DRAFT REPORT

Outfall 22B IRAM Performance Monitoring

2023 Annual Report

Submitted to:

Oregon Department of Environmental Quality

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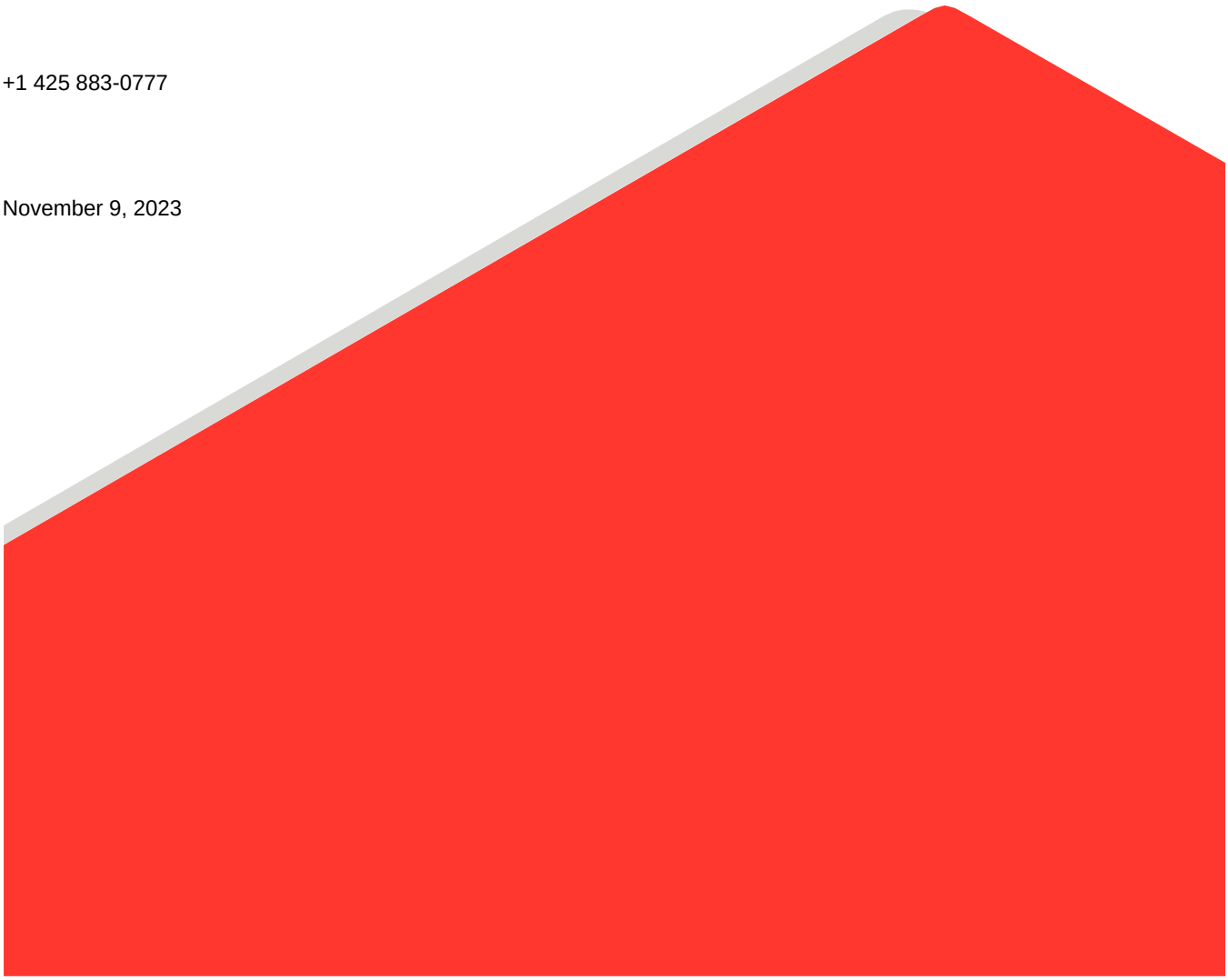

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1.0 INTRODUCTION

This 2023 Annual Report for the Outfall 22B storm sewer system interim remedial action measures (IRAM) was prepared for the Oregon Department of Environmental Quality (DEQ) by WSP USA Inc. (WSP) on behalf of StarLink Logistics, Inc. (StarLink). This report was prepared in accordance with applicable documents (DEQ 2015, DEQ 2017a, DEQ 2017b, DEQ 2018, DEQ 2019, and DEQ 2020).

Five quarterly monitoring reports were submitted during 2015 and 2016 followed by a two-year performance evaluation report in 2017 (Golder 2017b). Annual monitoring reports were submitted in 2017 (Golder 2017c), 2018 (Golder 2018), 2019 (Golder 2020a), 2020 (Golder 2020b), 2021 (Golder 2021), and 2022 (Golder 2022a). This report is the seventh annual monitoring report.

This report is organized as follows:

- Section 1.0 describes the Outfall 22B storm sewer system and the objectives of the IRAM monitoring program.
- Section 2.0 describes the pre-sampling observations of precipitation and river flow.
- Section 3.0 provides sampling flow observations and measurements.
- Section 4.0 describes the Outfall 22B sampling.
- Section 5.0 describes deviations from the Sampling and Analysis Plan (SAP), if any.
- Section 6.0 presents the analytical laboratory results, a comparison of the results to the screening level values (SLVs) and Portland Harbor Superfund Site Surface Water Clean-up Levels (PHCLs) (EPA 2017), and temporal data trend plots.
- Section 7.0 provides a summary of the evaluation of protectiveness and recommended actions.
- Section 8.0 lists the references used in this report.

1.1 Background

The Outfall 22B storm sewer system consists of a City of Portland (City) storm sewer along NW Front Avenue that discharges to the Willamette River upstream of the Burlington Northern Santa Fe (BNSF) railroad bridge (Figure 1). Private laterals connect to the Outfall 22B storm sewer from the Metro, MMGL (formerly Schnitzer/Air Liquide), and Gould properties, and were previously connected from the Arkema property. The Outfall 22B system receives run-off and associated sediments from NW Front Avenue and City right-of-way (ROW), City property, BNSF, Arkema, ESCO, Gould, MMGL, Metro, Highway 30, and potentially during very high rainfall events, the former Rhône-Poulenc property. The North Front Avenue portion of 22B also receives river water and river sediments that are deposited in the sewer during higher river stages (see photographs in Appendix A and river stage figure [Appendix E-6]). Much of the North Front Avenue portion of the sewer line was either constructed where dredged material from the river had been placed or where the 22B trench was backfilled with dredged material. The total length of the City and private Outfall 22B storm sewer system is approximately 8,000 linear feet.

StarLink began conducting Outfall 22B investigations when deterioration of the storm sewer and groundwater infiltration was identified in April 2004. Detections of constituents of interest (COIs) that could potentially impact Portland Harbor were partially attributed to activities conducted at the former Rhône-Poulenc facility and resulted in StarLink conducting the Outfall 22B IRAMs. These activities included injections of polyurethane at targeted

locations and repairs of the storm sewer in 2006 and 2007. A cutoff collar of polyurethane injected foam was installed in 2006 approximately 50 feet downstream of manhole MH-3 and approximately 290 feet upstream of the outfall to reduce the potential for seepage in the trench backfill surrounding the Outfall 22B pipe. There is no documentation of seepage through the backfill, nor was seepage observed during the quarterly (2015 and 2016) or annual (2017, 2018, 2019, 2020, 2021, 2022, and 2023) outfall sampling events as reported in this and previous monitoring reports:

- February 23, 2015: No seepage was observed
- June 8, 2015: No seepage was observed
- September 21, 2015: No seepage was observed
- December 30, 2015: No seepage was observed
- May 10, 2016: No seepage was observed
- September 12, 2016: No seepage was observed
- August 23, 2017: No seepage was observed
- April 25, 2018: No seepage was observed
- March 20, 2019: No seepage was observed
- April 10, 2020: No seepage was observed
- May 14, 2021: No seepage was observed
- July 13 and 19, 2022: No seepage was observed
- June 28 and 29, 2023: No seepage was observed

Parameter concentration trends at groundwater monitoring wells downgradient of the Outfall 22B cutoff collar will be evaluated and assessed as a potential pathway following completion of the Feasibility Study Report (Golder 2017a).

A cured-in-place pipe (CIPP) liner was installed throughout most of the City and private storm sewer system between 2010 and 2014 by Insituform Technologies Inc. (ITI). Figure 1 illustrates the location of the cutoff collar and segments of pipe and manholes that were lined, replaced, or abandoned. Since 2014, intermittent repair work has been completed to satisfy ITI's warranty on workmanship and materials. Final warranty CIPP repairs were completed in August 2020, the City of Portland Bureau of Environmental Services (BES) approved the work in September (BES 2020), and the first 5-year inspection video package was submitted to DEQ on November 24, 2020 (BSI 2020). BES or the respective private property owners will be notified if deterioration of IRAM linings is documented during future inspections.

Additionally, StarLink will continue to coordinate with Metro on any future repair activities or changes to the storm sewer infrastructure installed for the Metro facility stormwater treatment system. Further information regarding the Metro stormwater treatment and stormwater system may be found in Metro's stormwater pollution control plan (file# 110646).

1.2 Sampling and Analysis Plan Objectives

The objective of the performance monitoring is to demonstrate that the Outfall 22B storm sewer system pathway is adequately addressed and does not pose an unacceptable risk to the river. Protectiveness is assessed as follows (DEQ 2015):

- Determine if dry weather flow is present
- Determine if detected constituents exceed SLVs
- Evaluate if exceedances pose an unacceptable risk to the Willamette River
- Determine if additional actions are needed

1.3 2023 Annual Monitoring Event

The 2023 annual monitoring event was conducted on June 28 and 29, 2023. The following sections describe the monitoring activities.

2.0 PRE-SAMPLING OBSERVATIONS

2.1 Precipitation Monitoring

The SAP (DEQ 2015) specifies that sample collection must be preceded by at least 72 hours of no measurable precipitation as recorded at the NW Yeon Avenue, Portland, Oregon rain gage (USGS 2023). The 72-hour minimum dry period was met prior to the June 2023 sampling events (Table 1). It did not rain during the sampling events. Weather conditions are documented in the field notes (Appendix A) and on the field sheets in Appendix B.

2.2 River Stage

The river stage at the Morrison Bridge, Willamette River gage was between 9.4 feet to 13.7 feet lower than the Outfall 22B invert (14.65 ft) from the beginning of the 72-hour dry period to the completion of the monitoring event (OWRD 2023).

The outfall historically has contained wood, debris, and significant amounts of sediment deposited inside the outfall pipe during periods of high flow in the Willamette River. The historical river stage measurements by USGS are provided as Figure E-6. The interior of the outfall was clear of debris during the 2023 sampling event.

2.3 Surface Water Inflow

No surface water was observed entering the Outfall 22B storm sewer system during the 2023 monitoring event.

3.0 SAMPLING FLOW OBSERVATIONS AND MEASUREMENTS

WSP measured the flow rate at Outfall 22B and documented flow conditions in manholes and catch basins as part of the 2023 sampling event. Field notes are provided in Appendix A and observations are summarized below.

3.1 Outfall Flow Measurement

The approximate Outfall 22B flow rate on June 28 was 1.7 gallons per minute (gpm) as measured using a bucket and stopwatch.

3.2 Manhole and Catch Basin Observations

Dry weather observations of manholes and catch basins occurred on City, Gould, MMGL, and Metro properties in accordance with the SAP. DEQ (2017b) noted that MH-9 was “no longer a representative observation point for assessing groundwater intrusion” and recommended using MH-8 and SWMH-5. Observations are summarized below from the field notes in Appendix A, starting from the Metro upstream property and ending at the outfall (Figure 1).

Flow velocity could not be measured at the manholes with an electronic flow meter because the depth of flow in the channels was too shallow. In addition, it is not possible to calculate a flow rate using traditional methods of discharge in a partially filled pipe because manhole channel size is inconsistent, and the channels are generally not semi-circular. Therefore, qualitative estimates of flow rate at and between manholes are provided. These qualitative estimates are provided at DEQ’s request to aid in understanding how the flow compares at different locations in the system. The following summarizes the flow observations:

- Metro Property –
  - Metro MH-8: standing water, no discernable flow.
  - Metro MH-9: standing water, no discernable flow.
  - MH-15: standing water, no discernable flow.
  - SWMH-5: standing water, no flow observed.
- MMGL Property –
  - MH-1: standing water, no discernable flow, ponded water nearby.
  - MH-17: standing water, no discernable flow
  - MH-18: water present, trickle of flow
  - MH-19: standing water, no discernable flow.
  - MH-20: did not observe due to wasps present in the area.
  - MH-21: standing water, no discernable flow.
- City Property –
  - MH-10: trickle of flow coming from the direction of MH-21.
  - CB set 9: catch basins were dry.
  - MH-9: a trickle of flow estimated 0.75 inches deep and 7 inches wide.
  - CB set 8: trickle of flow in east catch basin, west was dry.
  - MH-8: a trickle of flow similar to MH-9.
  - CB set 7: west catch basin was dry, and the east catch basin had a trickling of flow into the pipe.
- Gould Property –
  - MH-4: standing water, no flow observed.

- City Property –
  - MH-7: water present approximately 10 inches wide, 0.5 inches deep), trickle of flow.
  - CB set 6: west set dry, east set had a trickling flow of water.
  - MH-6: flow in MH-6 was slightly more than MH-7 (approximately 24 inches wide and 1 inch deep) flow.
  - CB set 1-5: dry.
  - MH-5: no standing water.
  - MH-4 and MH-3: water present, unable to estimate flow due to bellies in the channels.

The approximate flow rate measured at Outfall 22B in June 2023 (1.7 gpm) is lower than previous measurements. Most of the dry weather flow in 2023 was observed entering the Outfall 22B system in several of the noted catch basins. Water flow is anticipated to remain at similarly low level since the IRAM has been completed.

3.3 Road Underdrains

No flow was observed in road underdrains inspected during the June 2023 monitoring event.

3.4 Groundwater Elevation Measurements

WSP measured groundwater levels on June 29, 2023 in shallow monitoring wells ASW-05, ASW-08, and W-15-S(23) on the Metro property and W-16-S(13), W-11-S(21), W-04-S(16) and W-03-S(17) adjacent to NW Front Avenue (Figure 1).

Table 2 provides groundwater elevations and pipe invert elevations. On the Metro property, groundwater elevations at most locations were below the nearby pipe invert elevations while groundwater elevations measured along NW Front Ave were well above nearby Outfall 22B mainline pipe invert elevations.

3.5 Seepage Through Outfall Backfill

An inspection of the soil adjacent to the outfall pipe was conducted on June 28 and 29, 2023 and no seepage was observed. No seepage has been observed from the soil surrounding Outfall 22B during any monitoring events.

4.0 OUTFALL 22B SAMPLING

A primary sample, field duplicate sample, and matrix spike/matrix spike duplicate (MS/MSD) sample were collected from Outfall 22B for the 2023 sampling event. An equipment rinsate blank sample was collected for dissolved parameters requiring a 0.45-micron filter.

4.1 Sample Collection

Sampling was conducted in accordance with the SAP (DEQ 2015) except as discussed in Section 5.0.

4.2 Field Parameter Results

Table 3 presents the field parameter monitoring results.

5.0 DEVIATIONS FROM THE SAP

There were minor deviations from the SAP. The primary water sample was collected on June 28. Due to an error with the lab-provided sample bottles, the samples collected on June 28 could not be analyzed for dissolved metals, mercury, and hexavalent chromium. Re-sampling was completed on June 29 to obtain replacement

samples for total and dissolved analyses of metals, including mercury and hexavalent chromium. No further action is required as all planned analyses were performed.

The 8270 Selected Ion Monitoring Polyaromatic Hydrocarbon (SIM PAH) method is being phased out by the analytical laboratory, so they have started moving all SIM requests to the United States Environmental Protection Agency (EPA) 8270E method. The methods, instruments, and RLs are essentially the same, but the lab reports that the 8270E method is more stable.

Quantification of flow rates at each manhole could not be performed as stated in the SAP given the low flow rates and actual geometry of the manhole pipes.

6.0 LABORATORY RESULTS

Samples were submitted to Apex Labs of Tigard, Oregon on June 28 and 29, 2023. Laboratory analytical reports are provided in Appendix C. Validated analytical results are presented in Table 4. Table 5 summarizes the analytical results for compounds detected in Outfall 22B samples since 2015.

A Level II validation of the laboratory analytical results was completed in accordance with the SAP. The data validation report is provided in Appendix D. The validation concludes that the majority of data are acceptable for their intended use. The following analyte results were rejected:

- Results for the following analytes were rejected based on low MS/MSD recovery:
  - Aniline, Benzoic acid, and Phenol. Aniline (primary and duplicate) and Benzoic acid (duplicate) additionally had surrogate recoveries below QC criteria.

The detection limits for some of the individual analytes (e.g., benzo(a)pyrene) analyzed by the methods provided in the 2015 SAP are above the PHCLs and SLVs. Therefore, although these constituents were not detected in the samples, there is uncertainty as to whether they are potentially present at concentrations that exceed screening levels.

6.1 Discussion of Outfall 22B Results

6.1.1 Comparison to PHCLs and SLVs

Table 5 summarizes the analytical results for detected compounds over the past five years and indicates those compounds detected in 2023 at concentrations above PHCLs. For compounds without PHCLs, results are compared to SLVs.

There were no detections of the following classes of compounds:

- Petroleum hydrocarbons (diesel-range organic and gasoline-range organic) were not detected in the 2023 annual sample (or duplicate), consistent with previous sampling events.
- None of the herbicide compounds were detected in 2023.
- No volatile organic compounds (VOCs) were detected in 2023 above the PHCL, consistent with previous sampling events.

The following analytes were detected during the 2023 sampling event at concentrations above their respective PHCL or SLV if a PHCL is not available:

- Polychlorinated dibenzo-para-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs): 1,2,3,4,6,7,8-HpCDD was the only detected compound in this class and exceeded the SLV. The result is "J" qualified as 'estimated' since it was measured below the method detection level. The concentration of 1,2,3,4,6,7,8-HpCDD in the duplicate sample was not detected. The resulting 2,3,7,8-TCDD Equivalents for the primary sample only exceeded the PHCL.
- Polychlorinated biphenyls (PCBs): Only PCBs 77 and 106 & 118 were detected above their respective SLVs, which occurred in both the primary and duplicate samples. The total PCBs calculated value was above the PHCL. Overall, the 2023 analytical results for PCBs are consistent with previous analytical results.
- Insecticides: 2,4'-dichlorodiphenyldichloroethane (DDD), 4,4'-DDD, 4,4'-dichlorodiphenyldichloroethylene (DDE), 4,4'-dichlorodiphenyltrichloroethane (DDT), hexachlorobenzene, and total chlordanes were detected at concentrations above their respective PHCLs and SLVs. Total DDx, 2,4'-DDE, and 2,4'-DDT were not detected above their respective PHCLs. Alpha-BHC, alpha-chlordane, beta-BHC, dieldrin, gamma-chlordane (duplicate sample), heptachlor epoxide, and trans-heptachlor epoxide were detected at concentrations above their respective SLVs. The 2023 analytical results are generally consistent with previous analytical results.
- Metals: total and dissolved arsenic were detected at concentrations above their PHCLs and SLVs. One of the duplicate total copper samples was detected above the PCHL and SLV. Total and dissolved barium, and manganese were detected at concentrations above their respective SLVs. One of the duplicate total nickel concentrations was above the SLV. The 2023 analytical results are generally consistent with previous analytical results.
- Semi-volatiles: Pentachlorophenol was detected above its PHCL. There were no other analytes detected at concentrations greater than the PHCLs or SLVs. The 2023 analytical results are generally consistent with previous analytical results.
- Total suspended solids (TSS) (Table 4): TSS was not detected above the 5,000 micrograms per liter (µg/L) detection limit in either the primary or duplicate sample, consistent with previous results. There is neither a PHCL nor a SLV for TSS.

6.1.2 Temporal Trends

Temporal data plots are presented in Appendix E for major analytes and include data collected prior to 2007, as requested by DEQ (2017a). The pre-2007 data may not be representative of dry weather flow and may not have been analyzed using the same analytical techniques currently used; therefore, comparison of pre-2007 to post-2007 data may not be appropriate. The pre-2007 datasets do not contain the complete set of analytes reported in the post-2007 datasets. Significant flow was observed entering the system from the Metro property during the second quarter 2016 sampling event, as previously reported. This inflow influenced sampling results during the second quarter 2016 sampling event.

Trend lines are presented on the Appendix E graphs based on linear regression using a linear, logarithmic, or exponential trendline. The regression line shown was based on the visual fit to the data and highest calculated r^2 values for the possible trendlines. A quantitative analysis for some of the analytes shown in Appendix E over time was performed using a Mann-Kendal Test in ProUCL (version 5.1). The ProUCL output also is provided in Appendix E. While most trend lines indicate stable or decreasing trends, the correlation coefficients (r^2 values) are

generally low (i.e., less than 0.7) which indicate that the data do not closely follow the trend line. For recent dry weather only data, a visual evaluation of the data trends indicates similar or slightly decreasing analyte concentrations between 2017 and 2023. Trans-heptachlor epoxide and beta-BHC are a couple of analytes that increased from 2019, although both showed a decrease in concentrations from last year. Overall, the following key findings as presented in the 2-Year Evaluation Report (Golder 2017b) and updated with Mann-Kendall results provided below remain valid:

- Organochlorine insecticide (OCI) concentrations in 2023 generally are slightly lower than 2022 (Appendix Figure E-1). Trend lines for the following representative compounds are shown in the Appendix E figure: trans-heptachlor epoxide (blue line, steady but slightly increasing trend), endrin (yellow, steady but slightly decreasing trend), and hexachlorobenzene (gray, decreasing trend). Due to the number of analytes shown on the graph, a trend line for each analyte is not displayed; however, other analytes are likely to be similar to one of these three trends. A Mann-Kendall test of the 4,4'-DDD, alpha-BHC, alpha-chlordane, beta-BHC, dieldrin, endrin, gamma-BHC (lindane), gamma-chlordane, hexachlorobenzene, and trans-heptachlor epoxide data from 2007 to 2023 indicate no significant trend at the 0.05 level (Appendix E). The Mann-Kendall test of the 4,4'-DDE and hexachlorobenzene data found a decreasing trend at the 0.05 level (Appendix E).
- Limited or no discernable trend is observed in PCDD/PCDF and PCB temporal data (Appendix Figures E-2 and E-3). A Mann-Kendall test of the OCDD data from 2007 to 2023 indicates a decreasing trend at the 0.05 level. The Mann-Kendall tests of PCB 105 indicate no significant trend at the 0.05 level. The Mann-Kendal test of PCB 77, 106 & 118, and total congeners showed a significant decreasing trend at the 0.05 level (Appendix E).
- Concentrations of di- and tri-chlorophenols and pentachlorophenol (SVOCs) are lower in post-IRAM monitoring results compared to fourth quarter 2007 and have been stable since 2019 (Appendix Figure E-4). A Mann-Kendall test of the 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, 2,4-dichlorophenol, and pentachlorophenol data from 2007 to 2023 indicates a significant decreasing trend at the 0.05 level.
- Metals concentrations have remained relatively constant since fourth quarter 2007, except for hexavalent chromium, which has decreased overall, including non-detect results for the 2017 through 2019 events, but has increased in the last few years to concentrations similar to 2015 and 2016 (Appendix Figure E-5). The Mann-Kendall tests of the unfiltered arsenic, barium, cadmium, and manganese data from 2007 to 2023 indicate no significant trend at the 0.05 level.

6.2 Permitted Discharges Near Outfall 22B

The 2023 Outfall 22B performance monitoring results were compared to nearby permitted National Pollutant Discharge Elimination System (NPDES) discharge limits for the Arkema property (see table below) for general comparison purposes only. The comparison is not to determine if the IRAM is functioning, but to compare the magnitude of the Outfall 22B results with other potential releases into the Willamette River. Comparisons of the Outfall 22B results to the PHCLs and SLVs were provided in Section 6.1.1. Key observations compared to nearby NPDES discharge limits include:

- VOCs: The annual 2023 sampling result for benzene was less than the detection limit of 0.1 µg/L and was below the nearby permitted discharge limit.

- Chlorinated insecticides: Recent sampling results for DDT and degradants (DDx) are significantly lower than recently permitted discharge limits for DDD (0.05 µg/L), DDE (0.05 µg/L), and DDT (0.05 µg/L). Permit limits are greater than the PHCLs and SLVs.
- Filtered and unfiltered metals: Arsenic and hexavalent chromium results are below the nearby permitted discharge limits. The arsenic and hexavalent chromium permit limits are greater than the PHCL and SLV.

Arkema – Permitted Discharge Limits		
Constituent Group	**Constituent**	**Discharge Limit (µg/L)**
VOCs	Benzene	<0.7
SVOCs	2-Chlorophenol	<5
Chlorinated Insecticide	DDD DDE DDT	<0.05 <0.05 <0.05
Metals	Arsenic Chromium VI	<10 <16

7.0 SUMMARY AND EVALUATION OF PROTECTIVENESS

The SAP specifies that the objective of the Outfall 22B performance monitoring is to demonstrate that the storm sewer system pathway is adequately addressed and does not pose an unacceptable risk to the river. Protectiveness is to be assessed as follows:

- Determine if dry weather flow is present.
- Determine if detected constituents exceed PHCLs or SLVs.
- Evaluate if exceedances pose an unacceptable risk to the Willamette River.
- Determine if additional actions are needed.

Evaluation of the above objectives is summarized below.

7.1 Dry Weather Flow

Flow was present at Outfall 22B during the annual 2023 event and samples were collected representative of Outfall 22B discharge under dry weather flow conditions (Section 2.1) as determined by a lack of rainfall within the previous 72 hours. Dry weather flow was identified at the MMGL and City properties with the majority of the observed flow coming from deteriorating NW Front Avenue catch basins (Section 3.2).

7.2 Comparison to PHCLs, SLVs, and Previous Sampling Results

Outfall 22B sampling results show limited detections of COIs at concentrations above the PHCLs and SLVs (when there are no PHCLs) as discussed in Section 6.1. The flow measured in 2023 was slightly lower than 2022 and was consistent with the historically low measurements. Flow is expected to remain at a similarly low level since the IRAM has been completed. Overall, measured concentrations of the analytes remain consistent with previous sampling results.

7.3 Risk Evaluation

Risk is qualitatively evaluated as follows:

- The short-term risk evaluation of dry weather discharge to river receptors concluded that Outfall 22B does not pose a significant risk (Golder 2017b). Measured concentrations of detected analytes have not significantly changed; therefore, the conclusions of the short-term risk evaluation are still valid. Detected concentrations of some analytes remain above PHCLs. An evaluation of remedial alternatives for the groundwater to Outfall 22B pathway was addressed in the "*Draft Feasibility Study Report – Operable Unit 1 Former Rhône-Poulenc Site, Portland, Oregon*" (Golder 2022b).
- Risk to river receptors from Outfall 22B sediment during non-stormwater flow conditions is considered low because TSS concentrations in outfall discharge were less than the reporting limit of 5 milligrams per liter (mg/L) which is well below the industrial stormwater discharge benchmark of 100 mg/L (there is no PHCL or SLV for TSS).
- The June 2023 dry weather discharge rate of 1.7 gpm is lower than the annual average of 5 gpm used for the short-term risk evaluation (Golder 2017b). Dry weather flow appears to have decreased to less than 5 gpm since additional repairs were completed following the 2020 compliance monitoring event. An evaluation of remedial alternatives for the groundwater to Outfall 22B pathway is presented in the feasibility study (Golder 2022b).

7.4 Recommended Actions

Warranty repairs to Outfall 22B IRAM CIPP and manhole were completed in 2020. It is recommended that performance monitoring (annual sampling) of Outfall 22B continue in accordance with the SAP and DEQ comments associated with annual performance monitoring reports as applicable.

As presented in Sections 1.1, 3.2, and 7.3, there have been no significant changes in dry weather flow quantity or quality since the spatial evaluation in the 2017 Outfall 22B IRAM 2-year performance report (Golder 2017b), therefore manhole sampling is not needed.

The next annual sampling will occur during the next qualifying dry weather period in the spring of 2024.

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Tables

TABLE 1
Rainfall Data
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

Date	Daily Total	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
06/22/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/23/23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
06/24/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/25/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/26/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/27/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/28/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06/29/23	0	0	0	0	0	0	0	0	0	0	0	0	0*	0	0	0	0	0	0	0	0	0	0	0	0

Notes & Legend:

Rainfall data are raw and uncorrected from the City of Portland HYDRA rainfall network Yeon Rain Gage located at 3395 NW Yeon Avenue, Portland, OR (USGS 2023)

Rainfall totals are measured in number of tips of the rain gauge bucket. One tip equals 0.01 inches of rainfall.

72 hour dry period leading up to sampling event

Sample collection

* Sample collection for metals, hexavalent chromium, and mercury.

TABLE 2
Groundwater Level and Pipe Invert Elevations
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

Date	Monitoring Well	DTW (ft BTOC)	Ground Surface Elevation (ft COPD)	Casing Elevation (ft COPD)	Water Level Elevation (ft COPD)	Respective Manhole	Downstream Pipe Invert Elevation (ft COPD)	Invert Elevation vs. Groundwater Elevation	Below Water Table
6/29/2023	ASW-05	6.75	42.26	41.58	34.83	Metro MH-1	37.14	2.31	no
						Metro MH-2	35.28	0.45	no
	W-15-S(23)	11.65	41.73	41.42	29.77	Metro MH-5	31.76	1.99	no
						Metro MH-6	29.87	0.10	no
						Metro MH-7	31.50	1.73	no
	ASW-08	6.55	36.87	36.67	30.12	Metro MH-15	29.61	-0.51	yes
	W-16-S(13)	5.23	32.41	34.93	29.70	MH-9	19.97	-9.73	yes
	W-04-S(16)	5.54	32.59	34.95	29.41	MH-8	18.92	-10.49	yes
	W-03-S(17)	5.16	33.12	35.10	29.94	MH-7	17.39	-12.55	yes
	W-11-S(21)	10.95	39.10	40.90	29.95	MH-6	16.79	-13.16	yes

Notes:

DTW Depth to water
BTOC Below top of casing
COPD City of Portland Datum

- Invert elevations of Outfall 22B piping from GIS data were provided by the City of Portland Bureau of Environmental Services, October 13, 2010; and from Metro and Schnitzer plan drawings C-6A and C-6C dated February 1990.
- Monitoring wells ASW-05, W-16-S, W-04-S, and W-03-S were resurveyed on November 21, 2016.

TABLE 3
Field Parameters
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

Parameter	Outfall 22B 06/28/2023	Outfall 22B 06/29/2023
Air Temp (°C)	20.0	22.8
Water Temp (°C)	14.8	13.8
Sample Depth (inches)	approx. 1/4 inch	approx. 1/4-inch
pH (S.U.)	7.10	6.88
ORP (mV)	230	190
Conductivity (uS/cm)	400	390
Turbidity (NTU)	7.96	NR
Oxygen (mg/L)	7.36	7.21

Notes:
Data collected with YSI Pro DSS
NR - Not recorded

TABLE 4
2023 Annual Laboratory Analytical Results - All Compounds
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
PCDD/PCDFs, ug/L								
1,2,3,4,6,7,8-HpCDD	35822-46-9	---	0.01	5.10E-08	1.13E-06 J	1.96E-06 U	---	---
1,2,3,4,6,7,8-HpCDF	67562-39-4	---	0.01	5.10E-08	7.59E-07 U	1.06E-06 U	---	---
1,2,3,4,7,8,9-HpCDF	55673-89-7	---	0.01	5.10E-08	1.02E-06 U	1.58E-06 U	---	---
1,2,3,4,7,8-HxCDD	39227-28-6	---	0.1	5.1E-09	1.36E-06 U	1.51E-06 U	---	---
1,2,3,4,7,8-HxCDF	70648-26-9	---	0.1	5.1E-09	5.39E-07 U	7.87E-07 U	---	---
1,2,3,6,7,8-HxCDD	57653-85-7	---	0.1	5.1E-09	1.31E-06 U	1.55E-06 U	---	---
1,2,3,6,7,8-HxCDF	57117-44-9	---	0.1	5.1E-09	5.75E-07 U	8.19E-07 U	---	---
1,2,3,7,8,9-HxCDD	19408-74-3	---	0.1	5.1E-09	1.38E-06 U	1.49E-06 U	---	---
1,2,3,7,8,9-HxCDF	72918-21-9	---	0.1	5.1E-09	7.92E-07 U	1.05E-06 U	---	---
1,2,3,7,8-PeCDD	40321-76-4	---	1	5.1E-10	1.42E-06 U	1.12E-06 U	---	---
1,2,3,7,8-PeCDF	57117-41-6	---	0.03	1.70E-08	5.66E-07 U	7.74E-07 U	---	---
2,3,4,6,7,8-HxCDF	60851-34-5	---	0.1	5.10E-09	5.78E-07 U	9.06E-07 U	---	---
2,3,4,7,8-PeCDF	57117-31-4	---	0.3	1.70E-09	4.77E-07 U	7.76E-07 U	---	---
2,3,7,8-TCDD	1746-01-6	---	1	5.10E-10	6.78E-07 U	6.92E-07 U	---	---
2,3,7,8-TCDF	51207-31-9	---	0.1	5.10E-09	6.26E-07 U	5.47E-07 U	---	---
OCDD	3268-87-9	---	0.0003	1.70E-06	6.79E-06 EMPC,U	6.42E-06 EMPC,U	---	---
OCDF	39001-02-0	---	0.0003	1.70E-06	2.14E-06 U	2.29E-06 U	---	---
2,3,7,8-TCDD Equivalents[1]	---	5.00E-10	---	---	**1.13E-08**	ND	---	---
PCBs, ug/L								
PCB 1	2051-60-7	---	---	---	4.62E-06 U	7.81E-06 U	---	---
PCB 100	39485-83-1	---	---	---	4.95E-07 U	3.5E-07 U	---	---
PCB 103	60145-21-3	---	---	---	5.17E-07 U	3.65E-07 U	---	---
PCB 104	56558-16-8	---	---	---	4.06E-07 U	2.87E-07 U	---	---
PCB 105	32598-14-4	---	---	1.70E-05	1.47E-05	1.46E-05	---	---
PCB 11	2050-67-1	---	---	---	1.9E-05 U	1.8E-05 U	---	---
PCB 110	38380-03-9	---	---	---	4.56E-05	4.31E-05	---	---
PCB 113	68194-10-5	---	---	---	3.69E-07 U	2.41E-07 U	---	---
PCB 114	74472-37-0	---	---	1.70E-05	3.95E-07 U	6.59E-07 J	---	---
PCB 119	56558-17-9	---	---	---	3.76E-07 U	5.23E-07 EMPC,U	---	---
PCB 12	2974-92-7	---	---	---	1.98E-06 U	1.63E-06 U	---	---
PCB 120	68194-12-7	---	---	---	3.21E-07 U	2.14E-07 U	---	---
PCB 121	56558-18-0	---	---	---	3.43E-07 U	2.33E-07 U	---	---
PCB 122	76842-07-4	---	---	---	4.6E-07 U	4.89E-07 EMPC,U	---	---
PCB 123	65510-44-3	---	---	---	4.07E-07 U	6.45E-07 EMPC,U	---	---
PCB 124	70424-70-3	---	---	---	1.52E-06 J	1.63E-06 J	---	---
PCB 126	57465-28-8	---	---	---	4.32E-07 U	4.64E-07 EMPC,U	---	---
PCB 127	39635-33-1	---	---	---	4.03E-07 U	2.28E-07 U	---	---
PCB 129	55215-18-4	---	---	---	1.96E-06 J	2.23E-06 EMPC,U	---	---
PCB 130	52663-66-8	---	---	---	2.44E-06 EMPC,U	2.55E-06 EMPC,U	---	---

TABLE 4
2023 Annual Laboratory Analytical Results - All Compounds
Outfall 22B IRAM Performance Monitoring
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					Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
					Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
					Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
					N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**		**Result**	**Result**	**Result**	**Result**
PCB 135	52744-13-5	---	---	---		4.13E-06 J	3.81E-06 J	---	---
PCB 136	38411-22-2	---	---	---		3.42E-06 EMPC,U	4.24E-06 J	---	---
PCB 137	35694-06-5	---	---	---		1.72E-06 J	1.28E-06 EMPC,U	---	---
PCB 14	34883-41-5	---	---	---		1.98E-06 U	1.62E-06 U	---	---
PCB 140	59291-64-4	---	---	---		2.64E-07 U	4.84E-07 U	---	---
PCB 141	52712-04-6	---	---	---		6.98E-06	6.34E-06 EMPC,U	---	---
PCB 142	41411-61-4	---	---	---		5.78E-07 U	5.2E-07 U	---	---
PCB 144	68194-14-9	---	---	---		5.75E-07 EMPC,U	1.39E-06 EMPC,U	---	---
PCB 145	74472-40-5	---	---	---		1.76E-07 U	3.21E-07 U	---	---
PCB 147	68194-13-8	---	---	---		1.18E-06 J	1.19E-06 J	---	---
PCB 148	74472-41-6	---	---	---		2.59E-07 U	4.74E-07 U	---	---
PCB 15	2050-68-2	---	---	---		1.90E-05	1.95E-05	---	---
PCB 150	68194-08-1	---	---	---		1.85E-07 U	3.38E-07 U	---	---
PCB 151	52663-63-5	---	---	---		7.81E-06	9.10E-06	---	---
PCB 152	68194-09-2	---	---	---		1.69E-07 U	3.1E-07 U	---	---
PCB 153	35065-27-1	---	---	---		3.50E-05	3.16E-05	---	---
PCB 154	60145-22-4	---	---	---		2.39E-07 U	4.38E-07 U	---	---
PCB 155	33979-03-2	---	---	---		2.02E-07 U	3.7E-07 U	---	---
PCB 156	38380-08-4	---	---	1.70E-05		2.72E-06 EMPC,U	3.77E-06 J	---	---
PCB 157	69782-90-7	---	---	1.70E-05		5.5E-07 EMPC,U	8.85E-07 EMPC,U	---	---
PCB 159	39635-35-3	---	---	---		3.42E-07 U	3.24E-07 U	---	---
PCB 166	41411-63-6	---	---	---		3.64E-07 U	3.44E-07 U	---	---
PCB 167	52663-72-6	---	---	1.70E-05		1.5E-06 EMPC,U	1.86E-06 J	---	---
PCB 168	59291-65-5	---	---	---		3.83E-07 U	3.45E-07 U	---	---
PCB 169	32774-16-6	---	---	---		4.74E-07 U	4.4E-07 U	---	---
PCB 17	37680-66-3	---	---	---		2.25E-05	2.26E-05	---	---
PCB 170	35065-30-6	---	---	---		9.55E-06	7.16E-06	---	---
PCB 171	52663-71-5	---	---	---		1.51E-06 EMPC,U	2.37E-06 EMPC,U	---	---
PCB 172	52663-74-8	---	---	---		2.41E-06 J	1.46E-06 J	---	---
PCB 173	68194-16-1	---	---	---		4.98E-07 U	4.16E-07 U	---	---
PCB 174	38411-25-5	---	---	---		1.34E-05	1.14E-05	---	---
PCB 175	40186-70-7	---	---	---		4.61E-07 EMPC,U	7.14E-07 J	---	---
PCB 176	52663-65-7	---	---	---		1.14E-06 EMPC,U	7E-07 EMPC,U	---	---
PCB 177	52663-70-4	---	---	---		6.97E-06 EMPC,U	5.79E-06	---	---
PCB 178	52663-67-9	---	---	---		2.14E-06 J	2.01E-06 EMPC,U	---	---
PCB 179	52663-64-6	---	---	---		5.75E-06	4.72E-06 J	---	---
PCB 18	37680-65-2	---	---	---		6.17E-05	6.02E-05	---	---
PCB 180	35065-29-3	---	---	---		2.68E-05	2.33E-05	---	---
PCB 181	74472-47-2	---	---	---		4E-07 U	3.34E-07 U	---	---
PCB 183	52663-69-1	---	---	---		6.02E-06	6.47E-06	---	---

TABLE 4
2023 Annual Laboratory Analytical Results - All Compounds
Outfall 22B IRAM Performance Monitoring
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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
PCB 184	74472-48-3	---	---	---	2.81E-07 U	2.37E-07 U	---	---
PCB 185	52712-05-7	---	---	---	1E-06 EMPC,U	1.67E-06 J	---	---
PCB 186	74472-49-4	---	---	---	2.61E-07 U	2.19E-07 U	---	---
PCB 188	74487-85-7	---	---	---	2.79E-07 U	2.35E-07 U	---	---
PCB 189	39635-31-9	---	---	1.70E-05	5.47E-07 J	2.74E-07 U	---	---
PCB 19	38444-73-4	---	---	---	9.42E-06	9.38E-06	---	---
PCB 190	41411-64-7	---	---	---	1.17E-06 EMPC,U	1.6E-06 J	---	---
PCB 191	74472-50-7	---	---	---	3.53E-07 U	2.95E-07 U	---	---
PCB 192	74472-51-8	---	---	---	3.29E-07 U	2.75E-07 U	---	---
PCB 193	69782-91-8	---	---	---	1.26E-06 EMPC,U	1.44E-06 EMPC,U	---	---
PCB 194	35694-08-7	---	---	---	5.6E-06 EMPC,U	5.66E-06	---	---
PCB 195	52663-78-2	---	---	---	2.37E-06 J	2.15E-06 EMPC,U	---	---
PCB 197	33091-17-7	---	---	---	3.71E-07 U	1.47E-07 U	---	---
PCB 198	68194-17-2	---	---	---	5.14E-07 U	2.04E-07 U	---	---
PCB 199	52663-75-9	---	---	---	9.26E-06	8E-06 EMPC,U	---	---
PCB 2	2051-61-8	---	---	---	3.38E-07 U	2.41E-06 U	---	---
PCB 200	52663-73-7	---	---	---	9.66E-07 EMPC,U	1.12E-06 EMPC,U	---	---
PCB 201	40186-71-8	---	---	---	7.96E-07 EMPC,U	8.84E-07 EMPC,U	---	---
PCB 202	2136-99-4	---	---	---	1.88E-06 J	1.36E-06 J	---	---
PCB 204	74472-52-9	---	---	---	3.74E-07 U	1.49E-07 U	---	---
PCB 205	74472-53-0	---	---	---	1.79E-07 U	1.82E-07 U	---	---
PCB 206	40186-72-9	---	---	---	3.81E-06 EMPC,U	3.66E-06 J	---	---
PCB 207	52663-79-3	---	---	---	4.33E-07 EMPC,U	7.27E-07 J	---	---
PCB 208	52663-77-1	---	---	---	1.3E-06 EMPC,U	1.32E-06 J	---	---
PCB 209 (Total Decachlorobiphenyl)	2051-24-3	---	---	---	1.39E-06 EMPC,U	1.48E-06 EMPC,U	---	---
PCB 22	38444-85-8	---	---	---	1.41E-05	1.52E-05	---	---
PCB 23	55720-44-0	---	---	---	2.35E-07 U	2.9E-07 U	---	---
PCB 25	55712-37-3	---	---	---	5.23E-06	4.94E-06 J	---	---
PCB 26	38444-81-4	---	---	---	1.19E-05	1.22E-05	---	---
PCB 28	7012-37-5	---	---	---	5.59E-05	5.87E-05	---	---
PCB 29	15862-07-4	---	---	---	7.77E-07 J	3E-07 U	---	---
PCB 3	2051-62-9	---	---	---	8.27E-07 EMPC,U	3.05E-07 U	---	---
PCB 30	35693-92-6	---	---	---	4.98E-07 U	1.73E-07 U	---	---
PCB 31	16606-02-3	---	---	---	5.20E-05	5.82E-05	---	---
PCB 34	37680-68-5	---	---	---	2.38E-07 U	2.94E-07 U	---	---
PCB 35	37680-69-6	---	---	---	1.02E-06 J	1.05E-06 EMPC,U	---	---
PCB 36	38444-87-0	---	---	---	2.54E-07 U	2.65E-07 U	---	---
PCB 37	38444-90-5	---	---	---	1.81E-05	1.69E-05	---	---
PCB 38	53555-66-1	---	---	---	6.55E-07 J	2.69E-07 U	---	---
PCB 39	38444-88-1	---	---	---	2.71E-07 U	2.82E-07 U	---	---

