB-195	28.0		2.07			13-Feb-23 19:05	1
PCB-196/203	78.0		3.80			13-Feb-23 19:05	1

Sample ID: M1001-SW-230113 **EPA Method 1668C**

Client Data
Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data
Lab Sample: 2301182-01
QC Batch: B23B082
Sample Size: 0.963 L
Date Received: 18-Jan-23 08:47
Date Extracted: 08-Feb-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-197	ND		2.10	3.64		13-Feb-23 19:05	1
PCB-198	ND		2.34	2.71		13-Feb-23 19:05	1
PCB-199	79.9		4.24			13-Feb-23 19:05	1
PCB-200	10.4		1.64			13-Feb-23 19:05	1
PCB-201	9.79		1.73			13-Feb-23 19:05	1
PCB-202	15.4		2.59			13-Feb-23 19:05	1
PCB-204	ND	0.441	2.12			13-Feb-23 19:05	1
PCB-205	4.42		1.26		J	13-Feb-23 19:05	1
PCB-206	52.2		2.00			13-Feb-23 19:05	1
PCB-207	6.59		1.56			13-Feb-23 19:05	1
PCB-208	14.4		1.96			13-Feb-23 19:05	1
PCB-209	12.7		0.783			13-Feb-23 19:05	1
Totals							
Total monoCB	11.2						
Total diCB	450						
Total triCB	1540			1540			
Total tetraCB	1910						
Total pentaCB	2450			2510			
Total hexaCB	2010			2020			
Total heptaCB	851			976			
Total octaCB	306			313			
Total nonaCB	73.2						
DecaCB	12.7						
Total PCB	9620						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	74.5	5 - 145		13-Feb-23 19:05	1
13C-PCB-3	IS	64.8	5 - 145		13-Feb-23 19:05	1
13C-PCB-4	IS	69.1	5 - 145		13-Feb-23 19:05	1
13C-PCB-11	IS	74.2	5 - 145		13-Feb-23 19:05	1
13C-PCB-9	IS	72.0	5 - 145		13-Feb-23 19:05	1
13C-PCB-19	IS	95.3	5 - 145		13-Feb-23 19:05	1
13C-PCB-28	IS	92.7	5 - 145		13-Feb-23 19:05	1
13C-PCB-32	IS	98.5	5 - 145		13-Feb-23 19:05	1
13C-PCB-37	IS	78.9	5 - 145		13-Feb-23 19:05	1
13C-PCB-47	IS	81.0	5 - 145		13-Feb-23 19:05	1
13C-PCB-52	IS	81.0	5 - 145		13-Feb-23 19:05	1
13C-PCB-54	IS	78.1	5 - 145		13-Feb-23 19:05	1
13C-PCB-70	IS	79.1	5 - 145		13-Feb-23 19:05	1
13C-PCB-77	IS	67.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-80	IS	76.0	10 - 145		13-Feb-23 19:05	1
13C-PCB-81	IS	68.9	10 - 145		13-Feb-23 19:05	1
13C-PCB-95	IS	74.9	10 - 145		13-Feb-23 19:05	1
13C-PCB-97	IS	73.9	10 - 145		13-Feb-23 19:05	1
13C-PCB-101	IS	74.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-104	IS	82.6	10 - 145		13-Feb-23 19:05	1
13C-PCB-105	IS	69.6	10 - 145		13-Feb-23 19:05	1
13C-PCB-114	IS	67.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-118	IS	71.0	10 - 145		13-Feb-23 19:05	1
13C-PCB-123	IS	70.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-126	IS	55.3	10 - 145		13-Feb-23 19:05	1
13C-PCB-127	IS	69.7	10 - 145		13-Feb-23 19:05	1

Sample ID: M1001-SW-230113 **EPA Method 1668C**

Client Data

Name: Friedman & Bruya, Inc.
Project: 301237
Matrix: Aqueous
Date Collected: 13-Jan-23 12:15

Laboratory Data

Lab Sample: 2301182-01
QC Batch: B23B082
Sample Size: 0.963 L
Date Received: 18-Jan-23 08:47
Date Extracted: 08-Feb-23
Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-138	IS	76.1	10 - 145		13-Feb-23 19:05	1
13C-PCB-141	IS	76.8	10 - 145		13-Feb-23 19:05	1
13C-PCB-153	IS	80.3	10 - 145		13-Feb-23 19:05	1
13C-PCB-155	IS	90.1	10 - 145		13-Feb-23 19:05	1
13C-PCB-156	IS	70.4	10 - 145		13-Feb-23 19:05	1
13C-PCB-157	IS	75.2	10 - 145		13-Feb-23 19:05	1
13C-PCB-159	IS	77.1	10 - 145		13-Feb-23 19:05	1
13C-PCB-167	IS	74.2	10 - 145		13-Feb-23 19:05	1
13C-PCB-169	IS	63.9	10 - 145		13-Feb-23 19:05	1
13C-PCB-170	IS	73.4	10 - 145		13-Feb-23 19:05	1
13C-PCB-180	IS	71.6	10 - 145		13-Feb-23 19:05	1
13C-PCB-188	IS	76.2	10 - 145		13-Feb-23 19:05	1
13C-PCB-189	IS	64.4	10 - 145		13-Feb-23 19:05	1
13C-PCB-194	IS	70.8	10 - 145		13-Feb-23 19:05	1
13C-PCB-202	IS	94.1	10 - 145		13-Feb-23 19:05	1
13C-PCB-206	IS	76.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-208	IS	84.0	10 - 145		13-Feb-23 19:05	1
13C-PCB-209	IS	98.9	10 - 145		13-Feb-23 19:05	1
13C-PCB-79	CRS	87.5	10 - 145		13-Feb-23 19:05	1
13C-PCB-178	CRS	116	10 - 145		13-Feb-23 19:05	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Enthalpy Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Massachusetts Department of Environmental Protection	M-CA413
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	2211390
New Hampshire Environmental Accreditation Program	207721
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-021
Texas Commission on Environmental Quality	T104704189-22-13
Vermont Department of Health	VT-4042
Virginia Department of General Services	11276
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

2301182 2.5°C

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: Enthalpy / VISTA

PROJECT NAME/NO.	PO #
301237	D-122

REMARKS: Please Email Results

Page # _____ of _____

TURNAROUND TIME
- [x] Standard TAT
- [ ] RUSH _____

Rush charges authorized by: _____

SAMPLE DISPOSAL
- [x] 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	PCB Congeners	D/F						Notes
M1001-SW-230113		1/13/23	12:15	2	3				✓	✓						✓ - see attached RLs e/1/17

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~~ Eric Lowe	Friedman & Bruya	1/17	1200
Received by:	Kelia Wadsworth	Kelia Wadsworth	Enthalpy	01/19/23	0847
Relinquished by:					
Received by:					

Table 1. Joint Source Control Screening Level Values

Analyte	Laboratory Method Detection Limits (µg/L)	Screening Levels	
		EPA Portland Harbor ROD Cleanup Levels (µg/L)	JSCS SLV (µg/L)
Total Metals			
Aluminum	50	NE	87
Arsenic	0.2	0.018	0.014
Cadmium	0.2	NE	0.094
Chromium	1	100	100
Copper	5	2.74	2.7
Lead	0.2	NE	0.54
Manganese	1	NE	10
Silver	0.2	NE	0.12
Zinc	5	36.5	33
Semi-Volatile Organic Constituents			
Total PCB (as congeners)	0.00000121 - 0.00000497	0.0000064	0.0000064
2,3,7,8-TCDD eq	0.000000304 - 0.000000732	0.0000000005	0.0000000005
Phthalates			
Bis(2-ethylhexyl)phthalate	0.5	NE	0.22
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.0037	NE	0.2
Anthracene	0.0023	NE	0.2
Fluorene	0.0044	NE	0.2
Naphthalene	0.005	NE	0.2
Phenanthrene	0.0062	NE	0.2
Benz(a)anthracene	0.007	0.0012	0.018
Benzo(a)pyrene	0.0028	0.00012	0.018
Benzo(b)fluoranthene	0.0021	0.0012	0.018
Benzo(k)fluoranthene	0.0035	0.0013	0.018
Benzo(g,h,i)perylene	0.0057	NE	0.2
Chrysene	0.0024	0.0013	0.018
Dibenz(a,h)anthracene	0.0051	0.00012	0.018
Fluoranthene	0.0029	NE	0.2
Indeno(1,2,3-cd)pyrene	0.0049	0.0012	0.018
Pyrene	0.0054	NE	0.2
Total Suspended Solids			
TSS	5000	NE	NE

Sample Log-In Checklist

ENTHALPY ANALYTICAL

Page # 1 of 1

Work Order #: 2301182 TAT Std

Samples Arrival:	**Date/Time** 01/19/23 0947		**Initials:** KW		**Location:** WR-2 **Shelf/Rack:** N/A		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 2.6 (uncorrected)			**Probe used:** Y / (N)		**Thermometer ID:** IR-3		
Temp °C: 2.5 (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?		✓	✓
Airbill ~~—~~ Trk # 8175 1926 0700	✓		
Shipping Documentation Present?	✓		

Shipping Container	Enthalpy	~~Client~~	Retain	Return	Dispose

Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 01/19/23 1147	**Initials:** KW	**Location:** WR-2 KW 01/19/23 **Shelf/Rack:** ~~D-3~~ B-2/C-6
COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

CoC/Label Reconciliation Report WO# 2301182

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Sample Comments
2301182-01	A M1001-SW-230113	☑		13-Jan-23 12:15	☑	Amber Glass NM Bottle, 1L	Aqueous	
2301182-01	B M1001-SW-230113	☑		13-Jan-23 12:15	☑	Amber Glass NM Bottle, 1L	Aqueous	
2301182-01	C M1001-SW-230113	☑		13-Jan-23 12:15	☑	Amber Glass NM Bottle, 1L	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?		✓	✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments:

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None (All) Other

Verifed by/Date: KW 01/19/23

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: 301237
Work Order Number: 2301312

January 24, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 1/17/2023 for the analyses presented in the following report.

Total Metals by EPA Method 200.8

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: *01/24/2023*

CLIENT: Friedman & Bruya
Project: 301237
Work Order: 2301312

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2301312-001	M1001-SW-230113	01/13/2023 12:15 PM	01/17/2023 1:20 PM

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

Original

Case Narrative

WO#: **2301312**
Date: **1/24/2023**

CLIENT: Friedman & Bruya
Project: 301237

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: **2301312**
Date Reported: **1/24/2023**

Client: Friedman & Bruya
Collection Date: 1/13/2023 12:15:00 PM
Project: 301237
Lab ID: 2301312-001
Matrix: Water
Client Sample ID: **M1001-SW-230113**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 200.8				Batch ID: 39187		Analyst: EH
Aluminum	780	10.0		µg/L	1	1/23/2023 12:06:00 PM

Work Order: 2301312
CLIENT: Friedman & Bruya
Project: 301237

QC SUMMARY REPORT

Total Metals by EPA Method 200.8

Sample ID: **MB-39187**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **1/23/2023**		RunNo: **81315**	
Client ID: **MBLKW**	Batch ID: **39187**					Analysis Date: **1/23/2023**		SeqNo: **1684079**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	Qual
Aluminum	ND	10.0							

Sample ID: **LCS-39187**	SampType: **LCS**			Units: **µg/L**		Prep Date: **1/23/2023**		RunNo: **81315**	
Client ID: **LCSW**	Batch ID: **39187**					Analysis Date: **1/23/2023**		SeqNo: **1684080**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	Qual
Aluminum	976	10.0	1,000	0	97.6	85	115		

Sample ID: **2301312-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **1/23/2023**		RunNo: **81315**	
Client ID: **M1001-SW-230113**	Batch ID: **39187**					Analysis Date: **1/23/2023**		SeqNo: **1684084**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	Qual
Aluminum	740	10.0					780.1	5.33	30

Sample ID: **2301312-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **1/23/2023**		RunNo: **81315**	
Client ID: **M1001-SW-230113**	Batch ID: **39187**					Analysis Date: **1/23/2023**		SeqNo: **1684085**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	Qual
Aluminum	1,750	10.0	1,000	780.1	96.8	70	130		

Sample ID: **2301317-001EMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **1/23/2023**		RunNo: **81315**	
Client ID: **BATCH**	Batch ID: **39187**					Analysis Date: **1/23/2023**		SeqNo: **1684059**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	Qual
Aluminum	1,010	10.0	1,000	65.38	94.9	70	130		

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**2301312**
Logged by:	**Clare Griggs**	Date Received:	**1/17/2023 1:20:00 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	5.6

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2301312

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.	PO #
301237	D-121

REMARKS: Please Email Results

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	Total Aluminum (Al)						Notes
M1001-SW-230113		1/13	12:15	W	1				✓						

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~~ Eric Young	Friedman & Bruya	1/17	Noon
Received by:		Nate Rits	AFAI	1/17/23	13:20
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

June 6, 2023

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the results from the testing of material submitted on March 24, 2023 from the 1355-19001-03, F&BI 303396 project. There are 10 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: Neil Woller, Paul Trone, Evan Bruggeman
ENW0606R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 24, 2023 by Friedman & Bruya, Inc. from the Evren Northwest 1355-19001-03, F&BI 303396 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Evren Northwest
303396 -01	ML001-SW-230323

The samples were sent to Enthalpy for dioxin and furan and PCB congener analyses. In addition, the sample was sent to Fremont for total aluminum analysis. The reports are enclosed.