TABLE 4
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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
PCB 40	38444-93-8	---	---	---	1.08E-05	1.08E-05	---	---
PCB 44	41464-39-5	---	---	---	4.15E-05	4.17E-05	---	---
PCB 45	70362-45-7	---	---	---	8.08E-06	9.01E-06	---	---
PCB 46	41464-47-5	---	---	---	4.15E-06 J	4.66E-06 J	---	---
PCB 47	2437-79-8	---	---	---	2.24E-05	2.17E-05	---	---
PCB 50	62796-65-0	---	---	---	3.87E-07 U	2.92E-07 U	---	---
PCB 51	68194-04-7	---	---	---	1.89E-05	2.05E-05	---	---
PCB 53	41464-41-9	---	---	---	8.42E-06	7.52E-06	---	---
PCB 54	15968-05-5	---	---	---	3.19E-07 U	2.41E-07 U	---	---
PCB 55	74338-24-2	---	---	---	2.71E-07 U	2.82E-07 J	---	---
PCB 57	70424-67-8	---	---	---	2.74E-07 U	2E-07 U	---	---
PCB 58	41464-49-7	---	---	---	2.73E-07 U	1.99E-07 U	---	---
PCB 6	25569-80-6	---	---	---	2.07E-06 U	1.72E-06 U	---	---
PCB 62	54230-22-7	---	---	---	3.42E-07 U	2.5E-07 U	---	---
PCB 63	74472-34-7	---	---	---	1.4E-06 J	1.15E-06 EMPC,U	---	---
PCB 65	33284-54-7	---	---	---	3.06E-07 U	2.23E-07 U	---	---
PCB 67	73575-53-8	---	---	---	9.37E-07 J	1.02E-06 J	---	---
PCB 68	73575-52-7	---	---	---	3.21E-06 EMPC,U	2.97E-06 J	---	---
PCB 73	74338-23-1	---	---	---	2.82E-07 U	2.12E-07 U	---	---
PCB 74	32690-93-0	---	---	---	1.30E-05	1.10E-05	---	---
PCB 77	32598-13-3	---	---	5.20E-07	*3.17E-06 J*	*3.5E-06 J*	---	---
PCB 78	70362-49-1	---	---	---	3.32E-07 U	2.42E-07 U	---	---
PCB 79	41464-48-6	---	---	---	2.72E-07 U	2.43E-07 EMPC,U	---	---
PCB 80	33284-52-5	---	---	---	2.68E-07 U	2.01E-07 U	---	---
PCB 81	70362-50-4	---	---	---	3.55E-07 U	6.82E-07 J	---	---
PCB 82	52663-62-4	---	---	---	5.49E-06	5.17E-06 EMPC,U	---	---
PCB 83	60145-20-2	---	---	---	3.7E-07 U	2.46E-07 U	---	---
PCB 86	55312-69-1	---	---	---	5.44E-07 U	5.24E-07 J	---	---
PCB 88	55215-17-3	---	---	---	5.96E-06 J	5.53E-06 J	---	---
PCB 89	73575-57-2	---	---	---	5.25E-07 U	3.43E-07 U	---	---
PCB 93	73575-56-1	---	---	---	6.6E-07 U	4.49E-07 U	---	---
PCB 94	73575-55-0	---	---	---	6.05E-07 U	4.12E-07 U	---	---
PCB 96	73575-54-9	---	---	---	4.05E-07 U	2.86E-07 U	---	---
PCB 97	41464-51-1	---	---	---	1.19E-05	1.15E-05	---	---
PCB 99	38380-01-7	---	---	---	1.55E-05	1.13E-05 EMPC,U	---	---
PCB004 & 010	PCB004_010	---	---	---	3.25E-05	2.80E-05	---	---
PCB005 & 008	PCB005_008	---	---	---	7.13E-06 EMPC,U	1.75E-06 U	---	---
PCB007 & 009	PCB007_009	---	---	---	2.2E-06 U	1.82E-06 U	---	---
PCB016 & 032	PCB016_032	---	---	---	4.24E-05	4.19E-05	---	---
PCB020 & 021 & 033	PCB020_021_033	---	---	---	1.39E-05 U	1.57E-05	---	---

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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
PCB024 & 027	PCB024_027	---	---	---	5.38E-06 J	5.8E-06 J	---	---
PCB041 & 064 & 071 & 072	PCB41_64_71_72	---	---	---	3.48E-05	3.52E-05	---	---
PCB042 & 059	PCB042_059	---	---	---	1.36E-05	1.35E-05	---	---
PCB043 & 049	PCB043_049	---	---	---	2.80E-05	2.91E-05	---	---
PCB048 & 075	PCB048_075	---	---	---	8.65E-06 J	8.86E-06 J	---	---
PCB052 & 069	PCB052_069	---	---	---	5.02E-05	4.97E-05	---	---
PCB056 & 060	PCB056_060	---	---	---	1.77E-05	1.94E-05	---	---
PCB061 & 070	PCB061_070	---	---	---	3.29E-05	3.09E-05	---	---
PCB066 & 076	PCB066_076	---	---	---	2.06E-05	1.87E-05	---	---
PCB084 & 092	PCB084_092	---	---	---	1.78E-05	1.63E-05	---	---
PCB085 & 116	PCB085_116	---	---	---	6.89E-06 J	5.87E-06 EMPC,U	---	---
PCB087 & 117 & 125	PCB087_117_125	---	---	---	1.51E-05 J	1.39E-05 J	---	---
PCB090 & 101	PCB090_101	---	---	---	3.90E-05	3.72E-05	---	---
PCB095 & 098 & 102	PCB095_098_102	---	---	---	3.12E-05	3.06E-05	---	---
PCB106 & 118	PCB106_118	---	---	1.70E-05	*3.11E-05*	*3.12E-05*	---	---
PCB107 & 109	PCB107_109	---	---	---	1.83E-06 EMPC,U	2.18E-06 EMPC,U	---	---
PCB108 & 112	PCB108_112	---	---	---	2.17E-06 J	1.54E-06 EMPC,U	---	---
PCB111 & 115	PCB111_115	---	---	---	1.13E-06 J	5.68E-07 EMPC,U	---	---
PCB128 & 162	PCB128_162	---	---	---	4.82E-06 EMPC,U	6.47E-06 J	---	---
PCB131 & 133	PCB131_133	---	---	---	7.6E-07 EMPC,U	8.7E-07 EMPC,U	---	---
PCB132 & 161	PCB132_161	---	---	---	8.92E-06 J	9.26E-06 J	---	---
PCB134 & 143	PCB134_143	---	---	---	2E-06 EMPC,U	1.72E-06 EMPC,U	---	---
PCB138 & 163 & 164	PCB138_163_164	---	---	---	3.94E-05	3.81E-05	---	---
PCB139 & 149	PCB139_149	---	---	---	2.74E-05	2.76E-05	---	---
PCB146 & 165	PCB146_165	---	---	---	5.82E-06 J	4.49E-06 EMPC,U	---	---
PCB158 & 160	PCB158_160	---	---	---	4.44E-06 EMPC,U	4.17E-06 J	---	---
PCB182 & 187	PCB182_187	---	---	---	2.49E-05	2.17E-05 EMPC,U	---	---
PCB196 & 203	PCB196_203	---	---	---	7.18E-06 EMPC,U	7.81E-06 J	---	---
Total PCBs [2]	1336-36-3	0.0000064	---	0.0000064	***0.00121***	***0.00117***	---	---
Insecticides, µg/L								
2,4'-DDD	53-19-0	0.000031	---	0.000031	***0.000134***	***0.000134***	---	---
2,4'-DDE	3424-82-6	0.000018	---	0.000022	8.17E-06 J	8.5E-06 J	---	---
2,4'-DDT	789-02-6	0.000022	---	0.000022	1.59E-05 J	1.4E-05 J	---	---
4,4'-DDD	72-54-8	0.000031	---	0.000031	***0.000237***	***0.00026***	---	---
4,4'-DDE	72-55-9	0.000018	---	0.000022	***0.0000832***	***0.0000872***	---	---
4,4'-DDT	50-29-3	0.000022	---	0.000022	***7.08E-05 J***	***8.77E-05 J***	---	---
DDx	---	0.01	---	---	0.00054907	0.0005914	---	---
Aldrin	309-00-2	0.00000077	---	0.000005	3.2E-06 U	3.1E-06 U	---	---
alpha-BHC	319-84-6	---	---	0.00049	*0.00133*	*0.00135*	---	---
alpha-Chlordane	5103-71-9	---	---	0.000081	*0.000109*	*0.000124*	---	---

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					Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
					Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
					Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
					N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**		**Result**	**Result**	**Result**	**Result**
beta-BHC	319-85-7	---	---	0.0017		*0.00249*	*0.00252*	---	---
cis-Nonachlor	5103-73-1	---	---	0.000081		2.04E-05 J	2.62E-05 J	---	---
delta-BHC	319-86-8	---	---	0.037		0.000997	0.000999	---	---
Dieldrin	60-57-1	---	---	0.0000054		*0.006*	*0.00597*	---	---
Endosulfan I	959-98-8	---	---	0.051		4.07E-05 EMPC,U	4.99E-05 J	---	---
Endosulfan II	33213-65-9	---	---	0.051		6.49E-05 J	6.95E-05 J	---	---
Endosulfan Sulfate	1031-07-8	---	---	0.051		9.38E-05 J	0.000102 J	---	---
Endrin	72-20-8	---	---	0.0023		0.000445	0.000452	---	---
Endrin Aldehyde	7421-93-4	---	---	0.0023		8.33E-05 J	6.71E-05 J	---	---
Endrin Ketone	53494-70-5	---	---	0.0023		0.000723	0.000736	---	---
gamma-BHC (Lindane)	58-89-9	---	---	0.08		0.000395	0.0004	---	---
gamma-Chlordane	5103-74-2	---	---	0.000081		9.34E-05 EMPC,U	*0.000122*	---	---
Heptachlor	76-44-8	---	---	0.0000079		4.65E-06 U	2.47E-06 U	---	---
Heptachlor Epoxide	1024-57-3	---	---	0.0000039		*0.0000593*	*0.0000618*	---	---
Hexachlorobenzene	118-74-1	0.000029	---	0.000029		**0.0000578**	**0.0000578**	---	---
Methoxychlor	72-43-5	---	---	0.019		6.28E-05 J+	6.49E-05 J+	---	---
Mirex	2385-85-5	---	---	0.001		8.39E-07 U	9.18E-07 U	---	---
Oxychlordane	27304-13-8	---	---	0.000081		7.22E-06 U	7.73E-06 U	---	---
trans-Heptachlor Epoxide	28044-83-9	---	---	0.0000039		*0.0502*	*0.0495*	---	---
trans-Nonachlor	39765-80-5	---	---	0.000081		0.0000556	0.0000686	---	---
Total Chlordanes[3]	---	0.000081	---	0.000081		***0.0002***	***0.0003***	---	---
Unfiltered Metals, ug/L									
Arsenic	7440-38-2	0.018	---	0.014		***8.74***	***9.02***	***8.48***	***8.51***
Barium	7440-39-3	---	---	4		*22.4*	*21.7*	*20.1*	*20.7*
Cadmium	7440-43-9	---	---	0.09		0.1 U	0.1 U	0.1 U	0.1 U
Calcium	7440-70-2	---	---	116000		38900	38400	37700	36800
Chromium	7440-47-3	100	---	74		1 U	1 U	1 U	1 U
Hexavalent Chromium	18540-29-9	---	---	0.043		---	---	0.035 J+	0.025 J+
Copper	7440-50-8	2.74	---	2.7		1.75 J	**3.12**	1 U	1 U
Iron	7439-89-6	---	---	1000		413 J	794	371	393
Lead	7439-92-1	---	---	0.54		0.174 J	0.194 J	0.189 J	0.18 J
Magnesium	7439-95-4	---	---	82000		10800	10700	10700	10500
Manganese	7439-96-5	---	---	10		*275*	*267*	*219*	*211*
Mercury	7439-97-6	---	---	0.012		---	---	0.00152	0.00147
Nickel	7440-02-0	---	---	16		2.94	*25.7 J*	1.54 J	1.6 J
Selenium	7782-49-2	---	---	5		0.5 U	0.5 U	0.5 U	0.5 U
Silver	7440-22-4	---	---	0.12		0.1 U	0.1 U	0.1 U	0.1 U
Zinc	7440-66-6	36.5	---	33		3.08 J	2.86 J	2 U	2.07 J

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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
Filtered Metals, ug/L								
Arsenic	7440-38-2	0.018	---	0.014	---	---	***7.29***	***7.34***
Barium	7440-39-3	---	---	4	---	---	*18.9*	*19.1*
Cadmium	7440-43-9	---	---	0.09	---	---	0.1 U	0.1 U
Calcium	7440-70-2	---	---	116000	---	---	38500	39000
Chromium	7440-47-3	100	---	74	---	---	1 U	1 U
Hexavalent Chromium	18540-29-9	---	---	0.043	---	---	0.027 J+	0.03 J+
Copper	7440-50-8	2.74	---	2.7	---	---	1 U	1 U
Iron	7439-89-6	---	---	1000	---	---	25 U	25 U
Lead	7439-92-1	---	---	0.54	---	---	0.1 U	0.1 U
Magnesium	7439-95-4	---	---	82000	---	---	11000	10900
Manganese	7439-96-5	---	---	10	---	---	*222*	*220*
Mercury	7439-97-6	---	---	0.012	---	---	0.000792 J	0.000804 J
Nickel	7440-02-0	---	---	16	---	---	1.45 J	1.55 J
Selenium	7782-49-2	---	---	5	---	---	0.5 U	0.5 U
Silver	7440-22-4	---	---	0.12	---	---	0.1 U	0.1 U
Zinc	7440-66-6	36.5	---	33	---	---	2 U	2 U
Herbicides, µg/L								
2,4,5-T	93-76-5	---	---	4	0.08 U	0.08 U	---	---
2,4,5-TP (Silvex)	93-72-1	---	---	5	0.08 U	0.08 U	---	---
2,4-D	94-75-7	---	---	4	0.08 U	0.08 U	---	---
2,4-DB	94-82-6	---	---	4	0.08 U	0.08 U	---	---
Acifluorofen	50594-66-6	---	---	---	0.08 U	0.08 U	---	---
Bentazon	25057-89-0	---	---	---	0.08 U	0.08 U	---	---
Clopyralid	1702-17-6	---	---	---	0.08 U	0.08 U	---	---
Dicamba	1918-00-9	---	---	10	0.08 U	0.08 U	---	---
Dichlorprop	120-36-5	---	---	4	0.08 U	0.08 U	---	---
Dinoseb	88-85-7	---	---	0.05	0.08 U	0.08 U	---	---
MCPA	94-74-6	---	---	2.6	0.08 U	0.08 U	---	---
MCPP	93-65-2	16	---	2.6	0.08 U	0.08 U	---	---
Picloram	1918-02-1	---	---	---	0.08 U	0.08 U	---	---
Quinclorac	84087-01-4	---	---	---	0.08 U	0.08 U	---	---
Triclopyr	55335-06-3	---	---	---	0.08 U	0.08 U	---	---
VOCs, µg/L								
1,1,1,2-Tetrachloroethane	630-20-6	---	---	---	0.2 U	0.2 U	---	---
1,1,1-Trichloroethane	71-55-6	---	---	11	0.2 U	0.2 U	---	---
1,1,2,2-Tetrachloroethane	79-34-5	---	---	0.067	0.25 U	0.25 U	---	---
1,1,2-Trichloroethane	79-00-5	---	---	0.24	0.25 U	0.25 U	---	---
1,1-Dichloroethane	75-34-3	---	---	2.4	0.2 U	0.2 U	---	---
1,1-Dichloroethene	75-35-4	---	---	7	0.2 U	0.2 U	---	---

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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
1,1-Dichloropropene	563-58-6	---	---	0.055	0.5 U	0.5 U	---	---
1,2,3-Trichlorobenzene	87-61-6	---	---	29	1 U	1 U	---	---
1,2,3-Trichloropropane	96-18-4	---	---	0.00072	0.5 U	0.5 U	---	---
1,2,4-Trichlorobenzene	120-82-1	---	---	2.3	1 U	1 U	---	---
1,2,4-Trimethylbenzene	95-63-6	---	---	7.3	0.5 U	0.5 U	---	---
1,2-Dibromo-3-Chloropropane	96-12-8	---	---	0.00032	2.5 U	2.5 U	---	---
1,2-Dibromoethane	106-93-4	---	---	---	0.25 U	0.25 U	---	---
1,2-Dichlorobenzene	95-50-1	---	---	14	0.25 U	0.25 U	---	---
1,2-Dichloroethane	107-06-2	---	---	0.15	0.2 U	0.2 U	---	---
1,2-Dichloropropane	78-87-5	---	---	0.39	0.25 U	0.25 U	---	---
1,3,5-Trimethylbenzene	108-67-8	---	---	7.3	0.5 U	0.5 U	---	---
1,3-Dichlorobenzene	541-73-1	---	---	14	0.25 U	0.25 U	---	---
1,3-Dichloropropane	142-28-9	---	---	730	0.5 U	0.5 U	---	---
1,4-Dichlorobenzene	106-46-7	---	---	0.43	0.25 U	0.25 U	---	---
2,2-Dichloropropane	594-20-7	---	---	---	0.5 U	0.5 U	---	---
2-Butanone (MEK)	78-93-3	---	---	7100	5 U	5 U	---	---
2-Chloroethyl Vinyl Ether	110-75-8	---	---	---	10 UJ	10 UJ	---	---
2-Chlorotoluene	95-49-8	---	---	730	0.5 U	0.5 U	---	---
2-Hexanone	591-78-6	---	---	47	5 U	5 U	---	---
4-Chlorotoluene	106-43-4	---	---	730	0.5 U	0.5 U	---	---
4-Isopropyltoluene	99-87-6	---	---	7.3	0.5 U	0.5 U	---	---
4-Methyl-2-pentanone (MIBK)	108-10-1	---	---	170	5 U	5 U	---	---
Acetone	67-64-1	---	---	1500	10 U	10 U	---	---
Acrylonitrile	107-13-1	---	---	---	1 U	1 U	---	---
Benzene	71-43-2	---	---	0.41	0.1 U	0.1 U	---	---
Bromobenzene	108-86-1	---	---	88	0.25 U	0.25 U	---	---
Bromochloromethane	74-97-5	---	---	0.12	0.5 U	0.5 U	---	---
Bromodichloromethane	75-27-4	---	---	0.12	0.5 U	0.5 U	---	---
Bromoform	75-25-2	---	---	8.5	0.5 U	0.5 U	---	---
Bromomethane	74-83-9	---	---	8.7	5 U	5 U	---	---
Carbon Disulfide	75-15-0	---	---	---	5 U	5 U	---	---
Carbon Tetrachloride	56-23-5	---	---	0.16	0.5 U	0.5 U	---	---
Chlorobenzene	108-90-7	---	---	50	0.25 U	0.25 U	---	---
Chloroethane	75-00-3	---	---	47	5 U	5 U	---	---
Chloroform	67-66-3	---	---	0.19	0.5 U	0.5 U	---	---
Chloromethane	74-87-3	---	---	190	2.5 U	2.5 U	---	---
cis-1,2-Dichloroethene	156-59-2	---	---	70	0.2 U	0.2 U	---	---
cis-1,3-Dichloropropene	10061-01-5	---	---	0.055	0.5 U	0.5 U	---	---
Dibromochloromethane	124-48-1	---	---	0.15	0.5 U	0.5 U	---	---
Dibromomethane	74-95-3	---	---	8.2	0.5 U	0.5 U	---	---

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				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
Dichlorodifluoromethane (Freon 12)	75-71-8	---	---	390	0.5 U	0.5 U	---	---
Ethylbenzene	100-41-4	7.3	---	1.5	0.68	0.89	---	---
Hexachlorobutadiene	87-68-3	---	---	0.86	2.5 U	2.5 U	---	---
Iodomethane	74-88-4	---	---	---	10 U	10 U	---	---
Isopropylbenzene	98-82-8	---	---	7.3	0.5 U	0.5 U	---	---
Methyl tert-Butyl Ether (MTBE)	1634-04-4	---	---	12	0.5 U	0.5 U	---	---
Methylene Chloride	75-09-2	---	---	4.8	5 U	5 U	---	---
Naphthalene	91-20-3	12	---	---	1 U	1 U	---	---
n-Butylbenzene	104-51-8	---	---	36	0.5 U	0.5 U	---	---
n-Propylbenzene	103-65-1	---	---	64	0.25 U	0.25 U	---	---
o-Xylene	95-47-6	---	---	13	0.25 U	0.25 U	---	---
sec-Butylbenzene	135-98-8	---	---	41	0.5 U	0.5 U	---	---
Styrene	100-42-5	---	---	100	0.5 U	0.5 U	---	---
tert-Butylbenzene	98-06-6	---	---	48	0.5 U	0.5 U	---	---
Tetrachloroethene	127-18-4	---	---	0.11	0.2 U	0.2 U	---	---
Toluene	108-88-3	---	---	9.8	0.5 U	0.5 U	---	---
trans-1,2-Dichloroethene	156-60-5	---	---	100	0.2 U	0.2 U	---	---
trans-1,3-Dichloropropene	10061-02-6	---	---	0.055	0.5 U	0.5 U	---	---
Trichloroethene	79-01-6	---	---	2	0.2 U	0.2 U	---	---
Trichlorofluoromethane (Freon 11)	75-69-4	---	---	1300	1 U	1 U	---	---
Vinyl Chloride	75-01-4	---	---	0.016	0.2 U	0.2 U	---	---
Xylene (Total)	1330-20-7	---	---	---	0.5 U	0.5 U	---	---
SVOCs, µg/L								
1,2,4-Trichlorobenzene	120-82-1	---	---	2.3	0.024 UJ	0.0243 UJ	---	---
1,2-Dichlorobenzene	95-50-1	---	---	14	0.024 UJ	0.0243 UJ	---	---
1,2-Dinitrobenzene	528-29-0	---	---	---	0.24 UJ	0.243 UJ	---	---
1,3-Dichlorobenzene	541-73-1	---	---	14	0.024 UJ	0.0243 UJ	---	---
1,3-Dinitrobenzene	99-65-0	---	---	---	0.24 UJ	0.243 UJ	---	---
1,4-Dichlorobenzene	106-46-7	---	---	0.43	0.024 UJ	0.0243 UJ	---	---
1,4-Dinitrobenzene	100-25-4	---	---	---	0.24 UJ	0.243 UJ	---	---
1-Methylnaphthalene	90-12-0	---	---	0.2	0.0192 UJ	0.0194 UJ	---	---
2,3,4,6-Tetrachlorophenol	58-90-2	---	---	1	0.0481 U	0.0485 U	---	---
2,3,5,6-Tetrachlorophenol	935-95-5	---	---	---	0.0508 J	0.0516 J	---	---
2,4,5-Trichlorophenol	95-95-4	---	---	3.2	0.161	0.177	---	---
2,4,6-Trichlorophenol	88-06-2	---	---	0.24	0.124	0.126	---	---
2,4-Dichlorophenol	120-83-2	---	---	29	0.519	0.554 J	---	---
2,4-Dimethylphenol	105-67-9	---	---	42	0.0481 U	0.05 J	---	---
2,4-Dinitrophenol	51-28-5	---	---	73	0.24 U	0.243 U	---	---
2,4-Dinitrotoluene	121-14-2	---	---	---	0.0962 UJ	0.0971 UJ	---	---
2,6-Dinitrotoluene	606-20-2	---	---	---	0.192 UJ	0.194 UJ	---	---

TABLE 4
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					Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
					Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
					Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
					N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**		**Result**	**Result**	**Result**	**Result**
2-Chloronaphthalene	91-58-7	---	---	---		0.00962 UJ	0.00971 UJ	---	---
2-Chlorophenol	95-57-8	---	---	15		0.0481 UJ	0.0485 UJ	---	---
2-Methylnaphthalene	91-57-6	---	---	0.2		0.0192 UJ	0.0194 UJ	---	---
2-Methylphenol	95-48-7	---	---	13		0.0908	0.106 J	---	---
2-Nitroaniline	88-74-4	---	---	---		0.192 UJ	0.194 UJ	---	---
2-Nitrophenol	88-75-5	---	---	150		0.0962 U	0.0971 UJ	---	---
3,3'-Dichlorobenzidine	91-94-1	---	---	0.0028		0.962 UJ	0.485 UJ	---	---
3-Nitroaniline	99-09-2	---	---	---		0.192 UJ	0.194 UJ	---	---
4,6-Dichloro-o-cresol	1570-65-6	---	---	---		0.24 UJ	0.243 UJ	---	---
4-Bromophenyl phenyl ether	101-55-3	---	---	---		0.024 UJ	0.0243 UJ	---	---
4-Chloro-3-Methylphenol	59-50-7	---	---	0.32		0.192 U	0.194 U	---	---
4-Chloroaniline	106-47-8	---	---	---		0.024 UJ	0.0243 UJ	---	---
4-Chlorophenyl phenyl ether	7005-72-3	---	---	---		0.024 UJ	0.0243 UJ	---	---
4-Nitroaniline	100-01-6	---	---	---		0.192 UJ	0.194 UJ	---	---
4-Nitrophenol	100-02-7	---	---	150		0.0962 U	0.0971 U	---	---
Acenaphthene	83-32-9	---	---	0.2		0.00962 UJ	0.00971 UJ	---	---
Acenaphthylene	208-96-8	---	---	0.2		0.00962 UJ	0.00971 UJ	---	---
Aniline	62-53-3	---	---	---		0.0481 UR	0.0485 UR	---	---
Anthracene	120-12-7	---	---	0.2		0.00962 UJ	0.00971 UJ	---	---
Azobenzene	103-33-3	---	---	---		0.024 UJ	0.0243 UJ	---	---
Benzo(a)anthracene	56-55-3	0.0012	0.1	0.0018		0.00962 UJ	0.00971 UJ	---	---
Benzo(a)pyrene	50-32-8	0.00012	1	0.0018		0.0144 UJ	0.0146 UJ	---	---
Benzo(b)fluoranthene	205-99-2	0.0012	0.1	0.0018		0.0144 UJ	0.0146 UJ	---	---
Benzo(g,h,i)Perylene	191-24-2	---	0.01	0.2		0.00962 UJ	0.00971 UJ	---	---
Benzo(k)Fluoranthene	207-08-9	0.0013	0.01	0.0018		0.0144 UJ	0.0146 UJ	---	---
Benzoic Acid	65-85-0	---	---	42		2.4 UR	1.21 UR	---	---
Benzyl Alcohol	100-51-6	---	---	8.6		0.0962 UJ	0.0971 UJ	---	---
bis(2-Chloroethoxy)methane	111-91-1	---	---	---		0.024 UJ	0.0243 UJ	---	---
bis(2-Chloroethyl)ether	111-44-4	---	---	0.012		0.024 UJ	0.0243 UJ	---	---
Bis(2-chloroisopropyl) Ether	108-60-1	---	---	0.32		0.024 UJ	0.0243 UJ	---	---
Bis(2-Ethylhexyl)adipate (Dioctyl Adipate)	103-23-1	---	---	0		0.24 UJ	0.243 UJ	---	---
bis(2-Ethylhexyl)phthalate	117-81-7	0.2	---	0.22		0.192 UJ	0.194 UJ	---	---
Butylbenzylphthalate	85-68-7	---	---	3		0.192 UJ	0.194 UJ	---	---
Carbazole	86-74-8	---	---	3.4		0.0144 UJ	0.0146 UJ	---	---
Chrysene	218-01-9	0.0013	0.001	0.0018		0.00962 UJ	0.00971 UJ	---	---
Cresol, Methylphenols, Total	1319-77-3	---	---	---		0.0959	0.141 J	---	---
Dibenzo(a,h)anthracene	53-70-3	0.00012	1	0.0018		0.00962 UJ	0.00971 UJ	---	---
Dibenzofuran	132-64-9	---	---	3.7		0.00962 UJ	0.00971 UJ	---	---
Diethylphthalate	84-66-2	---	---	3		0.192 UJ	0.194 UJ	---	---
Dimethylphthalate	131-11-3	---	---	3		0.192 UJ	0.194 UJ	---	---

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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
Di-n-butylphthalate	84-74-2	---	---	3	0.192 UJ	0.194 UJ	---	---
di-n-Octyl Phthalate	117-84-0	---	---	3	0.192 UJ	0.194 UJ	---	---
Fluoranthene	206-44-0	---	---	0.2	0.00962 UJ	0.01 J	---	---
Fluorene	86-73-7	---	---	0.2	0.00962 UJ	0.00971 UJ	---	---
Hexachlorobenzene	118-74-1	0.000029	---	0.000029	0.00962 UJ	0.00971 UJ	---	---
Hexachlorobutadiene	87-68-3	---	---	0.86	0.024 UJ	0.0243 UJ	---	---
Hexachlorocyclopentadiene	77-47-4	---	---	---	0.0481 UJ	0.0485 UJ	---	---
Hexachloroethane	67-72-1	---	---	---	0.024 UJ	0.0243 UJ	---	---
Indeno(1,2,3-cd)pyrene	193-39-5	0.0012	0.1	0.0018	0.00962 UJ	0.00971 UJ	---	---
Isophorone	78-59-1	---	---	71	0.024 UJ	0.0243 UJ	---	---
Naphthalene	91-20-3	12	---	---	0.0192 UJ	0.0194 UJ	---	---
Nitrobenzene	98-95-3	---	---	---	0.0962 UJ	0.0971 UJ	---	---
N-Nitrosodimethylamine	62-75-9	---	---	0.00042	0.024 UJ	0.0243 UJ	---	---
N-Nitrosodi-n-propylamine	621-64-7	---	---	0	0.024 UJ	0.0243 UJ	---	---
N-Nitrosodiphenylamine	86-30-6	---	---	0.6	0.024 UJ	0.0243 UJ	---	---
Pentachlorophenol	87-86-5	0.03	---	0.3	**0.119 J**	**0.124 J**	---	---
Phenanthrene	85-01-8	---	---	0.2	0.0197 J	0.0177 J	---	---
Phenol	108-95-2	---	---	110	0.192 UR	0.194 UR	---	---
Pyrene	129-00-0	---	---	0.2	0.00962 UJ	0.00971 UJ	---	---
Pyridine	110-86-1	---	---	---	0.0962 UJ	0.0971 UJ	---	---
cPAHs[4]	---	0.00012	---	---	NA	NA	---	---
Petroleum Hydrocarbons, µg/L								
Diesel-Range Organics (DRO)	68334-30-5	---	---	---	102 U	98 U	---	---
Residual-Range Organics (RRO)	WEY-130-500	---	---	---	204 U	196 U	---	---
Gasoline Range Hydrocarbons	86290-81-5	---	---	---	50 U	50 U	---	---
Diesel-Range Organics (DRO)	68334-30-5	---	---	---	238 U	238 U	---	---
Gasoline Range Organics	GRO	---	---	---	95.2 U	95.2 U	---	---
Residual-Range Organics (RRO)	WEY-130-500	---	---	---	238 U	238 U	---	---

TABLE 4
2023 Annual Laboratory Analytical Results - All Compounds
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				Sample ID	Outfall 22B	Outfall 22B	Outfall 22B	Outfall 22B
				Sample Name	22B-U-S-20230628	22B-U-D-20230628	22B-U-S-20230629	22B-U-D-20230629
				Sample Date	6/28/2023	6/28/2023	6/29/2023	6/29/2023
				N=Normal, FD=Field Duplicate	N	FD	N	FD
Parameter	CAS	**Portland Harbor Cleanup Level**	**Toxicity Equivalency Factor (TEF)**	**Site Specific SLV**	**Result**	**Result**	**Result**	**Result**
General Chemistry, ug/L								
Total Suspended Solids	TSS	---	---	---	5000 U	5000 U	---	---

Created by: SLG 10/24/2023
Checked by: JKC 10/25/2023

Notes:
Results formatted in **Bold** indicate concentration above the Portland Harbor Cleanup Level.
Results formatted in *italics* indicate concentration above the Site-specific Screening Level Value, if there is no Portland Harbor Cleanup Level.
U: The constituent was analyzed for, but was not detected above the reported sample quantitation limit. Reported at the MDL.
UJ: The constituent was not detected; the associated quantitation limit is an estimated value because quality control criteria were not met. Reported at the MDL.
J: The constituent was positively identified and detected; however, the concentration reported is an estimated value.
J+: The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.
UR: The constituent was analzyed for, but rejected during data validation.
EMPC, U: Estimated Maximum Potential Concentration, The EMPC qualifier is applied to a sample result when the signal to noise ratio is at least 2.5:1 for both quantitation ions, but the ion abundance ratio criteria are not met. The laboratory reported the constituent as not detected. Reported at the MDL.
ND: Individual constituents were non-detect, therefore total calculations are non-detect.
Equations for summing the detected constistuents of PCDD/PCDFs, PCBs, and PAHs:

1 - $$TEQ_{PCDDs,PCDFs} = \sum_{i=1}^{7}(PCDD_i \cdot TEF_i) + \sum_{i=1}^{10}(PDCF_i \cdot TEF_i)$$

2 - total PCBs calculated and reported by analytical lab as the sum of detected PCBs
3 - total Chlordanes calculated as sum of: alpha-chlordane, gamma-chlordane, oxychlordane, cis-nonachlor, and trans-nonachlor

4 - $TEQ_{PAH} = \sum_{i=1}^{8}(PAH_i \cdot TEF_i)$

Errata #2 for Portland Harbor Superfund Site Record of Decision ROD Table 17, accessed in August 2021 from: https://semspub.epa.gov/work/10/100200076.pdf
Site-Specific SLV from Table J-1 of the RI/SCE report (Golder 2014)
TEFs are used for PCDD/PCDFs to calculate a screening level based on the toxicity of 2,3,7,8 TCDD Van den Berg et al. 2006. The 2005 World Heath Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds. Toxicological Sciences. 2(93):223-241.
Benzo(a)pyrene equivalents from Toxic Equivalency Factors for Carcinogenic PAHs (DEQ 2010, Human Health Risk Assessment Guidance). However, the calculation is Not Applicable (NA) since none of the 8 compounds in the ODEQ Table 3 are detected.

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
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			Outfall Samples												
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-022315 2/23/15**	**Outfall 22B (FD) 22B-U-D-022315 2/23/15**	**Outfall 22B 22B-U-S-060815 6/8/15**	**Outfall 22B (FD) 22B-U-D-060815 6/8/15**	**Outfall 22B 22B-U-S-092115 9/21/15**	**Outfall 22B (FD) 22B-U-D-092115 9/21/15**	**Outfall 22B 22B-U-S-100516 5/10/16**	**Outfall 22B (FD) 22B-U-D-100516 5/10/16**	**Outfall 22B 22B-U-S-120916 9/12/16**	**Outfall 22B (FD) 22B-U-D-120916 9/12/16**	**Outfall 22B 22B-U-S-230817 8/23/2017**	**Outfall 22B (FD) 22B-U-D-230817 8/23/2017**	**Outfall 22B 22B-U-S-250418 4/25/2018**
PCDD/PCDFs (µg/L)															
1,2,3,4,6,7,8-HpCDD	---	0.000000051	*0.00000399 J*	*0.00000419 J*	0.00000209 U	*0.00000125 U*	0.0000246 U	*0.0000248 U*	0.00000216 EMPC, U	*0.00000205 EMPC, U*	0.0000252 U	*0.0000256 U*	*0.00000368 J*	*0.00000377 J*	*0.00000978 J*
Octachlorodibenzodioxin (OCDD)	---	0.0000017	*0.0000371 J*	*0.0000294 J*	*0.0000133 J*	*0.0000126 J*	*0.0000202 J*	*0.0000262 J*	*0.0000179 J*	*0.0000306 J*	*0.0000143 J*	*0.0000146 J*	*0.0000491 J*	*0.0000390 J*	*0.0000803*
2,3,7,8-TCDD Equivalents	0.00000000050	---	**0.00000005103**	**0.00000005072**	**0.00000000399**	**0.00000000378**	**0.00000000606**	**0.00000002416**	**0.00000000537**	**0.00000000918**	**0.00000000429**	**0.00000000438**	**0.00000005153**	**0.00000004940**	**0.00000012189**
PCBs (µg/L)*															
PCB 105	---	0.000017	*0.0000192*	**0.0000184**	0.0000152	**0.0000159**	*0.0000245*	**0.0000255**	0.0000162	**0.0000148**	*0.0000640*	*0.0000616*	*0.0000371*	*0.0000375*	*0.0000372*
PCB 114	---	0.000017	0.00000124 J	0.000000971 J	0.00000489 U	0.00000485 U	0.00000158 J	0.00000135 J	0.0000011 J	0.00000088 J	0.00000335 EMPC, U	0.00000376 J	0.00000189 J	0.00000207 J	0.00000149 U
PCB 156	---	0.000017	0.00000732	0.00000702	0.0000048 J	0.00000639	0.00000676	0.00000709	0.00000619	0.00000506	0.0000139	0.0000129	0.0000129	0.0000125	0.0000120
PCB 157	---	0.000017	0.00000246 J	0.00000206 J	0.00000184 J	0.00000241 J	0.00000153 U	0.0000018 J	0.00000154 J	0.00000154 J	0.00000371 J	0.00000392 J	0.00000346 J	0.00000346 J	0.00000369 J
PCB 189	---	0.000017	0.00000108 J	0.00000113 J	0.000000716 J	0.00000485 U	0.000000657 J	0.000000707 J	0.00000079 J	0.000000537 J	0.00000170 J	0.00000505 U	0.00000101 J	0.00000106 J	0.000000942 J
PCB 77	---	0.00000052	*0.00000507 U*	*0.00000314 J*	*0.00000338 J*	*0.00000343 J*	*0.00000518*	*0.00000482 J*	*0.00000256 J*	*0.00000253 J*	*0.0000117*	*0.00000899*	*0.00000847*	*0.00000823*	*0.00000561*
PCB106 & 118	---	0.000017	*0.0000516*	*0.0000536*	*0.0000527*	*0.0000575*	*0.0000677*	*0.0000685*	*0.0000485*	*0.0000413*	*0.000143*	*0.000128*	*0.0000884*	*0.0000879*	*0.0000829*
Total PCBs	0.0000064	0.0000064	**0.00171**	**0.00188**	**0.00213**	**0.00228**	**0.00239 B**	**0.00237 B**	**0.0017**	**0.00152**	**0.00366**	**0.0033**	**0.00256**	**0.00253**	**0.00252**
Insecticides (µg/L)															
2,4'-DDD	0.000031	0.000031	**0.000246**	**0.000255**	**0.000109 J**	**0.0008 U**	**0.0000703**	**0.0000705**	**0.000366**	**0.00036**	**0.000138**	**0.000143**	**0.000209**	**0.000207**	**0.000329**
2,4'-DDE	0.000018	0.000022	0.0000169 J	0.0000179 J	0.0016 U	0.0016 U	0.0000142 J	0.0000171 J	0.0000156 J	0.0000163 J	**0.0000204 J**	0.0000185 J	0.0000145	0.0000118 EMPC,U	**0.0000216 J**
2,4'-DDT	0.000022	0.000022	**0.0000331 J**	0.0000359 J	0.0016 U	0.0016 U	**0.0000265 J**	**0.0000257 J**	**0.000427**	0.000412	0.0000207 J	0.0000210 J	0.0000393 U	0.0000394 U	**0.0000461**
4,4'-DDD	0.000031	0.000031	**0.000501**	**0.0005**	0.000211 U	**0.000217 J**	**0.000149**	**0.000151**	**0.000794**	**0.000754**	**0.000288 J**	**0.000246 J**	**0.000643**	**0.000692**	**0.00066**
4,4'-DDE	0.000018	0.000022	**0.000259**	**0.00026**	**0.00018 J**	**0.000208 J**	**0.000153**	**0.000154**	**0.00022**	**0.000219**	**0.000176**	**0.000171**	**0.000182**	**0.000181**	**0.000317**
4,4'-DDT	0.000022	0.000022	**0.000195**	0.000215	0.0016 U	0.0016 U	**0.0000889 J+**	**0.0000946 J+**	**0.00216**	**0.0019**	**0.0000807 J**	0.0000943 J	0.0000207	0.0000183 J	**0.000188**
DDx	0.01	0.001	*0.00125*	0.00128	0.00029	0.00043	0.00050	0.00051	*0.00398*	0.00366	0.00072	0.00069	*0.00107*	0.00110	*0.00156*
Aldrin	0.00000077	0.000005	**0.0000124 J**	**0.000014 J**	0.0008 U	0.0008 U	0.0000398 U	0.0000395 U	**0.000103**	**0.000101**	**0.0000493**	**0.0000501**	**0.000026**	**0.0000269 J**	**0.0000642**
alpha-BHC	---	0.00049	0.000259	0.000251	0.000192 J	0.000175 J	0.0000265 J	**0.0000302 J**	*0.203*	**0.204**	*0.000969*	*0.000944*	*0.00632*	**0.00621**	*0.00597*
alpha-Chlordane	---	0.000081	*0.00014*	**0.000122**	0.0000866 U	**0.000139 J**	*0.000186*	*0.000178*	*0.000678*	*0.00166*	*0.000148*	*0.000131*	*0.000326*	*0.000324*	*0.000486*
beta-BHC	---	0.0017	0.000436	0.000434	0.000152 J	0.000192 J	0.0000309 J	**0.0000357 J**	*0.12*	**0.12**	0.00105	**0.00107**	*0.00875*	*0.00848*	*0.0064*
cis-Nonachlor	---	0.000081	0.0000226 U	0.000024 J	0.0000321 U	0.0008 U	0.0000335 J	0.0000509	0.0000392 U	0.0000394 U	0.0000199 J	0.0000210 J	0.0000393 U	0.0000375 EMPC,U	0.0000679
delta-BHC	---	0.037	0.0000835	0.0000878	0.0008 U	0.0008 U		0.0000102 U	*0.0611*	0.061	0.000378	0.00039	0.00301	0.003	0.00342
Dieldrin	---	0.0000054	*0.00261*	*0.00243*	*0.000403 J*	*0.000431 J*	*0.000327*	*0.000333*	*0.157*	*0.179*	*0.00344*	*0.00338*	*0.0137*	*0.0141*	*0.0169*
Endosulfan I	---	0.051	0.000847 U	0.000792 U	0.000139 U	0.000195 U	0.000797 U	0.000789 U	0.000196 U	0.000197 U	0.000196 U	0.000195 U	0.000197 U	0.000197 U	0.000135 J
Endosulfan II	---	0.051	0.000423 U	0.000396 U	0.008 U	0.008 U	0.000398 U	0.000395 U	0.000196 U	0.000197 U	0.000196 U	0.000195 U	0.000253	0.000241	0.000173 J
Endosulfan Sulfate	---	0.051	0.0001 J	0.0000773 J	0.008 U	0.008 U	0.0000788 J	0.0000842 J+	0.000196 U	0.000131 J	0.0000937 J	0.0000889 J	0.000494	0.000325 EMPC,U	0.000312
Endrin	---	0.0023	0.000173	0.000165	0.0000729 U	0.0016 U	0.0000279 J	0.0000789 U	*0.0121*	0.013	0.000342	0.00034	0.00114	0.00114	0.00199
Endrin Aldehyde	---	0.0023	0.0000548 J	0.000396 U	0.000559 U	0.000316 U	0.000398 U	0.000395 U	*0.0203*	0.000888	0.00196 U	0.000195 U	0.0002	0.000245	0.0000418 J
Endrin Ketone	---	0.0023	0.000614	0.00064	0.00032 U	0.000277 U	0.0000307 J	**0.000395 U**	*0.0831*	**0.102**	0.000336 EMPC, U	**0.000684 J**	*0.00269*	**0.00266**	*0.00492*
gamma-BHC (Lindane)	---	0.08	0.000157	0.000148	0.000154 J	0.000178 J	0.000186	0.000196	*0.306 J*	0.285	0.00222	0.00226	0.00622	0.00609	0.00542
gamma-Chlordane	---	0.000081	*0.000123*	**0.000111**	*0.000119 J*	**0.000131 J**	*0.000176*	*0.000174*	*0.000382*	*0.000393*	*0.000122*	*0.000125*	*0.00023*	*0.000234*	*0.000409*
Heptachlor	---	0.0000079	*0.00000968 U*	0.0000088 U	0.004 U	0.004 U	*0.0000214 J*	*0.0000195 U*	*0.0000354 J*	*0.0000333 J*	*0.0000392 U*	*0.0000390 U*	*0.0000393 U*	*0.0000394 U*	*0.00000367 EMPC,U*
Heptachlor Epoxide	---	0.0000039	*0.000056*	0.0000618	0.0008 U	0.0008 U	*0.0000234 J*	*0.0000395 U*	*0.000523*	*0.000593*	*0.0000586*	*0.0000619*	*0.000322*	*0.000343*	*0.00022*
Hexachlorobenzene	0.000029	---	**0.000164 B**	0.000165 B	0.0008 U	0.0008 U	**0.0000614 J+**	**0.0000673 J+**	**0.0000769**	**0.0000752**	**0.0000768**	**0.0000677**	**0.0000893 J+**	**0.0000921 J+**	**0.000151**
Methoxychlor	---	0.019	0.0000628 J	0.0000608 J	0.008 U	0.008 U	0.000172 J+	0.000151 J+	0.000334	0.000343	0.000682	0.000675	0.0000393 U	0.0000394 U	0.000151
trans-Heptachlor Epoxide	---	0.0000039	*0.0105*	**0.0124**	0.0008 U	**0.0008 U**	0.0000398 U	**0.0000395 U**	*0.604 J*	*2.19 J*	*0.00306*	*0.00274*	*0.0393*	*0.0354*	*0.0995*
trans-Nonachlor	---	0.000081	0.000059	**0.0000613**	0.0008 U	**0.0008 U**	*0.0000993*	*0.000102*	*0.000133*	**0.000141**	0.0000753	**0.0000661**	*0.00954*	*0.00987*	*0.000236*
Total Chlordanes	0.000081	0.000081	**0.000322**	**0.0003183**	**0.000119**	**0.00027**	**0.0004948**	**0.0005049**	**0.001193**	**0.002194**	**0.0003652**	**0.0003431**	**0.010096**	**0.010428**	**0.0011989**

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

			Outfall Samples												
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-022315 2/23/15**	**Outfall 22B (FD) 22B-U-D-022315 2/23/15**	**Outfall 22B 22B-U-S-060815 6/8/15**	**Outfall 22B (FD) 22B-U-D-060815 6/8/15**	**Outfall 22B 22B-U-S-092115 9/21/15**	**Outfall 22B (FD) 22B-U-D-092115 9/21/15**	**Outfall 22B 22B-U-S-100516 5/10/16**	**Outfall 22B (FD) 22B-U-D-100516 5/10/16**	**Outfall 22B 22B-U-S-120916 9/12/16**	**Outfall 22B (FD) 22B-U-D-120916 9/12/16**	**Outfall 22B 22B-U-S-230817 8/23/2017**	**Outfall 22B (FD) 22B-U-D-230817 8/23/2017**	**Outfall 22B 22B-U-S-250418 4/25/2018**
Unfiltered Metals (µg/L)															
Arsenic	0.018	0.014	**4.37**	**4.41**	**6.4**	**6.31**	**4.8**	**4.94**	**4.16**	**3.92**	**5.67**	**5.56**	**6.99**	**6.84**	**9.87**
Barium	---	4	*20.5*	*20.2*	*9.67*	*9.48*	*8.73*	*8.76*	*23*	*23*	*9.29*	*9.18*	*9.47 J+*	*9.27 J+*	*25.4*
Cadmium	---	0.09	0.0667 J	0.04 U	0.04 U	0.04 U	0.0556 J	0.0778 J	0.0444 J	0.0444 J	*0.133 J*	0.0400 U	0.0556 J	0.0400 U	0.0556 J
Calcium	---	116000	37700	37600	27000	29000	24000	23800	33800	34000	26300	26100	25200	25300	48600
Copper	2.74	2.7	2.64	2.9	1.06	0.867 J	1.03	1.06	1.21	1.17	1.22	0.844 J	1.69 J+	1.56 J+	1.67
Iron	---	1000	840	829	448	433	347	344	596	599	491	449	444 J+	431 J+	887
Lead	---	0.54	*0.922*	*0.989*	*0.767*	*0.767*	*1.2*	*1.3*	*0.633*	**0.611**	*1.12*	*1.04*	*1.30 J+*	*1.29 J+*	*1.02*
Magnesium	---	82000	9810	9710	3080	3120	746	755	8460	8720	1300	1310	2120	2130	11500
Manganese	---	10	*201*	*199*	*62.9*	*63*	*40*	*40*	*96.6*	*95.9*	*59.6*	*59.1*	*89.3*	*90.1*	*328*
Mercury	---	0.012	0.011	0.011	0.0039	0.0043	0.0059	0.0056	0.0012	0.003	0.0082	0.0079	0.0054 J+	0.0050 J+	0.011
Nickel	---	16	2.79	2.79	1.92	1.87	1.89	1.91	10.2	10.2	2.64	1.97	2.29	2.30	2.46
Zinc	36.5	33	20.4	21.5	5.66	4.47	5.73	5.71	5.94	5.8	10.1	6.91	6.56	5.70	7.51
Hexavalent Chromium	---	0.043	*0.2 J+*	*0.2 J+*	*0.081*	*0.061*	*0.033*	*0.056*	*0.052 J+*	0.078 J+	0.020 J+	0.022 J+	0.020 U	0.020 U	0.042
Filtered Metals (µg/L) **															
Arsenic	0.018	0.014	**4.29**	**4.25**	**5.64**	**6.06**	**4.92**	**4.8**	**4.32**	**4.21**	**5.47**	**5.40**	**6.91**	**6.68**	**8.40**
Barium	---	4	*18.2*	*17.3*	*8.01*	*8.04*	*7.71*	*7.73*	*20.7*	*21.4*	*7.59*	*7.57*	*7.97*	*7.97*	*21.1*
Cadmium	---	0.09	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Calcium	---	116000	37300	37200	31400	29800	24700	24800	33600	33600	26700	26600	25200	25100	42000
Copper	2.74	2.7	1.13	1.01	0.622 J	0.5 J	0.656 J	0.7 J	0.5	0.567 J	0.544 J	0.678 J	0.867 J	0.922 J	0.500 U
Iron	---	1000	402	343	218	212	226	221	276	273	186	185	270	265	268
Lead	---	0.54	0.167 J	0.111 J	0.289	0.289	*0.667*	0.667	0.156 J	0.133 J	0.411	0.444	*0.633*	0.633	0.100 U
Magnesium	---	82000	9160	9030	3570	3490	767	754	8200	7920	1320	1320	2120	2100	9930
Manganese	---	10	*185*	*173*	*44.5*	*44.2*	*27.3*	*27.5*	*80.8*	*80.9*	*32.0*	*33.4*	*61.3*	*62.7*	*301*
Mercury	---	0.012	0.005	0.0045	0.0031	0.0028	0.0052 J	0.0041 J	0.003	0.0035	0.0059 J-	**0.0056 J-**	0.0036 J+	**0.0040 J+**	0.0031
Nickel	---	16	2.77	2.58	1.61	1.52	1.98	1.8	9.84	9.81	1.73	1.77	2.07	2.27	2.11
Zinc	36.5	33	8.3	4.59	2.21 J	2.17 J	4.54	3.64 J	2	2	3.40 J	3.53 J	2.56 J	2.60 J	2.00 U
Hexavalent Chromium	---	0.043	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	*0.058 J+*
Herbicides (µg/L)															
2,4-D	---	4	0.73 J	0.66 J	2 U	2 U	2.7	2.8	2 U	2 U	2.0 U	2.0 U	2.0 U	2 U	0.2 J
VOCs (µg/L)															
Ethylbenzene	7.3	1.5	1.17	1.23	0.34 J	0.31 J	0.46 J	0.42 J	0.399 J	0.434 J	0.910	0.950	0.250 U	0.250 U	0.372 J
Styrene	---	100	0.82 J	0.87 J	0.5 U	0.5 U	0.5 U	0.5 U	1.25	0.5 U	0.500 U	0.500 U	0.500 U	0.500 U	0.631 J

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
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			Outfall Samples												
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-022315 2/23/15**	**Outfall 22B (FD) 22B-U-D-022315 2/23/15**	**Outfall 22B 22B-U-S-060815 6/8/15**	**Outfall 22B (FD) 22B-U-D-060815 6/8/15**	**Outfall 22B 22B-U-S-092115 9/21/15**	**Outfall 22B (FD) 22B-U-D-092115 9/21/15**	**Outfall 22B 22B-U-S-100516 5/10/16**	**Outfall 22B (FD) 22B-U-D-100516 5/10/16**	**Outfall 22B 22B-U-S-120916 9/12/16**	**Outfall 22B (FD) 22B-U-D-120916 9/12/16**	**Outfall 22B 22B-U-S-230817 8/23/2017**	**Outfall 22B (FD) 22B-U-D-230817 8/23/2017**	**Outfall 22B 22B-U-S-250418 4/25/2018**
SVOCs (µg/L)															
2,3,4,6-Tetrachlorophenol	---	1	0.51 U	0.49 U	1.92 U	1.94 U	0.618 J	0.473 J	0.481 U	0.481 U	0.862 J	0.873 J	0.952 U	0.943 U	0.490 U
2,4,5-Trichlorophenol	---	3.2	2	1.89	*5.54*	*4.59*	*7.32*	6.52	1.94	2.13	*7.89*	*7.96*	*6.13*	5.47	1.05
2,4,6-Trichlorophenol	---	0.24	0.934 J	0.937 J	3 J	2.74 J	3.09	2.67	1	1.16	3.34	3.41	2.86	2.53	0.490 U
2,4-Dichlorophenol	---	29	6.93	7.38	22.9 J	16.5 J	26.1	29.7	8.39	8.68	*34.1 J*	31.8 J	12.7	11.5	4.85
2-Methylphenol	---	13	1.57	1.65	0.962 U	0.971 U	0.236 U	0.236 U	1.17	1.08	1.47 J	1.24 J	0.476 U	0.472 U	1.50
Pentachlorophenol	0.03	0.3	**1.09 J**	**1.03 J**	3.85 U	**3.88 U**	**1.82 J**	**1.59 J**	**1.01 J**	**1.03 J**	**2.58**	**2.37**	1.90 U	1.89 U	0.980 U

Notes:

Results formatted in **Bold** indicate concentration above the Portland Harbor Cleanup Level.

Results formatted in *italics* indicate concentration above the Site-specific Screening Level Value, if there is no Portland Harbor Cleanup Level.

*Only PCB congeners reported in previous quarterly reports listed. See laboratory results (Table 4) for complete list.

** Filtered metals corresponding to the detected total metals listed.

--- No comparison level available (see Table 4)

FD: Field Duplicate Sample

B: This compound was also detected in the method blank.

D: Dilution

U: The constituent was analyzed for, but was not detected above the sample quantitation limit.

UJ: The constituent was not detected; the associated quantitation limit is an estimated value because quality control criteria were not met.

J -: The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.

J+: The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.

NA: Not analyzed

ND: Individual constituents were non-detect, therefore the total calculation was non-detect.

EMPC, U: Estimated Maximum Potential Concentration, The EMPC qualifier is applied to a sample result when the S/N ratio is at least 2.5:1 for both quantitation ions, but the ion abundance ratio criteria are not met.

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
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			Outfall Samples											
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-200319 3/20/2019**	**Outfall 22B 22B-U-S-100420 4/10/2020**	**Outfall 22B 22B-U-S-140521 5/14/2021**	**Outfall 22B 22B-U-D-140521 5/14/2021**	**Outfall 22B 22B-U-S-071322 7/13/2022**	**Outfall 22B 22B-U-D-071322 7/13/2022**	**Outfall 22B 22B-U-S-071922 7/19/2022**	**Outfall 22B 22B-U-D-071922 7/19/2022**	**Outfall 22B 22B-U-S-20230628 6/28/2023**	**Outfall 22B (FD) 22B-U-D-20230628 6/28/2023**	**Outfall 22B 22B-U-S-20230629 6/29/2023**	**Outfall 22B (FD) 22B-U-D-20230629 6/29/2023**
PCDD/PCDFs (µg/L)														
1,2,3,4,6,7,8-HpCDD	---	0.000000051	0.00000299 U				*0.00000213 J*	*0.00000301 J*			*1.13E-06 J*	1.96E-06 U		
Octachlorodibenzodioxin (OCDD)	---	0.0000017	*0.0000343 J*	*0.000018 J*	0.00000991 U	*0.0000168 EMPC, U*	*0.0000156 J*	*0.0000188 J*			6.79E-06 EMPC,U	6.42E-06 EMPC,U		
2,3,7,8-TCDD Equivalents	0.00000000050	---	**0.00000001029**	**0.00000000540**	ND	ND	**0.000000026**	**0.000000036**			**0.000000011**	ND		
PCBs (µg/L)*														
PCB 105	---	0.000017	*0.0000208*	0.000012	0.00000170 EMPC,U	0.00000169 EMPC,U	0.0000145	0.0000135			1.47E-05	1.46E-05		
PCB 114	---	0.000017	0.00000119 J	0.000000296 U	0.00000123 U	0.00000146 U	0.00000112 EMPC,U	0.000000503 U			3.95E-07 U	6.59E-07 J		
PCB 156	---	0.000017	0.00000609	0.00000335 J	0.00000138 EMPC,U	0.00000137 EMPC,U	0.00000404 J	0.00000126 EMPC,U			2.72E-06 EMPC,U	3.77E-06 J		
PCB 157	---	0.000017	0.0000019 J	0.00000112 J	0.00000104 U	0.000000801 U	0.00000139 EMPC,U	0.00000139 EMPC,U			5.5E-07 EMPC,U	8.85E-07 EMPC,U		
PCB 189	---	0.000017	0.000000675 EMPC,U	0.000000181 U	0.000000537 U	0.000000503 U	0.00000029 U	0.00000031 U			5.47E-07 J	2.74E-07 U		
PCB 77	---	0.00000052	*0.00000316 J*	*0.000002 J*	0.00000148 EMPC,U	0.00000275 J	0.00000135 EMPC,U	*0.00000304 J*			3.17E-06 J	3.5E-06 J		
PCB106 & 118	---	0.000017	*0.0000501*	*0.000027*	0.0000282 J	0.0000393 J	*0.0000338*	*0.0000312*			*3.11E-05*	*3.12E-05*		
Total PCBs	0.0000064	0.0000064	**0.00172**	**0.00101**	**0.00058**	**0.000645**	***0.001049***	***0.0010***			***0.00121***	***0.00117***		
Insecticides (µg/L)														
2,4'-DDD	0.000031	0.000031	**0.000207**	**0.000208**	**0.000143**	**0.000135**	***0.000197 J***	***0.000204 J***			***0.000134***	***0.000134***		
2,4'-DDE	0.000018	0.000022	**0.0000135 J**	0.0000095 J	0.0000102 EMPC, U	0.00000761 J	0.00000862 J	0.00000851 J			8.17E-06 J	8.5E-06 J		
2,4'-DDT	0.000022	0.000022	**0.000144**	**0.000054**	**0.0000318 J**	**0.000033 J**	0.0000157 J	0.0000169 J			1.59E-05 J	1.4E-05 J		
4,4'-DDD	0.000031	0.000031	**0.000388**	**0.000392**	**0.000294**	**0.000274**	***0.000446 J***	***0.000428 J***			***0.000237***	***0.00026***		
4,4'-DDE	0.000018	0.000022	**0.000283**	**0.000161**	**0.000118**	**0.000113**	***0.000132 J***	***0.000132 J***			***8.32E-05***	***8.72E-05***		
4,4'-DDT	0.000022	0.000022	**0.00041**	**0.000117**	**0.000129**	**0.000125**	***0.0000816 J***	***0.0000866 J***			***7.08E-05 J***	***8.77E-05 J***		
DDx	0.01	0.001	*0.0014455*	0.0009415	0.0007158	0.00068761	8.81E-04	0.00088			0.00055	0.00059		
Aldrin	0.00000077	0.000005	**0.0000128 J**	0.00000777 EMPC,U	0.0000088 J	0.00000813 U	***0.000013 J***	***0.0000113 J***			3.2E-06 U	3.1E-06 U		
alpha-BHC	---	0.00049	*0.00782*	*0.00296*	*0.00411*	*0.00391*	*0.00525 J*	*0.00493 J*			*0.00133*	*0.00135*		
alpha-Chlordane	---	0.000081	*0.000273*	*0.000632*	*0.000237*	*0.000239*	*0.000165 J*	*0.000172 J*			*0.000109*	*0.000124*		
beta-BHC	---	0.0017	*0.00692 J*	*0.00426*	*0.00854*	*0.00834*	*0.00911 J*	*0.0089 J*			*0.00249*	*0.00252*		
cis-Nonachlor	---	0.000081	0.0000243 U	0.0000917	0.0000178 U	0.0000217 U	0.0000287 J	0.0000291 J			2.04E-05 J	2.62E-05 J		
delta-BHC	---	0.037	0.00461	0.00226	0.00406	0.00383	0.00395 J	0.00387 J			0.000997	0.000999		
Dieldrin	---	0.0000054	*0.0119 J*	*0.0103*	*0.00822*	*0.00792*	*0.0126 J*	*0.0124 J*			*0.006*	*0.00597*		
Endosulfan I	---	0.051	0.00005 J	**0.0000259 U**	**0.0000462 EMPC, U**	0.000124 J	*0.000025 UR*	0.0000274 UR			4.07E-05 EMPC,U	4.99E-05 J		
Endosulfan II	---	0.051	0.000104 J	0.0000562 J	0.00019 J	0.000199 J	*0.0000433 UR*	0.0000223 UR			6.49E-05 J	6.95E-05 J		
Endosulfan Sulfate	---	0.051	0.000027 U	0.0000265 EMPC,U	0.00045 J	0.00121 J	0.0000868 J	0.0000811 J			9.38E-05 J	0.000102 J		
Endrin	---	0.0023	0.00121	0.000955	0.000585	0.000729	0.000935 J	0.000929 J			0.000445	0.000452		
Endrin Aldehyde	---	0.0023	0.0000277 U	0.0000572 EMPC,U	0.0000196 U	0.0000333 U	*0.0000532 UR*	0.000069 J			8.33E-05 J	6.71E-05 J		
Endrin Ketone	---	0.0023	*0.00628*	*0.00337*	*0.0026*	*0.00247*	*0.00269 J*	*0.0028 J*			0.000723	0.000736		
gamma-BHC (Lindane)	---	0.08	0.00809 J	0.00175 J	0.00169	0.00167	0.00229 J	0.00193 J			0.000395	0.0004		
gamma-Chlordane	---	0.000081	*0.000114*	*0.000532*	0.0000216 U	0.00018	*0.000168 J*	*0.000159 J*			9.34E-05 EMPC,U	*0.000122*		
Heptachlor	---	0.0000079	*0.00000457 U*	0.0000982	0.00000148 U	0.00000395 U	*0.00000237 UR*	0.00000209 UR			4.65E-06 U	2.47E-06 U		
Heptachlor Epoxide	---	0.0000039	*0.000113*	*0.000193*	*0.0000764*	*0.0000811*	*0.0000889 J*	*0.0000931 J*			*5.93E-05*	*6.18E-05*		
Hexachlorobenzene	0.000029	---	**0.0000957**	**0.000089**	**0.0000180 UJ**	**0.0000178 UJ**	***0.0000638 J***	***0.0000641 J***			**5.78E-05**	**5.78E-05**		
Methoxychlor	---	0.019	0.000158	0.000574	0.00000841 U	0.0000648 J	0.000097 J	0.0000967 J			6.28E-05 J+	6.49E-05 J+		
trans-Heptachlor Epoxide	---	0.0000039	*0.00306 J*	*0.0647*	*0.143*	*0.139*	*0.509 J*	*0.513 J*			*0.0502*	*0.0495*		
trans-Nonachlor	---	0.000081	0.0000675	0.000337	0.0000222 U	0.000115	*0.0000885 J*	0.0000165 UR			5.56E-05	6.86E-05		
Total Chlordanes	0.000081	0.000081	**0.0004545**	**0.0015927**	**0.000237**	**0.000534**	5.48E-01	***0.55***			***0.0002***	***0.0003***		

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

			Outfall Samples											
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-200319 3/20/2019**	**Outfall 22B 22B-U-S-100420 4/10/2020**	**Outfall 22B 22B-U-S-140521 5/14/2021**	**Outfall 22B 22B-U-D-140521 5/14/2021**	**Outfall 22B 22B-U-S-071322 7/13/2022**	**Outfall 22B 22B-U-D-071322 7/13/2022**	**Outfall 22B 22B-U-S-071922 7/19/2022**	**Outfall 22B 22B-U-D-071922 7/19/2022**	**Outfall 22B 22B-U-S-20230628 6/28/2023**	**Outfall 22B (FD) 22B-U-D-20230628 6/28/2023**	**Outfall 22B 22B-U-S-20230629 6/29/2023**	**Outfall 22B (FD) 22B-U-D-20230629 6/29/2023**
Unfiltered Metals (µg/L)														
Arsenic	0.018	0.014	**9.71**	**9.03**	**8.07**	**8.15**			***8.9***	***8.79***	***8.74***	***9.02***	***8.48***	***8.51***
Barium	---	4	*41.7*	*28.4*	*17.5*	*17.1*			***25.2***	*24.8*	*22.4*	*21.7*	*20.1*	*20.7*
Cadmium	---	0.09	0.0519 J	*0.19 J*	0.1 U	0.1 U			0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Calcium	---	116000	40900	40000	37600	37200			***40500***	40400	38900	38400	37700	36800
Copper	2.74	2.7	1.24	1.44 J	1.62 J	1.59 J			***1.21 J***	1.22 J	1.75 J	***3.12***	1 U	1 U
Iron	---	1000	537	387	291	295			***406***	409	413 J	794	371	393
Lead	---	0.54	*0.559*	0.372	0.173 J	0.168 J			***0.353***	0.356	0.174 J	0.194 J	0.189 J	0.18 J
Magnesium	---	82000	9980	9850	10200	10300			***11400***	11500	10800	10700	10700	10500
Manganese	---	10	*361*	*266*	*124*	*122*			***171***	*168*	*275*	*267*	*219*	*211*
Mercury	---	0.012	0.0095	0.0028	0.00217	0.00233	0.00295	0.00289					0.00152	0.00147
Nickel	---	16	2.22	1.74 J	1.68 J	1.75 J			***1.96 J***	1.74 J	2.94	*25.7 J*	1.54 J	1.6 J
Zinc	36.5	33	4.7	2.96 J	2.99 J	2.53 J			***3.59 J***	4.63	3.08 J	2.86 J	2 U	2.07 J
Hexavalent Chromium	---	0.043	0.037 J	0.02	0.20 J	0.20 J			***0.14 J+***	*0.15 J+*			0.035 J+	0.025 J+
Filtered Metals (µg/L) **														
Arsenic	0.018	0.014	**9.06**	**7.86**	**7.19**	**7.04**			***7.1***	***7.26***			***7.29***	***7.34***
Barium	---	4	*38.6*	*27*	*16.0*	*15.7*			*20.2*	*20.6*			*18.9*	*19.1*
Cadmium	---	0.09	0.1 U	*0.185 J*	0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U
Calcium	---	116000	41100	36000	38300	37200			37500	37700			38500	39000
Copper	2.74	2.7	0.5 U	2 U	1.58 J	1 U			1 U	1 U			1 U	1 U
Iron	---	1000	32.9 J	26.8 J	25 U	25 U			25 U	25 U			25 U	25 U
Lead	---	0.54	0.1 U	0.5 U	0.1 U	0.1 U			0.1 U	0.1 U			0.1 U	0.1 U
Magnesium	---	82000	10000	9010	10400	10200			10400	10500			11000	10900
Manganese	---	10	*350*	*217*	*114*	*114*			*150*	*150*			*222*	*220*
Mercury	---	0.012	0.0028 J+	0.00078	0.000878 J	0.000795 J	0.00096 J	0.00104					0.000792 J	0.000804 J
Nickel	---	16	2.16	2 J	1.29 J	1.37 J			1.33 J	1.34 J			1.45 J	1.55 J
Zinc	36.5	33	2.0 U	2 U	2 U	2 U			2 U	2 U			2 U	2 U
Hexavalent Chromium	---	0.043	0.037	0.023 J+	0.20 J+	0.18 J+			*0.13 J*	0.02 UJ			0.027 J+	0.03 J+
Herbicides (µg/L)														
2,4-D	---	4	0.52	0.08 U	0.08 U	0.08	0.1	0.12			0.08 U	0.08 U		
VOCs (µg/L)														
Ethylbenzene	7.3	1.5	0.63	0.705	0.678	0.424 J	0.5 U	0.93			0.68	0.89		
Styrene	---	100	0.5 U	**0.5 U**	**0.5 U**	0.5 U	0.5 U	0.61 J			0.5 U	0.5 U		

TABLE 5
2015 to 2023 Laboratory Analytical Results - Detected Compounds
Outfall 22B IRAM Performance Monitoring
Annual 2023 Report

			Outfall Samples											
Constituent	**Portland Harbor Cleanup Level**	**Site Specific SLV**	**Outfall 22B 22B-U-S-200319 3/20/2019**	**Outfall 22B 22B-U-S-100420 4/10/2020**	**Outfall 22B 22B-U-S-140521 5/14/2021**	**Outfall 22B 22B-U-D-140521 5/14/2021**	**Outfall 22B 22B-U-S-071322 7/13/2022**	**Outfall 22B 22B-U-D-071322 7/13/2022**	**Outfall 22B 22B-U-S-071922 7/19/2022**	**Outfall 22B 22B-U-D-071922 7/19/2022**	**Outfall 22B 22B-U-S-20230628 6/28/2023**	**Outfall 22B (FD) 22B-U-D-20230628 6/28/2023**	**Outfall 22B 22B-U-S-20230629 6/29/2023**	**Outfall 22B (FD) 22B-U-D-20230629 6/29/2023**
SVOCs (µg/L)														
2,3,4,6-Tetrachlorophenol	---	1	0.0481 U	0.0498 J	0.0589 J	0.0557 J	0.19 U	0.19 U			0.0481 U	0.0485 U		
2,4,5-Trichlorophenol	---	3.2	0.0805 J	0.1	0.143	0.158	0.19 U	0.19 U			0.161	0.177		
2,4,6-Trichlorophenol	---	0.24	0.104	0.0851 J	0.108	0.121	0.19 U	0.19 U			0.124	0.126		
2,4-Dichlorophenol	---	29	0.404 J	0.378	0.446	0.514	0.443	0.617			0.519	0.554 J		
2-Methylphenol	---	13	0.0752 J	0.068	0.0315 J	0.0341 J	0.0952 U	0.0952 U			0.0908	0.106 J		
Pentachlorophenol	0.03	0.3	**0.22**	**0.173 J**	**0.176 J**	0.17 J	0.381 U	0.381 U			**0.119 J**	**0.124 J**		

Notes:

Results formatted in **Bold** indicate concentration above the Portland Harbor Cleanup Level.

Results formatted in *italics* indicate concentration above the Site-specific Screening Level Value, if there is no Portland Harbor Cleanup Level.

*Only PCB congeners reported in previous quarterly reports listed. See laboratory results (Table 4) for complete list.

** Filtered metals corresponding to the detected total metals listed.

--- No comparison level available (see Table 4)

FD: Field Duplicate Sample

B: This compound was also detected in the method blank.

D: Dilution

U: The constituent was analyzed for, but was not detected above the sample quantitation limit.

UJ: The constituent was not detected; the associated quantitation limit is an estimated value because quality control criteria were not met.

J -: The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result is less than the quantitation limit or quality control criteria were not met.

J+: The constituent was positively identified and detected; however, the concentration reported is an estimated value because the result may be biased high.

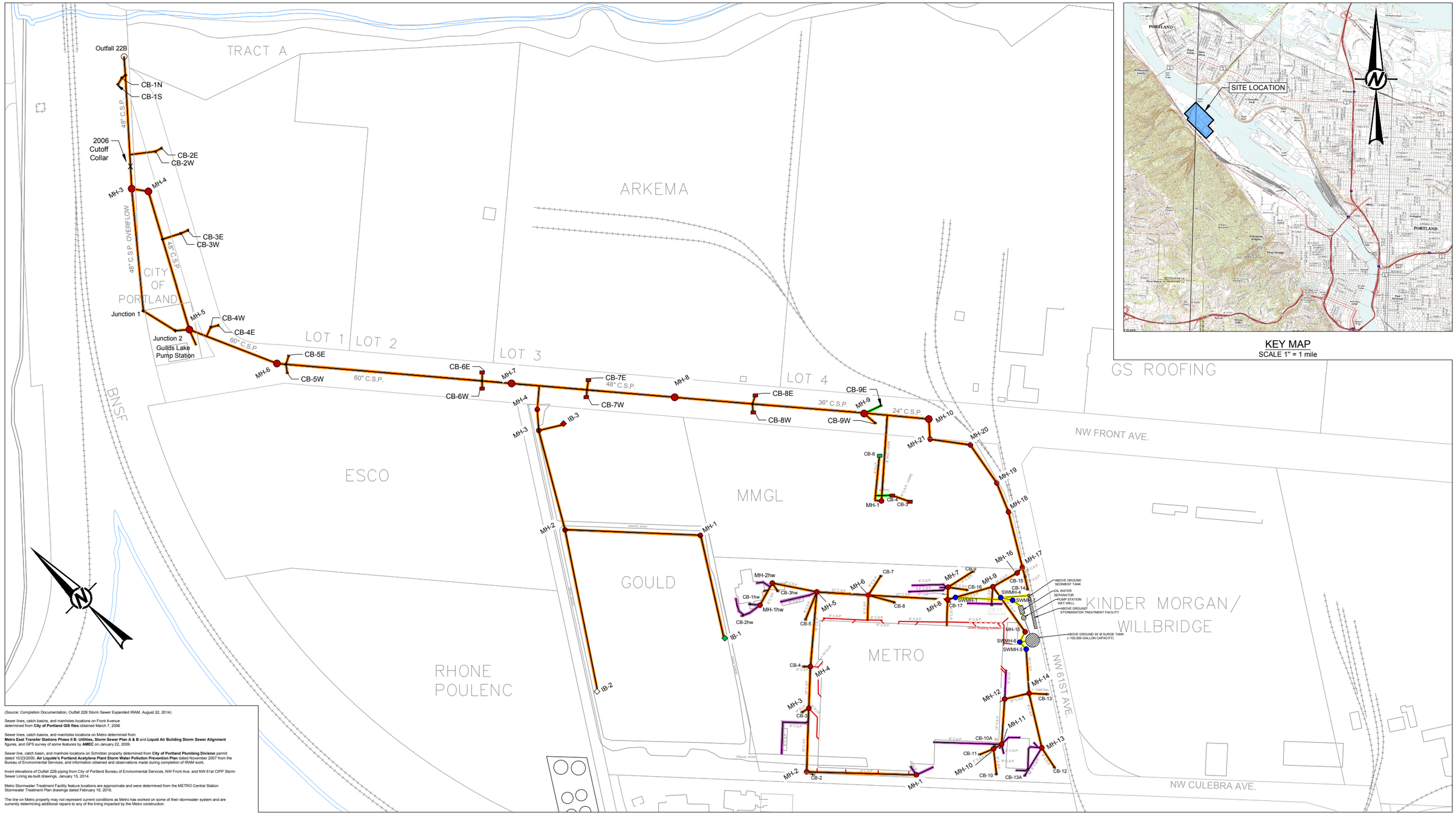
NA: Not analyzed

ND: Individual constituents were non-detect, therefore the total calculation was non-detect.

EMPC, U: Estimated Maximum Potential Concentration, The EMPC qualifier is applied to a sample result when the S/N ratio is at least 2.5:1 for both quantitation ions, but the ion abundance ratio criteria are not met.

Created by: SLG 10/24/2023
Checked by: CCC 10/25/2023

Figure



KEY MAP
SCALE 1" = 1 mile

(Source: Completion Documentation, Outfall 22B Storm Sewer Expanded IRAM, August 22, 2014)

Sewer lines, catch basins, and manholes locations on Front Avenue determined from **City of Portland GIS files** obtained March 7, 2006

Sewer lines, catch basins, and manholes locations on Metro determined from **Metro East Transfer Stations Phase II B; Utilities, Storm Sewer Plan A & B** and **Liquid Air Building Storm Sewer Alignment** figures, and GPS survey of some features by **AMEC** on January 22, 2009.

Sewer line, catch basin, and manhole locations on Schnitzer property determined from **City of Portland Plumbing Division** permit dated 10/23/2000, **Air Liquide's Portland Acetylene Plant Storm Water Pollution Prevention Plan** dated November 2007 from the Bureau of Environmental Services, and information obtained and observations made during completion of IRAM work.

Invert elevations of Outfall 22B piping from City of Portland Bureau of Environmental Services, NW Front Ave. and NW 61st CIPP Storm Sewer Lining as-built drawings, January 15, 2014.

Metro Stormwater Treatment Facility feature locations are approximate and were determined from the METRO Central Station Stormwater Treatment Plan drawings dated February 16, 2016.

The line on Metro property may not represent current conditions as Metro has worked on some of their stormwater system and are currently determining additional repairs to any of the lining impacted by the Metro construction.

LEGEND

- Tax Lot Boundary & Existing Features
- Surface Water Features
- Railroad Tracks
- Outfall 22B Storm Sewer Line
- Catch Basin
- Outfall
- C.S.P. Concrete Sewer Pipe
- D.I.P Ductile Iron Pipe
- CIPP Cure-In-Place Pipe
- PVC Polyvinyl Chloride
- HDPE High Density Polyethylene

- IRAM Interim Remedial Action Measure
- ft COPD Feet City of Portland Datum
- 14.79 Lined Outfall 22B System Piping and Invert Elevations (feet, COPD)
- Replaced
- Not Lined – Limited or No Access
- New PVC Pipe Installed For Metro Stormwater Treatment Facility Completed September 2016
- Not Lined - Roof Drain
- MH-10 Lined and/or Sealed Manhole
- Lined and/or Sealed Catch Basin
- Replaced Vault or Catch Basin

- SWMH-6 Manhole installed for Metro stormwater treatment facility completed September 2016.

DRAFT

0 120 240
1" = 120' FEET

CLIENT
STARLINK LOGISTICS INC.

CONSULTANT
wsp

YYYY-MM-DD	2021-08-20
DESIGNED	JJ
PREPARED	REDMOND
REVIEWED	JJ
APPROVED	TN

PROJECT
PERFORMANCE MONITORING 2023 ANNUAL REPORT

TITLE
OUTFALL 22B MONITORING LOCATIONS

PROJECT NO.
REV. A
FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D
0 1in

APPENDIX A

Field Notes and Photographs

Outfall 22B Sampling

6/28/23 sunny

09:00 Show up on site with Jason

09:15 Go to store for more ice

10:00 setting up equipment at ~~manhole~~ outfall

10:30 starting equipment calibration

10:45 start sampling at Outfall.

(Outfall is super steep climb so we call Carter to let him know we'll need his help carry samples back up.)

13:45 Carter arrives to help Jason with sampling. Grant goes to meet at Metro for 14:00 manhole inspection expected time

Metro Manholes 6/28/23

14:19
SWMH5
Water present. No discernable flow

14:26
MH 4
Water present. No discernable flow

14:29
MH8
water present. No discernable flow

14:33
MH-6
Water present. No discernable flow

14:36
MH-9
water present - No discernable flow.

14:41
MH-15
water present. No discernable flow

City Property Manholes
15:00
MH-10
water present. Trickle of flow

6/29 MMGL
09:54
MH-17
water present. No discernable flow

10:00
MH-18
water present. Barely a trickle of flow

10:03
MH-19
water present. No discernable flow

10:09
MH-20
couldn't view. Wasps present

10:29
W-16-S(13) depth to water
5.23 ft.
10:32 MH-21 water present. no discernable flow
10:45
went to conex to get flow measurement stick

8/29/23

11:18
ASW-01A — depth to water 6.73 ft.

11:34
ASW-08 — 6.55 ft.

11:56
W-15-S(23) — 11.65 ft.

~~12:29~~ ~~V-11~~ Incorrect well

12:54
W-11 — 10.95ft.
~~dt~~ 19.56 ft. ~~total~~ depth

13:19
W-03-S(17) — ~~5~~ 5.16 ft.

13:29
W-04-S(16) 5.54ft.

14:28 6/29/23

Flow rate: 1.65gpm

14:32
CB1 E&W dry

14:36
CB2 E&W dry

14:48
MH-5
Dry

14:53
CB-4 E&W dry

14:54
CB-3 E&W dry

15:09
MH-3
Water present No flow
width 20 in. 0.75 in depth

15:14
MH-4 ~~depth~~ ~~width~~ width MH 0.5 in
water present No discernable flow

6/29/23
15:29
MH-6 water present. Discernable flow
with 24in. 1in
1
15:30
CB-5 dry

15:37
MH-7 water present Trickling
10 in. 1/2 in.

CB-6 dry W
CB-6 water present trickling E

15:41

CB-7 dry W
CB-7 water present. Trickling E

15:46
MH-8 water present. Trickling
Slightly
16 in.
1/2 in.

6/29/23

15:50

CB-8E water present. slight trickle

CB-8W dry

15:53

CB9-W dry

CB9-E dry

15:55

MH-9 water present. trickle of flow

width 7 in

depth 3 1/4 in.

MH-10 water present. trickle from upper tunnel into manhole

width 7 in.

depth 1/2 in.