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 200.8

Client ID:	ML001-SW-230323	Client:	Evren Northwest
Date Received:	03/24/23	Project:	1355-19001-03, F&BI 303396
Date Extracted:	03/24/23	Lab ID:	303396-01
Date Analyzed:	03/24/23	Data File:	303396-01.152
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	14.0
Cadmium	<0.2
Chromium	<1
Copper	2.28
Lead	<0.2
Manganese	535
Silver	<0.2
Zinc	3.37

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-03, F&BI 303396
Date Extracted:	03/24/23	Lab ID:	I3-228 mb
Date Analyzed:	03/24/23	Data File:	I3-228 mb.128
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<0.2
Cadmium	<0.2
Chromium	<1
Copper	<0.5
Lead	<0.2
Manganese	<0.24
Silver	<0.2
Zinc	<0.68

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	ML001-SW-230323	Client:	Evren Northwest
Date Received:	03/24/23	Project:	1355-19001-03, F&BI 303396
Date Extracted:	03/27/23	Lab ID:	303396-01 1/0.5
Date Analyzed:	03/27/23	Data File:	032709.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	66	11	173
2-Fluorobiphenyl	71	44	108
2,4,6-Tribromophenol	98	10	140
Terphenyl-d14	95	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
2-Methylnaphthalene	<0.1
1-Methylnaphthalene	<0.1
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	0.015
Phenanthrene	0.057
Anthracene	<0.01
Fluoranthene	0.029
Pyrene	0.21
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.02
Dibenz(a,h)anthracene	<0.01
Bis(2-ethylhexyl) phthalate	<1.6

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1355-19001-03, F&BI 303396
Date Extracted:	03/27/23	Lab ID:	03-800 mb 1/0.5
Date Analyzed:	03/27/23	Data File:	032706.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Nitrobenzene-d5	79	11	173
2-Fluorobiphenyl	77	44	108
2,4,6-Tribromophenol	81	10	140
Terphenyl-d14	91	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.1
2-Methylnaphthalene	<0.1
1-Methylnaphthalene	<0.1
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.02
Bis(2-ethylhexyl) phthalate	<1.6

Date of Report: 06/06/23
Date Received: 03/24/23
Project: 1355-19001-03, F&BI 303396
Date Extracted: 03/28/23
Date Analyzed: 03/30/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Results Reported as mg/L (ppm)

Sample ID Laboratory ID	Total Suspended Solids
ML001-SW-230323 303396-01	7.6
Method Blank 03-417 MB	<5

Date of Report: 06/06/23
Date Received: 03/24/23
Project: 1355-19001-03, F&BI 303396

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 303398-01 (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	3.54	95 b	94 b	70-130	1 b
Cadmium	ug/L (ppb)	5	<1	98	98	70-130	0
Chromium	ug/L (ppb)	20	<1	98	98	70-130	0
Copper	ug/L (ppb)	20	8.60	98 b	96 b	70-130	2 b
Lead	ug/L (ppb)	10	<1	95	95	70-130	0
Manganese	ug/L (ppb)	20	7.17	97 b	95 b	70-130	2 b
Silver	ug/L (ppb)	5	<1	90	90	70-130	0
Zinc	ug/L (ppb)	50	390	102 b	93 b	70-130	9 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	96	85-115
Cadmium	ug/L (ppb)	5	100	85-115
Chromium	ug/L (ppb)	20	97	85-115
Copper	ug/L (ppb)	20	100	85-115
Lead	ug/L (ppb)	10	102	85-115
Manganese	ug/L (ppb)	20	97	85-115
Silver	ug/L (ppb)	5	96	85-115
Zinc	ug/L (ppb)	50	100	85-115

Date of Report: 06/06/23
Date Received: 03/24/23
Project: 1355-19001-03, F&BI 303396

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	77	76	62-97	1
2-Methylnaphthalene	ug/L (ppb)	5	79	78	64-101	1
1-Methylnaphthalene	ug/L (ppb)	5	79	77	64-93	3
Acenaphthylene	ug/L (ppb)	5	93	90	70-130	3
Acenaphthene	ug/L (ppb)	5	90	88	70-130	2
Fluorene	ug/L (ppb)	5	96	93	70-130	3
Phenanthrene	ug/L (ppb)	5	93	96	70-130	3
Anthracene	ug/L (ppb)	5	97	97	70-130	0
Fluoranthene	ug/L (ppb)	5	100	105	70-130	5
Pyrene	ug/L (ppb)	5	108	101	70-130	7
Benz(a)anthracene	ug/L (ppb)	5	102	104	70-130	2
Chrysene	ug/L (ppb)	5	102	101	70-130	1
Bis(2-ethylhexyl) phthalate	ug/L (ppb)	5	99	105	44-140	6
Benzo(a)pyrene	ug/L (ppb)	5	100	100	70-130	0
Benzo(b)fluoranthene	ug/L (ppb)	5	99	98	70-130	1
Benzo(k)fluoranthene	ug/L (ppb)	5	100	97	70-130	3
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	106	104	70-130	2
Dibenz(a,h)anthracene	ug/L (ppb)	5	107	103	70-130	4
Benzo(g,h,i)perylene	ug/L (ppb)	5	105	100	70-130	5

Date of Report: 06/06/23
Date Received: 03/24/23
Project: 1355-19001-03, F&BI 303396

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL SUSPENDED SOLIDS BY METHOD 2540D

Laboratory Code: 303417-10 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
TSS	mg/L (ppm)	5.2	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
TSS	mg/L (ppm)	20	96	35-146

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, biased high; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 standard reporting limit. 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.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

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.

303396

SAMPLE CHAIN OF CUSTODY

03/24/23 L3/I4

Report To Lynn Green
Company Evren Northwest
Address PO Box 14488
City, State, ZIP Portland OR 97293
Phone 503 452-5561 Email lynng@evren-nw.com

SAMPLERS (*signature*)
PROJECT NAME: 1355-1901-03
PO #
REMARKS: *see attached sheet for select analysis and reporting limits *select SVOCs
INVOICE TO
Project specific RLs? - Yes / No

Page # 1 of 1

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	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	select SVOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	select total metals	TSS	select PAHs	Phthalates by 625	Notes
ML001-GW-230323	01A-J	3/23/23	11:10	W	10					X			X	X	X	X	pH = 7.42
						Samples received at 3 °C											

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Don Sayko	ENW	03/23/23	18:00
Received by:	Dhan Phan	FedEx	03/24/23	10:30
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

May 31, 2023

Enthalpy Analytical - El Dorado Hills
Work Order No. 2303225

Mr. Michael Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119

Dear Mr. Erdahl,

Enclosed are the results for the sample set received at Enthalpy Analytical - EDH on March 28, 2023 under your Project Name '303396'.

Enthalpy Analytical - EDH is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at kathy.zipp@enthalpy.com.

Thank you for choosing Enthalpy Analytical - EDH as part of your analytical support team.

Sincerely,

Kathy Zipp
Project Manager

Enthalpy Analytical - EDH Work Order No. 2303225
Case Narrative

Sample Condition on Receipt:

One water sample was received and stored securely in accordance with Enthalpy Analytical - EDH standard operating procedures and EPA methodology. The sample was received in good condition and within the method temperature requirements. An additional bottle was received on May 11, 2023 in good condition.

Analytical Notes:

EPA Method 8290A

The sample was extracted and analyzed for tetra-through-octa chlorinated dioxins and furans by EPA Method 8290A using a ZB-DIOXIN GC column.

Holding Times

The method holding time criteria was met for this sample.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank. The OPR recoveries were within the method acceptance criteria.

Labeled standard recoveries for all QC and field samples were within method acceptance criteria.

EPA Method 1668A

The sample was extracted and analyzed for 209 PCB congeners by EPA Method 1668A using a ZB-1 GC column.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected above the sample quantitation limits in the Method Blank. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are flagged with an "H" qualifier.

TABLE OF CONTENTS

Case Narrative..... 1

Table of Contents..... 4

Sample Inventory..... 5

Analytical Results..... 6

Qualifiers..... 22

Certifications..... 23

Sample Receipt..... 24

Sample Inventory Report

Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2303225-01	ML001-SW-230323	23-Mar-23 11:10	28-Mar-23 09:19	Amber Glass NM Bottle, 1L Amber Glass NM Bottle, 1L

ANALYTICAL RESULTS

Sample ID: Method Blank **EPA Method 8290A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23D041-BLK1
QC Batch: B23D041
Sample Size: 1.00 L
Date Extracted: 04-Apr-23
Column: ZB-DIOXIN

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	ND		1.78	0.553		21-Apr-23 18:40	1
1,2,3,7,8-PeCDD	ND	0.918	5.63			21-Apr-23 18:40	1
1,2,3,4,7,8-HxCDD	ND	0.937	4.18			21-Apr-23 18:40	1
1,2,3,6,7,8-HxCDD	ND	1.11	3.51			21-Apr-23 18:40	1
1,2,3,7,8,9-HxCDD	ND	1.14	4.46			21-Apr-23 18:40	1
1,2,3,4,6,7,8-HpCDD	ND	0.856	4.84			21-Apr-23 18:40	1
OCDD	ND	4.62	16.4			21-Apr-23 18:40	1
2,3,7,8-TCDF	ND	0.230	1.78			21-Apr-23 18:40	1
1,2,3,7,8-PeCDF	ND	0.383	5.01			21-Apr-23 18:40	1
2,3,4,7,8-PeCDF	ND	0.432	4.99			21-Apr-23 18:40	1
1,2,3,4,7,8-HxCDF	ND	0.531	6.87			21-Apr-23 18:40	1
1,2,3,6,7,8-HxCDF	ND	0.519	6.31			21-Apr-23 18:40	1
2,3,4,6,7,8-HxCDF	ND	0.563	5.80			21-Apr-23 18:40	1
1,2,3,7,8,9-HxCDF	ND	0.736	5.33			21-Apr-23 18:40	1
1,2,3,4,6,7,8-HpCDF	ND	0.366	5.96			21-Apr-23 18:40	1
1,2,3,4,7,8,9-HpCDF	ND	0.550	5.34			21-Apr-23 18:40	1
OCDF	ND	1.48	11.3			21-Apr-23 18:40	1
Toxic Equivalent							
TEQMinWHO2005Dioxin	0.00						
Totals							
Total TCDD	ND			0.553			
Total PeCDD	ND	0.918					
Total HxCDD	ND	1.14					
Total HpCDD	ND	0.856					
Total TCDF	ND	0.230					
Total PeCDF	ND	0.432					
Total HxCDF	0.479						
Total HpCDF	ND	0.550					

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	70.4	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,7,8-PeCDD	IS	88.1	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,4,7,8-HxCDD	IS	93.4	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,6,7,8-HxCDD	IS	83.9	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,7,8,9-HxCDD	IS	82.1	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,4,6,7,8-HpCDD	IS	76.8	40 - 135		21-Apr-23 18:40	1
13C-OCDD	IS	40.6	40 - 135		21-Apr-23 18:40	1
13C-2,3,7,8-TCDF	IS	88.1	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,7,8-PeCDF	IS	96.7	40 - 135		21-Apr-23 18:40	1
13C-2,3,4,7,8-PeCDF	IS	92.8	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,4,7,8-HxCDF	IS	87.1	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,6,7,8-HxCDF	IS	85.0	40 - 135		21-Apr-23 18:40	1
13C-2,3,4,6,7,8-HxCDF	IS	89.5	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,7,8,9-HxCDF	IS	84.7	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,4,6,7,8-HpCDF	IS	80.9	40 - 135		21-Apr-23 18:40	1
13C-1,2,3,4,7,8,9-HpCDF	IS	88.8	40 - 135		21-Apr-23 18:40	1
13C-OCDF	IS	58.9	40 - 135		21-Apr-23 18:40	1
37Cl-2,3,7,8-TCDD	CRS	69.0	40 - 135		21-Apr-23 18:40	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: OPR **EPA Method 8290A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23D041-BS1
QC Batch: B23D041 Date Extracted: 04-Apr-23 15:34
Sample Size: 1.00 L Column: ZB-DIOXIN

Analyte	Amt Found (pg/L)	Spike Amt	% Recovery	Limits	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	251	200	125	70-130		24-Apr-23 15:57	1
1,2,3,7,8-PeCDD	1210	1000	121	70-130		24-Apr-23 15:57	1
1,2,3,4,7,8-HxCDD	1080	1000	108	70-130		24-Apr-23 15:57	1
1,2,3,6,7,8-HxCDD	1190	1000	119	70-130		24-Apr-23 15:57	1
1,2,3,7,8,9-HxCDD	1230	1000	123	70-130		24-Apr-23 15:57	1
1,2,3,4,6,7,8-HpCDD	1100	1000	110	70-130		24-Apr-23 15:57	1
OCDD	2530	2000	126	70-130		24-Apr-23 15:57	1
2,3,7,8-TCDF	222	200	111	70-130		24-Apr-23 15:57	1
1,2,3,7,8-PeCDF	1050	1000	105	70-130		24-Apr-23 15:57	1
2,3,4,7,8-PeCDF	1090	1000	109	70-130		24-Apr-23 15:57	1
1,2,3,4,7,8-HxCDF	1170	1000	117	70-130		24-Apr-23 15:57	1
1,2,3,6,7,8-HxCDF	1160	1000	116	70-130		24-Apr-23 15:57	1
2,3,4,6,7,8-HxCDF	1160	1000	116	70-130		24-Apr-23 15:57	1
1,2,3,7,8,9-HxCDF	1160	1000	116	70-130		24-Apr-23 15:57	1
1,2,3,4,6,7,8-HpCDF	1050	1000	105	70-130		24-Apr-23 15:57	1
1,2,3,4,7,8,9-HpCDF	1150	1000	115	70-130		24-Apr-23 15:57	1
OCDF	2410	2000	121	70-130		24-Apr-23 15:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	74.0	40-135		24-Apr-23 15:57	1
13C-1,2,3,7,8-PeCDD	IS	112	40-135		24-Apr-23 15:57	1
13C-1,2,3,4,7,8-HxCDD	IS	102	40-135		24-Apr-23 15:57	1
13C-1,2,3,6,7,8-HxCDD	IS	93.5	40-135		24-Apr-23 15:57	1
13C-1,2,3,7,8,9-HxCDD	IS	89.1	40-135		24-Apr-23 15:57	1
13C-1,2,3,4,6,7,8-HpCDD	IS	89.2	40-135		24-Apr-23 15:57	1
13C-OCDD	IS	60.5	40-135		24-Apr-23 15:57	1
13C-2,3,7,8-TCDF	IS	83.6	40-135		24-Apr-23 15:57	1
13C-1,2,3,7,8-PeCDF	IS	92.1	40-135		24-Apr-23 15:57	1
13C-2,3,4,7,8-PeCDF	IS	95.4	40-135		24-Apr-23 15:57	1
13C-1,2,3,4,7,8-HxCDF	IS	91.6	40-135		24-Apr-23 15:57	1
13C-1,2,3,6,7,8-HxCDF	IS	93.1	40-135		24-Apr-23 15:57	1
13C-2,3,4,6,7,8-HxCDF	IS	94.0	40-135		24-Apr-23 15:57	1
13C-1,2,3,7,8,9-HxCDF	IS	87.7	40-135		24-Apr-23 15:57	1
13C-1,2,3,4,6,7,8-HpCDF	IS	84.3	40-135		24-Apr-23 15:57	1
13C-1,2,3,4,7,8,9-HpCDF	IS	82.3	40-135		24-Apr-23 15:57	1
13C-OCDF	IS	64.6	40-135		24-Apr-23 15:57	1
37Cl-2,3,7,8-TCDD	CRS	78.1	40-135		24-Apr-23 15:57	1