16:16 left site

APEX LABS

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

CHAIN OF COUSTODY

Lab # ______ COC 1 of 1

Company: WSP	Project Mgr: Ted Norton	Project Name: Outfall 228	Project #: [illegible]
Address: [illegible]	Phone: 206 755 497[illegible]	Email: ted.norton@wsp.com	PO #
Sampled by: Jason Gr[illegible]	ANALYSIS REQUEST		

Site Location:

State OR

County ______

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS. TCLP	TCLP Metals (8)	[illegible]	[illegible]	[illegible]					Hold Sample	Frozen Archive
228-F-D-20230629	6/29/23	13:40	W	3														Dis X			X	Dis X						
228-F-S-20230629	6/29/23	12:30	W	9														Dis X			X	Dis X						
228-US-20230629	↓	12:30	W	9														Total X		X		Tot X						
228-F-RB-20230629	↓	14:00	W	3														Dis X			X	Dis X						
228-V-D-20230629	↓	13:00	W	3														Total X		X		Tot X						

Standard Turn Around Time (TAT) = 10 Business Days

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

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:

Total + Dissolved metals by EPA 200.7 + 200.8

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [illegible] Date:	Signature: [illegible] Date: 6/29/23	Signature: Date:	Signature: Date:
Printed Name: Time:	Printed Name: [illegible] Time: 16:15	Printed Name: Time:	Printed Name: Time:
Company:	Company: Apex	Company:	Company:

WATER QUALITY EQUIPMENT CALIBRATION FORM

Project	RPAC	Meter Model:	YSI
Location:	ODTFAII 22b	SEA Meter #	12609
Project #:		Date:	6/28/23 & 6/29/23
Personnel	SG, GB	Start Time:	9:45

Parameter	Standard	Lot #	Exp. Date	PreCal Reading 6/28/23	Temp	PostCal Reading 6/29/23	Units	Pre Cal	Comments	Post Cal
pH	pH 7	3GA0648	JAN-25	7.02	20.2C	7.00	SU	7.04	20.9	7
	pH 4	3GA235	JAN-25	4.00	20.0C	4.00	SU	4.01	20.9	4
	pH	3GA510	JAN-25	10.05	20.9	10.00	SU	10.03	20.6	10
	pH						SU			
	SLOPE						Slope			
Conductivity	1.413	26642	SEP 23	1619	~~1413~~ 20.6	1413	us/cm	1619	21.0	1413
							us/cm			
	CC						CC			
Turbidity	~~20~~ ~~10.0~~	A3097	July 24	21.0		20.0	NTU	20	NA	20
Dissolved Oxygen	Zero %	-	-	-	-	-	mg/L			
	Air %	-	-				mg/L			
ORP	240 MV	36E0347	Feb 24	229.2	20.0	240 MV	Ag/AgCl mV	231.6	20.5	240

Check	Parameter	Standard	Exp. Date	Reading	Temp	Time	Units	Comments
1								
2								
3								
4								

Meter must be calibrated daily prior to initial use, at a minimum.

Calibrators Name: Jason Gardner

* During use, meter must be checked against a standard pH 7.00 buffer every three hours. If the pH differs by more than ± 0.2 S.U. from the standard buffer value, the meter must be recalibrated.

PHOTOGRAPH 1

SWMH-5 at Metro. Inlet at bottom left, outlet to SWMH-6 at top left. Water present, no discernable flow.

PHOTOGRAPH 2

MH-8 on Metro. Inlet on left, outlet to MH-9 on right. Water present and trickling.

PHOTOGRAPH 3

MH-9 at Metro. Inlets on bottom and left. Outlet to MH-16 at right (gate). Water present, no discernable flow.

PHOTOGRAPH 4

MH-17 at MMGL. Inlet at bottom, outlet at top. Water present, no discernable flow.

PHOTOGRAPH 5

MH-10 inlet at left with outlet at top.

PHOTOGRAPH 6

MH-9 near Front Ave. Inlets at right, outlet to MH-8 at left. Water present, no discernable flow.

PHOTOGRAPH 7

MH-8 on Front Ave. Inlet at right, outlet to MH 7 at left. Water present, no discernable flow.

PHOTOGRAPH 8

MH-7 on Front Ave. Inlet on right, outlet to MH-6 at left. Water present and trickling flow.

PHOTOGRAPH 9

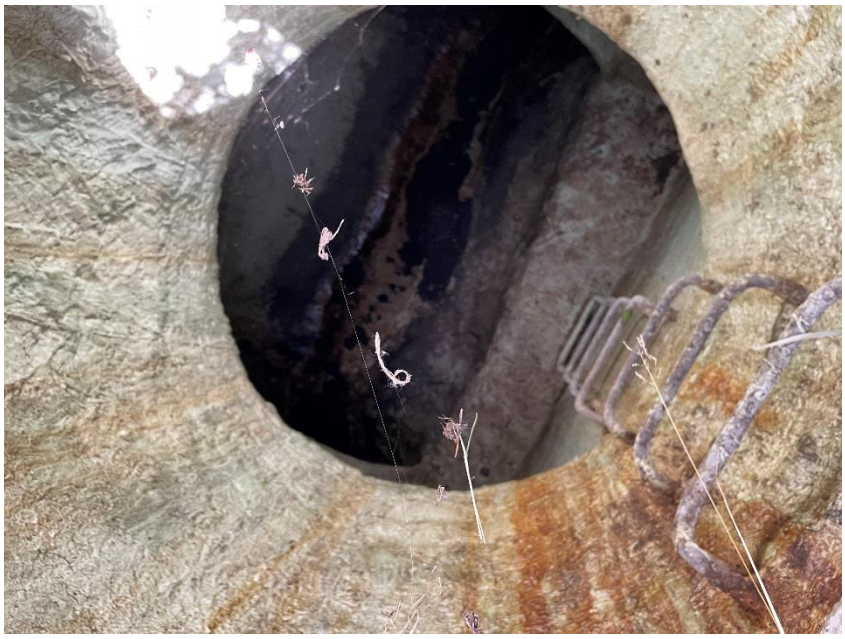
MH-6 on Front Ave. Inlet at right, outlet to MH-5 at left. Water present and trickling.

PHOTOGRAPH 10

MH-5 at Guild Lake Pump station. Inlet at left. No water present.

PHOTOGRAPH 11

MH-4 near Front Ave. Inlet at top right, outlet to MH-3 at bottom left. Water present, no discernable flow.

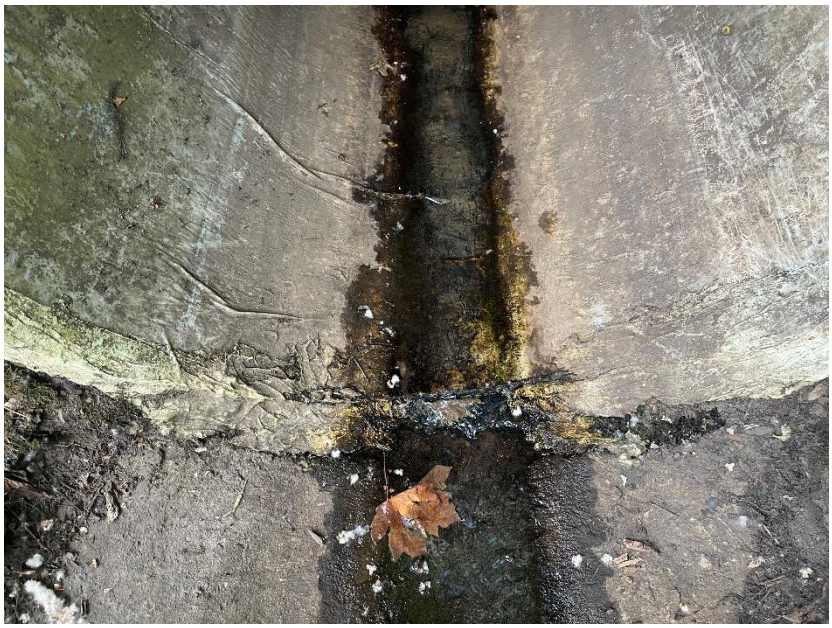


PHOTOGRAPH 12

MH-3 near Front Ave. Inlets at bottom and right, outlet to Outfall 22B at top left. Water present, no discernable flow.

PHOTOGRAPH 13

Outfall 22B facing southwest. Willamette River behind. Flow rate measured at 1.7 gallons per minute.



APPENDIX B

Outfall Sampling Worksheet

OUTFALL 22B PERFORMANCE MONITORING
SURFACE WATER AND OUTFALL SAMPLING WORKSHEET

SAMPLE LOCATION: Outfall 22B	DATE: 6/28/23	START TIME: 10:50
PERSONNEL: Grant Busse Jason Gardner	WEATHER: Sunny	

MEASUREMENT TYPE	VALUE/UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	20	YSI Pro DSS	
WATER TEMPERATURE (°C)	14.8	YSI Pro DSS	
SAMPLE DEPTH (TWC)	—		
pH	7.10	YSI Pro DSS	
ORP	836.1	YSI Pro DSS	
CONDUCTIVITY	403.8		
TURBIDITY	7.96	5.67	
FERROUS IRON	—	N/A	
DISSOLVED OXYGEN	7.36	"	
OBSERVATIONS	clear		

ADDITIONAL COMMENTS/OBSERVATION

SAMPLE COLLECTION

SAMPLE NUMBER	QA/QC SAMPLE NO.	SAMPLE TIME:	
SAMPLE COMMENTS:			
LABORATORY (1)		COC #	
LABORATORY (2)		COC #	
LABORATORY (3)		COC #	
LABORATORY (4)		COC #	

PARAMETERS	PRESERVATION/SIZE	NUMBER/VOLUME	LABORATORY #	ICED (Y/N)	COMMENTS
Total/Dissolved Metals EPA 200.7 or EPA 200.8	1 500ml HDPE HNO3 pH<2, cool 4°C	9/250			
Total/Dissolved Mercury EPA 1631E	1 250ml HDPE HNO3 pH<2, cool 4°C	9/250			
Hexavalent Chromium EPA 7195 or EPA 7196A	1 250ml HDPE cool 4°C	9/250			
Volatile Organic Compounds (VOCs) EPA 8260C	3 40 mL Glass Vials, HCL pH<2, cool 4°C	18/40			
Semivolatile Organic Compounds (SVOCs) EPA 8270D	2 1L Amber Glass, cool 4°C	6/L			
Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270 SIM	2 1L Amber Glass, cool 4°C	6/L			
Organochlorine Pesticides EPA 1699	2 1L Amber Glass, cool 4°C	6/L			
Chlorinated Herbicides EPA 8151A	2 1L Amber Glass, cool 4°C	6/L			
PCDDs/PCDFs EPA 1613B	2 1L Amber Glass, cool 4°C	6/L			
Petroleum Hydrocarbon Identification NWTPH-HCID	1 500ml Glass, HCL pH<2, cool 4°C	6/L			
Diesel Quantitation NWTPH-Dx	1 500ml Glass, HCL pH<2, cool 4°C	6/L			
Gasoline Quantitation NWTPH-Gx	3 40ml Glass Vials, HCL pH<2, cool 4°C	18/40			
PCB 1668		6/L			
TSS					

SOP-3: DECONTAMINATION PROCEDURES FOLLOWED? YES/NO:	SAMPLE METHOD USED:
QA/QC SAMPLE COLL/DESCRIBE:	SAMPLE TYPE (GRAB, SPLIT, ETC.):
CHAIN OF CUSTODY COMPLETED? YES/NO:	INSTRUMENT CALIBRATION (DATE/TIME):
WASTE DISPOSAL METHOD:	CALIBRATION STANDARD:

ADDITIONAL COMMENTS: 6/29/23

22B-F-D-20230629 13:00
22B-F-S-20230629 12:30
22B-D-S-20230629 12:30
22B-F-RQ-20230629 14:00
22B-U-D-20230629 13:00

(Hg only received 2 "Total" samples due to broken cap on one.)

OUTFALL 22B PERFORMANCE MONITORING
SURFACE WATER AND OUTFALL SAMPLING WORKSHEET

SAMPLE LOCATION:	Outfall 22B	DATE: 6/29/23	START TIME: 1138
PERSONNEL:	Jason Baldner Carter Thomas	WEATHER:	clear ~90°F

MEASUREMENT TYPE	VALUE/UNITS	INSTRUMENT	COMMENTS
AIR TEMP (°C)	29.3	YSI Pro DSS	
WATER TEMPERATURE (°C)	13.4		
SAMPLE DEPTH (TWC)	.02"		
pH	6.88		
ORP	192.6		
CONDUCTIVITY	393.7		
TURBIDITY			
FERROUS IRON	—		
DISSOLVED OXYGEN	7.31		
OBSERVATIONS	clear		

ADDITIONAL COMMENTS/OBSERVATION

SAMPLE COLLECTION

SAMPLE NUMBER		QA/QC SAMPLE NO.		SAMPLE TIME:	
SAMPLE COMMENTS:					
LABORATORY (1)		COC #			
LABORATORY (2)		COC #			
LABORATORY (3)		COC #			
LABORATORY (4)		COC #			

PARAMETERS	PRESERVATION/SIZE	NUMBER/VOLUME	LABORATORY #	ICED (Y/N)	COMMENTS
Total/Dissolved Metals EPA 200.7 or EPA 200.8	1 500ml HDPE HNO3 pH<2, cool 4°C				
Total/Dissolved Mercury EPA 1631E	1 250ml HDPE HNO3 pH<2, cool 4°C				
Hexavalent Chromium EPA 7195 or EPA 7196A	1 250ml HDPE cool 4°C				
Volatile Organic Compounds (VOCs) EPA 8260C	3 40 mL Glass Vials, HCL pH<2, cool 4°C				
Semivolatile Organic Compounds (SVOCs) EPA 8270D	2 1L Amber Glass, cool 4°C				
Polycyclic Aromatic Hydrocarbons (PAHs) EPA 8270 SIM	2 1L Amber Glass, cool 4°C				
Organochlorine Pesticides EPA 1699	2 1L Amber Glass, cool 4°C				
Chlorinated Herbicides EPA 8151A	2 1L Amber Glass, cool 4°C				
PCDDs/PCDFs EPA 1613B	2 1L Amber Glass, cool 4°C				
Petroleum Hydrocarbon Identification NWTPH-HCID	1 500ml Glass, HCL pH<2, cool 4°C				
Diesel Quantitation NWTPH-Dx	1 500ml Glass, HCL pH<2, cool 4°C				
Gasoline Quantitation NWTPH-Gx	3 40ml Glass Vials, HCL pH<2, cool 4°C				

SOP-3: DECONTAMINATION PROCEDURES FOLLOWED? YES/NO:	SAMPLE METHOD USED:
QA/QC SAMPLE COLL/DESCRIBE:	SAMPLE TYPE (GRAB, SPLIT, ETC.):
CHAIN OF CUSTODY COMPLETED? YES/NO:	INSTRUMENT CALIBRATION (DATE/TIME):
WASTE DISPOSAL METHOD:	CALIBRATION STANDARD:

ADDITIONAL COMMENTS:

APPENDIX C

Laboratory Data Reports

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

ANALYTICAL REPORT

Saturday, September 23, 2023

Ted Norton
WSP USA Environment & Infrastructure Inc.
15862 SW 72nd Ave. Suite 150
Portland, OR 97224

RE: A3F1632 - Outfall 22B - OF22B Dry Weather Month

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3F1632, which was received by the laboratory on 6/28/2023 at 5:53:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information

Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.

(See Cooler Receipt Form for details)

Cooler#1	5.5	degC	Cooler#2	1.9	degC
Cooler#3	5.4	degC	Cooler#4	5.4	degC
Cooler#5 received 6/29/23	3.1	degC			

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project:	**Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number:	**OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager:	**Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
22B-U-S-20230628	A3F1632-01	Water	06/28/23 12:00	06/28/23 17:53
22B-U-D-20230628	A3F1632-02	Water	06/28/23 11:30	06/28/23 17:53
Trip Blank	A3F1632-03	Water	06/28/23 00:00	06/28/23 17:53

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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APEX LABORATORIES

Apex Laboratories, LLC

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23G0245**		
Gasoline Range Organics	ND	0.0952	0.0952	mg/L	1	07/11/23 23:43	NWTPH-HCID	
Diesel Range Organics	ND	0.238	0.238	mg/L	1	07/11/23 23:43	NWTPH-HCID	
Oil Range Organics	ND	0.238	0.238	mg/L	1	07/11/23 23:43	NWTPH-HCID	
Surrogate: o-Terphenyl (Surr)			*Recovery: 83 %*	*Limits: 50-150 %*	*1*	*07/11/23 23:43*	*NWTPH-HCID*	
4-Bromofluorobenzene (Surr)			*53 %*	*10-120 %*	*1*	*07/11/23 23:43*	*NWTPH-HCID*	
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23G0245**		**PRES**
Gasoline Range Organics	ND	0.0952	0.0952	mg/L	1	07/12/23 00:03	NWTPH-HCID	
Diesel Range Organics	ND	0.238	0.238	mg/L	1	07/12/23 00:03	NWTPH-HCID	
Oil Range Organics	ND	0.238	0.238	mg/L	1	07/12/23 00:03	NWTPH-HCID	
Surrogate: o-Terphenyl (Surr)			*Recovery: 86 %*	*Limits: 50-150 %*	*1*	*07/12/23 00:03*	*NWTPH-HCID*	
4-Bromofluorobenzene (Surr)			*46 %*	*10-120 %*	*1*	*07/12/23 00:03*	*NWTPH-HCID*	

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23G0272**		
Diesel	ND	0.102	0.204	mg/L	1	07/11/23 21:47	NWTPH-Dx/SG	
Oil	ND	0.204	0.408	mg/L	1	07/11/23 21:47	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 111 %*		*Limits: 50-150 %*	*1*	*07/11/23 21:47*	*NWTPH-Dx/SG*	
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23G0272**		
Diesel	ND	0.0980	0.196	mg/L	1	07/11/23 22:27	NWTPH-Dx/SG	
Oil	ND	0.196	0.392	mg/L	1	07/11/23 22:27	NWTPH-Dx/SG	
Surrogate: o-Terphenyl (Surr)		*Recovery: 104 %*		*Limits: 50-150 %*	*1*	*07/11/23 22:27*	*NWTPH-Dx/SG*	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

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

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23F1132**		
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	06/30/23 18:35	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)		*Recovery: 91 %*		*Limits: 50-150 %*	*1*	*06/30/23 18:35*	*NWTPH-Gx (MS)*	
1,4-Difluorobenzene (Sur)		*105 %*		*50-150 %*	*1*	*06/30/23 18:35*	*NWTPH-Gx (MS)*	
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23F1132**		
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	06/30/23 17:49	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)		*Recovery: 90 %*		*Limits: 50-150 %*	*1*	*06/30/23 17:49*	*NWTPH-Gx (MS)*	
1,4-Difluorobenzene (Sur)		*104 %*		*50-150 %*	*1*	*06/30/23 17:49*	*NWTPH-Gx (MS)*	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23F1132**		
Acetone	ND	10.0	20.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Acrylonitrile	ND	1.00	2.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Benzene	ND	0.100	0.200	ug/L	1	06/30/23 18:35	EPA 8260D	
Bromobenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Bromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Bromoform	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Bromomethane	ND	5.00	5.00	ug/L	1	06/30/23 18:35	EPA 8260D	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
n-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Carbon disulfide	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Chlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Chloroethane	ND	5.00	5.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Chloroform	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Chloromethane	ND	2.50	5.00	ug/L	1	06/30/23 18:35	EPA 8260D	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Dibromomethane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	

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Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23F1132**		
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Ethylbenzene	**0.680**	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	06/30/23 18:35	EPA 8260D	
2-Hexanone	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Isopropylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Methylene chloride	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Naphthalene	ND	1.00	2.00	ug/L	1	06/30/23 18:35	EPA 8260D	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Styrene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
Toluene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
Vinyl chloride	ND	0.200	0.400	ug/L	1	06/30/23 18:35	EPA 8260D	
m,p-Xylene	ND	0.500	1.00	ug/L	1	06/30/23 18:35	EPA 8260D	
o-Xylene	ND	0.250	0.500	ug/L	1	06/30/23 18:35	EPA 8260D	

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**		**Batch: 23F1132**		
Acrolein	ND	5.00	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Iodomethane	ND	10.0	10.0	ug/L	1	06/30/23 18:35	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*104 %*	*Limits: 80-120 %*	*1*	*06/30/23 18:35*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*06/30/23 18:35*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*96 %*	*80-120 %*	*1*	*06/30/23 18:35*	*EPA 8260D*	
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23F1132**		
Acetone	ND	10.0	20.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Acrylonitrile	ND	1.00	2.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Benzene	ND	0.100	0.200	ug/L	1	06/30/23 17:49	EPA 8260D	
Bromobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Bromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Bromoform	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Bromomethane	ND	5.00	5.00	ug/L	1	06/30/23 17:49	EPA 8260D	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
n-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Carbon disulfide	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Chlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Chloroethane	ND	5.00	5.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Chloroform	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Chloromethane	ND	2.50	5.00	ug/L	1	06/30/23 17:49	EPA 8260D	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Dibromomethane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	

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Philip Nerenberg, Lab Director

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APEX LABORATORIES

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23F1132**		
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Ethylbenzene	**0.890**	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	06/30/23 17:49	EPA 8260D	
2-Hexanone	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Isopropylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Methylene chloride	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Naphthalene	ND	1.00	2.00	ug/L	1	06/30/23 17:49	EPA 8260D	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Styrene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
Toluene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	

Apex Laboratories

Philip Nerenberg, Lab Director

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**		**Batch: 23F1132**		
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
Vinyl chloride	ND	0.200	0.400	ug/L	1	06/30/23 17:49	EPA 8260D	
m,p-Xylene	ND	0.500	1.00	ug/L	1	06/30/23 17:49	EPA 8260D	
o-Xylene	ND	0.250	0.500	ug/L	1	06/30/23 17:49	EPA 8260D	
Acrolein	ND	5.00	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Iodomethane	ND	10.0	10.0	ug/L	1	06/30/23 17:49	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*103 %*	*Limits: 80-120 %*	*1*	*06/30/23 17:49*	*EPA 8260D*	
Toluene-d8 (Surr)			*100 %*	*80-120 %*	*1*	*06/30/23 17:49*	*EPA 8260D*	
4-Bromofluorobenzene (Surr)			*97 %*	*80-120 %*	*1*	*06/30/23 17:49*	*EPA 8260D*	
Trip Blank (A3F1632-03)				**Matrix: Water**		**Batch: 23F1132**		
Acetone	ND	10.0	20.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Acrylonitrile	ND	1.00	2.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Benzene	ND	0.100	0.200	ug/L	1	06/30/23 17:27	EPA 8260D	
Bromobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Bromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Bromoform	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Bromomethane	ND	5.00	5.00	ug/L	1	06/30/23 17:27	EPA 8260D	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
n-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Carbon disulfide	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Chlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Chloroethane	ND	5.00	5.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Chloroform	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Trip Blank (A3F1632-03)				**Matrix: Water**		**Batch: 23F1132**		
Chloromethane	ND	2.50	5.00	ug/L	1	06/30/23 17:27	EPA 8260D	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Dibromomethane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Ethylbenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	06/30/23 17:27	EPA 8260D	
2-Hexanone	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Isopropylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Methylene chloride	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Naphthalene	ND	1.00	2.00	ug/L	1	06/30/23 17:27	EPA 8260D	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Styrene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
Trip Blank (A3F1632-03)				**Matrix: Water**		**Batch: 23F1132**		
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
Toluene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
Vinyl chloride	ND	0.200	0.400	ug/L	1	06/30/23 17:27	EPA 8260D	
m,p-Xylene	ND	0.500	1.00	ug/L	1	06/30/23 17:27	EPA 8260D	
o-Xylene	ND	0.250	0.500	ug/L	1	06/30/23 17:27	EPA 8260D	
Acrolein	ND	5.00	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Iodomethane	ND	10.0	10.0	ug/L	1	06/30/23 17:27	EPA 8260D	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 104 %*		*Limits: 80-120 %*	*1*	*06/30/23 17:27*	*EPA 8260D*	
Toluene-d8 (Surr)			*101 %*		*80-120 %*	*1*	*06/30/23 17:27*	*EPA 8260D*
4-Bromofluorobenzene (Surr)			*98 %*		*80-120 %*	*1*	*06/30/23 17:27*	*EPA 8260D*

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01RE1)				**Matrix: Water**		**Batch: 23G0047**		
Acenaphthene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Acenaphthylene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Anthracene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Benz(a)anthracene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Benzo(a)pyrene	ND	0.0144	0.0288	ug/L	1	07/05/23 21:01	EPA 8270E	
Benzo(b)fluoranthene	ND	0.0144	0.0288	ug/L	1	07/05/23 21:01	EPA 8270E	
Benzo(k)fluoranthene	ND	0.0144	0.0288	ug/L	1	07/05/23 21:01	EPA 8270E	
Benzo(g,h,i)perylene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Chrysene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Dibenz(a,h)anthracene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Fluoranthene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Fluorene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Indeno(1,2,3-cd)pyrene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
1-Methylnaphthalene	ND	0.0192	0.0385	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
2-Methylnaphthalene	ND	0.0192	0.0385	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Naphthalene	ND	0.0192	0.0385	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Phenanthrene	**0.0197**	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Pyrene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Carbazole	ND	0.0144	0.0288	ug/L	1	07/05/23 21:01	EPA 8270E	
Dibenzofuran	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
2-Chlorophenol	ND	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
4-Chloro-3-methylphenol	ND	0.192	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
2,4-Dichlorophenol	**0.519**	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	**Q-42**
2,4-Dimethylphenol	ND	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	
2,4-Dinitrophenol	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
4,6-Dinitro-2-methylphenol	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
2-Methylphenol	**0.0908**	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
3+4-Methylphenol(s)	**0.0959**	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
2-Nitrophenol	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
4-Nitrophenol	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
Phenol	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
2,3,4,6-Tetrachlorophenol	ND	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	
2,3,5,6-Tetrachlorophenol	**0.0508**	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	**J**

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01RE1)				**Matrix: Water**		**Batch: 23G0047**		
2,4,5-Trichlorophenol	**0.161**	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	
2,4,6-Trichlorophenol	**0.124**	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	
Bis(2-ethylhexyl)phthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Butyl benzyl phthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Diethylphthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Dimethylphthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Di-n-butylphthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Di-n-octyl phthalate	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
N-Nitrosodimethylamine	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
N-Nitroso-di-n-propylamine	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
N-Nitrosodiphenylamine	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
Bis(2-Chloroethoxy) methane	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Bis(2-Chloroethyl) ether	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
2,2'-Oxybis(1-Chloropropane)	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Hexachlorobenzene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	
Hexachlorobutadiene	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
Hexachlorocyclopentadiene	ND	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	
Hexachloroethane	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
2-Chloronaphthalene	ND	0.00962	0.0192	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
1,2,4-Trichlorobenzene	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
4-Bromophenyl phenyl ether	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
4-Chlorophenyl phenyl ether	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
Aniline	ND	0.0481	0.0962	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
4-Chloroaniline	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
2-Nitroaniline	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
3-Nitroaniline	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
4-Nitroaniline	ND	0.192	0.385	ug/L	1	07/05/23 21:01	EPA 8270E	
Nitrobenzene	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
2,4-Dinitrotoluene	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
2,6-Dinitrotoluene	ND	0.192	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
Benzoic acid	ND	2.40	2.40	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Benzyl alcohol	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
Isophorone	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01RE1)				**Matrix: Water**		**Batch: 23G0047**		
Azobenzene (1,2-DPH)	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	
Bis(2-Ethylhexyl) adipate	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
3,3'-Dichlorobenzidine	ND	0.962	0.962	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42, Q-52
1,2-Dinitrobenzene	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
1,3-Dinitrobenzene	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
1,4-Dinitrobenzene	ND	0.240	0.481	ug/L	1	07/05/23 21:01	EPA 8270E	
Pyridine	ND	0.0962	0.192	ug/L	1	07/05/23 21:01	EPA 8270E	
1,2-Dichlorobenzene	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
1,3-Dichlorobenzene	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
1,4-Dichlorobenzene	ND	0.0240	0.0481	ug/L	1	07/05/23 21:01	EPA 8270E	Q-42
Surrogate: Nitrobenzene-d5 (Surr)		*Recovery:*	*34 %*	*Limits: 44-120 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	*S-03*
2-Fluorobiphenyl (Surr)			*41 %*	*44-120 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	*S-03*
Phenol-d6 (Surr)			*13 %*	*10-133 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	
p-Terphenyl-d14 (Surr)			*72 %*	*50-134 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	
2-Fluorophenol (Surr)			*19 %*	*19-120 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	
2,4,6-Tribromophenol (Surr)			*93 %*	*43-140 %*	*1*	*07/05/23 21:01*	*EPA 8270E*	
22B-U-S-20230628 (A3F1632-01RE2)				**Matrix: Water**		**Batch: 23G0047**		
Pentachlorophenol (PCP)	**0.119**	0.0962	0.192	ug/L	1	07/06/23 13:03	EPA 8270E	**J**
22B-U-D-20230628 (A3F1632-02RE2)				**Matrix: Water**		**Batch: 23G0047**		
Acenaphthene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Acenaphthylene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Anthracene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Benz(a)anthracene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzo(a)pyrene	ND	0.0146	0.0291	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzo(b)fluoranthene	ND	0.0146	0.0291	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzo(k)fluoranthene	ND	0.0146	0.0291	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzo(g,h,i)perylene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Chrysene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Dibenz(a,h)anthracene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Fluoranthene	**0.0100**	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	**J**
Fluorene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Indeno(1,2,3-cd)pyrene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-D-20230628 (A3F1632-02RE2)				**Matrix: Water**		**Batch: 23G0047**		
1-Methylnaphthalene	ND	0.0194	0.0388	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Methylnaphthalene	ND	0.0194	0.0388	ug/L	1	07/06/23 14:12	EPA 8270E	
Naphthalene	ND	0.0194	0.0388	ug/L	1	07/06/23 14:12	EPA 8270E	
Phenanthrene	**0.0177**	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	**J**
Pyrene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Carbazole	ND	0.0146	0.0291	ug/L	1	07/06/23 14:12	EPA 8270E	
Dibenzofuran	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Chlorophenol	ND	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Chloro-3-methylphenol	ND	0.194	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
2,4-Dichlorophenol	**0.554**	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
2,4-Dimethylphenol	**0.0500**	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	**J**
2,4-Dinitrophenol	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
4,6-Dinitro-2-methylphenol	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Methylphenol	**0.106**	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
3+4-Methylphenol(s)	**0.141**	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Nitrophenol	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Nitrophenol	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
Pentachlorophenol (PCP)	**0.124**	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	**J**
Phenol	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
2,3,4,6-Tetrachlorophenol	ND	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
2,3,5,6-Tetrachlorophenol	**0.0516**	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	**J**
2,4,5-Trichlorophenol	**0.177**	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
2,4,6-Trichlorophenol	**0.126**	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
Bis(2-ethylhexyl)phthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Butyl benzyl phthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Diethylphthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Dimethylphthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Di-n-butylphthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Di-n-octyl phthalate	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
N-Nitrosodimethylamine	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
N-Nitroso-di-n-propylamine	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
N-Nitrosodiphenylamine	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Bis(2-Chloroethoxy) methane	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-D-20230628 (A3F1632-02RE2)				**Matrix: Water**		**Batch: 23G0047**		
Bis(2-Chloroethyl) ether	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
2,2'-Oxybis(1-Chloropropane)	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Hexachlorobenzene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
Hexachlorobutadiene	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Hexachlorocyclopentadiene	ND	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
Hexachloroethane	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Chloronaphthalene	ND	0.00971	0.0194	ug/L	1	07/06/23 14:12	EPA 8270E	
1,2,4-Trichlorobenzene	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Bromophenyl phenyl ether	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Chlorophenyl phenyl ether	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Aniline	ND	0.0485	0.0971	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Chloroaniline	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
2-Nitroaniline	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
3-Nitroaniline	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
4-Nitroaniline	ND	0.194	0.388	ug/L	1	07/06/23 14:12	EPA 8270E	
Nitrobenzene	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
2,4-Dinitrotoluene	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
2,6-Dinitrotoluene	ND	0.194	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzoic acid	ND	1.21	2.43	ug/L	1	07/06/23 14:12	EPA 8270E	
Benzyl alcohol	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
Isophorone	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Azobenzene (1,2-DPH)	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Bis(2-Ethylhexyl) adipate	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
3,3'-Dichlorobenzidine	ND	0.485	0.971	ug/L	1	07/06/23 14:12	EPA 8270E	Q-52
1,2-Dinitrobenzene	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
1,3-Dinitrobenzene	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
1,4-Dinitrobenzene	ND	0.243	0.485	ug/L	1	07/06/23 14:12	EPA 8270E	
Pyridine	ND	0.0971	0.194	ug/L	1	07/06/23 14:12	EPA 8270E	
1,2-Dichlorobenzene	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
1,3-Dichlorobenzene	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
1,4-Dichlorobenzene	ND	0.0243	0.0485	ug/L	1	07/06/23 14:12	EPA 8270E	
Surrogate: Nitrobenzene-d5 (Surr)		*Recovery:*	*33 %*	*Limits:* *44-120 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	*S-06*
2-Fluorobiphenyl (Surr)			*41 %*	*44-120 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	*S-06*

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-D-20230628 (A3F1632-02RE2)			**Matrix: Water**			**Batch: 23G0047**		
Surrogate: Phenol-d6 (Surr)		*Recovery:*	*14 %*	*Limits: 10-133 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	
p-Terphenyl-d14 (Surr)			*67 %*	*50-134 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	
2-Fluorophenol (Surr)			*17 %*	*19-120 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	*S-03*
2,4,6-Tribromophenol (Surr)			*89 %*	*43-140 %*	*1*	*07/06/23 14:12*	*EPA 8270E*	*Q-41*

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Philip Nerenberg

Philip Nerenberg, Lab Director

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**				
Batch: 23G0115								
Arsenic	**8.74**	0.500	1.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Barium	**22.4**	1.00	2.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Cadmium	ND	0.100	0.200	ug/L	1	07/06/23 17:29	EPA 200.8	
Calcium	**38900**	375	600	ug/L	1	07/06/23 17:29	EPA 200.8	
Chromium	ND	1.00	2.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Copper	**1.75**	1.00	2.00	ug/L	1	07/06/23 17:29	EPA 200.8	**J**
Iron	**413**	25.0	50.0	ug/L	1	07/06/23 17:29	EPA 200.8	
Lead	**0.174**	0.100	0.200	ug/L	1	07/06/23 17:29	EPA 200.8	**J**
Magnesium	**10800**	75.0	150	ug/L	1	07/06/23 17:29	EPA 200.8	
Manganese	**275**	0.500	1.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Nickel	**2.94**	1.00	2.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Selenium	ND	0.500	1.00	ug/L	1	07/06/23 17:29	EPA 200.8	
Silver	ND	0.100	0.200	ug/L	1	07/06/23 17:29	EPA 200.8	
Zinc	**3.08**	2.00	4.00	ug/L	1	07/06/23 17:29	EPA 200.8	**J**
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**				
Batch: 23G0115								
Arsenic	**9.02**	0.500	1.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Barium	**21.7**	1.00	2.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Cadmium	ND	0.100	0.200	ug/L	1	07/06/23 18:00	EPA 200.8	
Calcium	**38400**	375	600	ug/L	1	07/06/23 18:00	EPA 200.8	
Chromium	ND	1.00	2.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Copper	**3.12**	1.00	2.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Iron	**794**	25.0	50.0	ug/L	1	07/06/23 18:00	EPA 200.8	
Lead	**0.194**	0.100	0.200	ug/L	1	07/06/23 18:00	EPA 200.8	**J**
Magnesium	**10700**	75.0	150	ug/L	1	07/06/23 18:00	EPA 200.8	
Manganese	**267**	0.500	1.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Nickel	**25.7**	1.00	2.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Selenium	ND	0.500	1.00	ug/L	1	07/06/23 18:00	EPA 200.8	
Silver	ND	0.100	0.200	ug/L	1	07/06/23 18:00	EPA 200.8	
Zinc	**2.86**	2.00	4.00	ug/L	1	07/06/23 18:00	EPA 200.8	**J**

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

ANALYTICAL SAMPLE RESULTS

Solid and Moisture Determinations

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230628 (A3F1632-01)				**Matrix: Water**				
Batch: 23F1170								
Total Suspended Solids	ND	---	5.00	mg/L	1	06/30/23 18:52	SM 2540 D	EST_s
22B-U-D-20230628 (A3F1632-02)				**Matrix: Water**				
Batch: 23F1170								
Total Suspended Solids	ND	---	5.00	mg/L	1	06/30/23 18:52	SM 2540 D	EST_s

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Hydrocarbon Identification Screen by NWTPH-HCID

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0245 - EPA 3510C (Fuels/Acid Ext.)									**Water**			
Blank (23G0245-BLK1)			Prepared: 07/11/23 07:10 Analyzed: 07/11/23 22:00									
NWTPH-HCID												
Gasoline Range Organics	ND	0.200	0.200	mg/L	1	---	---	---	---	---	---	
Diesel Range Organics	ND	0.250	0.250	mg/L	1	---	---	---	---	---	---	
Oil Range Organics	ND	0.250	0.250	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 88 %*		*Limits: 50-150 %*				*Dilution: 1x*			
4-Bromofluorobenzene (Surr)			*30 %*		*10-120 %*				*"*			

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0272 - EPA 3510C (Fuels/Acid Ext.) w/Silica Gel + Acid								**Water**				
Blank (23G0272-BLK1)			Prepared: 07/11/23 14:22		Analyzed: 07/11/23 20:46							
NWTPH-Dx/SG												
Diesel	ND	0.100	0.200	mg/L	1	---	---	---	---	---	---	
Oil	ND	0.200	0.400	mg/L	1	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 107 %*		*Limits: 50-150 %*		*Dilution: 1x*					
LCS (23G0272-BS1)			Prepared: 07/11/23 14:22		Analyzed: 07/11/23 21:06							
NWTPH-Dx/SG												
Diesel	0.951	0.100	0.200	mg/L	1	1.25	---	76	36-132%	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 114 %*		*Limits: 50-150 %*		*Dilution: 1x*					
LCS Dup (23G0272-BSD1)			Prepared: 07/11/23 14:22		Analyzed: 07/11/23 21:26							**Q-19**
NWTPH-Dx/SG												
Diesel	0.990	0.100	0.200	mg/L	1	1.25	---	79	36-132%	4	30%	
Surr: o-Terphenyl (Surr)			*Recovery: 111 %*		*Limits: 50-150 %*		*Dilution: 1x*					
Duplicate (23G0272-DUP1)			Prepared: 07/11/23 14:22		Analyzed: 07/11/23 22:07							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
NWTPH-Dx/SG												
Diesel	ND	0.0952	0.190	mg/L	1	---	ND	---	---	---	30%	
Oil	ND	0.190	0.381	mg/L	1	---	ND	---	---	---	30%	
Surr: o-Terphenyl (Surr)			*Recovery: 106 %*		*Limits: 50-150 %*		*Dilution: 1x*					

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

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

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Blank (23F1132-BLK1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 17:04							
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 91 %*		*Limits: 50-150 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*103 %*		*50-150 %*		*"*					
LCS (23F1132-BS2)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 16:42							
NWTPH-Gx (MS)												
Gasoline Range Organics	0.490	0.0500	0.100	mg/L	1	0.500	---	98	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 93 %*		*Limits: 50-150 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*103 %*		*50-150 %*		*"*					
Duplicate (23F1132-DUP1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:12							
QC Source Sample: 22B-U-D-20230628 (A3F1632-02)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 95 %*		*Limits: 50-150 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*106 %*		*50-150 %*		*"*					
Duplicate (23F1132-DUP2)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 21:13							
QC Source Sample: Non-SDG (A3F1663-01)												
Gasoline Range Organics	ND	0.0500	0.100	mg/L	1	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 90 %*		*Limits: 50-150 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*105 %*		*50-150 %*		*"*					

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Philip Nerenberg, Lab Director

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C								**Water**				
Blank (23F1132-BLK1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 17:04							
EPA 8260D												
Acetone	ND	10.0	20.0	ug/L	1	---	---	---	---	---	---	
Acrylonitrile	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Benzene	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Bromobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Bromochloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromoform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Bromomethane	ND	5.00	5.00	ug/L	1	---	---	---	---	---	---	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	
n-Butylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Carbon disulfide	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Chlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Chloroethane	ND	5.00	5.00	ug/L	1	---	---	---	---	---	---	
Chloroform	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Chloromethane	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Dibromomethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Blank (23F1132-BLK1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 17:04							
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Ethylbenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	---	---	---	---	---	---	
2-Hexanone	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	
Isopropylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Methylene chloride	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Naphthalene	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Styrene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Toluene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
m,p-Xylene	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
o-Xylene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Acrolein	ND	5.00	10.0	ug/L	1	---	---	---	---	---	---	

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15862 SW 72nd Ave. Suite 150	Project Number:	OF22B Dry Weather Month
Portland, OR 97224	Project Manager:	Ted Norton