Sample ID: ML001-SW-230323 **EPA Method 8290A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data
Lab Sample: 2303225-01
QC Batch: B23D041
Sample Size: 0.982 L
Date Received: 28-Mar-23 09:19
Date Extracted: 04-Apr-23
Column: ZB-DIOXIN

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
2,3,7,8-TCDD	ND	1.18	1.81			24-Apr-23 17:28	1
1,2,3,7,8-PeCDD	ND	1.54	5.73			24-Apr-23 17:28	1
1,2,3,4,7,8-HxCDD	ND	2.18	4.26			24-Apr-23 17:28	1
1,2,3,6,7,8-HxCDD	ND	2.46	3.57			24-Apr-23 17:28	1
1,2,3,7,8,9-HxCDD	ND	2.58	4.54			24-Apr-23 17:28	1
1,2,3,4,6,7,8-HpCDD	ND		4.93	0.716		24-Apr-23 17:28	1
OCDD	5.84		16.7		J	24-Apr-23 17:28	1
2,3,7,8-TCDF	ND	0.589	1.81			24-Apr-23 17:28	1
1,2,3,7,8-PeCDF	ND	1.07	5.10			24-Apr-23 17:28	1
2,3,4,7,8-PeCDF	ND	0.975	5.08			24-Apr-23 17:28	1
1,2,3,4,7,8-HxCDF	ND	0.983	7.00			24-Apr-23 17:28	1
1,2,3,6,7,8-HxCDF	ND	0.944	6.42			24-Apr-23 17:28	1
2,3,4,6,7,8-HxCDF	ND	1.09	5.91			24-Apr-23 17:28	1
1,2,3,7,8,9-HxCDF	ND	1.48	5.43			24-Apr-23 17:28	1
1,2,3,4,6,7,8-HpCDF	ND	1.15	6.07			24-Apr-23 17:28	1
1,2,3,4,7,8,9-HpCDF	ND	1.76	5.44			24-Apr-23 17:28	1
OCDF	ND	4.88	11.5			24-Apr-23 17:28	1
Toxic Equivalent							
TEQMinWHO2005Dioxin	0.00175						
Totals							
Total TCDD	ND	1.18					
Total PeCDD	ND	1.54					
Total HxCDD	ND	2.58					
Total HpCDD	ND			0.716			
Total TCDF	ND	0.589					
Total PeCDF	ND	1.07					
Total HxCDF	ND	1.48					
Total HpCDF	ND	1.76					

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-2,3,7,8-TCDD	IS	58.2	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,7,8-PeCDD	IS	90.7	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,4,7,8-HxCDD	IS	79.1	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,6,7,8-HxCDD	IS	72.0	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,7,8,9-HxCDD	IS	68.6	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,4,6,7,8-HpCDD	IS	68.2	40 - 135		24-Apr-23 17:28	1
13C-OCDD	IS	47.8	40 - 135		24-Apr-23 17:28	1
13C-2,3,7,8-TCDF	IS	74.2	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,7,8-PeCDF	IS	79.2	40 - 135		24-Apr-23 17:28	1
13C-2,3,4,7,8-PeCDF	IS	82.7	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,4,7,8-HxCDF	IS	74.6	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,6,7,8-HxCDF	IS	74.0	40 - 135		24-Apr-23 17:28	1
13C-2,3,4,6,7,8-HxCDF	IS	74.1	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,7,8,9-HxCDF	IS	69.6	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,4,6,7,8-HpCDF	IS	64.5	40 - 135		24-Apr-23 17:28	1
13C-1,2,3,4,7,8,9-HpCDF	IS	61.4	40 - 135		24-Apr-23 17:28	1
13C-OCDF	IS	49.9	40 - 135		24-Apr-23 17:28	1
37Cl-2,3,7,8-TCDD	CRS	64.5	40 - 135		24-Apr-23 17:28	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: Method Blank **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BLK1
QC Batch: B23E167
Sample Size: 1.00 L
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-1	11.0		1.89			25-May-23 20:01	1
PCB-2	ND	1.23	2.37			25-May-23 20:01	1
PCB-3	ND	1.25	3.08			25-May-23 20:01	1
PCB-4/10	ND	19.2	2.46			25-May-23 20:01	1
PCB-5/8	ND	13.6	3.62			25-May-23 20:01	1
PCB-6	ND	13.3	1.89			25-May-23 20:01	1
PCB-7/9	ND	14.1	2.22			25-May-23 20:01	1
PCB-11	ND	10.6	5.18			25-May-23 20:01	1
PCB-12/13	ND	11.6	3.29			25-May-23 20:01	1
PCB-14	ND	11.6	1.42			25-May-23 20:01	1
PCB-15	ND	11.6	1.98			25-May-23 20:01	1
PCB-16/32	ND		1.65	4.49		25-May-23 20:01	1
PCB-17	ND	1.62	1.44			25-May-23 20:01	1
PCB-18	ND		1.94	7.41		25-May-23 20:01	1
PCB-19	ND	1.83	0.851			25-May-23 20:01	1
PCB-20/21/33	7.36		4.47		J	25-May-23 20:01	1
PCB-22	ND	1.29	2.06			25-May-23 20:01	1
PCB-23	ND	1.37	2.07			25-May-23 20:01	1
PCB-24/27	ND	1.17	1.67			25-May-23 20:01	1
PCB-25	ND	1.33	1.63			25-May-23 20:01	1
PCB-26	ND	1.33	1.85			25-May-23 20:01	1
PCB-28	8.83		6.43		J	25-May-23 20:01	1
PCB-29	ND	1.41	1.62			25-May-23 20:01	1
PCB-30	ND	1.15	1.12			25-May-23 20:01	1
PCB-31	7.23		5.75		J	25-May-23 20:01	1
PCB-34	ND	1.39	1.48			25-May-23 20:01	1
PCB-35	ND	1.57	1.67			25-May-23 20:01	1
PCB-36	ND	1.54	1.44			25-May-23 20:01	1
PCB-37	ND	1.60	1.22			25-May-23 20:01	1
PCB-38	ND	1.56	1.73			25-May-23 20:01	1
PCB-39	ND	1.64	1.60			25-May-23 20:01	1
PCB-40	ND	1.28	2.26			25-May-23 20:01	1
PCB-41/64/71/72	ND		4.25	3.13		25-May-23 20:01	1
PCB-42/59	ND		2.02	1.29		25-May-23 20:01	1
PCB-43/49	3.73		3.88		J	25-May-23 20:01	1
PCB-44	3.28		13.2		J	25-May-23 20:01	1
PCB-45	ND	0.945	1.61			25-May-23 20:01	1
PCB-46	ND	0.984	1.58			25-May-23 20:01	1
PCB-47	ND	0.850	3.22			25-May-23 20:01	1
PCB-48/75	ND	0.706	2.81			25-May-23 20:01	1
PCB-50	ND	0.822	1.90			25-May-23 20:01	1
PCB-51	ND	0.759	1.15			25-May-23 20:01	1
PCB-52/69	ND		15.5	4.61		25-May-23 20:01	1
PCB-53	ND	0.808	1.58			25-May-23 20:01	1
PCB-54	ND	0.677	1.31			25-May-23 20:01	1
PCB-55	ND	0.589	1.24			25-May-23 20:01	1
PCB-56/60	ND		4.70	1.37		25-May-23 20:01	1
PCB-57	ND	0.569	1.09			25-May-23 20:01	1
PCB-58	ND	0.566	1.33			25-May-23 20:01	1
PCB-61/70	ND	0.626	3.10			25-May-23 20:01	1
PCB-62	ND	0.707	1.32			25-May-23 20:01	1
PCB-63	ND	0.631	1.11			25-May-23 20:01	1

Sample ID: Method Blank **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BLK1
QC Batch: B23E167
Sample Size: 1.00 L
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-65	ND	0.632	1.40			25-May-23 20:01	1
PCB-66/76	ND	0.572	6.10			25-May-23 20:01	1
PCB-67	ND	0.603	1.20			25-May-23 20:01	1
PCB-68	ND	0.617	1.94			25-May-23 20:01	1
PCB-73	ND	0.581	1.44			25-May-23 20:01	1
PCB-74	ND	0.563	1.39			25-May-23 20:01	1
PCB-77	ND	0.740	1.91			25-May-23 20:01	1
PCB-78	ND	0.706	1.22			25-May-23 20:01	1
PCB-79	ND	0.592	1.30			25-May-23 20:01	1
PCB-80	ND	0.582	0.807			25-May-23 20:01	1
PCB-81	ND	0.755	1.14			25-May-23 20:01	1
PCB-82	ND	0.918	1.85			25-May-23 20:01	1
PCB-83	ND	0.569	1.23			25-May-23 20:01	1
PCB-84/92	ND	0.871	1.75			25-May-23 20:01	1
PCB-85/116	ND	0.719	2.13			25-May-23 20:01	1
PCB-86	ND	0.837	2.05			25-May-23 20:01	1
PCB-87/117/125	ND	0.661	2.99			25-May-23 20:01	1
PCB-88/91	ND	0.881	2.32			25-May-23 20:01	1
PCB-89	ND	0.812	1.10			25-May-23 20:01	1
PCB-90/101	3.41		2.23		J	25-May-23 20:01	1
PCB-93	ND	1.05	2.80			25-May-23 20:01	1
PCB-94	ND	0.965	1.79			25-May-23 20:01	1
PCB-95/98/102	ND	0.749	2.16			25-May-23 20:01	1
PCB-96	ND	0.657	1.40			25-May-23 20:01	1
PCB-97	ND	0.789	1.01			25-May-23 20:01	1
PCB-99	ND	0.724	1.97			25-May-23 20:01	1
PCB-100	ND	0.802	1.49			25-May-23 20:01	1
PCB-103	ND	0.838	1.27			25-May-23 20:01	1
PCB-104	ND	0.657	1.09			25-May-23 20:01	1
PCB-105	ND	0.568	1.64			25-May-23 20:01	1
PCB-106/118	ND	0.605	3.03			25-May-23 20:01	1
PCB-107/109	ND	0.528	1.89			25-May-23 20:01	1
PCB-108/112	ND	0.711	2.94			25-May-23 20:01	1
PCB-110	ND	0.591	2.79			25-May-23 20:01	1
PCB-111/115	ND	0.548	2.31			25-May-23 20:01	1
PCB-113	ND	0.571	1.00			25-May-23 20:01	1
PCB-114	ND	0.545	0.980			25-May-23 20:01	1
PCB-119	ND	0.579	0.983			25-May-23 20:01	1
PCB-120	ND	0.494	1.46			25-May-23 20:01	1
PCB-121	ND	0.547	1.73			25-May-23 20:01	1
PCB-122	ND	0.636	1.77			25-May-23 20:01	1
PCB-123	ND	0.585	1.45			25-May-23 20:01	1
PCB-124	ND	0.542	1.22			25-May-23 20:01	1
PCB-126	ND	0.631	1.68			25-May-23 20:01	1
PCB-127	ND	0.558	1.53			25-May-23 20:01	1
PCB-128/162	ND	0.635	1.74			25-May-23 20:01	1
PCB-129	ND	0.832	1.88			25-May-23 20:01	1
PCB-130	ND	0.867	2.25			25-May-23 20:01	1
PCB-131/133	ND	0.747	2.63			25-May-23 20:01	1
PCB-132/161	ND	0.599	2.43			25-May-23 20:01	1
PCB-134/143	ND	0.799	1.76			25-May-23 20:01	1
PCB-135	ND	0.767	2.40			25-May-23 20:01	1

Sample ID: Method Blank **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BLK1
QC Batch: B23E167
Sample Size: 1.00 L
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-136	ND	0.629	1.62			25-May-23 20:01	1
PCB-137	ND	0.734	1.47			25-May-23 20:01	1
PCB-138/163/164	2.18		2.54		J	25-May-23 20:01	1
PCB-139/149	ND		3.61	1.38		25-May-23 20:01	1
PCB-140	ND	0.850	1.71			25-May-23 20:01	1
PCB-141	ND	0.746	1.16			25-May-23 20:01	1
PCB-142	ND	0.834	1.64			25-May-23 20:01	1
PCB-144	ND	0.802	1.75			25-May-23 20:01	1
PCB-145	ND	0.564	1.86			25-May-23 20:01	1
PCB-146/165	ND	0.607	2.67			25-May-23 20:01	1
PCB-147	ND	0.778	1.61			25-May-23 20:01	1
PCB-148	ND	0.832	1.80			25-May-23 20:01	1
PCB-150	ND	0.594	1.44			25-May-23 20:01	1
PCB-151	ND	0.823	2.18			25-May-23 20:01	1
PCB-152	ND	0.545	1.07			25-May-23 20:01	1
PCB-153	2.25		2.20		J	25-May-23 20:01	1
PCB-154	ND	0.769	1.38			25-May-23 20:01	1
PCB-155	ND	0.650	1.27			25-May-23 20:01	1
PCB-156	ND	0.544	1.64			25-May-23 20:01	1
PCB-157	ND	0.615	1.22			25-May-23 20:01	1
PCB-158/160	ND	0.590	2.40			25-May-23 20:01	1
PCB-159	ND	0.484	1.32			25-May-23 20:01	1
PCB-166	ND	0.515	1.18			25-May-23 20:01	1
PCB-167	ND	0.555	0.889			25-May-23 20:01	1
PCB-168	ND	0.554	0.893			25-May-23 20:01	1
PCB-169	ND	0.688	1.45			25-May-23 20:01	1
PCB-170	ND	0.870	1.52			25-May-23 20:01	1
PCB-171	ND	0.786	1.26			25-May-23 20:01	1
PCB-172	ND	0.761	1.68			25-May-23 20:01	1
PCB-173	ND	0.896	1.42			25-May-23 20:01	1
PCB-174	ND	0.799	1.54			25-May-23 20:01	1
PCB-175	ND	0.751	1.13			25-May-23 20:01	1
PCB-176	ND	0.575	0.816			25-May-23 20:01	1
PCB-177	ND	0.839	1.58			25-May-23 20:01	1
PCB-178	ND	0.771	1.61			25-May-23 20:01	1
PCB-179	ND	0.596	1.06			25-May-23 20:01	1
PCB-180	ND	0.735	1.78			25-May-23 20:01	1
PCB-181	ND	0.720	1.15			25-May-23 20:01	1
PCB-182/187	ND	0.680	2.33			25-May-23 20:01	1
PCB-183	ND	0.703	1.49			25-May-23 20:01	1
PCB-184	ND	0.562	0.951			25-May-23 20:01	1
PCB-185	ND	0.773	1.28			25-May-23 20:01	1
PCB-186	ND	0.520	0.985			25-May-23 20:01	1
PCB-188	ND	0.557	1.06			25-May-23 20:01	1
PCB-189	ND	0.572	1.26			25-May-23 20:01	1
PCB-190	ND	0.665	1.44			25-May-23 20:01	1
PCB-191	ND	0.635	1.85			25-May-23 20:01	1
PCB-192	ND	0.593	1.70			25-May-23 20:01	1
PCB-193	ND	0.650	1.81			25-May-23 20:01	1
PCB-194	ND		2.10	1.01		25-May-23 20:01	1
PCB-195	ND	0.496	1.54			25-May-23 20:01	1
PCB-196/203	ND	0.543	2.34			25-May-23 20:01	1