Report ID:
A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C									Water			
Blank (23F1132-BLK1)			Prepared: 06/30/23 11:22 Analyzed: 06/30/23 17:04									
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	---	---	---	---	---	---	
Iodomethane	ND	10.0	10.0	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 103 %*	*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*101 %*	*80-120 %*			*"*					
4-Bromofluorobenzene (Surr)			*98 %*	*80-120 %*			*"*					
LCS (23F1132-BS1)			Prepared: 06/30/23 11:22 Analyzed: 06/30/23 16:19									
EPA 8260D												
Acetone	33.7	10.0	20.0	ug/L	1	40.0	---	84	80-120%	---	---	
Acrylonitrile	19.2	1.00	2.00	ug/L	1	20.0	---	96	80-120%	---	---	
Benzene	19.2	0.100	0.200	ug/L	1	20.0	---	96	80-120%	---	---	
Bromobenzene	18.8	0.250	0.500	ug/L	1	20.0	---	94	80-120%	---	---	
Bromochloromethane	20.1	0.500	1.00	ug/L	1	20.0	---	101	80-120%	---	---	
Bromodichloromethane	19.0	0.500	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Bromoform	19.2	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Bromomethane	25.4	5.00	5.00	ug/L	1	20.0	---	**127**	**80-120%**	---	---	Q-56
2-Butanone (MEK)	35.7	5.00	10.0	ug/L	1	40.0	---	89	80-120%	---	---	
n-Butylbenzene	20.0	0.500	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
sec-Butylbenzene	20.5	0.500	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
tert-Butylbenzene	19.1	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Carbon disulfide	20.4	5.00	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
Carbon tetrachloride	20.4	0.500	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
Chlorobenzene	19.8	0.250	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Chloroethane	21.0	5.00	5.00	ug/L	1	20.0	---	105	80-120%	---	---	
Chloroform	19.2	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Chloromethane	18.1	2.50	5.00	ug/L	1	20.0	---	90	80-120%	---	---	
2-Chlorotoluene	19.2	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
4-Chlorotoluene	19.2	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
Dibromochloromethane	18.8	0.500	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
1,2-Dibromo-3-chloropropane	15.9	2.50	5.00	ug/L	1	20.0	---	80	80-120%	---	---	
1,2-Dibromoethane (EDB)	19.8	0.250	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Dibromomethane	19.9	0.500	1.00	ug/L	1	20.0	---	100	80-120%	---	---	
1,2-Dichlorobenzene	19.3	0.250	0.500	ug/L	1	20.0	---	96	80-120%	---	---	
1,3-Dichlorobenzene	19.2	0.250	0.500	ug/L	1	20.0	---	96	80-120%	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
LCS (23F1132-BS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 16:19							
1,4-Dichlorobenzene	18.9	0.250	0.500	ug/L	1	20.0	---	95	80-120%	---	---	
Dichlorodifluoromethane	22.6	0.500	1.00	ug/L	1	20.0	---	113	80-120%	---	---	
1,1-Dichloroethane	19.1	0.200	0.400	ug/L	1	20.0	---	96	80-120%	---	---	
1,2-Dichloroethane (EDC)	19.8	0.200	0.400	ug/L	1	20.0	---	99	80-120%	---	---	
1,1-Dichloroethene	20.6	0.200	0.400	ug/L	1	20.0	---	103	80-120%	---	---	
cis-1,2-Dichloroethene	18.8	0.200	0.400	ug/L	1	20.0	---	94	80-120%	---	---	
trans-1,2-Dichloroethene	19.4	0.200	0.400	ug/L	1	20.0	---	97	80-120%	---	---	
1,2-Dichloropropane	18.6	0.250	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
1,3-Dichloropropane	19.4	0.500	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
2,2-Dichloropropane	20.3	0.500	1.00	ug/L	1	20.0	---	102	80-120%	---	---	
1,1-Dichloropropene	19.4	0.500	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
cis-1,3-Dichloropropene	18.9	0.500	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
trans-1,3-Dichloropropene	19.0	0.500	1.00	ug/L	1	20.0	---	95	80-120%	---	---	
Ethylbenzene	19.6	0.250	0.500	ug/L	1	20.0	---	98	80-120%	---	---	
Hexachlorobutadiene	19.2	2.50	5.00	ug/L	1	20.0	---	96	80-120%	---	---	
2-Hexanone	33.3	5.00	10.0	ug/L	1	40.0	---	83	80-120%	---	---	
Isopropylbenzene	19.5	0.500	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
4-Isopropyltoluene	19.4	0.500	1.00	ug/L	1	20.0	---	97	80-120%	---	---	
Methylene chloride	20.4	5.00	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
4-Methyl-2-pentanone (MiBK)	35.6	5.00	10.0	ug/L	1	40.0	---	89	80-120%	---	---	
Methyl tert-butyl ether (MTBE)	18.8	0.500	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
Naphthalene	16.8	1.00	2.00	ug/L	1	20.0	---	84	80-120%	---	---	
n-Propylbenzene	19.8	0.250	0.500	ug/L	1	20.0	---	99	80-120%	---	---	
Styrene	18.8	0.500	1.00	ug/L	1	20.0	---	94	80-120%	---	---	
1,1,1,2-Tetrachloroethane	19.0	0.200	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
1,1,2,2-Tetrachloroethane	19.0	0.250	0.500	ug/L	1	20.0	---	95	80-120%	---	---	
Tetrachloroethene (PCE)	20.0	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Toluene	18.7	0.500	1.00	ug/L	1	20.0	---	93	80-120%	---	---	
1,2,3-Trichlorobenzene	17.3	1.00	2.00	ug/L	1	20.0	---	87	80-120%	---	---	
1,2,4-Trichlorobenzene	17.4	1.00	2.00	ug/L	1	20.0	---	87	80-120%	---	---	
1,1,1-Trichloroethane	19.9	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
1,1,2-Trichloroethane	19.0	0.250	0.500	ug/L	1	20.0	---	95	80-120%	---	---	
Trichloroethene (TCE)	20.2	0.200	0.400	ug/L	1	20.0	---	101	80-120%	---	---	
Trichlorofluoromethane	23.6	1.00	2.00	ug/L	1	20.0	---	118	80-120%	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
LCS (23F1132-BS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 16:19							
1,2,3-Trichloropropane	19.3	0.500	1.00	ug/L	1	20.0	---	96	80-120%	---	---	
1,2,4-Trimethylbenzene	19.5	0.500	1.00	ug/L	1	20.0	---	98	80-120%	---	---	
1,3,5-Trimethylbenzene	19.8	0.500	1.00	ug/L	1	20.0	---	99	80-120%	---	---	
Vinyl chloride	20.9	0.200	0.400	ug/L	1	20.0	---	105	80-120%	---	---	
m,p-Xylene	40.2	0.500	1.00	ug/L	1	40.0	---	100	80-120%	---	---	
o-Xylene	18.5	0.250	0.500	ug/L	1	20.0	---	93	80-120%	---	---	
Acrolein	16.4	5.00	10.0	ug/L	1	20.0	---	82	80-120%	---	---	
2-Chloroethyl vinyl ether	14.0	10.0	10.0	ug/L	1	20.0	---	**70**	**80-120%**	---	---	Q-55
Iodomethane	20.3	10.0	10.0	ug/L	1	20.0	---	102	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 102 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*99 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*94 %*		*80-120 %*			*"*				
Duplicate (23F1132-DUP1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:12							
QC Source Sample: 22B-U-D-20230628 (A3F1632-02)												
EPA 8260D												
Acetone	ND	10.0	20.0	ug/L	1	---	ND	---	---	---	30%	
Acrylonitrile	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
Benzene	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	30%	
Bromobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	5.00	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
n-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Carbon disulfide	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	5.00	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project:	Outfall 22B
15862 SW 72nd Ave. Suite 150	Project Number:	OF22B Dry Weather Month
Portland, OR 97224	Project Manager:	Ted Norton

Report ID:
A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Duplicate (23F1132-DUP1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:12							
QC Source Sample: 22B-U-D-20230628 (A3F1632-02)												
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	**0.740**	0.250	0.500	ug/L	1	---	0.890	---	---	18	30%	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Hexanone	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
Isopropylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Naphthalene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Styrene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director

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6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Duplicate (23F1132-DUP1)			Prepared: 06/30/23 11:22 Analyzed: 06/30/23 18:12									
QC Source Sample: 22B-U-D-20230628 (A3F1632-02)												
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
m,p-Xylene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
o-Xylene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Acrolein	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	---	ND	---	---	---	30%	
Iodomethane	ND	10.0	10.0	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 106 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*				*"*			
Duplicate (23F1132-DUP2)			Prepared: 06/30/23 11:22 Analyzed: 06/30/23 21:13									
QC Source Sample: Non-SDG (A3F1663-01)												
Acetone	ND	10.0	20.0	ug/L	1	---	ND	---	---	---	30%	
Acrylonitrile	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
Benzene	**0.410**	0.100	0.200	ug/L	1	---	0.420	---	---	2	30%	
Bromobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Bromochloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromodichloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromoform	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Bromomethane	ND	5.00	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Butanone (MEK)	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	

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Philip Nerenberg, Lab Director

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Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Duplicate (23F1132-DUP2)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 21:13							
QC Source Sample: Non-SDG (A3F1663-01)												
n-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
sec-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
tert-Butylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Carbon disulfide	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Chlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Chloroethane	ND	5.00	5.00	ug/L	1	---	ND	---	---	---	30%	
Chloroform	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Chloromethane	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Dibromochloromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Dibromomethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Ethylbenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	2.50	5.00	ug/L	1	---	ND	---	---	---	30%	
2-Hexanone	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	

Apex Laboratories

Philip Nerenberg, Lab Director

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

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Duplicate (23F1132-DUP2)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 21:13							
QC Source Sample: Non-SDG (A3F1663-01)												
Isopropylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
4-Isopropyltoluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Methylene chloride	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
4-Methyl-2-pentanone (MiBK)	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
Methyl tert-butyl ether (MTBE)	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Naphthalene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
n-Propylbenzene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Styrene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1,2-Tetrachloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Toluene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,2,4-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
1,3,5-Trimethylbenzene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
m,p-Xylene	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	30%	
o-Xylene	ND	0.250	0.500	ug/L	1	---	ND	---	---	---	30%	
Acrolein	ND	5.00	10.0	ug/L	1	---	ND	---	---	---	30%	
2-Chloroethyl vinyl ether	ND	10.0	10.0	ug/L	1	---	ND	---	---	---	30%	
Iodomethane	ND	10.0	10.0	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*100 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*97 %*		*80-120 %*				*"*			
Matrix Spike (23F1132-MS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:57							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project:	Outfall 22B
15862 SW 72nd Ave. Suite 150	Project Number:	OF22B Dry Weather Month
Portland, OR 97224	Project Manager:	Ted Norton

Report ID:
A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Matrix Spike (23F1132-MS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:57							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
EPA 8260D												
Acetone	35.3	10.0	20.0	ug/L	1	40.0	ND	88	39-160%	---	---	
Acrylonitrile	19.8	1.00	2.00	ug/L	1	20.0	ND	99	63-135%	---	---	
Benzene	21.0	0.100	0.200	ug/L	1	20.0	ND	105	79-120%	---	---	
Bromobenzene	19.4	0.250	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
Bromochloromethane	21.4	0.500	1.00	ug/L	1	20.0	ND	107	78-123%	---	---	
Bromodichloromethane	20.2	0.500	1.00	ug/L	1	20.0	ND	101	79-125%	---	---	
Bromoform	19.8	0.500	1.00	ug/L	1	20.0	ND	99	66-130%	---	---	
Bromomethane	27.7	5.00	5.00	ug/L	1	20.0	ND	139	53-141%	---	---	Q-54
2-Butanone (MEK)	36.6	5.00	10.0	ug/L	1	40.0	ND	92	56-143%	---	---	
n-Butylbenzene	21.1	0.500	1.00	ug/L	1	20.0	ND	106	75-128%	---	---	
sec-Butylbenzene	21.7	0.500	1.00	ug/L	1	20.0	ND	108	77-126%	---	---	
tert-Butylbenzene	19.7	0.500	1.00	ug/L	1	20.0	ND	99	78-124%	---	---	
Carbon disulfide	23.1	5.00	10.0	ug/L	1	20.0	ND	115	64-133%	---	---	
Carbon tetrachloride	22.4	0.500	1.00	ug/L	1	20.0	ND	112	72-136%	---	---	
Chlorobenzene	20.9	0.250	0.500	ug/L	1	20.0	ND	105	80-120%	---	---	
Chloroethane	24.3	5.00	5.00	ug/L	1	20.0	ND	121	60-138%	---	---	
Chloroform	20.8	0.500	1.00	ug/L	1	20.0	ND	104	79-124%	---	---	
Chloromethane	20.6	2.50	5.00	ug/L	1	20.0	ND	103	50-139%	---	---	
2-Chlorotoluene	20.3	0.500	1.00	ug/L	1	20.0	ND	102	79-122%	---	---	
4-Chlorotoluene	20.0	0.500	1.00	ug/L	1	20.0	ND	100	78-122%	---	---	
Dibromochloromethane	19.5	0.500	1.00	ug/L	1	20.0	ND	98	74-126%	---	---	
1,2-Dibromo-3-chloropropane	15.8	2.50	5.00	ug/L	1	20.0	ND	79	62-128%	---	---	
1,2-Dibromoethane (EDB)	20.2	0.250	0.500	ug/L	1	20.0	ND	101	77-121%	---	---	
Dibromomethane	21.0	0.500	1.00	ug/L	1	20.0	ND	105	79-123%	---	---	
1,2-Dichlorobenzene	20.2	0.250	0.500	ug/L	1	20.0	ND	101	80-120%	---	---	
1,3-Dichlorobenzene	20.2	0.250	0.500	ug/L	1	20.0	ND	101	80-120%	---	---	
1,4-Dichlorobenzene	19.9	0.250	0.500	ug/L	1	20.0	ND	100	79-120%	---	---	
Dichlorodifluoromethane	25.2	0.500	1.00	ug/L	1	20.0	ND	126	32-152%	---	---	
1,1-Dichloroethane	20.9	0.200	0.400	ug/L	1	20.0	ND	104	77-125%	---	---	
1,2-Dichloroethane (EDC)	20.7	0.200	0.400	ug/L	1	20.0	ND	103	73-128%	---	---	
1,1-Dichloroethene	22.8	0.200	0.400	ug/L	1	20.0	ND	114	71-131%	---	---	
cis-1,2-Dichloroethene	20.5	0.200	0.400	ug/L	1	20.0	ND	102	78-123%	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Matrix Spike (23F1132-MS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:57							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
trans-1,2-Dichloroethene	21.3	0.200	0.400	ug/L	1	20.0	ND	106	75-124%	---	---	
1,2-Dichloropropane	20.0	0.250	0.500	ug/L	1	20.0	ND	100	78-122%	---	---	
1,3-Dichloropropane	19.8	0.500	1.00	ug/L	1	20.0	ND	99	80-120%	---	---	
2,2-Dichloropropane	21.9	0.500	1.00	ug/L	1	20.0	ND	109	60-139%	---	---	
1,1-Dichloropropene	21.0	0.500	1.00	ug/L	1	20.0	ND	105	79-125%	---	---	
cis-1,3-Dichloropropene	19.5	0.500	1.00	ug/L	1	20.0	ND	98	75-124%	---	---	
trans-1,3-Dichloropropene	19.5	0.500	1.00	ug/L	1	20.0	ND	98	73-127%	---	---	
Ethylbenzene	21.5	0.250	0.500	ug/L	1	20.0	0.680	104	79-121%	---	---	
Hexachlorobutadiene	20.5	2.50	5.00	ug/L	1	20.0	ND	103	66-134%	---	---	
2-Hexanone	32.7	5.00	10.0	ug/L	1	40.0	ND	82	57-139%	---	---	
Isopropylbenzene	20.5	0.500	1.00	ug/L	1	20.0	ND	103	72-131%	---	---	
4-Isopropyltoluene	20.6	0.500	1.00	ug/L	1	20.0	ND	103	77-127%	---	---	
Methylene chloride	20.8	5.00	10.0	ug/L	1	20.0	ND	104	74-124%	---	---	
4-Methyl-2-pentanone (MiBK)	35.6	5.00	10.0	ug/L	1	40.0	ND	89	67-130%	---	---	
Methyl tert-butyl ether (MTBE)	19.6	0.500	1.00	ug/L	1	20.0	ND	98	71-124%	---	---	
Naphthalene	16.4	1.00	2.00	ug/L	1	20.0	ND	82	61-128%	---	---	
n-Propylbenzene	20.8	0.250	0.500	ug/L	1	20.0	ND	104	76-126%	---	---	
Styrene	20.2	0.500	1.00	ug/L	1	20.0	ND	101	78-123%	---	---	
1,1,1,2-Tetrachloroethane	19.8	0.200	0.400	ug/L	1	20.0	ND	99	78-124%	---	---	
1,1,2,2-Tetrachloroethane	19.4	0.250	0.500	ug/L	1	20.0	ND	97	71-121%	---	---	
Tetrachloroethene (PCE)	21.2	0.200	0.400	ug/L	1	20.0	ND	106	74-129%	---	---	
Toluene	19.8	0.500	1.00	ug/L	1	20.0	ND	99	80-121%	---	---	
1,2,3-Trichlorobenzene	17.9	1.00	2.00	ug/L	1	20.0	ND	90	69-129%	---	---	
1,2,4-Trichlorobenzene	17.8	1.00	2.00	ug/L	1	20.0	ND	89	69-130%	---	---	
1,1,1-Trichloroethane	22.1	0.200	0.400	ug/L	1	20.0	ND	110	74-131%	---	---	
1,1,2-Trichloroethane	19.3	0.250	0.500	ug/L	1	20.0	ND	97	80-120%	---	---	
Trichloroethene (TCE)	22.1	0.200	0.400	ug/L	1	20.0	ND	111	79-123%	---	---	
Trichlorofluoromethane	26.3	1.00	2.00	ug/L	1	20.0	ND	132	65-141%	---	---	
1,2,3-Trichloropropane	19.4	0.500	1.00	ug/L	1	20.0	ND	97	73-122%	---	---	
1,2,4-Trimethylbenzene	20.5	0.500	1.00	ug/L	1	20.0	ND	103	76-124%	---	---	
1,3,5-Trimethylbenzene	20.9	0.500	1.00	ug/L	1	20.0	ND	105	75-124%	---	---	
Vinyl chloride	23.5	0.200	0.400	ug/L	1	20.0	ND	117	58-137%	---	---	
m,p-Xylene	42.3	0.500	1.00	ug/L	1	40.0	ND	106	80-121%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Matrix Spike (23F1132-MS1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 18:57							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
o-Xylene	19.1	0.250	0.500	ug/L	1	20.0	ND	96	78-122%	---	---	
Acrolein	7.83	5.00	10.0	ug/L	1	20.0	ND	39	39-155%	---	---	J
2-Chloroethyl vinyl ether	13.6	10.0	10.0	ug/L	1	20.0	ND	68	51-139%	---	---	Q-54a
Iodomethane	21.7	10.0	10.0	ug/L	1	20.0	ND	109	69-131%	---	---	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 104 %*		*Limits: 80-120 %*			*Dilution: 1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*			*"*				
Matrix Spike Dup (23F1132-MSD1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 19:20							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
EPA 8260D												
Acetone	37.0	10.0	20.0	ug/L	1	40.0	ND	92	39-160%	5	30%	
Acrylonitrile	20.8	1.00	2.00	ug/L	1	20.0	ND	104	63-135%	5	30%	
Benzene	21.5	0.100	0.200	ug/L	1	20.0	ND	108	79-120%	2	30%	
Bromobenzene	20.1	0.250	0.500	ug/L	1	20.0	ND	101	80-120%	4	30%	
Bromochloromethane	21.6	0.500	1.00	ug/L	1	20.0	ND	108	78-123%	0.9	30%	
Bromodichloromethane	20.4	0.500	1.00	ug/L	1	20.0	ND	102	79-125%	1	30%	
Bromoform	19.9	0.500	1.00	ug/L	1	20.0	ND	100	66-130%	0.7	30%	
Bromomethane	29.2	5.00	5.00	ug/L	1	20.0	ND	**146**	**53-141%**	5	30%	Q-54
2-Butanone (MEK)	38.8	5.00	10.0	ug/L	1	40.0	ND	97	56-143%	6	30%	
n-Butylbenzene	21.8	0.500	1.00	ug/L	1	20.0	ND	109	75-128%	3	30%	
sec-Butylbenzene	22.5	0.500	1.00	ug/L	1	20.0	ND	112	77-126%	4	30%	
tert-Butylbenzene	20.6	0.500	1.00	ug/L	1	20.0	ND	103	78-124%	4	30%	
Carbon disulfide	23.7	5.00	10.0	ug/L	1	20.0	ND	119	64-133%	3	30%	
Carbon tetrachloride	23.0	0.500	1.00	ug/L	1	20.0	ND	115	72-136%	3	30%	
Chlorobenzene	21.1	0.250	0.500	ug/L	1	20.0	ND	106	80-120%	0.9	30%	
Chloroethane	24.0	5.00	5.00	ug/L	1	20.0	ND	120	60-138%	1	30%	
Chloroform	21.1	0.500	1.00	ug/L	1	20.0	ND	106	79-124%	1	30%	
Chloromethane	21.2	2.50	5.00	ug/L	1	20.0	ND	106	50-139%	3	30%	
2-Chlorotoluene	21.2	0.500	1.00	ug/L	1	20.0	ND	106	79-122%	4	30%	
4-Chlorotoluene	20.6	0.500	1.00	ug/L	1	20.0	ND	103	78-122%	3	30%	
Dibromochloromethane	19.8	0.500	1.00	ug/L	1	20.0	ND	99	74-126%	1	30%	
1,2-Dibromo-3-chloropropane	16.7	2.50	5.00	ug/L	1	20.0	ND	83	62-128%	5	30%	

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Matrix Spike Dup (23F1132-MSD1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 19:20							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
1,2-Dibromoethane (EDB)	20.7	0.250	0.500	ug/L	1	20.0	ND	103	77-121%	2	30%	
Dibromomethane	21.5	0.500	1.00	ug/L	1	20.0	ND	107	79-123%	2	30%	
1,2-Dichlorobenzene	20.8	0.250	0.500	ug/L	1	20.0	ND	104	80-120%	3	30%	
1,3-Dichlorobenzene	20.7	0.250	0.500	ug/L	1	20.0	ND	103	80-120%	2	30%	
1,4-Dichlorobenzene	20.5	0.250	0.500	ug/L	1	20.0	ND	102	79-120%	3	30%	
Dichlorodifluoromethane	25.9	0.500	1.00	ug/L	1	20.0	ND	130	32-152%	3	30%	
1,1-Dichloroethane	21.4	0.200	0.400	ug/L	1	20.0	ND	107	77-125%	3	30%	
1,2-Dichloroethane (EDC)	21.0	0.200	0.400	ug/L	1	20.0	ND	105	73-128%	2	30%	
1,1-Dichloroethene	23.3	0.200	0.400	ug/L	1	20.0	ND	116	71-131%	2	30%	
cis-1,2-Dichloroethene	20.9	0.200	0.400	ug/L	1	20.0	ND	105	78-123%	2	30%	
trans-1,2-Dichloroethene	21.8	0.200	0.400	ug/L	1	20.0	ND	109	75-124%	3	30%	
1,2-Dichloropropane	20.4	0.250	0.500	ug/L	1	20.0	ND	102	78-122%	2	30%	
1,3-Dichloropropane	20.0	0.500	1.00	ug/L	1	20.0	ND	100	80-120%	1	30%	
2,2-Dichloropropane	22.4	0.500	1.00	ug/L	1	20.0	ND	112	60-139%	3	30%	
1,1-Dichloropropene	21.7	0.500	1.00	ug/L	1	20.0	ND	108	79-125%	3	30%	
cis-1,3-Dichloropropene	19.7	0.500	1.00	ug/L	1	20.0	ND	99	75-124%	1	30%	
trans-1,3-Dichloropropene	19.8	0.500	1.00	ug/L	1	20.0	ND	99	73-127%	2	30%	
Ethylbenzene	22.0	0.250	0.500	ug/L	1	20.0	0.680	106	79-121%	2	30%	
Hexachlorobutadiene	21.6	2.50	5.00	ug/L	1	20.0	ND	108	66-134%	5	30%	
2-Hexanone	33.9	5.00	10.0	ug/L	1	40.0	ND	85	57-139%	3	30%	
Isopropylbenzene	21.2	0.500	1.00	ug/L	1	20.0	ND	106	72-131%	3	30%	
4-Isopropyltoluene	21.0	0.500	1.00	ug/L	1	20.0	ND	105	77-127%	2	30%	
Methylene chloride	21.0	5.00	10.0	ug/L	1	20.0	ND	105	74-124%	0.9	30%	
4-Methyl-2-pentanone (MiBK)	36.8	5.00	10.0	ug/L	1	40.0	ND	92	67-130%	3	30%	
Methyl tert-butyl ether (MTBE)	20.0	0.500	1.00	ug/L	1	20.0	ND	100	71-124%	2	30%	
Naphthalene	17.3	1.00	2.00	ug/L	1	20.0	ND	86	61-128%	5	30%	
n-Propylbenzene	21.4	0.250	0.500	ug/L	1	20.0	ND	107	76-126%	3	30%	
Styrene	20.3	0.500	1.00	ug/L	1	20.0	ND	101	78-123%	0.6	30%	
1,1,1,2-Tetrachloroethane	20.2	0.200	0.400	ug/L	1	20.0	ND	101	78-124%	2	30%	
1,1,2,2-Tetrachloroethane	20.0	0.250	0.500	ug/L	1	20.0	ND	100	71-121%	3	30%	
Tetrachloroethene (PCE)	22.0	0.200	0.400	ug/L	1	20.0	ND	110	74-129%	4	30%	
Toluene	20.3	0.500	1.00	ug/L	1	20.0	ND	101	80-121%	2	30%	
1,2,3-Trichlorobenzene	18.8	1.00	2.00	ug/L	1	20.0	ND	94	69-129%	5	30%	

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Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Volatile Organic Compounds by EPA 8260D

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1132 - EPA 5030C							**Water**					
Matrix Spike Dup (23F1132-MSD1)			Prepared: 06/30/23 11:22		Analyzed: 06/30/23 19:20							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
1,2,4-Trichlorobenzene	18.6	1.00	2.00	ug/L	1	20.0	ND	93	69-130%	5	30%	
1,1,1-Trichloroethane	22.3	0.200	0.400	ug/L	1	20.0	ND	111	74-131%	0.9	30%	
1,1,2-Trichloroethane	19.9	0.250	0.500	ug/L	1	20.0	ND	99	80-120%	3	30%	
Trichloroethene (TCE)	22.4	0.200	0.400	ug/L	1	20.0	ND	112	79-123%	1	30%	
Trichlorofluoromethane	27.0	1.00	2.00	ug/L	1	20.0	ND	135	65-141%	3	30%	
1,2,3-Trichloropropane	20.4	0.500	1.00	ug/L	1	20.0	ND	102	73-122%	5	30%	
1,2,4-Trimethylbenzene	21.0	0.500	1.00	ug/L	1	20.0	ND	105	76-124%	2	30%	
1,3,5-Trimethylbenzene	21.3	0.500	1.00	ug/L	1	20.0	ND	106	75-124%	2	30%	
Vinyl chloride	24.1	0.200	0.400	ug/L	1	20.0	ND	120	58-137%	3	30%	
m,p-Xylene	42.9	0.500	1.00	ug/L	1	40.0	ND	107	80-121%	1	30%	
o-Xylene	19.6	0.250	0.500	ug/L	1	20.0	ND	98	78-122%	3	30%	
Acrolein	8.57	5.00	10.0	ug/L	1	20.0	ND	43	39-155%	9	30%	J
2-Chloroethyl vinyl ether	13.9	10.0	10.0	ug/L	1	20.0	ND	69	51-139%	2	30%	Q-54a
Iodomethane	24.6	10.0	10.0	ug/L	1	20.0	ND	123	69-131%	13	30%	
Surr: 1,4-Difluorobenzene (Surr)			*Recovery: 105 %*		*Limits: 80-120 %*				*Dilution: 1x*			
Toluene-d8 (Surr)			*98 %*		*80-120 %*				*"*			
4-Bromofluorobenzene (Surr)			*93 %*		*80-120 %*				*"*			

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Blank (23G0047-BLK1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 14:04							
EPA 8270E												
Acenaphthene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Acenaphthylene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Anthracene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	0.0150	0.0300	ug/L	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	0.0150	0.0300	ug/L	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	0.0150	0.0300	ug/L	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Chrysene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Fluoranthene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Fluorene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	0.0200	0.0400	ug/L	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	0.0200	0.0400	ug/L	1	---	---	---	---	---	---	
Naphthalene	ND	0.0200	0.0400	ug/L	1	---	---	---	---	---	---	
Phenanthrene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Pyrene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Carbazole	ND	0.0150	0.0300	ug/L	1	---	---	---	---	---	---	
Dibenzofuran	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
2-Chlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
4-Chloro-3-methylphenol	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
2,4-Dichlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
2,4-Dimethylphenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
2,4-Dinitrophenol	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
4,6-Dinitro-2-methylphenol	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
2-Methylphenol	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
3+4-Methylphenol(s)	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
2-Nitrophenol	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
4-Nitrophenol	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Pentachlorophenol (PCP)	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Phenol	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
2,3,4,6-Tetrachlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	

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Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Blank (23G0047-BLK1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 14:04							
2,3,5,6-Tetrachlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
2,4,5-Trichlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
2,4,6-Trichlorophenol	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
Bis(2-ethylhexyl)phthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Butyl benzyl phthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Diethylphthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Dimethylphthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Di-n-butylphthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Di-n-octyl phthalate	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
N-Nitrosodimethylamine	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
N-Nitroso-di-n-propylamine	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
N-Nitrosodiphenylamine	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Bis(2-Chloroethoxy) methane	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Bis(2-Chloroethyl) ether	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
2,2'-Oxybis(1-Chloropropane)	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Hexachlorobenzene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
Hexachlorobutadiene	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Hexachlorocyclopentadiene	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
Hexachloroethane	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
2-Chloronaphthalene	ND	0.0100	0.0200	ug/L	1	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
4-Bromophenyl phenyl ether	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
4-Chlorophenyl phenyl ether	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Aniline	ND	0.0500	0.100	ug/L	1	---	---	---	---	---	---	
4-Chloroaniline	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
2-Nitroaniline	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
3-Nitroaniline	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
4-Nitroaniline	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Nitrobenzene	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
2,4-Dinitrotoluene	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
2,6-Dinitrotoluene	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Benzoic acid	ND	1.25	2.50	ug/L	1	---	---	---	---	---	---	
Benzyl alcohol	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Isophorone	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Blank (23G0047-BLK1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 14:04							
Azobenzene (1,2-DPH)	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Bis(2-Ethylhexyl) adipate	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
3,3'-Dichlorobenzidine	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	Q-52
1,2-Dinitrobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,3-Dinitrobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
1,4-Dinitrobenzene	ND	0.250	0.500	ug/L	1	---	---	---	---	---	---	
Pyridine	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	0.0250	0.0500	ug/L	1	---	---	---	---	---	---	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 55 %*		*Limits: 44-120 %*				*Dilution: 1x*			
2-Fluorobiphenyl (Surr)			*51 %*		*44-120 %*				*"*			
Phenol-d6 (Surr)			*19 %*		*10-133 %*				*"*			
p-Terphenyl-d14 (Surr)			*98 %*		*50-134 %*				*"*			
2-Fluorophenol (Surr)			*29 %*		*19-120 %*				*"*			
2,4,6-Tribromophenol (Surr)			*82 %*		*43-140 %*				*"*			
LCS (23G0047-BS1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 14:39							
EPA 8270E												
Acenaphthene	3.17	0.0400	0.0800	ug/L	4	4.00	---	79	47-122%	---	---	
Acenaphthylene	3.17	0.0400	0.0800	ug/L	4	4.00	---	79	41-130%	---	---	
Anthracene	3.67	0.0400	0.0800	ug/L	4	4.00	---	92	57-123%	---	---	
Benz(a)anthracene	3.82	0.0400	0.0800	ug/L	4	4.00	---	95	58-125%	---	---	
Benzo(a)pyrene	3.54	0.0600	0.120	ug/L	4	4.00	---	89	54-128%	---	---	
Benzo(b)fluoranthene	3.65	0.0600	0.120	ug/L	4	4.00	---	91	53-131%	---	---	
Benzo(k)fluoranthene	3.72	0.0600	0.120	ug/L	4	4.00	---	93	57-129%	---	---	
Benzo(g,h,i)perylene	4.10	0.0400	0.0800	ug/L	4	4.00	---	102	50-134%	---	---	
Chrysene	3.96	0.0400	0.0800	ug/L	4	4.00	---	99	59-123%	---	---	
Dibenz(a,h)anthracene	3.90	0.0400	0.0800	ug/L	4	4.00	---	98	51-134%	---	---	
Fluoranthene	3.94	0.0400	0.0800	ug/L	4	4.00	---	98	57-128%	---	---	
Fluorene	3.47	0.0400	0.0800	ug/L	4	4.00	---	87	52-124%	---	---	
Indeno(1,2,3-cd)pyrene	3.74	0.0400	0.0800	ug/L	4	4.00	---	93	52-134%	---	---	
1-Methylnaphthalene	2.78	0.0800	0.160	ug/L	4	4.00	---	69	41-120%	---	---	
2-Methylnaphthalene	2.82	0.0800	0.160	ug/L	4	4.00	---	71	40-121%	---	---	

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Philip Nerenberg, Lab Director

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503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS (23G0047-BS1)			Prepared: 07/05/23 06:12 Analyzed: 07/05/23 14:39									
Naphthalene	2.69	0.0800	0.160	ug/L	4	4.00	---	67	40-121%	---	---	
Phenanthrene	3.57	0.0400	0.0800	ug/L	4	4.00	---	89	59-120%	---	---	
Pyrene	3.88	0.0400	0.0800	ug/L	4	4.00	---	97	57-126%	---	---	
Carbazole	3.94	0.0600	0.120	ug/L	4	4.00	---	99	60-122%	---	---	
Dibenzofuran	3.25	0.0400	0.0800	ug/L	4	4.00	---	81	53-120%	---	---	
2-Chlorophenol	2.89	0.200	0.400	ug/L	4	4.00	---	72	38-120%	---	---	
4-Chloro-3-methylphenol	2.81	0.400	0.800	ug/L	4	4.00	---	70	52-120%	---	---	
2,4-Dichlorophenol	3.23	0.200	0.400	ug/L	4	4.00	---	81	47-121%	---	---	
2,4-Dimethylphenol	3.13	0.200	0.400	ug/L	4	4.00	---	78	31-124%	---	---	
2,4-Dinitrophenol	4.02	1.00	2.00	ug/L	4	4.00	---	100	23-143%	---	---	
4,6-Dinitro-2-methylphenol	4.95	1.00	2.00	ug/L	4	4.00	---	124	44-137%	---	---	
2-Methylphenol	2.54	0.100	0.200	ug/L	4	4.00	---	64	30-120%	---	---	
3+4-Methylphenol(s)	2.37	0.100	0.200	ug/L	4	4.00	---	59	29-120%	---	---	
2-Nitrophenol	3.81	0.400	0.800	ug/L	4	4.00	---	95	47-123%	---	---	
4-Nitrophenol	1.21	0.400	0.800	ug/L	4	4.00	---	30	10-120%	---	---	Q-31
Pentachlorophenol (PCP)	2.72	0.400	0.800	ug/L	4	4.00	---	68	35-138%	---	---	Q-31
Phenol	1.24	0.800	0.800	ug/L	4	4.00	---	31	10-120%	---	---	
2,3,4,6-Tetrachlorophenol	3.34	0.200	0.400	ug/L	4	4.00	---	83	50-128%	---	---	
2,3,5,6-Tetrachlorophenol	3.19	0.200	0.400	ug/L	4	4.00	---	80	50-121%	---	---	
2,4,5-Trichlorophenol	3.07	0.200	0.400	ug/L	4	4.00	---	77	53-123%	---	---	
2,4,6-Trichlorophenol	2.96	0.200	0.400	ug/L	4	4.00	---	74	50-125%	---	---	
Bis(2-ethylhexyl)phthalate	3.82	0.800	1.60	ug/L	4	4.00	---	95	55-135%	---	---	
Butyl benzyl phthalate	4.06	0.800	1.60	ug/L	4	4.00	---	102	53-134%	---	---	
Diethylphthalate	3.87	0.800	1.60	ug/L	4	4.00	---	97	56-125%	---	---	
Dimethylphthalate	3.85	0.800	1.60	ug/L	4	4.00	---	96	45-127%	---	---	
Di-n-butylphthalate	4.22	0.800	1.60	ug/L	4	4.00	---	105	59-127%	---	---	
Di-n-octyl phthalate	3.56	0.800	1.60	ug/L	4	4.00	---	89	51-140%	---	---	
N-Nitrosodimethylamine	1.65	0.100	0.200	ug/L	4	4.00	---	41	19-120%	---	---	
N-Nitroso-di-n-propylamine	3.13	0.100	0.200	ug/L	4	4.00	---	78	49-120%	---	---	
N-Nitrosodiphenylamine	3.57	0.100	0.200	ug/L	4	4.00	---	89	51-123%	---	---	
Bis(2-Chloroethoxy) methane	3.27	0.100	0.200	ug/L	4	4.00	---	82	48-120%	---	---	
Bis(2-Chloroethyl) ether	3.02	0.100	0.200	ug/L	4	4.00	---	76	43-120%	---	---	
2,2'-Oxybis(1-Chloropropane)	2.80	0.100	0.200	ug/L	4	4.00	---	70	41-120%	---	---	
Hexachlorobenzene	3.93	0.0400	0.0800	ug/L	4	4.00	---	98	53-125%	---	---	

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Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS (23G0047-BS1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 14:39							
Hexachlorobutadiene	2.25	0.100	0.200	ug/L	4	4.00	---	56	22-124%	---	---	
Hexachlorocyclopentadiene	2.02	0.200	0.400	ug/L	4	4.00	---	51	10-127%	---	---	Q-31
Hexachloroethane	1.94	0.100	0.200	ug/L	4	4.00	---	48	21-120%	---	---	
2-Chloronaphthalene	2.90	0.0400	0.0800	ug/L	4	4.00	---	73	40-120%	---	---	
1,2,4-Trichlorobenzene	2.49	0.100	0.200	ug/L	4	4.00	---	62	29-120%	---	---	
4-Bromophenyl phenyl ether	3.94	0.100	0.200	ug/L	4	4.00	---	99	55-124%	---	---	
4-Chlorophenyl phenyl ether	3.55	0.100	0.200	ug/L	4	4.00	---	89	53-121%	---	---	
Aniline	1.24	0.200	0.400	ug/L	4	4.00	---	31	10-120%	---	---	Q-31
4-Chloroaniline	2.07	0.100	0.200	ug/L	4	4.00	---	52	33-120%	---	---	
2-Nitroaniline	3.63	0.800	1.60	ug/L	4	4.00	---	91	55-127%	---	---	
3-Nitroaniline	2.47	0.800	1.60	ug/L	4	4.00	---	62	41-128%	---	---	
4-Nitroaniline	2.31	0.800	1.60	ug/L	4	4.00	---	58	25-120%	---	---	
Nitrobenzene	3.09	0.400	0.800	ug/L	4	4.00	---	77	45-121%	---	---	
2,4-Dinitrotoluene	3.80	0.400	0.800	ug/L	4	4.00	---	95	57-128%	---	---	
2,6-Dinitrotoluene	3.64	0.400	0.800	ug/L	4	4.00	---	91	57-124%	---	---	
Benzoic acid	3.50	2.00	2.00	ug/L	4	8.00	---	44	10-120%	---	---	Q-31
Benzyl alcohol	2.59	0.400	0.800	ug/L	4	4.00	---	65	31-120%	---	---	
Isophorone	3.28	0.100	0.200	ug/L	4	4.00	---	82	42-124%	---	---	
Azobenzene (1,2-DPH)	3.47	0.100	0.200	ug/L	4	4.00	---	87	61-120%	---	---	
Bis(2-Ethylhexyl) adipate	3.99	1.00	2.00	ug/L	4	4.00	---	100	63-121%	---	---	
3,3'-Dichlorobenzidine	6.89	2.00	4.00	ug/L	4	8.00	---	86	27-129%	---	---	Q-31, Q-52
1,2-Dinitrobenzene	3.60	1.00	2.00	ug/L	4	4.00	---	90	59-120%	---	---	
1,3-Dinitrobenzene	3.81	1.00	2.00	ug/L	4	4.00	---	95	49-128%	---	---	
1,4-Dinitrobenzene	4.01	1.00	2.00	ug/L	4	4.00	---	100	54-120%	---	---	
Pyridine	1.36	0.400	0.800	ug/L	4	4.00	---	34	10-120%	---	---	
1,2-Dichlorobenzene	2.17	0.100	0.200	ug/L	4	4.00	---	54	32-120%	---	---	
1,3-Dichlorobenzene	2.07	0.100	0.200	ug/L	4	4.00	---	52	28-120%	---	---	
1,4-Dichlorobenzene	2.14	0.100	0.200	ug/L	4	4.00	---	54	29-120%	---	---	

Surr: Nitrobenzene-d5 (Surr)	*Recovery: 75 %*	*Limits: 44-120 %*	*Dilution: 4x*
2-Fluorobiphenyl (Surr)	*74 %*	*44-120 %*	*"*
Phenol-d6 (Surr)	*26 %*	*10-133 %*	*"*
p-Terphenyl-d14 (Surr)	*100 %*	*50-134 %*	*"*
2-Fluorophenol (Surr)	*41 %*	*19-120 %*	*"*
2,4,6-Tribromophenol (Surr)	*102 %*	*43-140 %*	*"*

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS Dup (23G0047-BSD1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 15:13							**Q-19**
EPA 8270E												
Acenaphthene	3.35	0.0400	0.0800	ug/L	4	4.00	---	84	47-122%	6	30%	
Acenaphthylene	3.34	0.0400	0.0800	ug/L	4	4.00	---	84	41-130%	5	30%	
Anthracene	3.72	0.0400	0.0800	ug/L	4	4.00	---	93	57-123%	1	30%	
Benz(a)anthracene	3.84	0.0400	0.0800	ug/L	4	4.00	---	96	58-125%	0.5	30%	
Benzo(a)pyrene	3.43	0.0600	0.120	ug/L	4	4.00	---	86	54-128%	3	30%	
Benzo(b)fluoranthene	3.64	0.0600	0.120	ug/L	4	4.00	---	91	53-131%	0.4	30%	
Benzo(k)fluoranthene	3.72	0.0600	0.120	ug/L	4	4.00	---	93	57-129%	0.1	30%	
Benzo(g,h,i)perylene	4.14	0.0400	0.0800	ug/L	4	4.00	---	103	50-134%	1	30%	
Chrysene	3.94	0.0400	0.0800	ug/L	4	4.00	---	99	59-123%	0.5	30%	
Dibenz(a,h)anthracene	3.97	0.0400	0.0800	ug/L	4	4.00	---	99	51-134%	2	30%	
Fluoranthene	3.78	0.0400	0.0800	ug/L	4	4.00	---	94	57-128%	4	30%	
Fluorene	3.53	0.0400	0.0800	ug/L	4	4.00	---	88	52-124%	2	30%	
Indeno(1,2,3-cd)pyrene	3.69	0.0400	0.0800	ug/L	4	4.00	---	92	52-134%	1	30%	
1-Methylnaphthalene	3.06	0.0800	0.160	ug/L	4	4.00	---	77	41-120%	10	30%	
2-Methylnaphthalene	3.08	0.0800	0.160	ug/L	4	4.00	---	77	40-121%	9	30%	
Naphthalene	2.93	0.0800	0.160	ug/L	4	4.00	---	73	40-121%	9	30%	
Phenanthrene	3.65	0.0400	0.0800	ug/L	4	4.00	---	91	59-120%	2	30%	
Pyrene	3.77	0.0400	0.0800	ug/L	4	4.00	---	94	57-126%	3	30%	
Carbazole	3.87	0.0600	0.120	ug/L	4	4.00	---	97	60-122%	2	30%	
Dibenzofuran	3.43	0.0400	0.0800	ug/L	4	4.00	---	86	53-120%	5	30%	
2-Chlorophenol	2.98	0.200	0.400	ug/L	4	4.00	---	74	38-120%	3	30%	
4-Chloro-3-methylphenol	2.85	0.400	0.800	ug/L	4	4.00	---	71	52-120%	1	30%	
2,4-Dichlorophenol	3.31	0.200	0.400	ug/L	4	4.00	---	83	47-121%	2	30%	
2,4-Dimethylphenol	3.48	0.200	0.400	ug/L	4	4.00	---	87	31-124%	11	30%	
2,4-Dinitrophenol	3.95	1.00	2.00	ug/L	4	4.00	---	99	23-143%	2	30%	
4,6-Dinitro-2-methylphenol	4.99	1.00	2.00	ug/L	4	4.00	---	125	44-137%	0.8	30%	
2-Methylphenol	2.52	0.100	0.200	ug/L	4	4.00	---	63	30-120%	0.9	30%	
3+4-Methylphenol(s)	2.33	0.100	0.200	ug/L	4	4.00	---	58	29-120%	2	30%	
2-Nitrophenol	4.02	0.400	0.800	ug/L	4	4.00	---	101	47-123%	6	30%	
4-Nitrophenol	1.11	0.400	0.800	ug/L	4	4.00	---	28	10-120%	9	30%	Q-31
Pentachlorophenol (PCP)	2.67	0.400	0.800	ug/L	4	4.00	---	67	35-138%	2	30%	Q-31
Phenol	1.21	0.800	0.800	ug/L	4	4.00	---	30	10-120%	2	30%	
2,3,4,6-Tetrachlorophenol	3.36	0.200	0.400	ug/L	4	4.00	---	84	50-128%	0.8	30%	