Sample ID: Method Blank **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BLK1
QC Batch: B23E167
Sample Size: 1.00 L
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-197	ND	0.425	1.45			25-May-23 20:01	1
PCB-198	ND	0.589	2.07			25-May-23 20:01	1
PCB-199	ND	0.580	1.48			25-May-23 20:01	1
PCB-200	ND	0.449	0.890			25-May-23 20:01	1
PCB-201	ND	0.453	1.33			25-May-23 20:01	1
PCB-202	ND	0.412	1.24			25-May-23 20:01	1
PCB-204	ND	0.429	1.06			25-May-23 20:01	1
PCB-205	ND	0.374	1.56			25-May-23 20:01	1
PCB-206	ND	0.281	1.62			25-May-23 20:01	1
PCB-207	ND	0.214	1.56			25-May-23 20:01	1
PCB-208	ND	0.211	1.53			25-May-23 20:01	1
PCB-209	ND	0.112	1.93			25-May-23 20:01	1
Totals							
Total monoCB	11.0						
Total diCB	ND	19.2					
Total triCB	23.4			35.3			
Total tetraCB	7.01			17.4			
Total pentaCB	3.41						
Total hexaCB	4.43			5.81			
Total heptaCB	ND	0.896					
Total octaCB	ND			1.01			
Total nonaCB	ND	0.281					
DecaCB	ND	0.112					
Total PCB	49.2						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	33.1	15 - 150		25-May-23 20:01	1
13C-PCB-3	IS	33.1	15 - 150		25-May-23 20:01	1
13C-PCB-4	IS	29.5	25 - 150		25-May-23 20:01	1
13C-PCB-11	IS	31.1	25 - 150		25-May-23 20:01	1
13C-PCB-9	IS	29.4	25 - 150		25-May-23 20:01	1
13C-PCB-19	IS	43.6	25 - 150		25-May-23 20:01	1
13C-PCB-28	IS	34.1	25 - 150		25-May-23 20:01	1
13C-PCB-32	IS	46.6	25 - 150		25-May-23 20:01	1
13C-PCB-37	IS	30.6	25 - 150		25-May-23 20:01	1
13C-PCB-47	IS	31.1	25 - 150		25-May-23 20:01	1
13C-PCB-52	IS	31.7	25 - 150		25-May-23 20:01	1
13C-PCB-54	IS	31.2	25 - 150		25-May-23 20:01	1
13C-PCB-70	IS	32.5	25 - 150		25-May-23 20:01	1
13C-PCB-77	IS	28.8	25 - 150		25-May-23 20:01	1
13C-PCB-80	IS	31.0	25 - 150		25-May-23 20:01	1
13C-PCB-81	IS	29.0	25 - 150		25-May-23 20:01	1
13C-PCB-95	IS	29.5	25 - 150		25-May-23 20:01	1
13C-PCB-97	IS	30.6	25 - 150		25-May-23 20:01	1
13C-PCB-101	IS	30.7	25 - 150		25-May-23 20:01	1
13C-PCB-104	IS	28.7	25 - 150		25-May-23 20:01	1
13C-PCB-105	IS	25.8	25 - 150		25-May-23 20:01	1
13C-PCB-114	IS	26.4	25 - 150		25-May-23 20:01	1
13C-PCB-118	IS	31.0	25 - 150		25-May-23 20:01	1
13C-PCB-123	IS	31.9	25 - 150		25-May-23 20:01	1
13C-PCB-126	IS	22.9	25 - 150	H	25-May-23 20:01	1
13C-PCB-127	IS	25.8	25 - 150		25-May-23 20:01	1

Sample ID: Method Blank **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BLK1
QC Batch: B23E167
Sample Size: 1.00 L
Date Extracted: 15-May-23
Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-138	IS	33.1	25 - 150		25-May-23 20:01	1
13C-PCB-141	IS	31.9	25 - 150		25-May-23 20:01	1
13C-PCB-153	IS	32.9	25 - 150		25-May-23 20:01	1
13C-PCB-155	IS	34.8	25 - 150		25-May-23 20:01	1
13C-PCB-156	IS	32.2	25 - 150		25-May-23 20:01	1
13C-PCB-157	IS	32.1	25 - 150		25-May-23 20:01	1
13C-PCB-159	IS	34.3	25 - 150		25-May-23 20:01	1
13C-PCB-167	IS	32.0	25 - 150		25-May-23 20:01	1
13C-PCB-169	IS	28.7	25 - 150		25-May-23 20:01	1
13C-PCB-170	IS	31.3	25 - 150		25-May-23 20:01	1
13C-PCB-180	IS	31.9	25 - 150		25-May-23 20:01	1
13C-PCB-188	IS	30.6	25 - 150		25-May-23 20:01	1
13C-PCB-189	IS	32.0	25 - 150		25-May-23 20:01	1
13C-PCB-194	IS	30.0	25 - 150		25-May-23 20:01	1
13C-PCB-202	IS	38.0	25 - 150		25-May-23 20:01	1
13C-PCB-206	IS	35.6	25 - 150		25-May-23 20:01	1
13C-PCB-208	IS	36.7	25 - 150		25-May-23 20:01	1
13C-PCB-209	IS	46.0	25 - 150		25-May-23 20:01	1
13C-PCB-79	CRS	32.9	30 - 135		25-May-23 20:01	1
13C-PCB-178	CRS	47.1	30 - 135		25-May-23 20:01	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

Sample ID: OPR **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BS1
QC Batch: B23E167 Date Extracted: 15-May-23 07:36
Sample Size: 1.00 L Column: ZB-1

Analyte	Amt Found (pg/L)	Spike Amt	% Recovery	Limits	Qualifiers	Analyzed	Dilution
PCB-1	873	1000	87.3	50-150	B	25-May-23 15:59	1
PCB-3	900	1000	90.0	50-150		25-May-23 15:59	1
PCB-4/10	2050	2000	102	50-150		25-May-23 15:59	1
PCB-15	982	1000	98.2	50-150		25-May-23 15:59	1
PCB-19	754	1000	75.4	50-150		25-May-23 15:59	1
PCB-37	1060	1000	106	50-150		25-May-23 15:59	1
PCB-54	863	1000	86.3	50-150		25-May-23 15:59	1
PCB-77	812	1000	81.2	50-150		25-May-23 15:59	1
PCB-81	820	1000	82.0	50-150		25-May-23 15:59	1
PCB-104	836	1000	83.6	50-150		25-May-23 15:59	1
PCB-105	1010	1000	101	50-150		25-May-23 15:59	1
PCB-106/118	1660	2000	83.2	50-150		25-May-23 15:59	1
PCB-114	995	1000	99.5	50-150		25-May-23 15:59	1
PCB-123	828	1000	82.8	50-150		25-May-23 15:59	1
PCB-126	983	1000	98.3	50-150		25-May-23 15:59	1
PCB-155	843	1000	84.3	50-150		25-May-23 15:59	1
PCB-156	836	1000	83.6	50-150		25-May-23 15:59	1
PCB-157	836	1000	83.6	50-150		25-May-23 15:59	1
PCB-167	863	1000	86.3	50-150		25-May-23 15:59	1
PCB-169	850	1000	85.0	50-150		25-May-23 15:59	1
PCB-188	837	1000	83.7	50-150		25-May-23 15:59	1
PCB-189	807	1000	80.7	50-150		25-May-23 15:59	1
PCB-202	836	1000	83.6	50-150		25-May-23 15:59	1
PCB-205	1020	1000	102	50-150		25-May-23 15:59	1
PCB-206	856	1000	85.6	50-150		25-May-23 15:59	1
PCB-208	907	1000	90.7	50-150		25-May-23 15:59	1
PCB-209	777	1000	77.7	50-150		25-May-23 15:59	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	47.7	15-140		25-May-23 15:59	1
13C-PCB-3	IS	46.7	15-140		25-May-23 15:59	1
13C-PCB-4	IS	41.5	30-140		25-May-23 15:59	1
13C-PCB-11	IS	44.3	30-140		25-May-23 15:59	1
13C-PCB-9	IS	41.2	30-140		25-May-23 15:59	1
13C-PCB-19	IS	59.3	30-140		25-May-23 15:59	1
13C-PCB-28	IS	47.1	30-140		25-May-23 15:59	1
13C-PCB-32	IS	66.0	30-140		25-May-23 15:59	1
13C-PCB-37	IS	42.1	30-140		25-May-23 15:59	1
13C-PCB-47	IS	43.9	30-140		25-May-23 15:59	1
13C-PCB-52	IS	45.4	30-140		25-May-23 15:59	1
13C-PCB-54	IS	40.6	30-140		25-May-23 15:59	1
13C-PCB-70	IS	46.6	30-140		25-May-23 15:59	1
13C-PCB-77	IS	44.0	30-140		25-May-23 15:59	1
13C-PCB-80	IS	44.7	30-140		25-May-23 15:59	1
13C-PCB-81	IS	43.1	30-140		25-May-23 15:59	1

Sample ID: OPR **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Aqueous

Laboratory Data
Lab Sample: B23E167-BS1
QC Batch: B23E167 Date Extracted: 15-May-23 07:36
Sample Size: 1.00 L Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-95	IS	42.9	30-140		25-May-23 15:59	1
13C-PCB-97	IS	45.9	30-140		25-May-23 15:59	1
13C-PCB-101	IS	45.2	30-140		25-May-23 15:59	1
13C-PCB-104	IS	40.6	30-140		25-May-23 15:59	1
13C-PCB-105	IS	39.0	30-140		25-May-23 15:59	1
13C-PCB-114	IS	39.8	30-140		25-May-23 15:59	1
13C-PCB-118	IS	47.5	30-140		25-May-23 15:59	1
13C-PCB-123	IS	47.9	30-140		25-May-23 15:59	1
13C-PCB-126	IS	35.3	30-140		25-May-23 15:59	1
13C-PCB-127	IS	38.7	30-140		25-May-23 15:59	1
13C-PCB-138	IS	49.6	30-140		25-May-23 15:59	1
13C-PCB-141	IS	47.6	30-140		25-May-23 15:59	1
13C-PCB-153	IS	49.1	30-140		25-May-23 15:59	1
13C-PCB-155	IS	52.6	30-140		25-May-23 15:59	1
13C-PCB-156	IS	47.8	30-140		25-May-23 15:59	1
13C-PCB-157	IS	48.5	30-140		25-May-23 15:59	1
13C-PCB-159	IS	51.0	30-140		25-May-23 15:59	1
13C-PCB-167	IS	48.9	30-140		25-May-23 15:59	1
13C-PCB-169	IS	44.0	30-140		25-May-23 15:59	1
13C-PCB-170	IS	49.7	30-140		25-May-23 15:59	1
13C-PCB-180	IS	50.0	30-140		25-May-23 15:59	1
13C-PCB-188	IS	48.4	30-140		25-May-23 15:59	1
13C-PCB-189	IS	50.2	30-140		25-May-23 15:59	1
13C-PCB-194	IS	47.7	30-140		25-May-23 15:59	1
13C-PCB-202	IS	61.1	30-140		25-May-23 15:59	1
13C-PCB-206	IS	53.3	30-140		25-May-23 15:59	1
13C-PCB-208	IS	57.9	30-140		25-May-23 15:59	1
13C-PCB-209	IS	69.7	30-140		25-May-23 15:59	1
13C-PCB-79	CRS	47.0	25-125		25-May-23 15:59	1
13C-PCB-178	CRS	64.0	25-125		25-May-23 15:59	1