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Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS Dup (23G0047-BSD1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 15:13							**Q-19**
2,3,5,6-Tetrachlorophenol	3.21	0.200	0.400	ug/L	4	4.00	---	80	50-121%	0.8	30%	
2,4,5-Trichlorophenol	3.05	0.200	0.400	ug/L	4	4.00	---	76	53-123%	0.6	30%	
2,4,6-Trichlorophenol	3.08	0.200	0.400	ug/L	4	4.00	---	77	50-125%	4	30%	
Bis(2-ethylhexyl)phthalate	3.86	0.800	1.60	ug/L	4	4.00	---	97	55-135%	1	30%	
Butyl benzyl phthalate	4.21	0.800	1.60	ug/L	4	4.00	---	105	53-134%	4	30%	
Diethylphthalate	3.89	0.800	1.60	ug/L	4	4.00	---	97	56-125%	0.5	30%	
Dimethylphthalate	3.92	0.800	1.60	ug/L	4	4.00	---	98	45-127%	2	30%	
Di-n-butylphthalate	4.11	0.800	1.60	ug/L	4	4.00	---	103	59-127%	3	30%	
Di-n-octyl phthalate	3.52	0.800	1.60	ug/L	4	4.00	---	88	51-140%	1	30%	
N-Nitrosodimethylamine	1.71	0.100	0.200	ug/L	4	4.00	---	43	19-120%	3	30%	
N-Nitroso-di-n-propylamine	3.18	0.100	0.200	ug/L	4	4.00	---	80	49-120%	2	30%	
N-Nitrosodiphenylamine	3.67	0.100	0.200	ug/L	4	4.00	---	92	51-123%	3	30%	
Bis(2-Chloroethoxy) methane	3.42	0.100	0.200	ug/L	4	4.00	---	85	48-120%	5	30%	
Bis(2-Chloroethyl) ether	3.21	0.100	0.200	ug/L	4	4.00	---	80	43-120%	6	30%	
2,2'-Oxybis(1-Chloropropane)	2.95	0.100	0.200	ug/L	4	4.00	---	74	41-120%	5	30%	
Hexachlorobenzene	4.07	0.0400	0.0800	ug/L	4	4.00	---	102	53-125%	4	30%	
Hexachlorobutadiene	2.55	0.100	0.200	ug/L	4	4.00	---	64	22-124%	12	30%	
Hexachlorocyclopentadiene	2.26	0.200	0.400	ug/L	4	4.00	---	56	10-127%	11	30%	Q-31
Hexachloroethane	2.17	0.100	0.200	ug/L	4	4.00	---	54	21-120%	11	30%	
2-Chloronaphthalene	3.07	0.0400	0.0800	ug/L	4	4.00	---	77	40-120%	6	30%	
1,2,4-Trichlorobenzene	2.76	0.100	0.200	ug/L	4	4.00	---	69	29-120%	10	30%	
4-Bromophenyl phenyl ether	4.05	0.100	0.200	ug/L	4	4.00	---	101	55-124%	3	30%	
4-Chlorophenyl phenyl ether	3.65	0.100	0.200	ug/L	4	4.00	---	91	53-121%	3	30%	
Aniline	1.33	0.200	0.400	ug/L	4	4.00	---	33	10-120%	7	30%	Q-31
4-Chloroaniline	2.13	0.100	0.200	ug/L	4	4.00	---	53	33-120%	3	30%	
2-Nitroaniline	3.58	0.800	1.60	ug/L	4	4.00	---	90	55-127%	1	30%	
3-Nitroaniline	2.57	0.800	1.60	ug/L	4	4.00	---	64	41-128%	4	30%	
4-Nitroaniline	2.13	0.800	1.60	ug/L	4	4.00	---	53	25-120%	8	30%	
Nitrobenzene	3.14	0.400	0.800	ug/L	4	4.00	---	79	45-121%	2	30%	
2,4-Dinitrotoluene	3.73	0.400	0.800	ug/L	4	4.00	---	93	57-128%	2	30%	
2,6-Dinitrotoluene	3.65	0.400	0.800	ug/L	4	4.00	---	91	57-124%	0.2	30%	
Benzoic acid	3.47	2.00	2.00	ug/L	4	8.00	---	43	10-120%	1	30%	Q-31
Benzyl alcohol	2.50	0.400	0.800	ug/L	4	4.00	---	63	31-120%	3	30%	
Isophorone	3.48	0.100	0.200	ug/L	4	4.00	---	87	42-124%	6	30%	

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
LCS Dup (23G0047-BSD1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 15:13							**Q-19**
Azobenzene (1,2-DPH)	3.53	0.100	0.200	ug/L	4	4.00	---	88	61-120%	2	30%	
Bis(2-Ethylhexyl) adipate	4.20	1.00	2.00	ug/L	4	4.00	---	105	63-121%	5	30%	
3,3'-Dichlorobenzidine	6.42	2.00	4.00	ug/L	4	8.00	---	80	27-129%	7	30%	Q-52, Q-31
1,2-Dinitrobenzene	3.62	1.00	2.00	ug/L	4	4.00	---	91	59-120%	0.5	30%	
1,3-Dinitrobenzene	3.83	1.00	2.00	ug/L	4	4.00	---	96	49-128%	0.7	30%	
1,4-Dinitrobenzene	4.02	1.00	2.00	ug/L	4	4.00	---	101	54-120%	0.4	30%	
Pyridine	1.44	0.400	0.800	ug/L	4	4.00	---	36	10-120%	5	30%	
1,2-Dichlorobenzene	2.40	0.100	0.200	ug/L	4	4.00	---	60	32-120%	10	30%	
1,3-Dichlorobenzene	2.31	0.100	0.200	ug/L	4	4.00	---	58	28-120%	11	30%	
1,4-Dichlorobenzene	2.37	0.100	0.200	ug/L	4	4.00	---	59	29-120%	10	30%	
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 76 %*		*Limits: 44-120 %*				*Dilution: 4x*			
2-Fluorobiphenyl (Surr)			*76 %*		*44-120 %*				*"*			
Phenol-d6 (Surr)			*25 %*		*10-133 %*				*"*			
p-Terphenyl-d14 (Surr)			*106 %*		*50-134 %*				*"*			
2-Fluorophenol (Surr)			*49 %*		*19-120 %*				*"*			
2,4,6-Tribromophenol (Surr)			*106 %*		*43-140 %*				*"*			
Matrix Spike (23G0047-MS1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 16:19							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
EPA 8270E												
Acenaphthene	1.83	0.0385	0.0769	ug/L	4	3.85	ND	48	47-122%	---	---	
Acenaphthylene	1.82	0.0385	0.0769	ug/L	4	3.85	ND	47	41-130%	---	---	
Anthracene	3.11	0.0385	0.0769	ug/L	4	3.85	ND	81	57-123%	---	---	
Benz(a)anthracene	3.42	0.0385	0.0769	ug/L	4	3.85	ND	89	58-125%	---	---	
Benzo(a)pyrene	3.20	0.0577	0.115	ug/L	4	3.85	ND	83	54-128%	---	---	
Benzo(b)fluoranthene	3.29	0.0577	0.115	ug/L	4	3.85	ND	85	53-131%	---	---	
Benzo(k)fluoranthene	3.20	0.0577	0.115	ug/L	4	3.85	ND	83	57-129%	---	---	
Benzo(g,h,i)perylene	3.61	0.0385	0.0769	ug/L	4	3.85	ND	94	50-134%	---	---	
Chrysene	3.48	0.0385	0.0769	ug/L	4	3.85	ND	90	59-123%	---	---	
Dibenz(a,h)anthracene	3.55	0.0385	0.0769	ug/L	4	3.85	ND	92	51-134%	---	---	
Fluoranthene	3.59	0.0385	0.0769	ug/L	4	3.85	ND	93	57-128%	---	---	
Fluorene	2.32	0.0385	0.0769	ug/L	4	3.85	ND	60	52-124%	---	---	
Indeno(1,2,3-cd)pyrene	3.32	0.0385	0.0769	ug/L	4	3.85	ND	86	52-134%	---	---	
1-Methylnaphthalene	1.42	0.0769	0.154	ug/L	4	3.85	ND	**37**	**41-120%**	---	---	Q-01

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Matrix Spike (23G0047-MS1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 16:19							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
2-Methylnaphthalene	1.45	0.0769	0.154	ug/L	4	3.85	ND	**38**	**40-121%**	---	---	Q-01
Naphthalene	1.30	0.0769	0.154	ug/L	4	3.85	ND	**34**	**40-121%**	---	---	Q-01
Phenanthrene	3.05	0.0385	0.0769	ug/L	4	3.85	ND	79	59-120%	---	---	
Pyrene	3.55	0.0385	0.0769	ug/L	4	3.85	ND	92	57-126%	---	---	
Carbazole	3.68	0.0577	0.115	ug/L	4	3.85	ND	96	60-122%	---	---	
Dibenzofuran	2.04	0.0385	0.0769	ug/L	4	3.85	ND	53	53-120%	---	---	
2-Chlorophenol	1.26	0.192	0.385	ug/L	4	3.85	ND	**33**	**38-120%**	---	---	Q-01
4-Chloro-3-methylphenol	2.36	0.769	0.769	ug/L	4	3.85	ND	61	52-120%	---	---	
2,4-Dichlorophenol	2.26	0.192	0.385	ug/L	4	3.85	0.519	**45**	**47-121%**	---	---	Q-01
2,4-Dimethylphenol	2.06	0.192	0.385	ug/L	4	3.85	ND	54	31-124%	---	---	
2,4-Dinitrophenol	4.76	0.962	1.92	ug/L	4	3.85	ND	124	23-143%	---	---	
4,6-Dinitro-2-methylphenol	4.94	0.962	1.92	ug/L	4	3.85	ND	128	44-137%	---	---	
2-Methylphenol	1.33	0.0962	0.192	ug/L	4	3.85	ND	35	30-120%	---	---	
3+4-Methylphenol(s)	1.34	0.0962	0.192	ug/L	4	3.85	ND	35	29-120%	---	---	
2-Nitrophenol	1.87	0.385	0.769	ug/L	4	3.85	ND	49	47-123%	---	---	
4-Nitrophenol	1.38	0.385	0.769	ug/L	4	3.85	ND	36	10-120%	---	---	Q-31
Pentachlorophenol (PCP)	3.70	0.385	0.769	ug/L	4	3.85	ND	96	35-138%	---	---	Q-31
Phenol	ND	0.769	1.54	ug/L	4	3.85	ND		**10-120%**	---	---	Q-01
2,3,4,6-Tetrachlorophenol	3.44	0.192	0.385	ug/L	4	3.85	ND	89	50-128%	---	---	
2,3,5,6-Tetrachlorophenol	3.30	0.192	0.385	ug/L	4	3.85	ND	86	50-121%	---	---	
2,4,5-Trichlorophenol	2.91	0.192	0.385	ug/L	4	3.85	ND	76	53-123%	---	---	
2,4,6-Trichlorophenol	2.28	0.192	0.385	ug/L	4	3.85	ND	59	50-125%	---	---	
Bis(2-ethylhexyl)phthalate	3.56	0.769	1.54	ug/L	4	3.85	ND	93	55-135%	---	---	
Butyl benzyl phthalate	3.66	0.769	1.54	ug/L	4	3.85	ND	95	53-134%	---	---	
Diethylphthalate	3.19	0.769	1.54	ug/L	4	3.85	ND	83	56-125%	---	---	
Dimethylphthalate	2.69	0.769	1.54	ug/L	4	3.85	ND	70	45-127%	---	---	
Di-n-butylphthalate	3.84	0.769	1.54	ug/L	4	3.85	ND	100	59-127%	---	---	
Di-n-octyl phthalate	3.25	0.769	1.54	ug/L	4	3.85	ND	85	51-140%	---	---	
N-Nitrosodimethylamine	0.728	0.0962	0.192	ug/L	4	3.85	ND	19	19-120%	---	---	
N-Nitroso-di-n-propylamine	1.33	0.0962	0.192	ug/L	4	3.85	ND	**35**	**49-120%**	---	---	Q-01
N-Nitrosodiphenylamine	2.95	0.0962	0.192	ug/L	4	3.85	ND	77	51-123%	---	---	
Bis(2-Chloroethoxy) methane	1.40	0.0962	0.192	ug/L	4	3.85	ND	**36**	**48-120%**	---	---	Q-01
Bis(2-Chloroethyl) ether	1.27	0.0962	0.192	ug/L	4	3.85	ND	**33**	**43-120%**	---	---	Q-01

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Matrix Spike (23G0047-MS1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 16:19							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
2,2'-Oxybis(1-Chloropropane)	1.13	0.0962	0.192	ug/L	4	3.85	ND	**29**	**41-120%**	---	---	Q-01
Hexachlorobenzene	2.80	0.0385	0.0769	ug/L	4	3.85	ND	73	53-125%	---	---	
Hexachlorobutadiene	1.03	0.0962	0.192	ug/L	4	3.85	ND	27	22-124%	---	---	
Hexachlorocyclopentadiene	0.828	0.192	0.385	ug/L	4	3.85	ND	22	10-127%	---	---	Q-31
Hexachloroethane	0.878	0.0962	0.192	ug/L	4	3.85	ND	23	21-120%	---	---	
2-Chloronaphthalene	1.51	0.0385	0.0769	ug/L	4	3.85	ND	**39**	**40-120%**	---	---	Q-01
1,2,4-Trichlorobenzene	1.16	0.0962	0.192	ug/L	4	3.85	ND	30	29-120%	---	---	
4-Bromophenyl phenyl ether	2.90	0.0962	0.192	ug/L	4	3.85	ND	75	55-124%	---	---	
4-Chlorophenyl phenyl ether	2.34	0.0962	0.192	ug/L	4	3.85	ND	61	53-121%	---	---	
Aniline	0.353	0.192	0.385	ug/L	4	3.85	ND	**9**	**10-120%**	---	---	Q-01, Q-31, J
4-Chloroaniline	0.673	0.0962	0.192	ug/L	4	3.85	ND	**17**	**33-120%**	---	---	Q-01
2-Nitroaniline	2.70	0.769	1.54	ug/L	4	3.85	ND	70	55-127%	---	---	
3-Nitroaniline	1.21	0.769	1.54	ug/L	4	3.85	ND	**32**	**41-128%**	---	---	Q-01, J
4-Nitroaniline	1.27	0.769	1.54	ug/L	4	3.85	ND	33	25-120%	---	---	J
Nitrobenzene	1.41	0.385	0.769	ug/L	4	3.85	ND	**37**	**45-121%**	---	---	Q-01
2,4-Dinitrotoluene	3.12	0.385	0.769	ug/L	4	3.85	ND	81	57-128%	---	---	
2,6-Dinitrotoluene	2.64	0.769	0.769	ug/L	4	3.85	ND	69	57-124%	---	---	
Benzoic acid	ND	9.62	9.62	ug/L	4	7.69	ND		**10-120%**	---	---	Q-01, Q-31
Benzyl alcohol	1.17	0.385	0.769	ug/L	4	3.85	ND	31	31-120%	---	---	
Isophorone	1.52	0.0962	0.192	ug/L	4	3.85	ND	**40**	**42-124%**	---	---	Q-01
Azobenzene (1,2-DPH)	2.38	0.0962	0.192	ug/L	4	3.85	ND	62	61-120%	---	---	
Bis(2-Ethylhexyl) adipate	3.69	0.962	1.92	ug/L	4	3.85	ND	96	63-121%	---	---	
3,3'-Dichlorobenzidine	ND	3.85	3.85	ug/L	4	7.69	ND		**27-129%**	---	---	Q-01, Q-52, Q-31
1,2-Dinitrobenzene	2.85	0.962	1.92	ug/L	4	3.85	ND	74	59-120%	---	---	
1,3-Dinitrobenzene	2.92	0.962	1.92	ug/L	4	3.85	ND	76	49-128%	---	---	
1,4-Dinitrobenzene	2.90	0.962	1.92	ug/L	4	3.85	ND	75	54-120%	---	---	
Pyridine	0.596	0.385	0.769	ug/L	4	3.85	ND	15	10-120%	---	---	J
1,2-Dichlorobenzene	1.02	0.0962	0.192	ug/L	4	3.85	ND	**27**	**32-120%**	---	---	Q-01
1,3-Dichlorobenzene	0.980	0.0962	0.192	ug/L	4	3.85	ND	**25**	**28-120%**	---	---	Q-01
1,4-Dichlorobenzene	1.00	0.0962	0.192	ug/L	4	3.85	ND	**26**	**29-120%**	---	---	Q-01
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 32 %*		*Limits: 44-120 %*			*Dilution: 4x*				*S-03*
2-Fluorobiphenyl (Surr)			*37 %*		*44-120 %*			*"*				*S-03*

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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6700 S.W. Sandburg Street
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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Matrix Spike (23G0047-MS1)			Prepared: 07/05/23 06:12 Analyzed: 07/05/23 16:19									
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
Surr: Phenol-d6 (Surr)			*Recovery: 12 %*	*Limits: 10-133 %*		*Dilution: 4x*						
p-Terphenyl-d14 (Surr)			*74 %*	*50-134 %*		*"*						
2-Fluorophenol (Surr)			*17 %*	*19-120 %*		*"*						*S-03*
2,4,6-Tribromophenol (Surr)			*101 %*	*43-140 %*		*"*						
Matrix Spike Dup (23G0047-MSD1)			Prepared: 07/05/23 06:12 Analyzed: 07/05/23 16:53									
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
EPA 8270E												
Acenaphthene	2.15	0.0385	0.0769	ug/L	4	3.85	ND	56	47-122%	16	30%	
Acenaphthylene	2.16	0.0385	0.0769	ug/L	4	3.85	ND	56	41-130%	17	30%	
Anthracene	3.40	0.0385	0.0769	ug/L	4	3.85	ND	88	57-123%	9	30%	
Benz(a)anthracene	3.57	0.0385	0.0769	ug/L	4	3.85	ND	93	58-125%	4	30%	
Benzo(a)pyrene	3.33	0.0577	0.115	ug/L	4	3.85	ND	87	54-128%	4	30%	
Benzo(b)fluoranthene	3.43	0.0577	0.115	ug/L	4	3.85	ND	89	53-131%	4	30%	
Benzo(k)fluoranthene	3.33	0.0577	0.115	ug/L	4	3.85	ND	87	57-129%	4	30%	
Benzo(g,h,i)perylene	3.81	0.0385	0.0769	ug/L	4	3.85	ND	99	50-134%	5	30%	
Chrysene	3.66	0.0385	0.0769	ug/L	4	3.85	ND	95	59-123%	5	30%	
Dibenz(a,h)anthracene	3.67	0.0385	0.0769	ug/L	4	3.85	ND	95	51-134%	3	30%	
Fluoranthene	3.76	0.0385	0.0769	ug/L	4	3.85	ND	98	57-128%	5	30%	
Fluorene	2.83	0.0385	0.0769	ug/L	4	3.85	ND	74	52-124%	20	30%	
Indeno(1,2,3-cd)pyrene	3.41	0.0385	0.0769	ug/L	4	3.85	ND	89	52-134%	3	30%	
1-Methylnaphthalene	1.50	0.0769	0.154	ug/L	4	3.85	ND	**39**	**41-120%**	6	30%	Q-01
2-Methylnaphthalene	1.51	0.0769	0.154	ug/L	4	3.85	ND	**39**	**40-121%**	4	30%	Q-01
Naphthalene	1.33	0.0769	0.154	ug/L	4	3.85	ND	**34**	**40-121%**	2	30%	Q-01
Phenanthrene	3.32	0.0385	0.0769	ug/L	4	3.85	ND	86	59-120%	9	30%	
Pyrene	3.68	0.0385	0.0769	ug/L	4	3.85	ND	96	57-126%	4	30%	
Carbazole	3.87	0.0577	0.115	ug/L	4	3.85	ND	101	60-122%	5	30%	
Dibenzofuran	2.50	0.0385	0.0769	ug/L	4	3.85	ND	65	53-120%	20	30%	
2-Chlorophenol	1.39	0.192	0.385	ug/L	4	3.85	ND	**36**	**38-120%**	10	30%	Q-01
4-Chloro-3-methylphenol	2.82	0.769	0.769	ug/L	4	3.85	ND	73	52-120%	18	30%	
2,4-Dichlorophenol	2.76	0.192	0.385	ug/L	4	3.85	0.519	58	47-121%	20	30%	
2,4-Dimethylphenol	2.38	0.192	0.385	ug/L	4	3.85	ND	62	31-124%	14	30%	
2,4-Dinitrophenol	5.59	0.962	1.92	ug/L	4	3.85	ND	**145**	**23-143%**	16	30%	Q-01

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC
6700 S.W. Sandburg Street
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ORELAP ID: OR100062

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Matrix Spike Dup (23G0047-MSD1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 16:53							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
4,6-Dinitro-2-methylphenol	5.42	0.962	1.92	ug/L	4	3.85	ND	**141**	**44-137%**	9	30%	Q-01
2-Methylphenol	1.46	0.0962	0.192	ug/L	4	3.85	ND	38	30-120%	9	30%	
3+4-Methylphenol(s)	1.56	0.0962	0.192	ug/L	4	3.85	ND	40	29-120%	15	30%	
2-Nitrophenol	1.80	0.385	0.769	ug/L	4	3.85	ND	47	47-123%	4	30%	
4-Nitrophenol	1.56	0.385	0.769	ug/L	4	3.85	ND	41	10-120%	12	30%	Q-31
Pentachlorophenol (PCP)	3.97	0.385	0.769	ug/L	4	3.85	ND	103	35-138%	7	30%	Q-31
Phenol	ND	0.769	1.54	ug/L	4	3.85	ND		**10-120%**	**200**	**30%**	Q-01
2,3,4,6-Tetrachlorophenol	3.79	0.192	0.385	ug/L	4	3.85	ND	99	50-128%	10	30%	
2,3,5,6-Tetrachlorophenol	3.73	0.192	0.385	ug/L	4	3.85	ND	97	50-121%	12	30%	
2,4,5-Trichlorophenol	3.59	0.192	0.385	ug/L	4	3.85	ND	93	53-123%	21	30%	
2,4,6-Trichlorophenol	2.92	0.192	0.385	ug/L	4	3.85	ND	76	50-125%	24	30%	
Bis(2-ethylhexyl)phthalate	3.70	0.769	1.54	ug/L	4	3.85	ND	96	55-135%	4	30%	
Butyl benzyl phthalate	3.77	0.769	1.54	ug/L	4	3.85	ND	98	53-134%	3	30%	
Diethylphthalate	3.51	0.769	1.54	ug/L	4	3.85	ND	91	56-125%	10	30%	
Dimethylphthalate	3.12	0.769	1.54	ug/L	4	3.85	ND	81	45-127%	15	30%	
Di-n-butylphthalate	3.93	0.769	1.54	ug/L	4	3.85	ND	102	59-127%	2	30%	
Di-n-octyl phthalate	3.37	0.769	1.54	ug/L	4	3.85	ND	88	51-140%	4	30%	
N-Nitrosodimethylamine	0.690	0.0962	0.192	ug/L	4	3.85	ND	**18**	**19-120%**	5	30%	Q-01
N-Nitroso-di-n-propylamine	1.36	0.0962	0.192	ug/L	4	3.85	ND	**35**	**49-120%**	2	30%	Q-01
N-Nitrosodiphenylamine	3.19	0.0962	0.192	ug/L	4	3.85	ND	83	51-123%	8	30%	
Bis(2-Chloroethoxy) methane	1.47	0.0962	0.192	ug/L	4	3.85	ND	**38**	**48-120%**	5	30%	Q-01
Bis(2-Chloroethyl) ether	1.32	0.0962	0.192	ug/L	4	3.85	ND	**34**	**43-120%**	4	30%	Q-01
2,2'-Oxybis(1-Chloropropane)	1.17	0.0962	0.192	ug/L	4	3.85	ND	**30**	**41-120%**	3	30%	Q-01
Hexachlorobenzene	3.16	0.0385	0.0769	ug/L	4	3.85	ND	82	53-125%	12	30%	
Hexachlorobutadiene	1.05	0.0962	0.192	ug/L	4	3.85	ND	27	22-124%	2	30%	
Hexachlorocyclopentadiene	1.02	0.192	0.385	ug/L	4	3.85	ND	26	10-127%	20	30%	Q-31
Hexachloroethane	0.898	0.0962	0.192	ug/L	4	3.85	ND	23	21-120%	2	30%	
2-Chloronaphthalene	1.73	0.0385	0.0769	ug/L	4	3.85	ND	45	40-120%	14	30%	
1,2,4-Trichlorobenzene	1.19	0.0962	0.192	ug/L	4	3.85	ND	31	29-120%	3	30%	
4-Bromophenyl phenyl ether	3.37	0.0962	0.192	ug/L	4	3.85	ND	88	55-124%	15	30%	
4-Chlorophenyl phenyl ether	2.89	0.0962	0.192	ug/L	4	3.85	ND	75	53-121%	21	30%	
Aniline	0.455	0.192	0.385	ug/L	4	3.85	ND	12	10-120%	25	30%	Q-31
4-Chloroaniline	0.608	0.0962	0.192	ug/L	4	3.85	ND	**16**	**33-120%**	10	30%	Q-01

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Philip Nerenberg

Philip Nerenberg, Lab Director

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503-718-2323
ORELAP ID: **OR100062**

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Semivolatile Organic Compounds by EPA 8270E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0047 - EPA 3510C (Acid/Base Neutral)							**Water**					
Matrix Spike Dup (23G0047-MSD1)			Prepared: 07/05/23 06:12		Analyzed: 07/05/23 16:53							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01RE1)												
2-Nitroaniline	3.30	0.769	1.54	ug/L	4	3.85	ND	86	55-127%	20	30%	
3-Nitroaniline	1.19	0.769	1.54	ug/L	4	3.85	ND	**31**	**41-128%**	2	30%	Q-01, J
4-Nitroaniline	1.38	0.769	1.54	ug/L	4	3.85	ND	36	25-120%	8	30%	J
Nitrobenzene	1.47	0.385	0.769	ug/L	4	3.85	ND	**38**	**45-121%**	4	30%	Q-01
2,4-Dinitrotoluene	3.62	0.385	0.769	ug/L	4	3.85	ND	94	57-128%	15	30%	
2,6-Dinitrotoluene	3.13	0.769	0.769	ug/L	4	3.85	ND	81	57-124%	17	30%	
Benzoic acid	ND	9.62	9.62	ug/L	4	7.69	ND		**10-120%**	**200**	**30%**	Q-01, Q-31
Benzyl alcohol	1.27	0.385	0.769	ug/L	4	3.85	ND	33	31-120%	8	30%	
Isophorone	1.57	0.0962	0.192	ug/L	4	3.85	ND	**41**	**42-124%**	3	30%	Q-01
Azobenzene (1,2-DPH)	2.76	0.0962	0.192	ug/L	4	3.85	ND	72	61-120%	15	30%	
Bis(2-Ethylhexyl) adipate	3.84	0.962	1.92	ug/L	4	3.85	ND	100	63-121%	4	30%	
3,3'-Dichlorobenzidine	ND	3.85	3.85	ug/L	4	7.69	ND		**27-129%**		30%	Q-01, Q-52, Q-31
1,2-Dinitrobenzene	3.48	0.962	1.92	ug/L	4	3.85	ND	90	59-120%	20	30%	
1,3-Dinitrobenzene	3.54	0.962	1.92	ug/L	4	3.85	ND	92	49-128%	19	30%	
1,4-Dinitrobenzene	3.61	0.962	1.92	ug/L	4	3.85	ND	94	54-120%	22	30%	
Pyridine	0.605	0.385	0.769	ug/L	4	3.85	ND	16	10-120%	1	30%	J
1,2-Dichlorobenzene	1.01	0.0962	0.192	ug/L	4	3.85	ND	**26**	**32-120%**	0.9	30%	Q-01
1,3-Dichlorobenzene	0.990	0.0962	0.192	ug/L	4	3.85	ND	**26**	**28-120%**	0.9	30%	Q-01
1,4-Dichlorobenzene	1.00	0.0962	0.192	ug/L	4	3.85	ND	**26**	**29-120%**	0.3	30%	Q-01
Surr: Nitrobenzene-d5 (Surr)			*Recovery: 34 %*		*Limits: 44-120 %*		*Dilution: 4x*					*S-03*
2-Fluorobiphenyl (Surr)			*42 %*		*44-120 %*		*"*					*S-03*
Phenol-d6 (Surr)			*13 %*		*10-133 %*		*"*					
p-Terphenyl-d14 (Surr)			*79 %*		*50-134 %*		*"*					
2-Fluorophenol (Surr)			*17 %*		*19-120 %*		*"*					*S-03*
2,4,6-Tribromophenol (Surr)			*109 %*		*43-140 %*		*"*					

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Philip Nerenberg, Lab Director

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Apex Laboratories, LLC
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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0115 - EPA 3015A								**Water**				
Blank (23G0115-BLK1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 16:58							
EPA 200.8												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Barium	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Calcium	ND	375	600	ug/L	1	---	---	---	---	---	---	
Chromium	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Iron	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Lead	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Magnesium	ND	75.0	150	ug/L	1	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Nickel	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Silver	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	ug/L	1	---	---	---	---	---	---	
LCS (23G0115-BS1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 17:03							
EPA 200.8												
Arsenic	55.8	0.500	1.00	ug/L	1	55.6	---	100	85-115%	---	---	
Barium	59.0	1.00	2.00	ug/L	1	55.6	---	106	85-115%	---	---	
Cadmium	55.9	0.100	0.200	ug/L	1	55.6	---	101	85-115%	---	---	
Calcium	2970	375	600	ug/L	1	2780	---	107	85-115%	---	---	
Chromium	57.0	1.00	2.00	ug/L	1	55.6	---	103	85-115%	---	---	
Copper	58.8	1.00	2.00	ug/L	1	55.6	---	106	85-115%	---	---	
Iron	3060	25.0	50.0	ug/L	1	2780	---	110	85-115%	---	---	
Lead	55.5	0.100	0.200	ug/L	1	55.6	---	100	85-115%	---	---	
Magnesium	3090	75.0	150	ug/L	1	2780	---	111	85-115%	---	---	
Manganese	59.9	0.500	1.00	ug/L	1	55.6	---	108	85-115%	---	---	
Nickel	60.6	1.00	2.00	ug/L	1	55.6	---	109	85-115%	---	---	
Selenium	29.4	0.500	1.00	ug/L	1	27.8	---	106	85-115%	---	---	
Silver	28.3	0.100	0.200	ug/L	1	27.8	---	102	85-115%	---	---	
Zinc	59.6	2.00	4.00	ug/L	1	55.6	---	107	85-115%	---	---	
Duplicate (23G0115-DUP1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 17:34							

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0115 - EPA 3015A							**Water**					
Duplicate (23G0115-DUP1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 17:34							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
EPA 200.8												
Arsenic	**8.87**	0.500	1.00	ug/L	1	---	8.74	---	---	1	20%	
Barium	**21.8**	1.00	2.00	ug/L	1	---	22.4	---	---	3	20%	
Cadmium	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	20%	
Calcium	**38300**	375	600	ug/L	1	---	38900	---	---	2	20%	
Chromium	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	20%	
Copper	ND	1.00	2.00	ug/L	1	---	1.75	---	---	***	**20%**	
Iron	**407**	25.0	50.0	ug/L	1	---	413	---	---	2	20%	
Lead	**0.166**	0.100	0.200	ug/L	1	---	0.174	---	---	5	20%	J
Magnesium	**10500**	75.0	150	ug/L	1	---	10800	---	---	3	20%	
Manganese	**263**	0.500	1.00	ug/L	1	---	275	---	---	4	20%	
Nickel	**2.29**	1.00	2.00	ug/L	1	---	2.94	---	---	**25**	**20%**	Q-05
Selenium	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	20%	
Silver	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	20%	
Zinc	**2.55**	2.00	4.00	ug/L	1	---	3.08	---	---	19	20%	J
Matrix Spike (23G0115-MS1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 17:39							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
EPA 200.8												
Arsenic	65.3	0.500	1.00	ug/L	1	55.6	8.74	102	70-130%	---	---	
Barium	80.3	1.00	2.00	ug/L	1	55.6	22.4	104	70-130%	---	---	
Cadmium	57.3	0.100	0.200	ug/L	1	55.6	ND	103	70-130%	---	---	
Calcium	41000	375	600	ug/L	1	2780	38900	77	70-130%	---	---	
Chromium	56.1	1.00	2.00	ug/L	1	55.6	ND	101	70-130%	---	---	
Copper	58.3	1.00	2.00	ug/L	1	55.6	1.75	102	70-130%	---	---	
Iron	3350	25.0	50.0	ug/L	1	2780	413	106	70-130%	---	---	
Lead	54.3	0.100	0.200	ug/L	1	55.6	0.174	97	70-130%	---	---	
Magnesium	13200	75.0	150	ug/L	1	2780	10800	86	70-130%	---	---	
Manganese	316	0.500	1.00	ug/L	1	55.6	275	75	70-130%	---	---	
Nickel	61.2	1.00	2.00	ug/L	1	55.6	2.94	105	70-130%	---	---	
Selenium	29.4	0.500	1.00	ug/L	1	27.8	ND	106	70-130%	---	---	
Silver	28.2	0.100	0.200	ug/L	1	27.8	ND	102	70-130%	---	---	
Zinc	59.9	2.00	4.00	ug/L	1	55.6	3.08	102	70-130%	---	---	

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0115 - EPA 3015A								**Water**				
Matrix Spike Dup (23G0115-MSD1)			Prepared: 07/06/23 09:43		Analyzed: 07/06/23 17:55							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
EPA 200.8												
Arsenic	65.0	0.500	1.00	ug/L	1	55.6	8.74	101	70-130%	0.5	20%	
Barium	79.6	1.00	2.00	ug/L	1	55.6	22.4	103	70-130%	0.9	20%	
Cadmium	56.4	0.100	0.200	ug/L	1	55.6	ND	102	70-130%	2	20%	
Calcium	40100	375	600	ug/L	1	2780	38900	**44**	**70-130%**	2	20%	Q-65
Chromium	56.7	1.00	2.00	ug/L	1	55.6	ND	102	70-130%	1	20%	
Copper	58.2	1.00	2.00	ug/L	1	55.6	1.75	102	70-130%	0.2	20%	
Iron	3370	25.0	50.0	ug/L	1	2780	413	106	70-130%	0.7	20%	
Lead	56.8	0.100	0.200	ug/L	1	55.6	0.174	102	70-130%	5	20%	
Magnesium	13100	75.0	150	ug/L	1	2780	10800	83	70-130%	0.6	20%	
Manganese	314	0.500	1.00	ug/L	1	55.6	275	71	70-130%	0.6	20%	
Nickel	59.8	1.00	2.00	ug/L	1	55.6	2.94	102	70-130%	2	20%	
Selenium	29.5	0.500	1.00	ug/L	1	27.8	ND	106	70-130%	0.4	20%	
Silver	28.3	0.100	0.200	ug/L	1	27.8	ND	102	70-130%	0.2	20%	
Zinc	60.3	2.00	4.00	ug/L	1	55.6	3.08	103	70-130%	0.6	20%	

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALITY CONTROL (QC) SAMPLE RESULTS

Solid and Moisture Determinations

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1170 - Total Suspended Solids - 2022												**Water**
Blank (23F1170-BLK1)			Prepared: 06/30/23 18:52		Analyzed: 06/30/23 18:52							
SM 2540 D												
Total Suspended Solids	ND	---	5.00	mg/L	1	---	---	---	---	---	---	
Duplicate (23F1170-DUP1)			Prepared: 06/30/23 18:52		Analyzed: 06/30/23 18:52							
QC Source Sample: 22B-U-S-20230628 (A3F1632-01)												
SM 2540 D												
Total Suspended Solids	ND	---	5.00	mg/L	1	---	ND	---	---	---	10%	EST_s
Duplicate (23F1170-DUP2)			Prepared: 06/30/23 18:52		Analyzed: 06/30/23 18:52							
QC Source Sample: Non-SDG (A3F1656-01)												
Total Suspended Solids	**149**	---	14.3	mg/L	1	---	149	---	---	0.00	10%	
Reference (23F1170-SRM1)			Prepared: 06/30/23 18:52		Analyzed: 06/30/23 18:52							
SM 2540 D												
Total Suspended Solids	1000	---		mg/L	1	931		108	85-116%	---	---	

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

SAMPLE PREPARATION INFORMATION

Hydrocarbon Identification Screen by NWTPH-HCID

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0245							
A3F1632-01	Water	NWTPH-HCID	06/28/23 12:00	07/11/23 14:23	1050mL/5mL	1000mL/5mL	0.95
A3F1632-02	Water	NWTPH-HCID	06/28/23 11:30	07/11/23 14:23	1050mL/5mL	1000mL/5mL	0.95

Diesel and/or Oil Hydrocarbons by NWTPH-Dx with Acid/Silica Gel Cleanup

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

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0272							
A3F1632-01	Water	NWTPH-Dx/SG	06/28/23 12:00	07/11/23 14:22	980mL/5mL	1000mL/5mL	1.02
A3F1632-02	Water	NWTPH-Dx/SG	06/28/23 11:30	07/11/23 14:22	1020mL/5mL	1000mL/5mL	0.98

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

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23F1132							
A3F1632-01	Water	NWTPH-Gx (MS)	06/28/23 12:00	06/30/23 11:22	5mL/5mL	5mL/5mL	1.00
A3F1632-02	Water	NWTPH-Gx (MS)	06/28/23 11:30	06/30/23 11:22	5mL/5mL	5mL/5mL	1.00

Volatile Organic Compounds by EPA 8260D

Prep: EPA 5030C

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23F1132							
A3F1632-01	Water	EPA 8260D	06/28/23 12:00	06/30/23 11:22	5mL/5mL	5mL/5mL	1.00
A3F1632-02	Water	EPA 8260D	06/28/23 11:30	06/30/23 11:22	5mL/5mL	5mL/5mL	1.00
A3F1632-03	Water	EPA 8260D	06/28/23 00:00	06/30/23 11:22	5mL/5mL	5mL/5mL	1.00

Semivolatile Organic Compounds by EPA 8270E

Prep: EPA 3510C (Acid/Base Neutral)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0047							
A3F1632-01RE1	Water	EPA 8270E	06/28/23 12:00	07/05/23 06:12	1040mL/1mL	1000mL/1mL	0.96
A3F1632-01RE2	Water	EPA 8270E	06/28/23 12:00	07/05/23 06:12	1040mL/1mL	1000mL/1mL	0.96
A3F1632-02RE2	Water	EPA 8270E	06/28/23 11:30	07/05/23 06:12	1030mL/1mL	1000mL/1mL	0.97

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: OF22B Dry Weather Month	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1632 - 09 23 23 1651

SAMPLE PREPARATION INFORMATION

Semivolatile Organic Compounds by EPA 8270E

Prep: EPA 3510C (Acid/Base Neutral)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor

Total Metals by EPA 200.8 (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0115							
A3F1632-01	Water	EPA 200.8	06/28/23 12:00	07/06/23 09:43	45mL/50mL	45mL/50mL	1.00
A3F1632-02	Water	EPA 200.8	06/28/23 11:30	07/06/23 09:43	45mL/50mL	45mL/50mL	1.00

Solid and Moisture Determinations

Prep: Total Suspended Solids - 2022

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23F1170							
A3F1632-01	Water	SM 2540 D	06/28/23 12:00	06/30/23 18:52			NA
A3F1632-02	Water	SM 2540 D	06/28/23 11:30	06/30/23 18:52			NA

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

Apex Laboratories, LLC

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ANALYTICAL REPORT

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

QUALIFIER DEFINITIONS

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

Apex Laboratories

EST_s	Solids results are reported as estimates when less than 2.5 mg residue is recovered during analysis. All method QC requirements have been met for samples, and reporting levels are adjusted based on volume filtered. Results meet regulatory requirements.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
PRES	Incomplete field preservation. Additional preservative was added to adjust the pH within the appropriate range for this analysis.
Q-01	Spike recovery and/or RPD is outside acceptance limits.
Q-05	Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
Q-19	Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
Q-31	Estimated Results. Recovery of Continuing Calibration Verification sample below lower control limit for this analyte. Results are likely biased low.
Q-41	Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
Q-42	Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
Q-52	Due to known erratic recoveries, the result and reporting levels for this analyte are reported as Estimated Values. This analyte may not have passed all QC requirements for this method.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by +7%. The results are reported as Estimated Values.
Q-54a	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260/8270 by -10%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260
Q-65	Spike recovery is estimated due to the high analyte concentration of the source sample.
S-03	Sample re-extract, or the analysis of an associated Batch QC sample, confirms surrogate failure due to sample matrix effect.
S-06	Surrogate recovery is outside of established control limits.