Sample ID: ML001-SW-230323 **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data
Lab Sample: 2303225-01
QC Batch: B23E167
Sample Size: 0.859 L
Date Received: 28-Mar-23 09:19
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-1	ND	1.18	2.20			25-May-23 03:23	1
PCB-2	ND		2.76	3.05		25-May-23 03:23	1
PCB-3	ND		3.59	3.30		25-May-23 03:23	1
PCB-4/10	ND	14.9	2.86			25-May-23 03:23	1
PCB-5/8	ND		4.22	42.3		25-May-23 03:23	1
PCB-6	ND	10.3	2.20			25-May-23 03:23	1
PCB-7/9	ND	10.9	2.58			25-May-23 03:23	1
PCB-11	ND	8.77	6.03			25-May-23 03:23	1
PCB-12/13	ND	9.60	3.83			25-May-23 03:23	1
PCB-14	ND	9.56	1.65			25-May-23 03:23	1
PCB-15	ND	9.62	2.31			25-May-23 03:23	1
PCB-16/32	ND		1.92	10.8		25-May-23 03:23	1
PCB-17	13.5		1.68			25-May-23 03:23	1
PCB-18	37.4		2.26			25-May-23 03:23	1
PCB-19	ND		0.991	5.51		25-May-23 03:23	1
PCB-20/21/33	25.8		5.20		B	25-May-23 03:23	1
PCB-22	13.2		2.40			25-May-23 03:23	1
PCB-23	ND	0.954	2.41			25-May-23 03:23	1
PCB-24/27	ND	0.849	1.94			25-May-23 03:23	1
PCB-25	ND		1.90	2.61		25-May-23 03:23	1
PCB-26	7.17		2.15			25-May-23 03:23	1
PCB-28	ND		7.49	23.4		25-May-23 03:23	1
PCB-29	ND	0.988	1.89			25-May-23 03:23	1
PCB-30	ND	0.791	1.30			25-May-23 03:23	1
PCB-31	26.4		6.70		B	25-May-23 03:23	1
PCB-34	ND	0.969	1.72			25-May-23 03:23	1
PCB-35	ND	0.932	1.94			25-May-23 03:23	1
PCB-36	ND	0.913	1.68			25-May-23 03:23	1
PCB-37	6.33		1.42			25-May-23 03:23	1
PCB-38	ND	0.929	2.01			25-May-23 03:23	1
PCB-39	ND	0.973	1.86			25-May-23 03:23	1
PCB-40	ND		2.63	2.97		25-May-23 03:23	1
PCB-41/64/71/72	13.5		4.95		J	25-May-23 03:23	1
PCB-42/59	ND		2.35	4.67		25-May-23 03:23	1
PCB-43/49	11.1		4.52		J, B	25-May-23 03:23	1
PCB-44	22.8		15.4		B	25-May-23 03:23	1
PCB-45	ND		1.87	3.83		25-May-23 03:23	1
PCB-46	ND		1.84	1.15		25-May-23 03:23	1
PCB-47	3.61		3.75		J	25-May-23 03:23	1
PCB-48/75	ND		3.27	2.62		25-May-23 03:23	1
PCB-50	ND	0.532	2.21			25-May-23 03:23	1
PCB-51	ND		1.34	0.704		25-May-23 03:23	1
PCB-52/69	25.5		18.0			25-May-23 03:23	1
PCB-53	ND		1.84	3.27		25-May-23 03:23	1
PCB-54	ND	0.439	1.53			25-May-23 03:23	1
PCB-55	ND	0.389	1.44			25-May-23 03:23	1
PCB-56/60	5.27		5.47		J	25-May-23 03:23	1
PCB-57	ND	0.372	1.27			25-May-23 03:23	1
PCB-58	ND	0.370	1.55			25-May-23 03:23	1
PCB-61/70	14.8		3.61			25-May-23 03:23	1
PCB-62	ND	0.478	1.54			25-May-23 03:23	1
PCB-63	ND	0.412	1.29			25-May-23 03:23	1

Sample ID: ML001-SW-230323 **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data
Lab Sample: 2303225-01
QC Batch: B23E167
Sample Size: 0.859 L
Date Received: 28-Mar-23 09:19
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-65	ND	0.428	1.63			25-May-23 03:23	1
PCB-66/76	7.07		7.10		J	25-May-23 03:23	1
PCB-67	ND	0.394	1.40			25-May-23 03:23	1
PCB-68	ND	0.417	2.26			25-May-23 03:23	1
PCB-73	ND	0.406	1.68			25-May-23 03:23	1
PCB-74	ND		1.62	3.78		25-May-23 03:23	1
PCB-77	ND	0.461	2.22			25-May-23 03:23	1
PCB-78	ND	0.448	1.42			25-May-23 03:23	1
PCB-79	ND	0.391	1.51			25-May-23 03:23	1
PCB-80	ND	0.385	0.940			25-May-23 03:23	1
PCB-81	ND	0.479	1.33			25-May-23 03:23	1
PCB-82	4.20		2.15		J	25-May-23 03:23	1
PCB-83	ND	0.617	1.43			25-May-23 03:23	1
PCB-84/92	ND		2.04	11.8		25-May-23 03:23	1
PCB-85/116	3.58		2.48		J	25-May-23 03:23	1
PCB-86	ND	0.907	2.39			25-May-23 03:23	1
PCB-87/117/125	ND		3.48	5.88		25-May-23 03:23	1
PCB-88/91	ND		2.70	1.76		25-May-23 03:23	1
PCB-89	ND	0.904	1.28			25-May-23 03:23	1
PCB-90/101	22.2		2.60		B	25-May-23 03:23	1
PCB-93	ND	1.12	3.26			25-May-23 03:23	1
PCB-94	ND	1.02	2.08			25-May-23 03:23	1
PCB-95/98/102	21.7		2.52			25-May-23 03:23	1
PCB-96	ND	0.656	1.63			25-May-23 03:23	1
PCB-97	ND		1.18	6.19		25-May-23 03:23	1
PCB-99	7.53		2.29			25-May-23 03:23	1
PCB-100	ND	0.801	1.73			25-May-23 03:23	1
PCB-103	ND	0.838	1.48			25-May-23 03:23	1
PCB-104	ND	0.657	1.27			25-May-23 03:23	1
PCB-105	7.67		1.91			25-May-23 03:23	1
PCB-106/118	16.3		3.53			25-May-23 03:23	1
PCB-107/109	ND	0.627	2.20			25-May-23 03:23	1
PCB-108/112	1.33		3.42		J	25-May-23 03:23	1
PCB-110	25.5		3.25			25-May-23 03:23	1
PCB-111/115	ND	0.594	2.69			25-May-23 03:23	1
PCB-113	ND	0.636	1.16			25-May-23 03:23	1
PCB-114	ND	0.715	1.14			25-May-23 03:23	1
PCB-119	ND	0.628	1.14			25-May-23 03:23	1
PCB-120	ND	0.536	1.70			25-May-23 03:23	1
PCB-121	ND	0.581	2.01			25-May-23 03:23	1
PCB-122	ND	0.833	2.06			25-May-23 03:23	1
PCB-123	ND	0.695	1.69			25-May-23 03:23	1
PCB-124	ND	0.645	1.42			25-May-23 03:23	1
PCB-126	ND	0.684	1.96			25-May-23 03:23	1
PCB-127	ND	0.699	1.78			25-May-23 03:23	1
PCB-128/162	ND		2.03	3.18		25-May-23 03:23	1
PCB-129	ND	0.921	2.19			25-May-23 03:23	1
PCB-130	ND	1.03	2.62			25-May-23 03:23	1
PCB-131/133	ND	0.855	3.06			25-May-23 03:23	1
PCB-132/161	6.03		2.83		J	25-May-23 03:23	1
PCB-134/143	ND	0.914	2.05			25-May-23 03:23	1
PCB-135	ND	0.812	2.79			25-May-23 03:23	1

Sample ID: ML001-SW-230323 **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data
Lab Sample: 2303225-01
QC Batch: B23E167
Sample Size: 0.859 L
Date Received: 28-Mar-23 09:19
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-136	1.99		1.89		J	25-May-23 03:23	1
PCB-137	ND	0.876	1.71			25-May-23 03:23	1
PCB-138/163/164	16.0		2.96		J, B	25-May-23 03:23	1
PCB-139/149	13.4		4.20			25-May-23 03:23	1
PCB-140	ND	0.900	1.99			25-May-23 03:23	1
PCB-141	4.23		1.35		J	25-May-23 03:23	1
PCB-142	ND	0.955	1.91			25-May-23 03:23	1
PCB-144	ND	0.849	2.04			25-May-23 03:23	1
PCB-145	ND	0.597	2.17			25-May-23 03:23	1
PCB-146/165	ND		3.11	2.00		25-May-23 03:23	1
PCB-147	ND	0.823	1.87			25-May-23 03:23	1
PCB-148	ND	0.881	2.10			25-May-23 03:23	1
PCB-150	ND	0.628	1.68			25-May-23 03:23	1
PCB-151	ND		2.54	2.78		25-May-23 03:23	1
PCB-152	ND	0.576	1.25			25-May-23 03:23	1
PCB-153	11.9		2.56		B	25-May-23 03:23	1
PCB-154	ND	0.814	1.61			25-May-23 03:23	1
PCB-155	ND	0.688	1.48			25-May-23 03:23	1
PCB-156	ND	0.609	1.91			25-May-23 03:23	1
PCB-157	ND	0.708	1.42			25-May-23 03:23	1
PCB-158/160	ND	0.653	2.79			25-May-23 03:23	1
PCB-159	ND	0.567	1.54			25-May-23 03:23	1
PCB-166	ND	0.602	1.37			25-May-23 03:23	1
PCB-167	ND	0.644	1.04			25-May-23 03:23	1
PCB-168	ND	0.634	1.04			25-May-23 03:23	1
PCB-169	ND	0.708	1.69			25-May-23 03:23	1
PCB-170	ND		1.77	3.09		25-May-23 03:23	1
PCB-171	ND	0.724	1.47			25-May-23 03:23	1
PCB-172	ND	0.701	1.96			25-May-23 03:23	1
PCB-173	ND	0.826	1.65			25-May-23 03:23	1
PCB-174	ND		1.79	3.94		25-May-23 03:23	1
PCB-175	ND	0.657	1.32			25-May-23 03:23	1
PCB-176	ND	0.503	0.950			25-May-23 03:23	1
PCB-177	ND		1.84	1.91		25-May-23 03:23	1
PCB-178	ND	0.675	1.87			25-May-23 03:23	1
PCB-179	ND	0.521	1.23			25-May-23 03:23	1
PCB-180	ND		2.07	7.40		25-May-23 03:23	1
PCB-181	ND	0.663	1.34			25-May-23 03:23	1
PCB-182/187	ND		2.71	3.97		25-May-23 03:23	1
PCB-183	ND		1.73	1.12		25-May-23 03:23	1
PCB-184	ND	0.492	1.11			25-May-23 03:23	1
PCB-185	ND	0.712	1.49			25-May-23 03:23	1
PCB-186	ND	0.455	1.15			25-May-23 03:23	1
PCB-188	ND	0.487	1.23			25-May-23 03:23	1
PCB-189	ND	0.478	1.47			25-May-23 03:23	1
PCB-190	ND	0.575	1.68			25-May-23 03:23	1
PCB-191	ND	0.585	2.15			25-May-23 03:23	1
PCB-192	ND	0.546	1.98			25-May-23 03:23	1
PCB-193	ND	0.599	2.11			25-May-23 03:23	1
PCB-194	ND		2.45	2.94		25-May-23 03:23	1
PCB-195	1.09		1.79		J	25-May-23 03:23	1
PCB-196/203	2.85		2.72		J	25-May-23 03:23	1

Sample ID: ML001-SW-230323 **EPA Method 1668A**

Client Data
Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data
Lab Sample: 2303225-01
QC Batch: B23E167
Sample Size: 0.859 L
Date Received: 28-Mar-23 09:19
Date Extracted: 15-May-23
Column: ZB-1

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
PCB-197	ND	0.565	1.69			25-May-23 03:23	1
PCB-198	ND	0.783	2.41			25-May-23 03:23	1
PCB-199	ND		1.72	1.96		25-May-23 03:23	1
PCB-200	ND	0.598	1.04			25-May-23 03:23	1
PCB-201	ND	0.603	1.55			25-May-23 03:23	1
PCB-202	ND	0.548	1.44			25-May-23 03:23	1
PCB-204	ND	0.571	1.23			25-May-23 03:23	1
PCB-205	ND	0.507	1.82			25-May-23 03:23	1
PCB-206	ND		1.89	0.714		25-May-23 03:23	1
PCB-207	ND	0.216	1.82			25-May-23 03:23	1
PCB-208	ND		1.78	0.636		25-May-23 03:23	1
PCB-209	ND		2.25	0.371		25-May-23 03:23	1
Totals							
Total monoCB	ND			6.35			
Total diCB	ND			42.3			
Total triCB	130			172			
Total tetraCB	104			127			
Total pentaCB	110			136			
Total hexaCB	53.5			61.5			
Total heptaCB	ND			21.4			
Total octaCB	3.94			8.84			
Total nonaCB	ND			1.35			
DecaCB	ND			0.371			
Total PCB	401						

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-1	IS	65.0	15 - 150		25-May-23 03:23	1
13C-PCB-3	IS	63.0	15 - 150		25-May-23 03:23	1
13C-PCB-4	IS	57.3	25 - 150		25-May-23 03:23	1
13C-PCB-11	IS	58.4	25 - 150		25-May-23 03:23	1
13C-PCB-9	IS	57.9	25 - 150		25-May-23 03:23	1
13C-PCB-19	IS	71.4	25 - 150		25-May-23 03:23	1
13C-PCB-28	IS	49.1	25 - 150		25-May-23 03:23	1
13C-PCB-32	IS	70.0	25 - 150		25-May-23 03:23	1
13C-PCB-37	IS	51.7	25 - 150		25-May-23 03:23	1
13C-PCB-47	IS	59.1	25 - 150		25-May-23 03:23	1
13C-PCB-52	IS	58.5	25 - 150		25-May-23 03:23	1
13C-PCB-54	IS	59.6	25 - 150		25-May-23 03:23	1
13C-PCB-70	IS	60.4	25 - 150		25-May-23 03:23	1
13C-PCB-77	IS	55.5	25 - 150		25-May-23 03:23	1
13C-PCB-80	IS	57.6	25 - 150		25-May-23 03:23	1
13C-PCB-81	IS	54.8	25 - 150		25-May-23 03:23	1
13C-PCB-95	IS	59.3	25 - 150		25-May-23 03:23	1
13C-PCB-97	IS	60.4	25 - 150		25-May-23 03:23	1
13C-PCB-101	IS	57.8	25 - 150		25-May-23 03:23	1
13C-PCB-104	IS	61.5	25 - 150		25-May-23 03:23	1
13C-PCB-105	IS	57.9	25 - 150		25-May-23 03:23	1
13C-PCB-114	IS	55.3	25 - 150		25-May-23 03:23	1
13C-PCB-118	IS	57.9	25 - 150		25-May-23 03:23	1
13C-PCB-123	IS	59.3	25 - 150		25-May-23 03:23	1
13C-PCB-126	IS	53.1	25 - 150		25-May-23 03:23	1
13C-PCB-127	IS	57.4	25 - 150		25-May-23 03:23	1