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Philip Nerenberg, Lab Director

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

Results for Volatiles analyses on soils and sediments that are reported on a “dry weight” basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an “As Received” basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

Philip Nerenberg, Lab Director

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15862 SW 72nd Ave. Suite 150	Project Number:	**OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager:	**Ted Norton**	**A3F1632 - 09 23 23 1651**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

APEX LABS

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

CHAIN OF CUSTODY

Lab # A3F1632 ~~COC~~ 1 of 1

Company: WSP
Project Mgr: Ted Norton
Project Name: outfall 22B
Project #: OF22B Dry Weather Month
Address: 15682 SW 72nd #150 Portland, or
Phone: ~~503~~ 206 755 4970
Email: ted.norton@wsp.com
PO #
Sampled by: Grant Busse
Site Location:
State Or
County

ANALYSIS REQUEST

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs + 8270 SIM	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn — TOTAL / DISS. / TCLP	TCLP Metals (8)	TSS	Organic pest EPA ~~1608~~ 1699	PCBs EPA 1668	PCDDs/PCDFs EPA 1613 B	Other Herb EPA 8151A			Hold Sample	Frozen Archive
228-U-S-20230628	6/28/23	12:00	W	70	X	X	X	~~X~~			X	X	X					X		X	X	X	X	X				
229-U-~~S~~-20230628	"	11:30	W	18	X	X	X	~~X~~			X	X	X					X		X	X	X	X	X				

Standard Turn Around Time (TAT) = 10 Business Days

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

SAMPLES ARE HELD FOR 30 DAYS

SPECIAL INSTRUCTIONS:
228-U-S-20230628 is with MS/MSDS

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Grant Busse Date: 6/28/23	Signature: [signature] Date: 6/28/23	Signature: Date:	Signature: Date:
Printed Name: Grant Busse Time: 17:53	Printed Name: Katrina Mariposa Time: 17:53	Printed Name: Time:	Printed Name: Time:
Company: WSP	Company: Apex	Company:	Company:

Form Y-002 R-00

Apex Laboratories, LLC
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ANALYTICAL REPORT

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15862 SW 72nd Ave. Suite 150	Project Number: **OF22B Dry Weather Month**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1632 - 09 23 23 1651**

APEX LABS COOLER RECEIPT FORM

Client: WSP Element WO#: A3F1632

Project/Project #: Outfall 22B / OF22B Dry Weather Month

Delivery Info:

Date/time received: 6/28/23 @ 17:53 By: RAM

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

Cooler Inspection Date/time inspected: 6/28/23 @ 18:15 By: RAM

Chain of Custody included? Yes X No ____

Signed/dated by client? Yes X No ____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5 (received 6/29)	Cooler #6	Cooler #7
Temperature (°C)	5.5	1.9	5.4	5.4	3.1		
Custody seals? (Y/N)	N				N		
Received on ice? (Y/N)	Y				Y		
Temp. blanks? (Y/N)	Y				Y		
Ice type: (Gel/Real/Other)	Real				Real		
Condition (In/Out):	In				In		

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

Green dots applied to out of temperature samples? Yes/(No)

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 6/29/23 @ 0905 By: ks

All samples intact? Yes X No ___ Comments: ____

Bottle labels/COCs agree? Yes ___ No X Comments: Trip blank not listed on COC, we received 4 (5) containers.

COC/container discrepancies form initiated? Yes ___ No X

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

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

Comments ____

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

Comments: ____

Additional information: TB#3317

Labeled by: JS Witness: APW Cooler Inspected by: ks

Form Y-003 R-00

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ORELAP ID: **OR100062**

ANALYTICAL REPORT

Saturday, September 23, 2023

Ted Norton
WSP USA Environment & Infrastructure Inc.
15862 SW 72nd Ave. Suite 150
Portland, OR 97224

RE: A3F1661 - Outfall 22B - 361M136900.01

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A3F1661, which was received by the laboratory on 6/29/2023 at 4:55:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information
Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.
(See Cooler Receipt Form for details)
Default Cooler 0.4 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
22B-F-D-20230629	A3F1661-01	Water	06/29/23 13:00	06/29/23 16:55
22B-F-S-20230629	A3F1661-02	Water	06/29/23 12:30	06/29/23 16:55
22B-U-S-20230629	A3F1661-03	Water	06/29/23 12:30	06/29/23 16:55
22B-F-RB-20230629	A3F1661-04	Water	06/29/23 14:00	06/29/23 16:55
22B-U-D-20230629	A3F1661-05	Water	06/29/23 13:00	06/29/23 16:55

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15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

ANALYTICAL SAMPLE RESULTS

Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230629 (A3F1661-03)				**Matrix: Water**		**Batch: 23F1159**		
Mercury	**1.52**	0.500	1.00	ng/L	1	07/03/23 15:12	EPA 1631E-LL	
22B-U-D-20230629 (A3F1661-05)				**Matrix: Water**		**Batch: 23F1159**		
Mercury	**1.47**	0.500	1.00	ng/L	1	07/03/23 15:17	EPA 1631E-LL	

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ANALYTICAL REPORT

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15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

ANALYTICAL SAMPLE RESULTS

Dissolved Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-F-D-20230629 (A3F1661-01)				**Matrix: Water**		**Batch: 23G0321**		
Mercury	**0.804**	0.500	1.00	ng/L	1	07/13/23 13:30	EPA 1631E-LL (Diss)	**J**
22B-F-S-20230629 (A3F1661-02)				**Matrix: Water**		**Batch: 23G0321**		
Mercury	**0.792**	0.500	1.00	ng/L	1	07/13/23 13:45	EPA 1631E-LL (Diss)	**J**
22B-F-RB-20230629 (A3F1661-04)				**Matrix: Water**		**Batch: 23G0321**		
Mercury	ND	0.500	1.00	ng/L	1	07/13/23 13:50	EPA 1631E-LL (Diss)	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.
15862 SW 72nd Ave. Suite 150
Portland, OR 97224

Project: **Outfall 22B**
Project Number: **361M136900.01**
Project Manager: **Ted Norton**

Report ID:
A3F1661 - 09 23 23 1724

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-U-S-20230629 (A3F1661-03)				**Matrix: Water**				
Batch: 23G0026								
Arsenic	**8.48**	0.500	1.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Barium	**20.1**	1.00	2.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Cadmium	ND	0.100	0.200	ug/L	1	07/06/23 06:06	EPA 200.8	
Calcium	**37700**	375	600	ug/L	1	07/06/23 06:06	EPA 200.8	
Chromium	ND	1.00	2.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Copper	ND	1.00	2.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Iron	**371**	25.0	50.0	ug/L	1	07/06/23 06:06	EPA 200.8	
Lead	**0.189**	0.100	0.200	ug/L	1	07/06/23 06:06	EPA 200.8	**J**
Magnesium	**10700**	75.0	150	ug/L	1	07/06/23 06:06	EPA 200.8	
Manganese	**219**	0.500	1.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Nickel	**1.54**	1.00	2.00	ug/L	1	07/06/23 06:06	EPA 200.8	**J**
Selenium	ND	0.500	1.00	ug/L	1	07/06/23 06:06	EPA 200.8	
Silver	ND	0.100	0.200	ug/L	1	07/06/23 06:06	EPA 200.8	
Zinc	ND	2.00	4.00	ug/L	1	07/06/23 06:06	EPA 200.8	
22B-U-D-20230629 (A3F1661-05)				**Matrix: Water**				
Batch: 23G0026								
Arsenic	**8.51**	0.500	1.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Barium	**20.7**	1.00	2.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Cadmium	ND	0.100	0.200	ug/L	1	07/06/23 06:31	EPA 200.8	
Calcium	**36800**	375	600	ug/L	1	07/06/23 06:31	EPA 200.8	
Chromium	ND	1.00	2.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Copper	ND	1.00	2.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Iron	**393**	25.0	50.0	ug/L	1	07/06/23 06:31	EPA 200.8	
Lead	**0.180**	0.100	0.200	ug/L	1	07/06/23 06:31	EPA 200.8	**J**
Magnesium	**10500**	75.0	150	ug/L	1	07/06/23 06:31	EPA 200.8	
Manganese	**211**	0.500	1.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Nickel	**1.60**	1.00	2.00	ug/L	1	07/06/23 06:31	EPA 200.8	**J**
Selenium	ND	0.500	1.00	ug/L	1	07/06/23 06:31	EPA 200.8	
Silver	ND	0.100	0.200	ug/L	1	07/06/23 06:31	EPA 200.8	
Zinc	**2.07**	2.00	4.00	ug/L	1	07/06/23 06:31	EPA 200.8	**J**

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 200.8 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-F-D-20230629 (A3F1661-01)				**Matrix: Water**				
Batch: 23G0155								
Arsenic	**7.34**	0.500	1.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Barium	**19.1**	0.500	1.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Cadmium	ND	0.100	0.200	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Calcium	**39000**	300	600	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Chromium	ND	1.00	2.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Copper	ND	1.00	2.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Iron	ND	25.0	50.0	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Lead	ND	0.100	0.200	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Magnesium	**10900**	75.0	150	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Manganese	**220**	0.500	1.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Nickel	**1.55**	1.00	2.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	**J**
Selenium	ND	0.500	1.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Silver	ND	0.100	0.200	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
Zinc	ND	2.00	4.00	ug/L	1	07/08/23 05:28	EPA 200.8 (Diss)	
22B-F-S-20230629 (A3F1661-02)				**Matrix: Water**				
Batch: 23G0155								
Arsenic	**7.29**	0.500	1.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Barium	**18.9**	0.500	1.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Cadmium	ND	0.100	0.200	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Calcium	**38500**	300	600	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Chromium	ND	1.00	2.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Copper	ND	1.00	2.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Iron	ND	25.0	50.0	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Lead	ND	0.100	0.200	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Magnesium	**11000**	75.0	150	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Manganese	**222**	0.500	1.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Nickel	**1.45**	1.00	2.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	**J**
Selenium	ND	0.500	1.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Silver	ND	0.100	0.200	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
Zinc	ND	2.00	4.00	ug/L	1	07/08/23 05:33	EPA 200.8 (Diss)	
22B-F-RB-20230629 (A3F1661-04)				**Matrix: Water**				

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 200.8 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-F-RB-20230629 (A3F1661-04)				**Matrix: Water**				
Batch: 23G0155								
Arsenic	ND	0.500	1.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Barium	ND	0.500	1.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Cadmium	ND	0.100	0.200	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Calcium	ND	300	600	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Chromium	ND	1.00	2.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Copper	ND	1.00	2.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Iron	ND	25.0	50.0	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Lead	ND	0.100	0.200	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Magnesium	ND	75.0	150	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Manganese	ND	0.500	1.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Nickel	ND	1.00	2.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Selenium	ND	0.500	1.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Silver	ND	0.100	0.200	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	
Zinc	ND	2.00	4.00	ug/L	1	07/08/23 05:38	EPA 200.8 (Diss)	

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Philip Nerenberg, Lab Director

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

Weck Laboratories, Inc.

ANALYTICAL SAMPLE RESULTS (Subcontracted)

Hexavalent Chromium by IC

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
22B-F-D-20230629 (A3F1661-01)				**Matrix: Water**		**Batch: W3G0816**		
Batch: W3G0816								
Chromium 6+, Dissolved	**0.030**	---	0.020	ug/l	1	07/12/23 15:54	EPA 218.6	
22B-F-S-20230629 (A3F1661-02)				**Matrix: Water**		**Batch: W3G0816**		
Batch: W3G0816								
Chromium 6+, Dissolved	**0.027**	---	0.020	ug/l	1	07/12/23 16:05	EPA 218.6	
22B-U-S-20230629 (A3F1661-03)				**Matrix: Water**		**Batch: W3G0816**		
Batch: W3G0816								
Chromium 6+	**0.035**	---	0.020	ug/l	1	07/12/23 16:17	EPA 218.6	
22B-F-RB-20230629 (A3F1661-04)				**Matrix: Water**		**Batch: W3G0816**		
Batch: W3G0816								
Chromium 6+, Dissolved	**0.031**	---	0.020	ug/l	1	07/12/23 16:29	EPA 218.6	
22B-U-D-20230629 (A3F1661-05)				**Matrix: Water**		**Batch: W3G0816**		
Batch: W3G0816								
Chromium 6+	**0.025**	---	0.020	ug/l	1	07/12/23 16:41	EPA 218.6	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23F1159 - 1631E Mercury (H2O)									Water			
Blank (23F1159-BLK1)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 14:32							
EPA 1631E-LL												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
Blank (23F1159-BLK2)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 14:37							
EPA 1631E-LL												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
Blank (23F1159-BLK3)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 14:42							
EPA 1631E-LL												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
LCS (23F1159-BS1)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 14:47							
EPA 1631E-LL												
Mercury	8.87	0.500	1.00	ng/L	1	8.00	---	111	80-120%	---	---	
Matrix Spike (23F1159-MS1)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 14:57							
QC Source Sample: Non-SDG (A3F1525-01)												
EPA 1631E-LL												
Mercury	9.04	0.500	1.00	ng/L	1	8.00	0.504	107	75-125%	---	---	
Matrix Spike Dup (23F1159-MSD1)			Prepared: 06/30/23 12:55		Analyzed: 07/03/23 15:02							
QC Source Sample: Non-SDG (A3F1525-01)												
Mercury	9.44	0.500	1.00	ng/L	1	8.00	0.504	112	75-125%	4	24%	

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0321 - 1631E Mercury (H2O)								Water				
Blank (23G0321-BLK1)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:10							
EPA 1631E-LL (Diss)												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
Blank (23G0321-BLK2)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:15							
EPA 1631E-LL (Diss)												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
Blank (23G0321-BLK3)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:20							
EPA 1631E-LL (Diss)												
Mercury	ND	0.500	1.00	ng/L	1	---	---	---	---	---	---	
LCS (23G0321-BS1)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:25							
EPA 1631E-LL (Diss)												
Mercury	8.70	0.500	1.00	ng/L	1	8.00	---	109	80-120%	---	---	
Matrix Spike (23G0321-MS1)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:35							
QC Source Sample: 22B-F-D-20230629 (A3F1661-01)												
EPA 1631E-LL (Diss)												
Mercury	9.69	0.500	1.00	ng/L	1	8.00	0.804	111	75-125%	---	---	
Matrix Spike Dup (23G0321-MSD1)			Prepared: 07/12/23 11:10		Analyzed: 07/13/23 13:40							
QC Source Sample: 22B-F-D-20230629 (A3F1661-01)												
EPA 1631E-LL (Diss)												
Mercury	9.88	0.500	1.00	ng/L	1	8.00	0.804	113	75-125%	2	24%	

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0026 - EPA 3015A							**Water**					
Blank (23G0026-BLK1)			Prepared: 07/03/23 11:13		Analyzed: 07/06/23 05:29							
EPA 200.8												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Barium	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Calcium	ND	375	600	ug/L	1	---	---	---	---	---	---	
Chromium	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Iron	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Lead	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Magnesium	ND	75.0	150	ug/L	1	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Nickel	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Silver	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	ug/L	1	---	---	---	---	---	---	
LCS (23G0026-BS1)			Prepared: 07/03/23 11:13		Analyzed: 07/06/23 05:35							
EPA 200.8												
Arsenic	55.3	0.500	1.00	ug/L	1	55.6	---	99	85-115%	---	---	
Barium	58.0	1.00	2.00	ug/L	1	55.6	---	104	85-115%	---	---	
Cadmium	54.0	0.100	0.200	ug/L	1	55.6	---	97	85-115%	---	---	
Calcium	3020	375	600	ug/L	1	2780	---	109	85-115%	---	---	
Chromium	56.0	1.00	2.00	ug/L	1	55.6	---	101	85-115%	---	---	
Copper	58.2	1.00	2.00	ug/L	1	55.6	---	105	85-115%	---	---	
Iron	2990	25.0	50.0	ug/L	1	2780	---	108	85-115%	---	---	
Lead	56.4	0.100	0.200	ug/L	1	55.6	---	101	85-115%	---	---	
Magnesium	3140	75.0	150	ug/L	1	2780	---	113	85-115%	---	---	
Manganese	59.3	0.500	1.00	ug/L	1	55.6	---	107	85-115%	---	---	
Nickel	57.5	1.00	2.00	ug/L	1	55.6	---	104	85-115%	---	---	
Selenium	28.9	0.500	1.00	ug/L	1	27.8	---	104	85-115%	---	---	
Silver	26.6	0.100	0.200	ug/L	1	27.8	---	96	85-115%	---	---	
Zinc	57.7	2.00	4.00	ug/L	1	55.6	---	104	85-115%	---	---	
Matrix Spike (23G0026-MS1)			Prepared: 07/03/23 11:13		Analyzed: 07/06/23 06:11							

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0026 - EPA 3015A							**Water**					
Matrix Spike (23G0026-MS1)			Prepared: 07/03/23 11:13		Analyzed: 07/06/23 06:11							
QC Source Sample: 22B-U-S-20230629 (A3F1661-03)												
EPA 200.8												
Arsenic	63.8	0.500	1.00	ug/L	1	55.6	8.48	100	70-130%	---	---	
Barium	75.7	1.00	2.00	ug/L	1	55.6	20.1	100	70-130%	---	---	
Cadmium	56.4	0.100	0.200	ug/L	1	55.6	ND	102	70-130%	---	---	
Calcium	39900	375	600	ug/L	1	2780	37700	79	70-130%	---	---	
Chromium	55.2	1.00	2.00	ug/L	1	55.6	ND	99	70-130%	---	---	
Copper	56.9	1.00	2.00	ug/L	1	55.6	ND	102	70-130%	---	---	
Iron	3290	25.0	50.0	ug/L	1	2780	371	105	70-130%	---	---	
Lead	56.4	0.100	0.200	ug/L	1	55.6	0.189	101	70-130%	---	---	
Magnesium	13300	75.0	150	ug/L	1	2780	10700	94	70-130%	---	---	
Manganese	276	0.500	1.00	ug/L	1	55.6	219	102	70-130%	---	---	
Nickel	56.8	1.00	2.00	ug/L	1	55.6	1.54	99	70-130%	---	---	
Selenium	28.5	0.500	1.00	ug/L	1	27.8	ND	103	70-130%	---	---	
Silver	27.5	0.100	0.200	ug/L	1	27.8	ND	99	70-130%	---	---	
Zinc	58.6	2.00	4.00	ug/L	1	55.6	ND	105	70-130%	---	---	
Matrix Spike Dup (23G0026-MSD1)			Prepared: 07/03/23 11:13		Analyzed: 07/06/23 06:16							
QC Source Sample: 22B-U-S-20230629 (A3F1661-03)												
EPA 200.8												
Arsenic	63.4	0.500	1.00	ug/L	1	55.6	8.48	99	70-130%	0.5	20%	
Barium	75.0	1.00	2.00	ug/L	1	55.6	20.1	99	70-130%	0.9	20%	
Cadmium	56.2	0.100	0.200	ug/L	1	55.6	ND	101	70-130%	0.4	20%	
Calcium	40500	375	600	ug/L	1	2780	37700	99	70-130%	1	20%	
Chromium	53.9	1.00	2.00	ug/L	1	55.6	ND	97	70-130%	2	20%	
Copper	57.2	1.00	2.00	ug/L	1	55.6	ND	103	70-130%	0.6	20%	
Iron	3200	25.0	50.0	ug/L	1	2780	371	102	70-130%	3	20%	
Lead	56.1	0.100	0.200	ug/L	1	55.6	0.189	101	70-130%	0.4	20%	
Magnesium	13500	75.0	150	ug/L	1	2780	10700	102	70-130%	2	20%	
Manganese	272	0.500	1.00	ug/L	1	55.6	219	95	70-130%	2	20%	
Nickel	57.1	1.00	2.00	ug/L	1	55.6	1.54	100	70-130%	0.5	20%	
Selenium	28.4	0.500	1.00	ug/L	1	27.8	ND	102	70-130%	0.5	20%	
Silver	27.3	0.100	0.200	ug/L	1	27.8	ND	98	70-130%	1	20%	
Zinc	57.6	2.00	4.00	ug/L	1	55.6	ND	104	70-130%	2	20%	

Apex Laboratories

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: Outfall 22B	
15862 SW 72nd Ave. Suite 150	Project Number: 361M136900.01	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1661 - 09 23 23 1724

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0026 - EPA 3015A							**Water**					

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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WSP USA Environment & Infrastructure Inc.
15862 SW 72nd Ave. Suite 150
Portland, OR 97224

Project: **Outfall 22B**
Project Number: **361M136900.01**
Project Manager: **Ted Norton**

Report ID:
A3F1661 - 09 23 23 1724

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0155 - Matrix Matched Direct Inject								Water				
Blank (23G0155-BLK1)			Prepared: 07/07/23 07:48 Analyzed: 07/08/23 04:47									
EPA 200.8 (Diss)												
Arsenic	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Barium	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Cadmium	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Calcium	ND	300	600	ug/L	1	---	---	---	---	---	---	
Chromium	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Copper	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Iron	ND	25.0	50.0	ug/L	1	---	---	---	---	---	---	
Lead	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Magnesium	ND	75.0	150	ug/L	1	---	---	---	---	---	---	
Manganese	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Nickel	ND	1.00	2.00	ug/L	1	---	---	---	---	---	---	
Selenium	ND	0.500	1.00	ug/L	1	---	---	---	---	---	---	
Silver	ND	0.100	0.200	ug/L	1	---	---	---	---	---	---	
Zinc	ND	2.00	4.00	ug/L	1	---	---	---	---	---	---	
LCS (23G0155-BS1)			Prepared: 07/07/23 07:48 Analyzed: 07/08/23 04:52									
EPA 200.8 (Diss)												
Arsenic	54.2	0.500	1.00	ug/L	1	55.6	---	98	85-115%	---	---	
Barium	57.0	0.500	1.00	ug/L	1	55.6	---	103	85-115%	---	---	
Cadmium	54.9	0.100	0.200	ug/L	1	55.6	---	99	85-115%	---	---	
Calcium	2870	300	600	ug/L	1	2780	---	103	85-115%	---	---	
Chromium	54.7	1.00	2.00	ug/L	1	55.6	---	98	85-115%	---	---	
Copper	56.9	1.00	2.00	ug/L	1	55.6	---	102	85-115%	---	---	
Iron	2850	25.0	50.0	ug/L	1	2780	---	103	85-115%	---	---	
Lead	56.6	0.100	0.200	ug/L	1	55.6	---	102	85-115%	---	---	
Magnesium	2960	75.0	150	ug/L	1	2780	---	107	85-115%	---	---	
Manganese	57.8	0.500	1.00	ug/L	1	55.6	---	104	85-115%	---	---	
Nickel	56.7	1.00	2.00	ug/L	1	55.6	---	102	85-115%	---	---	
Selenium	29.1	0.500	1.00	ug/L	1	27.8	---	105	85-115%	---	---	
Silver	27.6	0.100	0.200	ug/L	1	27.8	---	100	85-115%	---	---	
Zinc	57.3	2.00	4.00	ug/L	1	55.6	---	103	85-115%	---	---	
Duplicate (23G0155-DUP1)			Prepared: 07/07/23 07:48 Analyzed: 07/08/23 05:02									

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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15862 SW 72nd Ave. Suite 150	Project Number: 361M136900.01	Report ID:
Portland, OR 97224	Project Manager: Ted Norton	A3F1661 - 09 23 23 1724

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0155 - Matrix Matched Direct Inject								Water				
Duplicate (23G0155-DUP1)			Prepared: 07/07/23 07:48		Analyzed: 07/08/23 05:02							
QC Source Sample: Non-SDG (A3F1597-01)												
Arsenic	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	20%	
Barium	**140**	0.500	1.00	ug/L	1	---	142	---	---	1	20%	
Cadmium	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	20%	
Chromium	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	20%	
Copper	ND	1.00	2.00	ug/L	1	---	ND	---	---	---	20%	
Iron	**89.0**	25.0	50.0	ug/L	1	---	91.0	---	---	2	20%	
Lead	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	20%	
Magnesium	**29900**	75.0	150	ug/L	1	---	30100	---	---	0.8	20%	
Manganese	**239**	0.500	1.00	ug/L	1	---	241	---	---	0.8	20%	
Nickel	**15.0**	1.00	2.00	ug/L	1	---	15.3	---	---	2	20%	
Selenium	ND	0.500	1.00	ug/L	1	---	ND	---	---	---	20%	
Silver	ND	0.100	0.200	ug/L	1	---	ND	---	---	---	20%	
Zinc	ND	2.00	4.00	ug/L	1	---	ND	---	---	---	20%	
Duplicate (23G0155-DUP2)			Prepared: 07/07/23 07:48		Analyzed: 07/10/23 21:16							
QC Source Sample: Non-SDG (A3F1597-01RE1)												
Calcium	**84700**	3000	6000	ug/L	10	---	83900	---	---	1	20%	Q-16
Matrix Spike (23G0155-MS1)			Prepared: 07/07/23 07:48		Analyzed: 07/08/23 05:07							
QC Source Sample: Non-SDG (A3F1597-01)												
EPA 200.8 (Diss)												
Arsenic	55.6	0.500	1.00	ug/L	1	55.6	ND	100	70-130%	---	---	
Barium	194	0.500	1.00	ug/L	1	55.6	142	94	70-130%	---	---	
Cadmium	54.5	0.100	0.200	ug/L	1	55.6	ND	98	70-130%	---	---	
Calcium	82200	300	600	ug/L	1	2780	80900	**49**	**70-130%**	---	---	E, Q-65
Chromium	55.5	1.00	2.00	ug/L	1	55.6	ND	100	70-130%	---	---	
Copper	55.3	1.00	2.00	ug/L	1	55.6	ND	99	70-130%	---	---	
Iron	3000	25.0	50.0	ug/L	1	2780	91.0	105	70-130%	---	---	
Lead	53.6	0.100	0.200	ug/L	1	55.6	ND	96	70-130%	---	---	
Magnesium	32400	75.0	150	ug/L	1	2780	30100	83	70-130%	---	---	
Manganese	304	0.500	1.00	ug/L	1	55.6	241	113	70-130%	---	---	
Nickel	69.9	1.00	2.00	ug/L	1	55.6	15.3	98	70-130%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

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WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 200.8 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 23G0155 - Matrix Matched Direct Inject								**Water**				
Matrix Spike (23G0155-MS1)			Prepared: 07/07/23 07:48		Analyzed: 07/08/23 05:07							
QC Source Sample: Non-SDG (A3F1597-01)												
Selenium	29.5	0.500	1.00	ug/L	1	27.8	ND	106	70-130%	---	---	
Silver	27.1	0.100	0.200	ug/L	1	27.8	ND	98	70-130%	---	---	
Zinc	57.0	2.00	4.00	ug/L	1	55.6	ND	103	70-130%	---	---	

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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Portland, OR 97224	Project Manager: Ted Norton	A3F1661 - 09 23 23 1724

Weck Laboratories, Inc.

QUALITY CONTROL (QC) SAMPLE RESULTS

Hexavalent Chromium by IC

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch W3G0816 - _NONE (LC)							Water					
Blank (W3G0816-BLK1)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 10:02							
EPA 218.6												
Chromium 6+, Dissolved	ND	---	0.020	ug/l	1	---	---	---	---	---	---	
Chromium 6+	ND	---	0.020	ug/l	1	---	---	---	---	---	---	
LCS (W3G0816-BS1)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 10:26							
EPA 218.6												
Chromium 6+, Dissolved	4.67	---	0.020	ug/l	1	5.00	---	93	90-110%	---	---	
Chromium 6+	4.67	---	0.020	ug/l	1	5.00	---	93	90-110%	---	---	
Matrix Spike (W3G0816-MS1)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 10:47							
QC Source Sample: Non-SDG (3F29004-01)												
EPA 218.6												
Chromium 6+, Dissolved	5.02	---	0.020	ug/l	1	5.00	0.118	98	88-112%	---	---	
Chromium 6+	5.02	---	0.020	ug/l	1	5.00	0.195	97	88-112%	---	---	
Matrix Spike (W3G0816-MS2)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 11:10							
QC Source Sample: Non-SDG (3F29004-02)												
EPA 218.6												
Chromium 6+, Dissolved	5.41	---	0.020	ug/l	1	5.00	0.109	106	88-112%	---	---	
Chromium 6+	5.41	---	0.020	ug/l	1	5.00	0.315	102	88-112%	---	---	
Matrix Spike Dup (W3G0816-MSD1)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 10:59							
QC Source Sample: Non-SDG (3F29004-01)												
Chromium 6+, Dissolved	5.12	---	0.020	ug/l	1	5.00	0.118	100	88-112%	2	10%	
Chromium 6+	5.12	---	0.020	ug/l	1	5.00	0.195	98	88-112%	2	10%	
Matrix Spike Dup (W3G0816-MSD2)			Prepared: 07/12/23 09:24		Analyzed: 07/12/23 11:22							
QC Source Sample: Non-SDG (3F29004-02)												
Chromium 6+, Dissolved	5.44	---	0.020	ug/l	1	5.00	0.109	107	88-112%	0.6	10%	
Chromium 6+	5.44	---	0.020	ug/l	1	5.00	0.315	103	88-112%	0.6	10%	

Apex Laboratories

Philip Nerenberg, Lab Director

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APEX LABORATORIES

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SAMPLE PREPARATION INFORMATION

Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Prep: 1631E Mercury (H2O)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23F1159							
A3F1661-03	Water	EPA 1631E-LL	06/29/23 12:30	06/30/23 12:55	20mL/20mL	20mL/20mL	1.00
A3F1661-05	Water	EPA 1631E-LL	06/29/23 13:00	06/30/23 12:55	20mL/20mL	20mL/20mL	1.00

Dissolved Low Level Mercury by Cold Vapor Atomic Fluoresence (CVAF) by EPA 1631E

Prep: 1631E Mercury (H2O)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0321							
A3F1661-01	Water	EPA 1631E-LL (Diss)	06/29/23 13:00	07/12/23 11:10	20mL/20mL	20mL/20mL	1.00
A3F1661-02	Water	EPA 1631E-LL (Diss)	06/29/23 12:30	07/12/23 11:10	20mL/20mL	20mL/20mL	1.00
A3F1661-04	Water	EPA 1631E-LL (Diss)	06/29/23 14:00	07/12/23 11:10	20mL/20mL	20mL/20mL	1.00

Total Metals by EPA 200.8 (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0026							
A3F1661-03	Water	EPA 200.8	06/29/23 12:30	07/03/23 11:13	45mL/50mL	45mL/50mL	1.00
A3F1661-05	Water	EPA 200.8	06/29/23 13:00	07/03/23 11:13	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 200.8 (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 23G0155							
A3F1661-01	Water	EPA 200.8 (Diss)	06/29/23 13:00	07/07/23 07:48	45mL/50mL	45mL/50mL	1.00
A3F1661-02	Water	EPA 200.8 (Diss)	06/29/23 12:30	07/07/23 07:48	45mL/50mL	45mL/50mL	1.00
A3F1661-04	Water	EPA 200.8 (Diss)	06/29/23 14:00	07/07/23 07:48	45mL/50mL	45mL/50mL	1.00

Apex Laboratories

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Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

Weck Laboratories, Inc.

SAMPLE PREPARATION INFORMATION

Hexavalent Chromium by IC

Prep: NONE (LC)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: W3G0816							
A3F1661-01	Water	EPA 218.6	06/29/23 13:00	06/29/23 14:24	5ml/5ml	5ml/5ml	1.00
A3F1661-02	Water	EPA 218.6	06/29/23 12:30	06/29/23 13:24	5ml/5ml	5ml/5ml	1.00
A3F1661-03	Water	EPA 218.6	06/29/23 12:30	07/12/23 09:24	5ml/5ml	5ml/5ml	1.00
A3F1661-04	Water	EPA 218.6	06/29/23 14:00	06/29/23 15:24	5ml/5ml	5ml/5ml	1.00
A3F1661-05	Water	EPA 218.6	06/29/23 13:00	07/12/23 09:24	5ml/5ml	5ml/5ml	1.00

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QUALIFIER DEFINITIONS

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

Apex Laboratories

E	Estimated Value. The result is above the calibration range of the instrument.
J	Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
Q-16	Reanalysis of an original Batch QC sample.
Q-65	Spike recovery is estimated due to the high analyte concentration of the source sample.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

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

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

NR Result Not Reported

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

Detection Limits: Limit of Detection (LOD)

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

Reporting Limits: Limit of Quantitation (LOQ)

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

Reporting Conventions:

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

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

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

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

Results for Volatiles analyses on soils and sediments that are reported on a “dry weight” basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an “As Received” basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).

-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.

-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

-Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

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

Soil and Sediment Samples:

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

Sampling and Preservation Notes:

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

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

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

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

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

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

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

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

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

Secondary Accreditations

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

Subcontract Laboratory Accreditations

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

Field Testing Parameters

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

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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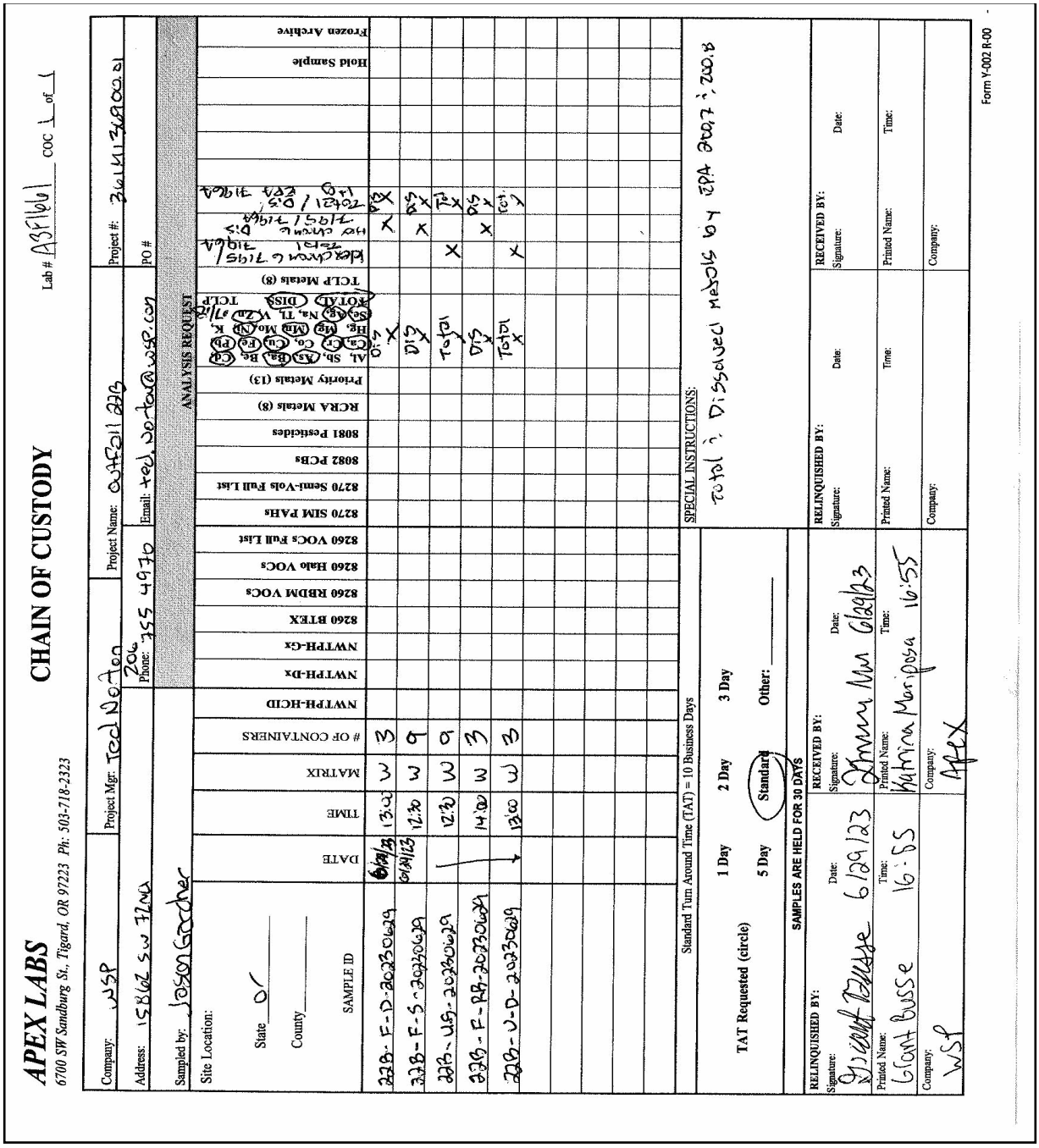
Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: **OR100062**

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.
15862 SW 72nd Ave. Suite 150
Portland, OR 97224

Project: **Outfall 22B**
Project Number: **361M136900.01**
Project Manager: **Ted Norton**

Report ID:
A3F1661 - 09 23 23 1724



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

CHAIN OF CUSTODY

Lab # A3F1661 COC 1 of 1

Company: WSP
Project Mgr: Ted Norton
Project Name: Outfall 22B
Project #: 361M136900.01
Address: 15862 SW 72nd
Phone: 355 4970
Email: ted.norton@wsp.com
PO #
Sampled by: Jason Gardner
Site Location:
State OR
County

SAMPLE ID	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	TCLP Metals (8)	Hold Sample	Frozen Archive
22B-F-D-20230629	6/29/23	13:30	W	3													X	X		
22B-F-S-20230629	6/29/23	12:20	W	9													X	X		
22B-US-20230629		12:10	W	9													X			
22B-F-RB-20230629		14:00	W	3													X	X		
22B-U-D-20230629	↓	13:00	W	3													X	X		

Standard Turn Around Time (TAT) = 10 Business Days

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

SPECIAL INSTRUCTIONS:
Total & Dissolved metals by EPA 200.7 & 200.8

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: Date: Time:
RECEIVED BY: Signature: Date:
Printed Name: Grant Busse Time: 16:55
Company: WSP
RELINQUISHED BY: Signature: Date: 6/29/23 Time: 16:55
RECEIVED BY: Signature: Date:
Printed Name: Katrina Mariposa Time:
Company: Apex
RELINQUISHED BY: Signature: Date: Time:
RECEIVED BY: Signature: Date:
Printed Name: Time:
Company:

Form Y-002 R-00

Apex Laboratories

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Philip Nerenberg

Philip Nerenberg, Lab Director

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

ANALYTICAL REPORT

WSP USA Environment & Infrastructure Inc.	Project: **Outfall 22B**	
15862 SW 72nd Ave. Suite 150	Project Number: **361M136900.01**	**Report ID:**
Portland, OR 97224	Project Manager: **Ted Norton**	**A3F1661 - 09 23 23 1724**

APEX LABS COOLER RECEIPT FORM

Client: WSP Element WO#: A3F1661

Project/Project #: Outfall 22B / 361M136900.01

Delivery Info:

Date/time received: 6/29/23 @ 16:55 By: KAM

Delivered by: Apex__Client X ESS__FedEx__UPS__Radio__Morgan__SDS__Evergreen__Other__

Cooler Inspection Date/time inspected: 6/29/23 @ 17:00 By: KAM

Chain of Custody included? Yes X No ____

Signed/dated by client? Yes X No ____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	0.4						
Custody seals? (Y/N)	N						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition (In/Out):	In						

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

Green dots applied to out of temperature samples? Yes/No

Out of temperature samples form initiated? Yes/No

Sample Inspection: Date/time inspected: 6/29/23 @ 17:36 By: AAW

All samples intact? Yes X No ___ Comments: ____

Bottle labels/COCs agree? Yes ___ No X Comments: 22B-U-S-20230629 CoC shows 9 containers, but we only received 8. Trip blank (mmmy) not listed on the CoC

COC/container discrepancies form initiated? Yes ___ No X

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

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

Comments ____

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

Comments: 22B-U-D-20230629 they provided 1L unpres ~~amb~~ 6/29 poly for total metals. Ph=7

Additional information: ____

Labeled by: AAW Witness: AJM Cooler Inspected by: AAW

Form Y-003 R-00

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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Matrix SCIENCES | PAL PACIFIC AGRICULTURAL LABORATORY

PACAGLAB.COM
503.626.7943
21830 S.W. Alexander Ln
Sherwood, OR 97140

Apex Laboratories
6700 SW Sandburg St
Tigard, OR 97223

Report Number: P231062
Report Date: July 14, 2023
Client Project ID: A3F1632

Analytical Report

Client Sample ID: 22B-U-S-20230628
Matrix: water

PAL Sample ID: P231062-01
Sample Date: 6/28/23
Received Date: 6/29/23

Method: Modified EPA 8151A (GC-MS/MS)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
7/05/23	7/6/23	2,4,5-T	ND	0.080 ug/L	
7/05/23	7/6/23	2,4,5-TP	ND	0.080 ug/L	
7/05/23	7/6/23	2,4-D	ND	0.080 ug/L	
7/05/23	7/6/23	2,4-DB	ND	0.080 ug/L	
7/05/23	7/6/23	Acifluorfen	ND	0.080 ug/L	
7/05/23	7/6/23	Bentazon	ND	0.080 ug/L	
7/05/23	7/6/23	Clopyralid	ND	0.080 ug/L	
7/05/23	7/6/23	Dicamba	ND	0.080 ug/L	
7/05/23	7/6/23	Dichlorprop	ND	0.080 ug/L	
7/05/23	7/6/23	Dinoseb	ND	0.080 ug/L	
7/05/23	7/6/23	MCPA	ND	0.080 ug/L	
7/05/23	7/6/23	MCPP	ND	0.080 ug/L	
7/05/23	7/6/23	Picloram	ND	0.080 ug/L	
7/05/23	7/6/23	Quinclorac	ND	0.080 ug/L	
7/05/23	7/6/23	Triclopyr	ND	0.080 ug/L	

Surrogate Recovery: 49 %
Surrogate Recovery Range: 25-130
(DCPAA used as Surrogate)

This analytical report complies with the ISO/IEC 17025:2017 Quality Standard.

Kara Greer, Project Manager

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503.626.7943
21830 S.W. Alexander Ln
Sherwood, OR 97140

Apex Laboratories
6700 SW Sandburg St
Tigard, OR 97223

Report Number: P231062
Report Date: July 14, 2023
Client Project ID: A3F1632

Analytical Report

Client Sample ID: 22B-U-D-20230628
Matrix: water

PAL Sample ID: P231062-02
Sample Date: 6/28/23
Received Date: 6/29/23

Method: Modified EPA 8151A (GC-MS/MS)

Extraction Date	Analysis Date	Analyte	Amount Detected	Limit of Quantitation	Notes
7/05/23	7/6/23	2,4,5-T	ND	0.080 ug/L	
7/05/23	7/6/23	2,4,5-TP	ND	0.080 ug/L	
7/05/23	7/6/23	2,4-D	ND	0.080 ug/L	
7/05/23	7/6/23	2,4-DB	ND	0.080 ug/L	
7/05/23	7/6/23	Acifluorfen	ND	0.080 ug/L	
7/05/23	7/6/23	Bentazon	ND	0.080 ug/L	
7/05/23	7/6/23	Clopyralid	ND	0.080 ug/L	
7/05/23	7/6/23	Dicamba	ND	0.080 ug/L	
7/05/23	7/6/23	Dichlorprop	ND	0.080 ug/L	
7/05/23	7/6/23	Dinoseb	ND	0.080 ug/L	
7/05/23	7/6/23	MCPA	ND	0.080 ug/L	
7/05/23	7/6/23	MCPP	ND	0.080 ug/L	
7/05/23	7/6/23	Picloram	ND	0.080 ug/L	
7/05/23	7/6/23	Quinclorac	ND	0.080 ug/L	
7/05/23	7/6/23	Triclopyr	ND	0.080 ug/L	

Surrogate Recovery: 52 %
Surrogate Recovery Range: 25-130
(DCPAA used as Surrogate)

This analytical report complies with the ISO/IEC 17025:2017 Quality Standard.