Sample ID: ML001-SW-230323 **EPA Method 1668A**

Client Data

Name: Friedman & Bruya, Inc.
Project: 303396
Matrix: Water
Date Collected: 23-Mar-23 11:10

Laboratory Data

Lab Sample: 2303225-01
QC Batch: B23E167
Sample Size: 0.859 L
Date Received: 28-Mar-23 09:19
Date Extracted: 15-May-23
Column: ZB-1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C-PCB-138	IS	60.7	25 - 150		25-May-23 03:23	1
13C-PCB-141	IS	59.6	25 - 150		25-May-23 03:23	1
13C-PCB-153	IS	60.3	25 - 150		25-May-23 03:23	1
13C-PCB-155	IS	66.0	25 - 150		25-May-23 03:23	1
13C-PCB-156	IS	61.4	25 - 150		25-May-23 03:23	1
13C-PCB-157	IS	60.8	25 - 150		25-May-23 03:23	1
13C-PCB-159	IS	63.4	25 - 150		25-May-23 03:23	1
13C-PCB-167	IS	61.2	25 - 150		25-May-23 03:23	1
13C-PCB-169	IS	56.4	25 - 150		25-May-23 03:23	1
13C-PCB-170	IS	60.2	25 - 150		25-May-23 03:23	1
13C-PCB-180	IS	61.1	25 - 150		25-May-23 03:23	1
13C-PCB-188	IS	60.5	25 - 150		25-May-23 03:23	1
13C-PCB-189	IS	64.4	25 - 150		25-May-23 03:23	1
13C-PCB-194	IS	56.1	25 - 150		25-May-23 03:23	1
13C-PCB-202	IS	64.6	25 - 150		25-May-23 03:23	1
13C-PCB-206	IS	57.9	25 - 150		25-May-23 03:23	1
13C-PCB-208	IS	60.4	25 - 150		25-May-23 03:23	1
13C-PCB-209	IS	70.0	25 - 150		25-May-23 03:23	1
13C-PCB-79	CRS	59.2	30 - 135		25-May-23 03:23	1
13C-PCB-178	CRS	73.3	30 - 135		25-May-23 03:23	1

EDL - Sample specifc estimated detection limit
EMPC - Estimated maximum possible concentration
MDL - Method Detection Limit

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection Limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
MDL	Method Detection Limit
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
RL	For 537.1, the reported RLs are the MRLs.
TEQ	Toxic Equivalency, sum of the toxic equivalency factors (TEF) multiplied by the sample concentrations.
TEQMax	TEQ calculation that uses the detection limit as the concentration for non-detects
TEQMin	TEQ calculation that uses zero as the concentration for non-detects
TEQRisk	TEQ calculation that uses ½ the detection limit as the concentration for non-detects
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Enthalpy Analytical - EDH Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	21-023-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2020018
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	2211390
Nevada Division of Environmental Protection	CA00413
New Hampshire Environmental Accreditation Program	207721
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Ohio Environmental Protection Agency	87778
Oregon Laboratory Accreditation Program	4042-021
Texas Commission on Environmental Quality	T104704189-22-13
Vermont Department of Health	VT-4042
Virginia Department of General Services	11276
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters can be found at Enthalpy.com/Resources/Accreditations.

2303225 2.20

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 Enthalpy

PROJECT NAME/NO. 303396

PO #

REMARKS Replacement Volume for Contaminated Sample. See Kathy Zipp

Please Email Results

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	PCB Congeners							Notes
ML001-SW-230323		3/23/23	1110	water	1				X							

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Michael Erdahl	Friedman & Bruya	5/10/23	1000AM
Received by: Kelia Wadsworth	Kelia Wadsworth	Enthalpy-EDH	05/11/23	0913
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

2303225 3.6°C

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 A-Enthalpy - CA

PROJECT NAME/NO.	PO #
303396	D-222

REMARKS

Please Email Results Ac

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: 8290 Dioxins/Furans	EPH	VPH	PCB Congners							Notes
ML001-SW-230323		3/23/23	1110	water.	2	X			X							

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	3/27/23	1143
Received by:		Karen Austin	Enthalpy EDH	03/28/23	09:19
Relinquished by:					
Received by:					

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Sample Log-In Checklist

ENTHALPY ANALYTICAL

KW 05/12/23

Work Order #: 2303225 TAT Std

Samples Arrival:	Date/Time: 03/28/23 09:19	Initials: KW	Location: WR-2 Shelf/Rack: RIA

Delivered By:	FedEx	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None

Temp °C: 3.8 (uncorrected)	Probe used: Y / (N)	Thermometer ID: IR-4
Temp °C: 3.6 (corrected)		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?			✓
Airbill 20f2 Trk # 8176 4016 9767	✓		
Shipping Documentation Present?	✓		
Shipping Container: Enthalpy / (Client) / Retain / (Return)		Dispose	
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	Date/Time: 03/28/23 1254	Initials: KW	Location: WR-2 Shelf/Rack: B-2/G-2

COC Anomaly/Sample Acceptance Form completed?		✓	✓

Comments:

Sample Log-In Checklist

ENTHALPY ANALYTICAL

Work Order #: 2303225 **TAT** Std

Samples Arrival:	**Date/Time** 05/11/23 0913		**Initials:** KW		**Location:** WR-2 **Shelf/Rack:** NA		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Techni Ice	Dry Ice	None
Temp °C: 4.6 (uncorrected) / **Temp °C:** 2.2 (corrected)			**Probe used: Y / (N)**		**Thermometer ID:** IR-4		

					YES	NO	NA
Shipping Container(s) Intact?					✓		
Shipping Custody Seals Intact?						✓	✓
Airbill ←	Trk # 8175 1926 0033				✓		
Shipping Documentation Present?					✓		
Shipping Container	(Enthalpy)	Client	(Retain)	Return	Dispose		
Chain of Custody / Sample Documentation Present?					✓		
Chain of Custody / Sample Documentation Complete?					✓		
Holding Time Acceptable?					✓		

Logged In:	**Date/Time** Ⓐ 03/29/23 1254		**Initials:** KW	**Location:** WR-2 **Shelf/Rack:** B-2/G-2		
COC Anomaly/Sample Acceptance Form completed?					✓	✓

Comments: Ⓐ Originally logged by KW on 03/29/23. Backup volume received in this shipment. Backup volume added on 05/12/23 at 1525.

KW 05/12/23

CoC/Label Reconciliation Report WO# 2303225

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2303225-01	A ML001-SW-230323 ☑		23-Mar-23 11:10 ☑	Amber Glass NM Bottle, 1L	Aqueous	
2303225-01	B ML001-SW-230323 ☑ (A)		23-Mar-23 11:10 ☑	Amber Glass NM Bottle, 1L	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?		✓	✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		

Comments: (A) Received backup volume on 05/12/23. (1-120mL jar) ~~per~~ KW 05/12/23. Labeled and reconciled by KW on 05/12/23

Preservation Documented: Na2S2O3 Trizma NH4CH3CO2 None (All) Other

Verifed by/Date: KW 03/28/23
MMS 03/28/23

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: 303396
Work Order Number: 2303580

April 03, 2023

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 3/24/2023 for the analyses presented in the following report.

Total Metals by EPA Method 200.8

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: *04/03/2023*

CLIENT: Friedman & Bruya
Project: 303396
Work Order: 2303580

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2303580-001	M1-001-SW-230323	03/23/2023 11:10 AM	03/24/2023 3:50 PM

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

Original

Case Narrative

WO#: **2303580**
Date: **4/3/2023**

CLIENT: Friedman & Bruya
Project: 303396

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: **2303580**
Date Reported: **4/3/2023**

CLIENT: Friedman & Bruya
Project: 303396

Lab ID: 2303580-001 **Collection Date:** 3/23/2023 11:10:00 AM
Client Sample ID: **M1-001-SW-230323** **Matrix:** Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 200.8				Batch ID: 39887		Analyst: JR
Aluminum	16.6	10.0		µg/L	1	3/31/2023 6:38:00 PM

Work Order: 2303580
CLIENT: Friedman & Bruya
Project: 303396

QC SUMMARY REPORT

Total Metals by EPA Method 200.8

Sample ID: **MB-39887**	SampType: **MBLK**			Units: **µg/L**		Prep Date: **3/31/2023**			RunNo: **82873**		
Client ID: **MBLKW**	Batch ID: **39887**					Analysis Date: **3/31/2023**			SeqNo: **1724295**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	ND	10.0									

Sample ID: **LCS-39887**	SampType: **LCS**			Units: **µg/L**		Prep Date: **3/31/2023**			RunNo: **82873**		
Client ID: **LCSW**	Batch ID: **39887**					Analysis Date: **3/31/2023**			SeqNo: **1724296**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1,010	10.0	1,000	0	101	85	115				

Sample ID: **2303530-001ADUP**	SampType: **DUP**			Units: **µg/L**		Prep Date: **3/31/2023**			RunNo: **82873**		
Client ID: **BATCH**	Batch ID: **39887**					Analysis Date: **3/31/2023**			SeqNo: **1724298**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	884	10.0						877.1	0.822	30	

Sample ID: **2303530-001AMS**	SampType: **MS**			Units: **µg/L**		Prep Date: **3/31/2023**			RunNo: **82873**		
Client ID: **BATCH**	Batch ID: **39887**					Analysis Date: **3/31/2023**			SeqNo: **1724299**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2,080	10.0	1,000	877.1	120	70	130				

Sample ID: **2303530-001AMSD**	SampType: **MSD**			Units: **µg/L**		Prep Date: **3/31/2023**			RunNo: **82873**		
Client ID: **BATCH**	Batch ID: **39887**					Analysis Date: **3/31/2023**			SeqNo: **1724300**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	2,090	10.0	1,000	877.1	121	70	130	2,082	0.363	30	

Work Order: 2303580
CLIENT: Friedman & Bruya
Project: 303396

QC SUMMARY REPORT

Total Metals by EPA Method 200.8

Sample ID: **2303569-001CMS** SampType: **MS** Units: **µg/L** Prep Date: **3/31/2023** RunNo: **82873**
Client ID: **BATCH** Batch ID: **39887** Analysis Date: **3/31/2023** SeqNo: **1724355**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	1,190	10.0	1,000	108.8	108	70	130				

Sample Log-In Check List

Client Name:	**FB**	Work Order Number:	**2303580**
Logged by:	**Morgan Wilson**	Date Received:	**3/24/2023 3:50:00 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 ☐ HNO3
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	0.7

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

2303580

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.	PO #
303396	D-230

REMARKS

Please Email Results

TURNAROUND TIME

X Standard TAT

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

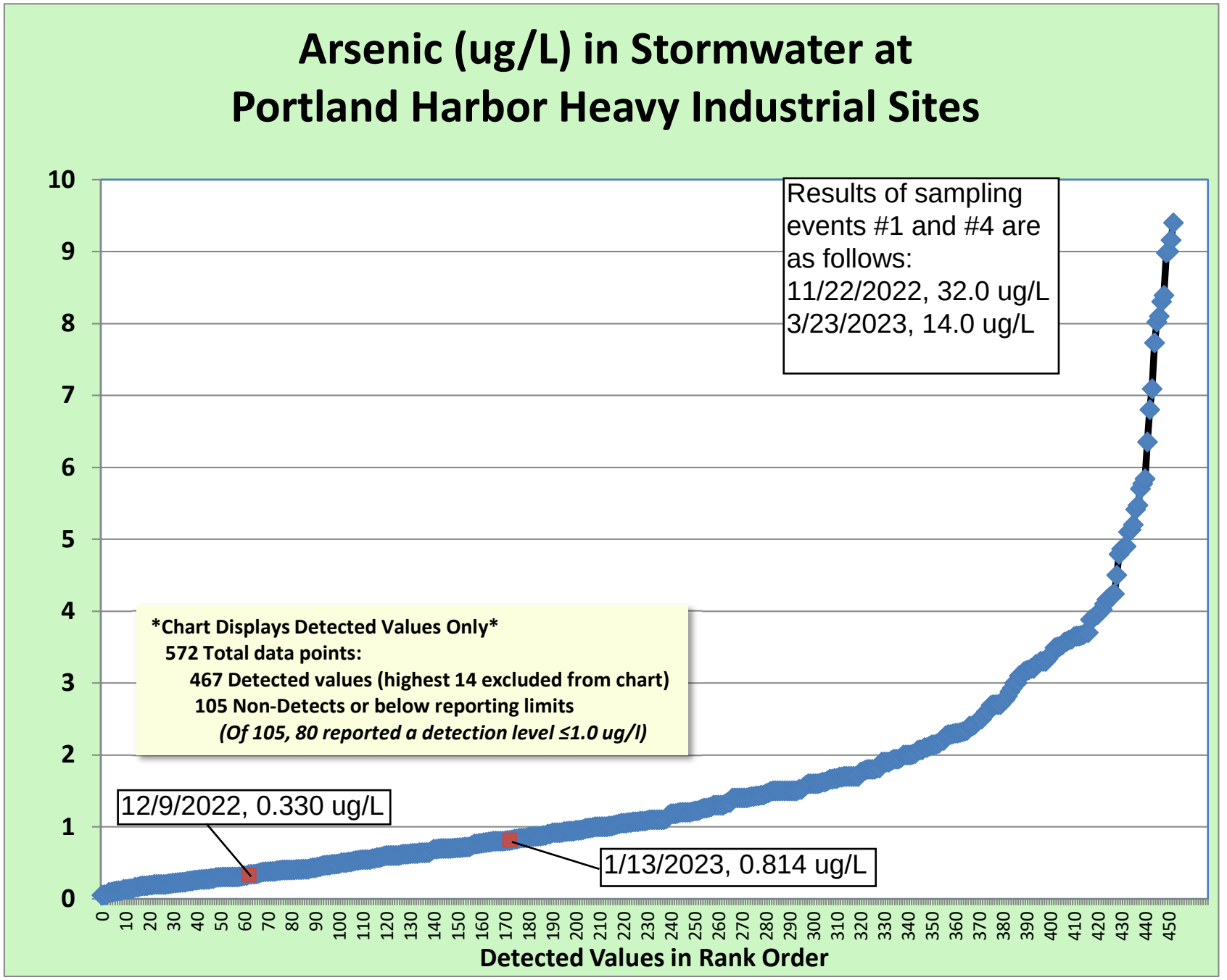
Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	X Total Al							Notes
ML001-SW-230323		3/23/23	1110	H_2O					X							

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

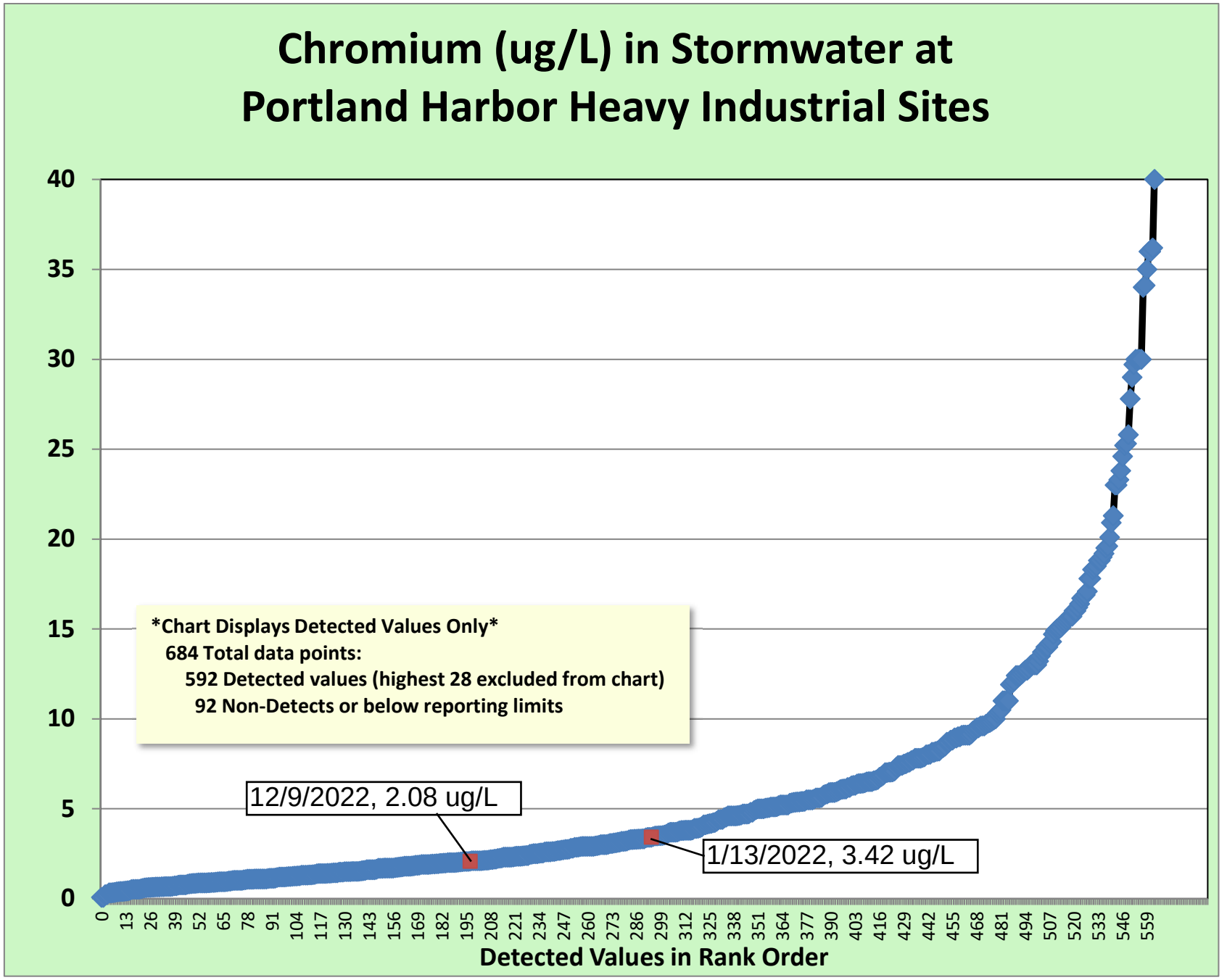
	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman & Bruya	3/24/23	0930
Received by:		Emma Tuck	Fremont Analytical	3/24/23	15:50
Relinquished by:					
Received by:					

Appendix C

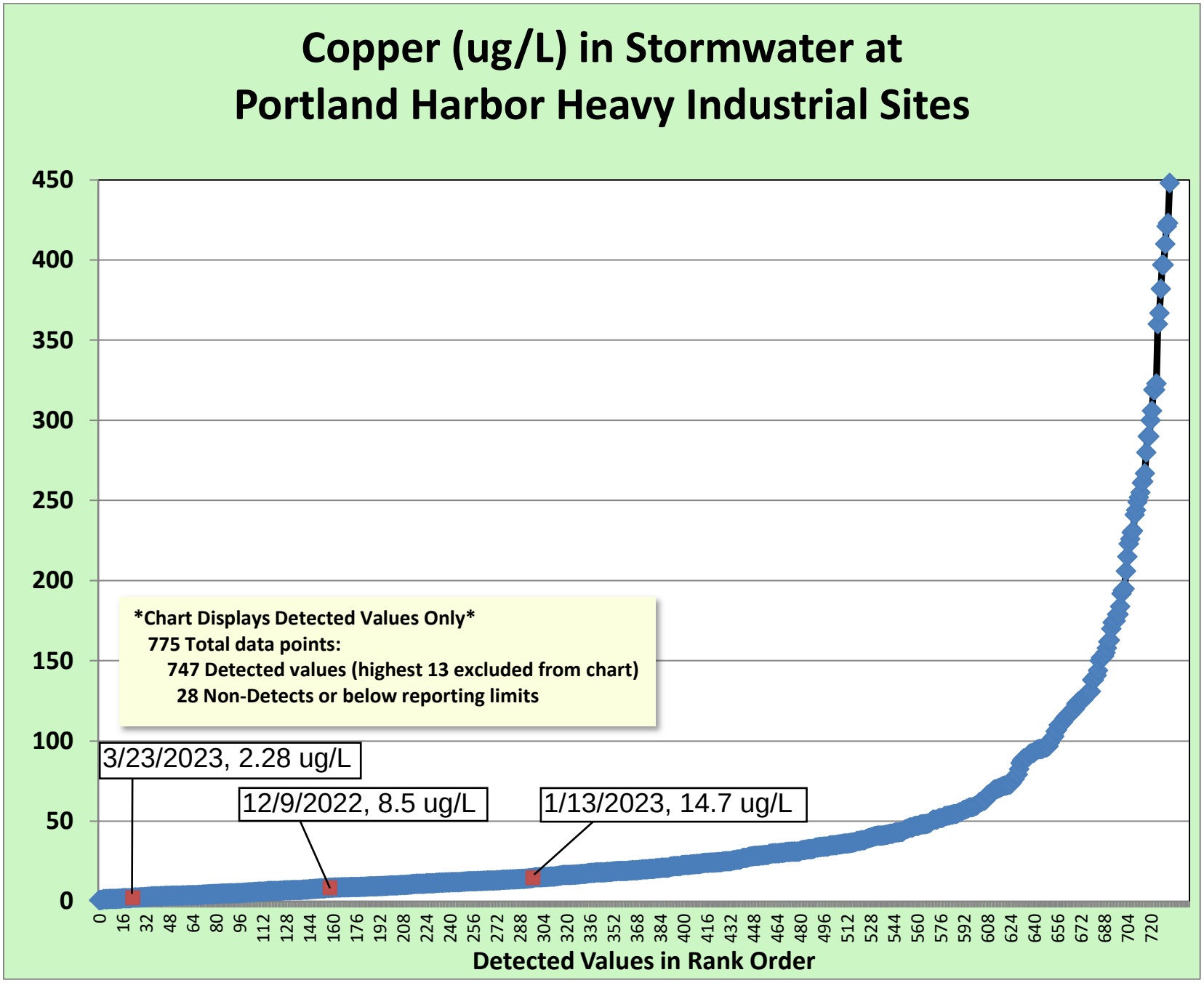
Comparison of Detected Storm Water Analytical Results to Typical Industrial Sites



ENW Sample Date, Concentration

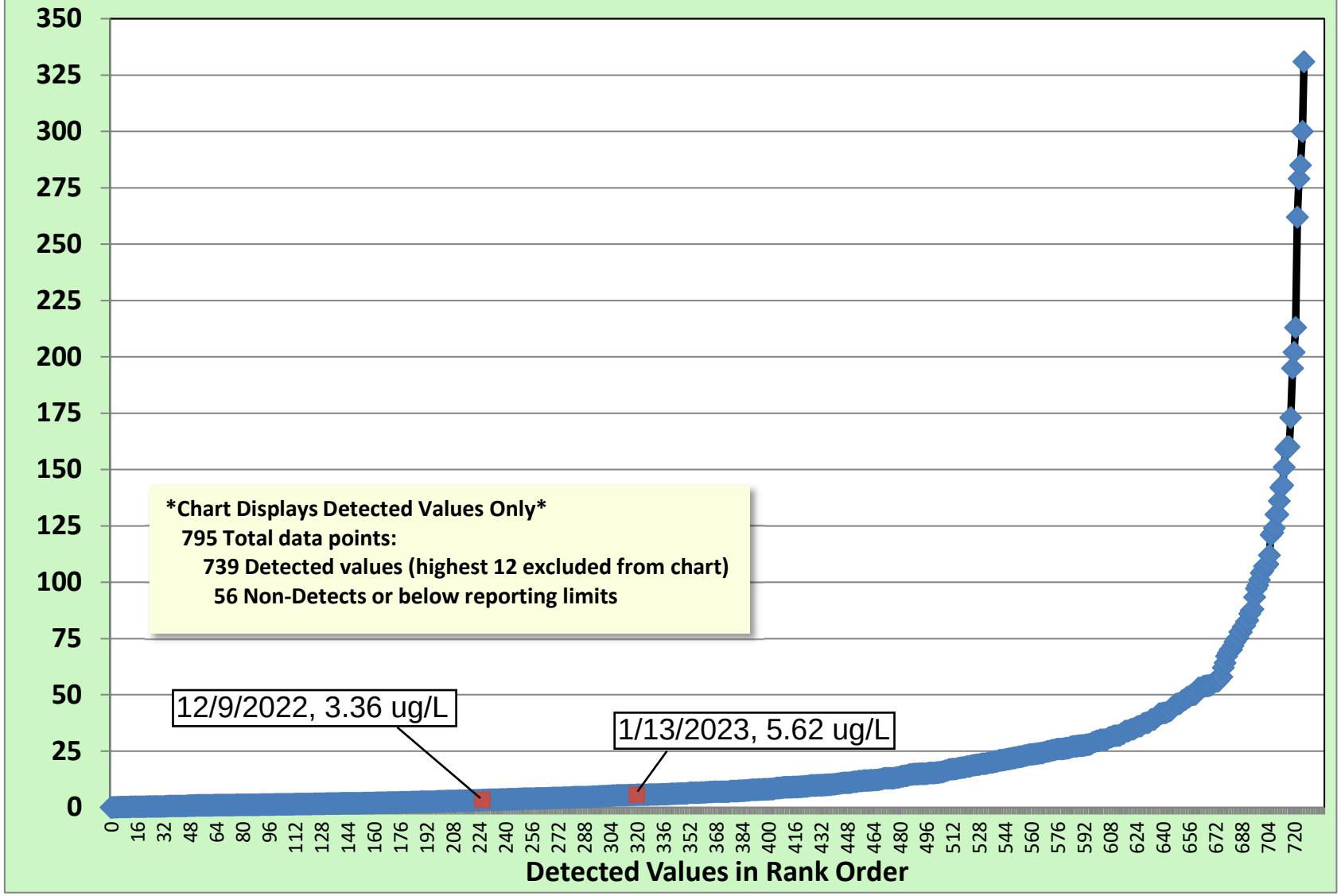


ENW Sample Date, Concentration

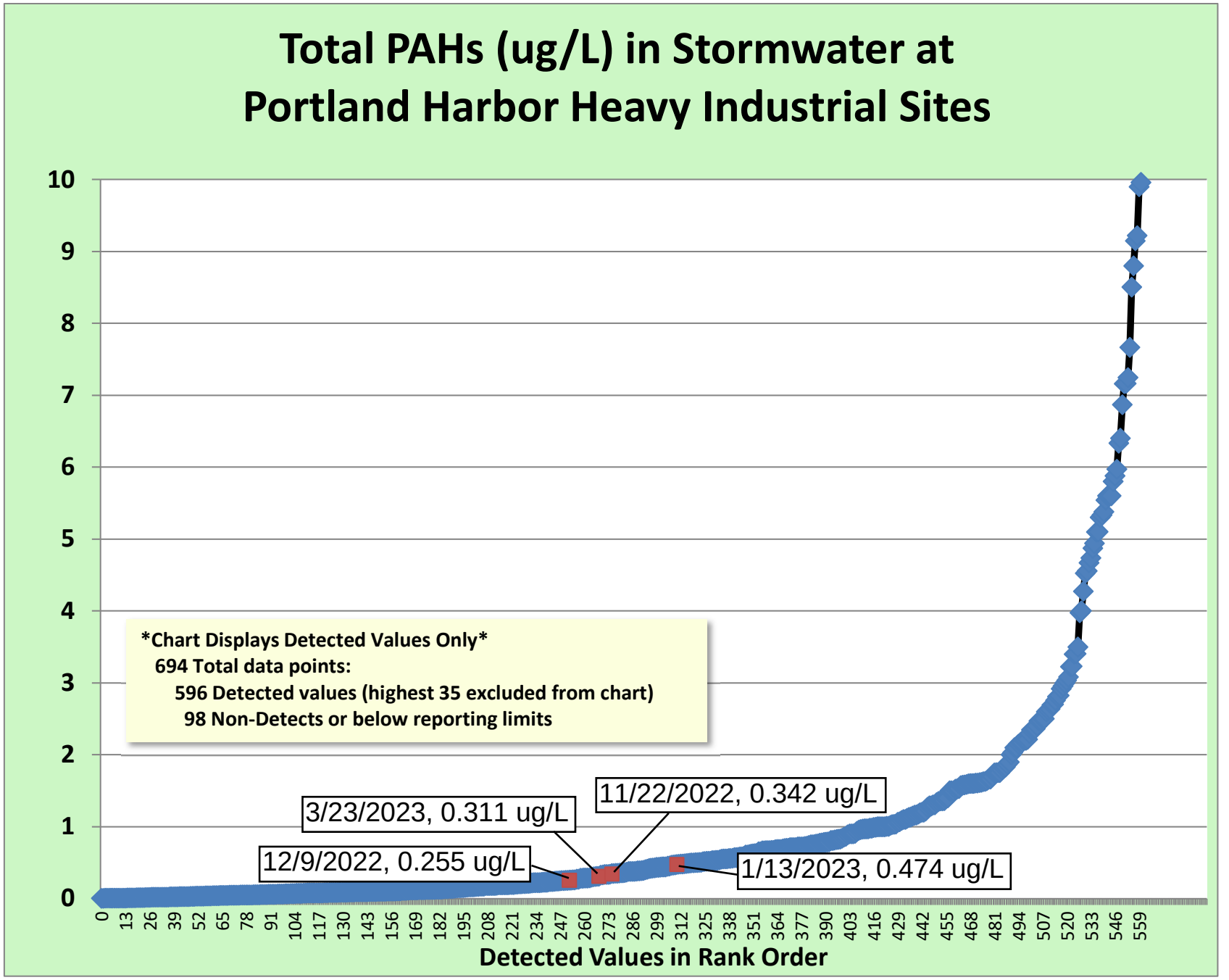


ENW Sample Date, Concentration

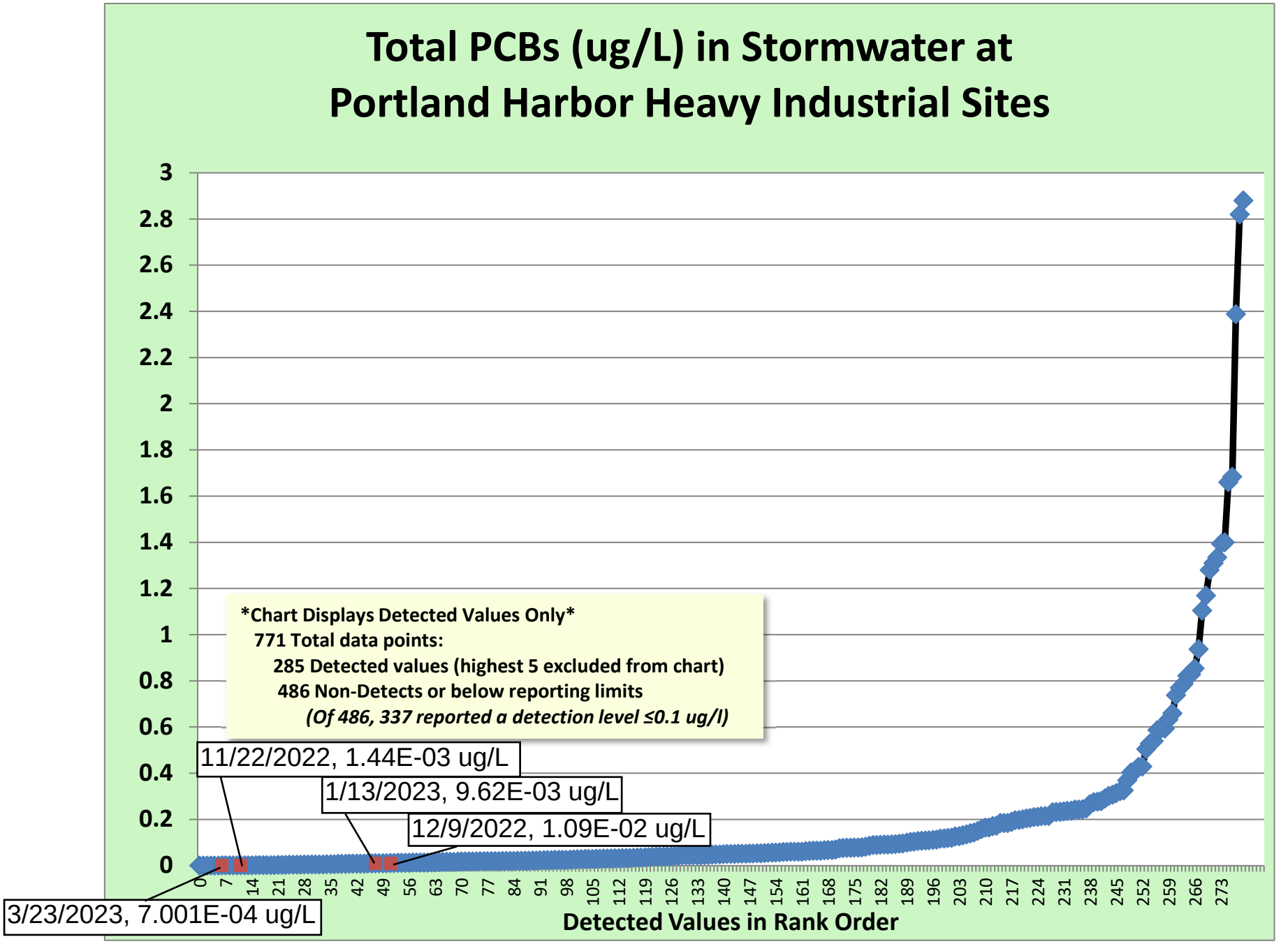
Lead (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites

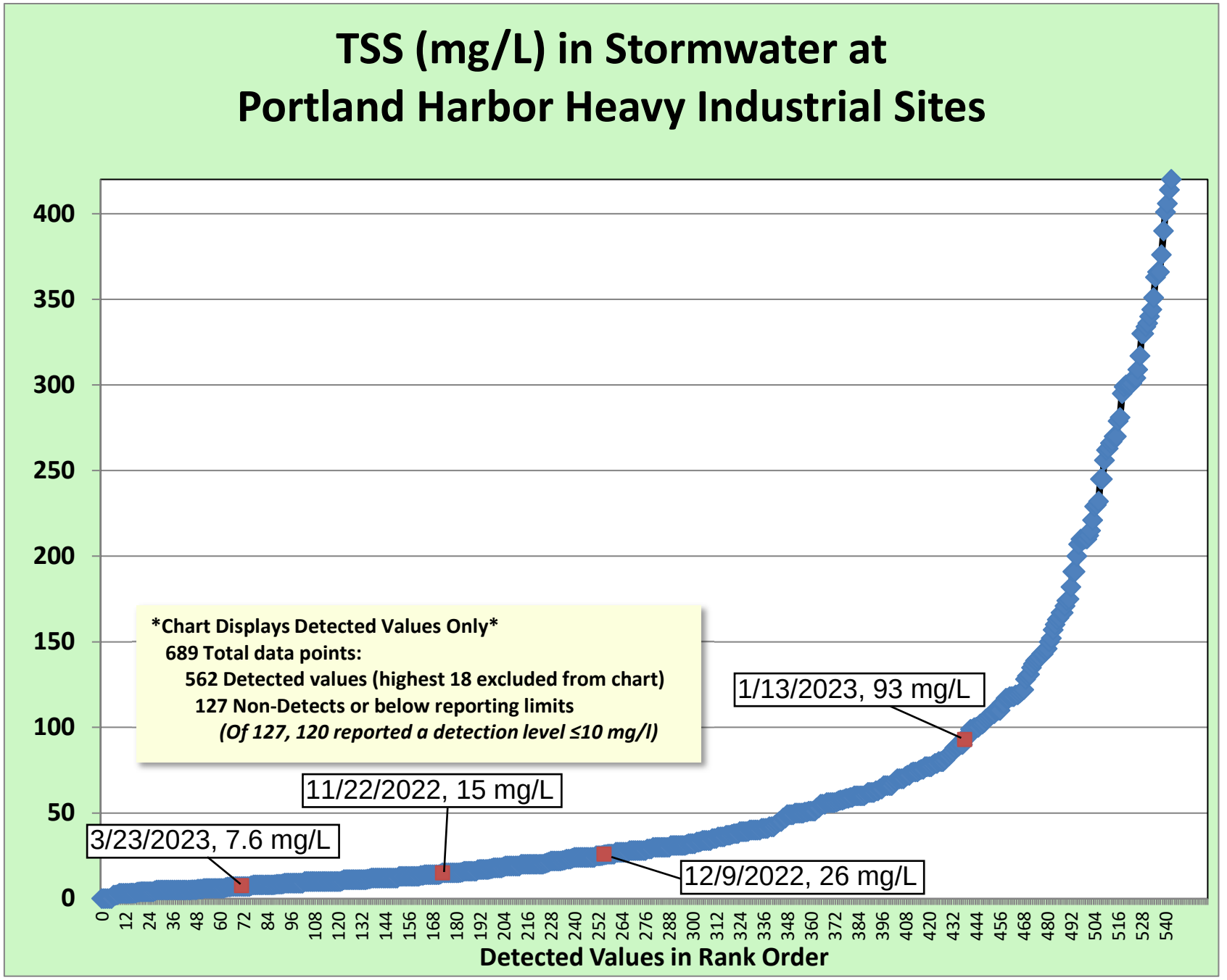


ENW Sample Date, Concentration

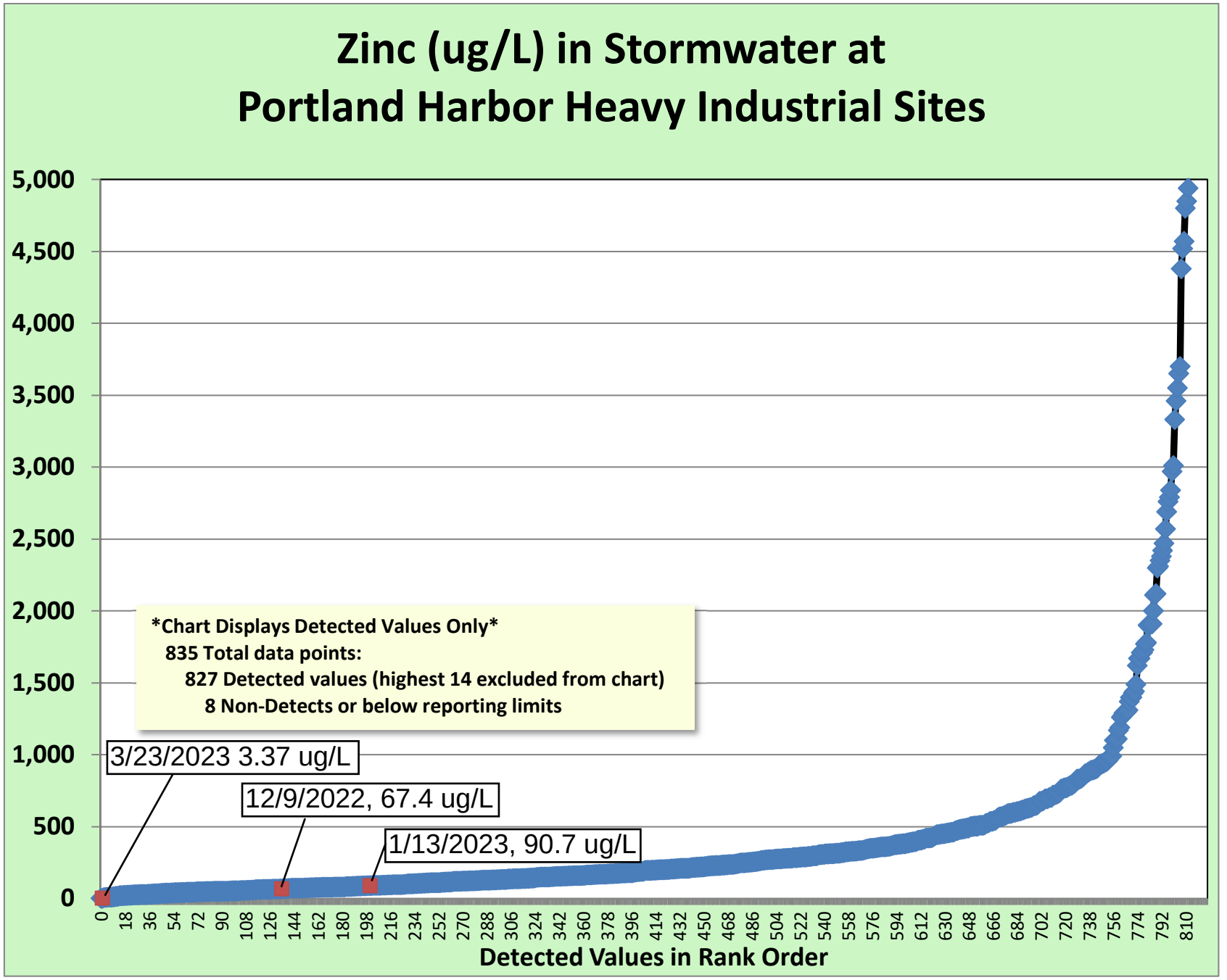


ENW Sample Date, Concentration


Total PCBs (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites
3
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0 7 14 21 28 35 42 49 56 63 70 77 84 91 98 105 112 119 126 133 140 147 154 161 168 175 182 189 196 203 210 217 224 231 238 245 252 259 266 273
Detected Values in Rank Order
Chart Displays Detected Values Only
771 Total data points:
285 Detected values (highest 5 excluded from chart)
486 Non-Detects or below reporting limits
(Of 486, 337 reported a detection level ≤0.1 ug/l)
11/22/2022, 1.44E-03 ug/L
1/13/2023, 9.62E-03 ug/L
12/9/2022, 1.09E-02 ug/L
3/23/2023, 7.001E-04 ug/L
ENW Sample Date, Concentration



ENW Sample Date, Concentration



ENW Sample Date, Concentration