Kara Greer, Project Manager

Matrix SCIENCES | PAL PACIFIC AGRICULTURAL LABORATORY

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Sherwood, OR 97140

Apex Laboratories
6700 SW Sandburg St
Tigard, OR 97223

Report Number: P231062
Report Date: July 14, 2023
Client Project ID: A3F1632

Quality Assurance

Method Blank Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
7/5/23	7/6/23	23G0501-BLK1	2,4,5-T	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	2,4,5-TP	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	2,4-D	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	2,4-DB	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Acifluorfen	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Bentazon	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Clopyralid	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Dicamba	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Dichlorprop	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Dinoseb	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	MCPA	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	MCPP	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Picloram	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Quinclorac	Not Detected	< 0.080 ug/L	
7/5/23	7/6/23	23G0501-BLK1	Triclopyr	Not Detected	< 0.080 ug/L	

Blank Spike Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
7/5/23	7/10/23	23G0501-BS1	2,4-D	115	51-141	
7/5/23	7/10/23	23G0501-BSD1	2,4-D	103	51-141	
7/5/23	7/10/23	23G0501-BS1	Dicamba	83	40-122	
7/5/23	7/10/23	23G0501-BSD1	Dicamba	86	40-122	
7/5/23	7/10/23	23G0501-BS1	Triclopyr	94	53-127	
7/5/23	7/10/23	23G0501-BSD1	Triclopyr	87	53-127	

Matrix Spike Data **Matrix:** water

Extraction Date	Analysis Date	Batch QC Sample #	Analyte	% Recovery	Expected % Recovery	Notes
7/5/23	7/10/23	23G0501-MS1	2,4-D	109	60-140	
7/5/23	7/10/23	23G0501-MSD1	2,4-D	120	60-140	
7/5/23	7/10/23	23G0501-MS1	Dicamba	105	60-140	
7/5/23	7/10/23	23G0501-MSD1	Dicamba	103	60-140	
7/5/23	7/10/23	23G0501-MS1	Triclopyr	101	60-140	
7/5/23	7/10/23	23G0501-MSD1	Triclopyr	111	60-140	

This analytical report complies with the ISO/IEC 17025:2017 Quality Standard.

Kara Greer, Project Manager

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Sherwood, OR 97140

Apex Laboratories
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Tigard, OR 97223

Report Number: P231062
Report Date: July 14, 2023
Client Project ID: A3F1632

This analytical report complies with the ISO/IEC 17025:2017 Quality Standard.

Kara Greer, Project Manager

October 09, 2023

Enthalpy Analytical - El Dorado Hills
Work Order No. 2307001

Mr. Philip Nerenberg
Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223

Dear Mr. Nerenberg,

Enclosed are the amended results for the sample set received at Enthalpy Analytical - EDH on July 01, 2023 under your Project Name 'A3F1632'.

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 mark.rein@enthalpy.com.

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

Sincerely,

For

Mark Rein
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. 2307001
Case Narrative

Sample Condition on Receipt:

Two water samples were received and stored securely in accordance with Enthalpy Analytical - EDH standard operating procedures and EPA methodology. The samples were received in good condition and within the method temperature requirements. As directed, this report has been amended to change the date to the same date as the EDD.

Analytical Notes:

EPA Method 1699

The samples were extracted and analyzed for chlorinated pesticides by EPA Method 1699 using a ZB-50 GC column.

Holding Times

The samples were 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.

As requested, an MS/MSD was performed on sample "22B-U-S-20230628". The MS/MSD recoveries and RPDs out of the acceptance criteria are flagged with an "H" qualifier.

The labeled standard recoveries outside the method acceptance criteria are listed in the table below:

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
2307001-01	22B-U-S-20230628	EPA Method 1699	13C12-Methoxychlor	H	137
2307001-02	22B-U-D-20230628	EPA Method 1699	13C12-Methoxychlor	H	130
B23G004-BLK1	B23G004-BLK1	EPA Method 1699	13C12-2,4'-DDE	H	19.8
B23G004-BLK1	B23G004-BLK1	EPA Method 1699	13C12-4,4'-DDD	H	159
B23G004-BLK1	B23G004-BLK1	EPA Method 1699	13C12-4,4'-DDT	H	172
B23G004-BLK1	B23G004-BLK1	EPA Method 1699	13C12-Methoxychlor	H	142
B23G004-MS1	B23G004-MS1	EPA Method 1699	13C12-Methoxychlor	H	122

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Sample Inventory Report

Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2307001-01	22B-U-S-20230628	28-Jun-23 12:00	01-Jul-23 10:40	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L
2307001-02	22B-U-D-20230628	28-Jun-23 11:30	01-Jul-23 10:40	Amber Glass NM Bottle, 1L
				Amber Glass NM Bottle, 1L

ANALYTICAL RESULTS

Sample ID: Method Blank **EPA Method 1699**

Client Data
Name: Apex Laboratories
Project: A3F1632
Matrix: Aqueous

Laboratory Data
Lab Sample: B23G004-BLK1
QC Batch: B23G004 Date Extracted: 05-Jul-23
Sample Size: 1.00 L Column: ZB-50

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
Hexachlorobenzene	8.14		17.5		J	26-Jul-23 01:31	1
alpha-BHC	ND	1.22	6.59			26-Jul-23 01:31	1
Lindane (gamma-BHC)	ND	1.55	8.45			26-Jul-23 01:31	1
beta-BHC	ND	1.68	8.68			26-Jul-23 01:31	1
delta-BHC	ND	1.28	8.50			26-Jul-23 01:31	1
Heptachlor	ND	7.00	24.0			26-Jul-23 01:31	1
Aldrin	ND	1.20	9.55			26-Jul-23 01:31	1
Oxychlordane	ND	3.28	10.1			26-Jul-23 01:31	1
cis-Heptachlor Epoxide	ND	2.42	12.7			26-Jul-23 01:31	1
trans-Heptachlor Epoxide	ND	9.85	22.4			26-Jul-23 01:31	1
trans-Chlordane (gamma)	ND	2.95	14.2			26-Jul-23 01:31	1
trans-Nonachlor	ND	2.91	11.8			26-Jul-23 01:31	1
cis-Chlordane (alpha)	ND	2.86	28.0			26-Jul-23 01:31	1
Endosulfan I (alpha)	ND	4.82	94.8			26-Jul-23 01:31	1
2,4'-DDE	ND	3.27	8.57			26-Jul-23 01:31	1
4,4'-DDE	ND	1.60	14.6			26-Jul-23 01:31	1
Dieldrin	ND	2.45	18.8			26-Jul-23 01:31	1
Endrin	ND	3.48	14.9			26-Jul-23 01:31	1
cis-Nonachlor	ND	3.31	11.4			26-Jul-23 01:31	1
Endosulfan II (beta)	ND	12.4	65.1			26-Jul-23 01:31	1
2,4'-DDD	ND	0.958	9.77			26-Jul-23 01:31	1
2,4'-DDT	ND	1.54	11.7			26-Jul-23 01:31	1
4,4'-DDD	ND	1.02	9.23			26-Jul-23 01:31	1
4,4'-DDT	ND	1.80	11.3			26-Jul-23 01:31	1
Endosulfan Sulfate	ND	8.55	36.6			26-Jul-23 01:31	1
4,4'-Methoxychlor	ND	2.71	26.6			26-Jul-23 01:31	1
Mirex	ND	0.739	7.97			26-Jul-23 01:31	1
Endrin Aldehyde	ND	4.49	54.7			26-Jul-23 01:31	1
Endrin Ketone	ND	4.25	50.5			26-Jul-23 01:31	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C6-Hexachlorobenzene	IS	45.8	5 - 120		26-Jul-23 01:31	1
13C6-alpha-BHC	IS	57.6	32 - 130		26-Jul-23 01:31	1
13C6-Lindane (gamma-BHC)	IS	71.3	11 - 120		26-Jul-23 01:31	1
13C6-beta-BHC	IS	82.0	32 - 130		26-Jul-23 01:31	1
13C6-delta-BHC	IS	78.3	36 - 137		26-Jul-23 01:31	1
13C10-Heptachlor	IS	70.4	5 - 120		26-Jul-23 01:31	1
13C12-Aldrin	IS	50.9	5 - 120		26-Jul-23 01:31	1
13C10-Oxychlordane	IS	59.7	23 - 135		26-Jul-23 01:31	1
13C10-cis-Heptachlor Epoxide	IS	55.2	27 - 137		26-Jul-23 01:31	1
13C10-trans-Chlordane (gamma)	IS	51.5	21 - 132		26-Jul-23 01:31	1
13C10-trans-Nonachlor	IS	76.9	14 - 136		26-Jul-23 01:31	1
13C9-Endosulfan I (alpha)	IS	70.8	15 - 148		26-Jul-23 01:31	1
13C12-2,4'-DDE	IS	19.8	47 - 160	H	26-Jul-23 01:31	1
13C12-4,4'-DDE	IS	84.3	47 - 160		26-Jul-23 01:31	1
13C12-Dieldrin	IS	71.5	40 - 151		26-Jul-23 01:31	1
13C12-Endrin	IS	108	35 - 155		26-Jul-23 01:31	1
13C10-cis-Nonachlor	IS	88.1	36 - 139		26-Jul-23 01:31	1
13C9-Endosulfan II (beta)	IS	80.7	5 - 122		26-Jul-23 01:31	1
13C12-2,4'-DDD	IS	151	5 - 199		26-Jul-23 01:31	1
13C12-2,4'-DDT	IS	169	5 - 199		26-Jul-23 01:31	1
13C12-4,4'-DDD	IS	159	5 - 120	H	26-Jul-23 01:31	1

Sample ID: Method Blank **EPA Method 1699**

Client Data
Name: Apex Laboratories
Project: A3F1632
Matrix: Aqueous

Laboratory Data
Lab Sample: B23G004-BLK1
QC Batch: B23G004
Sample Size: 1.00 L
Date Extracted: 05-Jul-23
Column: ZB-50

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C12-4,4'-DDT	IS	172	5 - 120	H	26-Jul-23 01:31	1
13C9-Endosulfan Sulfate	IS	72.1	15 - 148		26-Jul-23 01:31	1
13C12-Methoxychlor	IS	142	5 - 120	H	26-Jul-23 01:31	1
13C10-Mirex	IS	88.1	5 - 120		26-Jul-23 01:31	1
13C12-Endrin Aldehyde	IS	82.6	15 - 148		26-Jul-23 01:31	1
13C12-Endrin Ketone	IS	93.9	15 - 148		26-Jul-23 01:31	1

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

Sample ID: OPR **EPA Method 1699**

Client Data
Name: Apex LaboratorieK
Project: A3F1632
Matrix: A5. eo. K

Laboratory Data
Lab Sample: B23G004-BS1
QC Batch: B23G004 Date Extracted: 0Z-q. l-23 0J:26
Sample Size: 1s00 L Col. mu: nB-Z0

Analyte	Amt Found (pg/L)	Spike Amt	% Recovery	Limits	Qualifiers	Analyzed	Dilution
Hexachlorobeuzeue	1070	1000	107	Z0-120	D8B	26-q. l-23 1Z:41	3
alpha-BHC	997	1000	99s7	Z0-120	D	26-q. l-23 1Z:41	3
Liudaue (gamma-BHC)	9Z6	1000	9Zs6	Z0-120	D	26-q. l-23 1Z:41	3
beta-BHC	1020	1000	102	Z0-120	D	26-q. l-23 1Z:41	3
delta-BHC	93Z	1000	93sZ	Z0-120	D	26-q. l-23 1Z:41	3
Heptachlor	J73	1000	J7s3	Z0-120	D	26-q. l-23 1Z:41	3
Aldriu	1000	1000	100	Z0-120	D	26-q. l-23 1Z:41	3
Oxychlordaue	1040	1000	104	Z0-120	D	26-q. l-23 1Z:41	3
ciK-Heptachlor Epoxide	979	1000	97s9	Z0-120	D	26-q. l-23 1Z:41	3
trauK-Heptachlor Epoxide	9Z3	1000	9Zs3	Z0-120	D	26-q. l-23 1Z:41	3
trauK-Chlordaue (gamma)	1040	1000	104	Z0-120	D	26-q. l-23 1Z:41	3
trauK-Nouachlor	10Z0	1000	10Z	Z0-120	D	26-q. l-23 1Z:41	3
ciK-Chlordaue (alpha)	J9J	1000	J9sJ	Z0-120	D	26-q. l-23 1Z:41	3
EudoK lfau I (alpha)	10J0	1000	10J	Z0-120	D	26-q. l-23 1Z:41	3
2&4,-DDE	10J0	1000	10J	24-123	D	26-q. l-23 1Z:41	3
4&4,-DDE	1040	1000	104	Z0-120	D	26-q. l-23 1Z:41	3
Dieldriu	1190	1000	119	Z0-120	D	26-q. l-23 1Z:41	3
Eudriu	10J0	1000	10J	Z0-120	D	26-q. l-23 1Z:41	3
ciK-Nouachlor	1020	1000	102	Z0-120	D	26-q. l-23 1Z:41	3
EudoK lfau II (beta)	9JZ	1000	9JsZ	Z-200	D	26-q. l-23 1Z:41	3
2&4,-DDD	922	1000	92s2	Z0-120	D	26-q. l-23 1Z:41	3
2&4,-DD'	J62	1000	J6s2	Z0-120	D	26-q. l-23 1Z:41	3
4&4,-DDD	929	1000	92s9	42-120	D	26-q. l-23 1Z:41	3
4&4,-DD'	9Z6	1000	9Zs6	Z0-120	D	26-q. l-23 1Z:41	3
EudoK lfau S. lfate	1010	1000	101	Z0-120	D	26-q. l-23 1Z:41	3
4&4,-Methoxychlor	J9Z	1000	J9sZ	Z0-120	D	26-q. l-23 1Z:41	3
Mirex	1030	1000	103	Z0-120	D	26-q. l-23 1Z:41	3
Eudriu Aldehyde	9J4	1000	9Js4	Z0-134	D	26-q. l-23 1Z:41	3
Eudriu Tetoue	993	990	100	Z0-134	D	26-q. l-23 1Z:41	3

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C6-Hexachlorobeuzeue	IS	ZZs7	Z-120	D	26-q. l-23 1Z:41	3
13C6-alpha-BHC	IS	66s6	17-141	D	26-q. l-23 1Z:41	3
13C6-Liudaue (gamma-BHC)	IS	70s3	Z-124	D	26-q. l-23 1Z:41	3
13C6-beta-BHC	IS	70sZ	17-141	D	26-q. l-23 1Z:41	3
13C6-delta-BHC	IS	66sZ	16-1Z0	D	26-q. l-23 1Z:41	3
13C10-Heptachlor	IS	76sl	Z-12J	D	26-q. l-23 1Z:41	3
13C12-Aldriu	IS	67sl	Z-126	D	26-q. l-23 1Z:41	3
13C10-Oxychlordaue	IS	7Zs0	Z-144	D	26-q. l-23 1Z:41	3
13C10-ciK-Heptachlor Epoxide	IS	76s9	J-146	D	26-q. l-23 1Z:41	3
13C10-trauK-Chlordaue (gamma)	IS	6Zs7	1Z-144	D	26-q. l-23 1Z:41	3
13C10-trauK-Nouachlor	IS	J9sl	13-149	D	26-q. l-23 1Z:41	3
13C9-EudoK lfau I (alpha)	IS	J9s4	Z-144	D	26-q. l-23 1Z:41	3
13C12-2&4,-DDE	IS	JJsZ	26-169	D	26-q. l-23 1Z:41	3
13C12-4&4,-DDE	IS	102	26-169	D	26-q. l-23 1Z:41	3

Sample ID: OPR **EPA Method 1699**

Client Data
Name: Apex LaboratorieK
Project: A3F1632
Matrix: A5. eo. K

Laboratory Data
Lab Sample: B23G004-BS1
QC Batch: B23G004 Date Extracted: 0Z-q. l-23 0J:26
Sample Size: 1s00 L Col. mu: nB-Z0

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C12-Dieldriu	IS	7Js9	19-161	D	26-q. l-23 1Z:41	3
13C12-Eudriu	IS	114	20-1Z7	D	26-q. l-23 1Z:41	3
13C10-ciK-Nouachlor	IS	9Zs3	17-1Z4	D	26-q. l-23 1Z:41	3
13C9-EudoK lfau II (beta)	IS	7Zs7	Z-120	D	26-q. l-23 1Z:41	3
13C12-284,-DDD	IS	117	14-200	D	26-q. l-23 1Z:41	3
13C12-284,-DD'	IS	137	14-200	D	26-q. l-23 1Z:41	3
13C12-484,-DDD	IS	11J	14-200	D	26-q. l-23 1Z:41	3
13C12-484,-DD'	IS	134	13-200	D	26-q. l-23 1Z:41	3
13C9-EudoK lfau S. lfate	IS	7Js7	Z-144	D	26-q. l-23 1Z:41	3
13C12-Methoxychlor	IS	112	J-200	D	26-q. l-23 1Z:41	3
13C10-Mirex	IS	J9s7	Z-13J	D	26-q. l-23 1Z:41	3
13C12-Eudriu Aldehyde	IS	72s2	Z-144	D	26-q. l-23 1Z:41	3
13C12-Eudriu Tetoue	IS	90s3	Z-144	D	26-q. l-23 1Z:41	3

Sample ID: 22B-U-S-20230628 **EPA Method 1699**

Client Data

Name: Apex Laboratories
Project: A3F1632
Matrix: Water
Date Collected: 28-Jun-23 12:00

Laboratory Data

Lab Sample: 2307001-01
QC Batch: B23G004
Sample Size: 1.03 L
Date Received: 01-Jul-23 10:40
Date Extracted: 05-Jul-23
Column: ZB-50

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
Hexachlorobenzene	57.8		17.0		B	26-Jul-23 03:08	1
alpha-BHC	1330		6.39			26-Jul-23 03:08	1
Lindane (gamma-BHC)	395		8.19			26-Jul-23 03:08	1
beta-BHC	2490		8.42			26-Jul-23 03:08	1
delta-BHC	997		8.24			26-Jul-23 03:08	1
Heptachlor	ND	4.65	23.3			26-Jul-23 03:08	1
Aldrin	ND	3.20	9.26			26-Jul-23 03:08	1
Oxychlordane	ND	7.22	9.79			26-Jul-23 03:08	1
cis-Heptachlor Epoxide	59.3		12.3			26-Jul-23 03:08	1
trans-Heptachlor Epoxide	50200		65.2		D	26-Jul-23 19:51	3
trans-Chlordane (gamma)	ND		13.8	93.4		26-Jul-23 03:08	1
trans-Nonachlor	55.6		11.4			26-Jul-23 03:08	1
cis-Chlordane (alpha)	109		27.2			26-Jul-23 03:08	1
Endosulfan I (alpha)	ND		91.9	40.7		26-Jul-23 03:08	1
2,4'-DDE	8.17		8.31		J	26-Jul-23 03:08	1
4,4'-DDE	83.2		14.2			26-Jul-23 03:08	1
Dieldrin	6000		18.2			26-Jul-23 03:08	1
Endrin	445		14.4			26-Jul-23 03:08	1
cis-Nonachlor	20.4		11.1		J	26-Jul-23 03:08	1
Endosulfan II (beta)	64.9		63.1		J	26-Jul-23 03:08	1
2,4'-DDD	134		9.47			26-Jul-23 03:08	1
2,4'-DDT	15.9		11.3		J	26-Jul-23 03:08	1
4,4'-DDD	237		26.9		D	26-Jul-23 19:51	3
4,4'-DDT	70.8		32.9		D, J	26-Jul-23 19:51	3
Endosulfan Sulfate	93.8		35.5		J	26-Jul-23 03:08	1
4,4'-Methoxychlor	62.8		25.8		J	26-Jul-23 03:08	1
Mirex	ND	0.839	7.73			26-Jul-23 03:08	1
Endrin Aldehyde	83.3		53.0		J	26-Jul-23 03:08	1
Endrin Ketone	723		49.0			26-Jul-23 03:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C6-Hexachlorobenzene	IS	53.8	5 - 120		26-Jul-23 03:08	1
13C6-alpha-BHC	IS	78.3	32 - 130		26-Jul-23 03:08	1
13C6-Lindane (gamma-BHC)	IS	86.4	11 - 120		26-Jul-23 03:08	1
13C6-beta-BHC	IS	93.6	32 - 130		26-Jul-23 03:08	1
13C6-delta-BHC	IS	88.1	36 - 137		26-Jul-23 03:08	1
13C10-Heptachlor	IS	88.9	5 - 120		26-Jul-23 03:08	1
13C12-Aldrin	IS	52.8	5 - 120		26-Jul-23 03:08	1
13C10-Oxychlordane	IS	68.2	23 - 135		26-Jul-23 03:08	1
13C10-cis-Heptachlor Epoxide	IS	61.8	27 - 137	D	26-Jul-23 19:51	3
13C10-trans-Chlordane (gamma)	IS	65.2	21 - 132		26-Jul-23 03:08	1
13C10-trans-Nonachlor	IS	93.9	14 - 136		26-Jul-23 03:08	1
13C9-Endosulfan I (alpha)	IS	89.0	15 - 148		26-Jul-23 03:08	1
13C12-2,4'-DDE	IS	79.9	47 - 160		26-Jul-23 03:08	1
13C12-4,4'-DDE	IS	98.4	47 - 160		26-Jul-23 03:08	1
13C12-Dieldrin	IS	102	40 - 151		26-Jul-23 03:08	1
13C12-Endrin	IS	101	35 - 155		26-Jul-23 03:08	1
13C10-cis-Nonachlor	IS	114	36 - 139		26-Jul-23 03:08	1
13C9-Endosulfan II (beta)	IS	109	5 - 122		26-Jul-23 03:08	1
13C12-2,4'-DDD	IS	170	5 - 199		26-Jul-23 03:08	1
13C12-2,4'-DDT	IS	182	5 - 199		26-Jul-23 03:08	1
13C12-4,4'-DDD	IS	71.0	5 - 120	D	26-Jul-23 19:51	3

Sample ID: 22B-U-S-20230628 **EPA Method 1699**

Client Data

Name: Apex Laboratories
Project: A3F1632
Matrix: Water
Date Collected: 28-Jun-23 12:00

Laboratory Data

Lab Sample: 2307001-01
QC Batch: B23G004
Sample Size: 1.03 L
Date Received: 01-Jul-23 10:40
Date Extracted: 05-Jul-23
Column: ZB-50

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C12-4,4'-DDT	IS	57.6	5 - 120	D	26-Jul-23 19:51	3
13C9-Endosulfan Sulfate	IS	83.3	15 - 148		26-Jul-23 03:08	1
13C12-Methoxychlor	IS	137	5 - 120	H	26-Jul-23 03:08	1
13C10-Mirex	IS	91.3	5 - 120		26-Jul-23 03:08	1
13C12-Endrin Aldehyde	IS	92.5	15 - 148		26-Jul-23 03:08	1
13C12-Endrin Ketone	IS	106	15 - 148		26-Jul-23 03:08	1

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

Sample ID: 22B-U-S-20230628 **EPA Method 1699**

Name:	Apex Laboratories				
Project:	A3F1632	Lab Sample:	B23G004-MSD1	Source Lab Sample:	2307001-01
Matrix:	Aqueous	QC Batch:	B23G004	Date Extracted:	05-Jul-23
Date Analyzed:	26-Jul-23 21:29	Samp Size:	1.02/1.04 L	Column:	ZB-50
	26-Jul-23 03:57				

Analyte	Sample (pg/L)	MS (pg/L)	MS Spike Amt	MS % Rec	MS Quals	MSD (pg/L)	MSD Spike Amt	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits
Hexachlorobenzene	57.8	1170	978	114	B	1120	964	111	2.67	B	50- 150	25
alpha-BHC	1330	2440	978	113		2430	964	114	0.881		50- 150	25
Lindane (gamma-BHC)	395	1500	978	113		1440	964	109	3.6		50- 150	25
beta-BHC	2490	3670	978	121		3680	964	123	1.64		50- 150	25
delta-BHC	997	2070	978	110		2060	964	111	0.905		50- 150	25
Heptachlor	ND	1020	978	104		1000	964	104	0		50- 150	25
Aldrin	ND	1030	978	105		987	964	102	2.9		50- 150	25
Oxychlordane	ND	1130	978	115		1060	964	110	4.44		50- 150	25
cis-Heptachlor Epoxide	59.3	1120	978	108		1090	964	107	0.93		50- 150	25
trans-Heptachlor Epoxide	50200	54000	978	384	D, H	52000	964	180	72.3	D, H	50- 150	25
trans-Chlordane (gamma)	ND	1110	978	113		1090	964	113	0		50- 150	25
trans-Nonachlor	55.6	1150	978	112		1110	964	109	2.71		50- 150	25
cis-Chlordane (alpha)	109	759	978	66.5		1010	964	93.4	33.6	H	50- 150	25
Endosulfan I (alpha)	ND	1090	978	111		1000	964	104	6.51		50- 150	25
2,4'-DDE	8.17	1120	978	114	D	1040	964	107	6.33		50- 150	25
4,4'-DDE	83.2	1130	978	107		1100	964	105	1.89		50- 150	25
Dieldrin	6000	8070	978	212	H	7810	964	189	11.5	H	50- 150	25
Endrin	445	1550	978	113		1530	964	113	0		50- 150	25
cis-Nonachlor	20.4	1160	978	117		1090	964	111	5.26		50- 150	25
Endosulfan II (beta)	64.9	980	978	93.6		1050	964	102	8.59		5- 150	25
2,4'-DDD	134	1350	978	124		1270	964	118	4.96		50- 150	25
2,4'-DDT	15.9	1130	978	113		1080	964	110	2.69		50- 150	25
4,4'-DDD	237	1160	978	94.5	D	1110	964	91.0	3.77	D	50- 150	25
4,4'-DDT	70.8	1010	978	96.3	D	928	964	89.0	7.88	D	50- 150	25
Endosulfan Sulfate	93.8	1210	978	115		1190	964	114	0.873		50- 150	25
4,4'-Methoxychlor	62.8	1200	978	116		1170	964	115	0.866		50- 150	25
Mirex	ND	1090	978	111		1080	964	112	0.897		50- 150	25
Endrin Aldehyde	83.3	1190	978	113		1200	964	116	2.62		50- 150	25
Endrin Ketone	723	1960	968	128		1960	954	130	1.55		50- 150	25

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits
13C6-Hexachlorobenzene	IS	49.0		51.1		5 - 120
13C6-alpha-BHC	IS	70.7		72.8		32 - 130
13C6-Lindane (gamma-BHC)	IS	76.5		80.6		11 - 120
13C6-beta-BHC	IS	87.5		89.4		32 - 130
13C6-delta-BHC	IS	80.5		83.0		36 - 137
13C10-Heptachlor	IS	94.5		100		5 - 120
13C12-Aldrin	IS	52.9		59.2		5 - 120
13C10-Oxychlordane	IS	64.9		73.5		23 - 135
13C10-cis-Heptachlor Epoxide	IS	58.0	D	66.4	D	27 - 137
13C10-trans-Chlordane (gamma)	IS	62.6		70.0		21 - 132
13C10-trans-Nonachlor	IS	81.5		85.3		14 - 136
13C9-Endosulfan I (alpha)	IS	77.7		86.1		15 - 148
13C12-2,4'-DDE	IS	86.1	D	74.0		47 - 160
13C12-4,4'-DDE	IS	81.6		85.6		47 - 160
13C12-Dieldrin	IS	69.8		71.5		40 - 151
13C12-Endrin	IS	93.1		84.2		35 - 155
13C10-cis-Nonachlor	IS	87.4		89.5		36 - 139
13C9-Endosulfan II (beta)	IS	101		97.2		5 - 122

Sample ID: 22B-U-S-20230628 **EPA Method 1699**

Name:	Apex Laboratories				
Project:	A3F1632	Lab Sample:	B23G004-MSD1	Source Lab Sample:	2307001-01
Matrix:	Aqueous	QC Batch:	B23G004	Date Extracted:	05-Jul-23
Date Analyzed:	26-Jul-23 21:29 26-Jul-23 03:57	Samp Size:	1.02/1.04 L	Column:	ZB-50

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits
13C12-2,4'-DDD	IS	143		141		5 - 199
13C12-2,4'-DDT	IS	161		160		5 - 199
13C12-4,4'-DDD	IS	73.4	D	78.6	D	5 - 120
13C12-4,4'-DDT	IS	63.4	D	70.0	D	5 - 120
13C9-Endosulfan Sulfate	IS	74.7		74.3		15 - 148
13C12-Methoxychlor	IS	122	H	115		5 - 120
13C10-Mirex	IS	78.6		78.6		5 - 120
13C12-Endrin Aldehyde	IS	76.1		76.3		15 - 148
13C12-Endrin Ketone	IS	91.5		90.6		15 - 148

Sample ID: 22B-U-D-20230628 **EPA Method 1699**

Client Data

Name: Apex Laboratories
Project: A3F1632
Matrix: Water
Date Collected: 28-Jun-23 11:30

Laboratory Data

Lab Sample: 2307001-02
QC Batch: B23G004
Sample Size: 1.02 L
Date Received: 01-Jul-23 10:40
Date Extracted: 05-Jul-23
Column: ZB-50

Analyte	Conc. (pg/L)	EDL	MDL	EMPC	Qualifiers	Analyzed	Dilution
Hexachlorobenzene	57.8		17.2		B	26-Jul-23 02:19	1
alpha-BHC	1350		6.47			26-Jul-23 02:19	1
Lindane (gamma-BHC)	400		8.30			26-Jul-23 02:19	1
beta-BHC	2520		8.52			26-Jul-23 02:19	1
delta-BHC	999		8.35			26-Jul-23 02:19	1
Heptachlor	ND	2.47	23.6			26-Jul-23 02:19	1
Aldrin	ND	3.10	9.38			26-Jul-23 02:19	1
Oxychlordane	ND	7.73	9.92			26-Jul-23 02:19	1
cis-Heptachlor Epoxide	61.8		12.5			26-Jul-23 02:19	1
trans-Heptachlor Epoxide	49500		66.0		D	26-Jul-23 19:03	3
trans-Chlordane (gamma)	122		13.9			26-Jul-23 02:19	1
trans-Nonachlor	68.6		11.6			26-Jul-23 02:19	1
cis-Chlordane (alpha)	124		27.5			26-Jul-23 02:19	1
Endosulfan I (alpha)	49.9		93.1		J	26-Jul-23 02:19	1
2,4'-DDE	8.50		8.42		J	26-Jul-23 02:19	1
4,4'-DDE	87.2		14.3			26-Jul-23 02:19	1
Dieldrin	5970		18.5			26-Jul-23 02:19	1
Endrin	452		14.6			26-Jul-23 02:19	1
cis-Nonachlor	26.2		11.2		J	26-Jul-23 02:19	1
Endosulfan II (beta)	69.5		63.9		J	26-Jul-23 02:19	1
2,4'-DDD	134		9.60			26-Jul-23 02:19	1
2,4'-DDT	14.0		11.5		J	26-Jul-23 02:19	1
4,4'-DDD	260		27.2		D	26-Jul-23 19:03	3
4,4'-DDT	87.7		33.3		D, J	26-Jul-23 19:03	3
Endosulfan Sulfate	102		35.9		J	26-Jul-23 02:19	1
4,4'-Methoxychlor	64.9		26.1		J	26-Jul-23 02:19	1
Mirex	ND	0.918	7.83			26-Jul-23 02:19	1
Endrin Aldehyde	67.1		53.7		J	26-Jul-23 02:19	1
Endrin Ketone	736		49.6			26-Jul-23 02:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C6-Hexachlorobenzene	IS	55.8	5 - 120		26-Jul-23 02:19	1
13C6-alpha-BHC	IS	79.2	32 - 130		26-Jul-23 02:19	1
13C6-Lindane (gamma-BHC)	IS	85.6	11 - 120		26-Jul-23 02:19	1
13C6-beta-BHC	IS	92.5	32 - 130		26-Jul-23 02:19	1
13C6-delta-BHC	IS	87.6	36 - 137		26-Jul-23 02:19	1
13C10-Heptachlor	IS	94.9	5 - 120		26-Jul-23 02:19	1
13C12-Aldrin	IS	55.8	5 - 120		26-Jul-23 02:19	1
13C10-Oxychlordane	IS	70.8	23 - 135		26-Jul-23 02:19	1
13C10-cis-Heptachlor Epoxide	IS	54.1	27 - 137	D	26-Jul-23 19:03	3
13C10-trans-Chlordane (gamma)	IS	65.4	21 - 132		26-Jul-23 02:19	1
13C10-trans-Nonachlor	IS	92.6	14 - 136		26-Jul-23 02:19	1
13C9-Endosulfan I (alpha)	IS	87.8	15 - 148		26-Jul-23 02:19	1
13C12-2,4'-DDE	IS	80.3	47 - 160		26-Jul-23 02:19	1
13C12-4,4'-DDE	IS	97.8	47 - 160		26-Jul-23 02:19	1
13C12-Dieldrin	IS	102	40 - 151		26-Jul-23 02:19	1
13C12-Endrin	IS	108	35 - 155		26-Jul-23 02:19	1
13C10-cis-Nonachlor	IS	107	36 - 139		26-Jul-23 02:19	1
13C9-Endosulfan II (beta)	IS	110	5 - 122		26-Jul-23 02:19	1
13C12-2,4'-DDD	IS	164	5 - 199		26-Jul-23 02:19	1
13C12-2,4'-DDT	IS	176	5 - 199		26-Jul-23 02:19	1
13C12-4,4'-DDD	IS	62.9	5 - 120	D	26-Jul-23 19:03	3

Sample ID: 22B-U-D-20230628 **EPA Method 1699**

Client Data

Name: Apex Laboratories
Project: A3F1632
Matrix: Water
Date Collected: 28-Jun-23 11:30

Laboratory Data

Lab Sample: 2307001-02
QC Batch: B23G004
Sample Size: 1.02 L
Date Received: 01-Jul-23 10:40
Date Extracted: 05-Jul-23
Column: ZB-50

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Analyzed	Dilution
13C12-4,4'-DDT	IS	47.2	5 - 120	D	26-Jul-23 19:03	3
13C9-Endosulfan Sulfate	IS	88.6	15 - 148		26-Jul-23 02:19	1
13C12-Methoxychlor	IS	130	5 - 120	H	26-Jul-23 02:19	1
13C10-Mirex	IS	87.7	5 - 120		26-Jul-23 02:19	1
13C12-Endrin Aldehyde	IS	89.1	15 - 148		26-Jul-23 02:19	1
13C12-Endrin Ketone	IS	103	15 - 148		26-Jul-23 02:19	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.

SUBCONTRACT ORDER 2307001 2.7°C

Apex Laboratories

AB 6/30/23 **A3F1632**

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 336-0745
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Enthalpy Analytical- CA
1104 Windfield Way
El Dorado Hills, CA 95762
Phone :(916) 673-1520
Fax: -

Sample Name: 22B-U-S-20230628 **Water** **Sampled: 06/28/23 12:00** (A3F1632-01)

Analysis	Due	Expires	Comments
1699 Insecticides/Pesticides (SUB)	07/12/23 17:00	07/05/23 12:00	MS/MSD MDL
Containers Supplied:			
(CL)1 L Amber Glass - Non Preserved			
(CM)1 L Amber Glass - Non Preserved			
(CN)1 L Amber Glass - Non Preserved			
(CO)1 L Amber Glass - Non Preserved			

Sample Name: 22B-U-D-20230628 **Water** **Sampled: 06/28/23 11:30** (A3F1632-02)

Analysis	Due	Expires	Comments
1699 Insecticides/Pesticides (SUB)	07/12/23 17:00	07/05/23 11:30	sub to Enthalpy CA, MDL
Containers Supplied:			
(Q)1 L Amber Glass - Non Preserved			
(R)1 L Amber Glass - Non Preserved			

Standard TAT

Please watch hold time

Released By	Date	Received By	Date
	6-30-23	Fed Ex (Shipper)	
Fed Ex (Shipper)		Byron Clark	07/01/23 10:40
Released By	Date	Received By	Date

Page 1 of 1

Sample Log-In Checklist

ENTHALPY ANALYTICAL

Work Order #: 2307001 **TAT** 37

Samples Arrival:	**Date/Time** 10:40 07/01/23		**Initials:** BAC		**Location:** WR-1 **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: 4.1 (uncorrected) **Temp °C:** 2.7 (corrected)			**Probe used: Y / (N)**		**Thermometer ID:** IR-4		

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?		✓	✓
Airbill — Trk # 772619176489	✓		
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?	✓	(A)	

Logged In:	**Date/Time** 13:24 07/01/23	**Initials:** BAC	**Location:** WR-2 **Shelf/Rack:** B-2, G-2	
COC Anomaly/Sample Acceptance Form completed?			✓	✓

Comments:

(A) Showing an expiration of samples on 07/05.

CoC/Label Reconciliation Report WO# 2307001

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Sample Comments
2307001-01	A 22B-U-S-20230628	☑	A3F1632-01	28-Jun-23 12:00	☑	Amber Glass NM Bottle, 1L	Aqueous	MS/MSD
2307001-01	B 22B-U-S-20230628	☑	A3F1632-01	28-Jun-23 12:00	☑	Amber Glass NM Bottle, 1L	Aqueous	MS/MSD
2307001-01	C 22B-U-S-20230628	☑	A3F1632-01	28-Jun-23 12:00	☑	Amber Glass NM Bottle, 1L	Aqueous	MS/MSD
2307001-01	D 22B-U-S-20230628	☑	A3F1632-01	28-Jun-23 12:00	☑	Amber Glass NM Bottle, 1L	Aqueous	MS/MSD
2307001-02	A 22B-U-D-20230628	☑	A3F1632-02	28-Jun-23 11:30	☑	Amber Glass NM Bottle, 1L	Aqueous	
2307001-02	B 22B-U-D-20230628	☑	A3F1632-02	28-Jun-23 11:30	☑	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) Other

Verifed by/Date: BAC 07/01/23

APPENDIX D

Laboratory Data Validation Report

Project Name: Starlink / Uplands Support
Project Number/Phase/Task: GL1039351414.320
Reviewing Company: WSP
Project Manager: Ted Norton
Data Evaluator: Sarah Gilles
Data Evaluation Date: October 11, 2023
Checked by: Julie Lehrman
Review Date: October 12, 2023
Laboratory: Apex, Weck, Enthalpy Analytical, Matrix
Lab SDG #: A3F1632, A3F1661, 2307001, 2307059, P231062

Matrix: ☒ Aqueous ☐ Soil ☐ Sediment ☐ Waste ☐ Air ☐ Other:

Analytical Methods: See Table 1

Sample Information: See Table 1

Data qualification: See Table 2.

Work Plan or QAPP: Final Outfall 22B IRAM Performance Monitoring, Sampling and Analysis Plan, Former Rhone-Poulenc Portland Site, Oregon Department of Environmental Quality, February 2015; Quality Assurance Project Plan Update, RP – Portland Site, AMEC Earth & Environmental, Inc. September 2009.

Data Validation Guidance: National Functional Guidelines for Superfund Organic/Inorganic Methods Data (EPA 2020); National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA 2020).

COC and Sample Receipt	**YES**	**NO**	**NA**	**COMMENT**
a) COC complete and correct?	☐	☒		See Note 1
b) COC documents release of custody (signed and dated)?	☒	☐		
c) Field QC types provided (note types)?	☒	☐	☐	MS/MSD, FD, RB, TB
d) Did the cooler contents match the COC?	☐	☒		See Note 1
e) Were samples received in good condition?	☒	☐		
f) Were cooler temperatures within control limits?	☒	☐		

Data Package Information	**YES**	**NO**	**NA**	**COMMENT**
a) Laboratory name and location documented?	☒	☐		
b) All samples on COC reported in data package?	☒	☐		
c) Requested analytical methods used?	☒	☐		
d) Requested sample preparation methods used?	☒	☐	☐	
e) Requested analyte list reported?	☒	☐		
f) Requested units reported?	☒	☐	☐	
g) Did the laboratory define the qualifiers used?	☒	☐		
h) Data package contains all information necessary to complete the data quality review?	☒	☐		

Analytical Assessment	**YES**	**NO**	**NA**	**COMMENT**
a) Solid samples reported on a dry-weight basis?	☐	☐	☒	
b) Were solid samples percent moisture criteria acceptable?	☐	☐	☒	
c) Were sample dilutions noted?	☒	☐		See Note 2

Analytical Assessment	**YES**	**NO**	**NA**	**COMMENT**
d) Were detected concentrations less than the QL qualified by the laboratory?	☒	☐		
e) Were detected concentrations above the calibration range reported by the laboratory?	☐	☒		
f) Did the laboratory satisfy the requested sensitivity requirements?	☒	☐		

Laboratory Case Narrative	**YES**	**NO**	**NA**	**COMMENT**
a) Do the laboratory narrative or laboratory qualifiers indicate deficiencies?	☒	☐	☐	Addressed in sections below
b) Were all deficiencies noted in the laboratory qualifiers or narrative?	☒	☐	☐	

Sample Preservation and Holding Time	**YES**	**NO**	**NA**	**COMMENT**
a) Were samples properly preserved?	☐	☒		See Note 3
b) Were holding times met for sample preparation?	☒	☐	☐	
c) Were holding times met for sample analysis?	☒	☐		

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were blanks analyzed at the appropriate frequency?	☒	☐		
b) Were any analytes detected in the associated preparation/method blank?	☒	☐		See Note 4 and Table 3
c) Were any analytes detected in the associated trip blanks?	☐	☒	☐	
d) Were any analytes detected in the associated field or equipment/rinsate blanks?	☒	☐	☐	See Note 5
e) Were any analytes detected in the associated storage blanks?	☐	☐	☒	Only required for CLP methods

Surrogates or Deuterated Monitoring Compounds	**YES**	**NO**	**NA**	**COMMENTS**
a) Were the correct surrogate compounds added to each sample?	☒	☐	☐	Cleanup standard in lieu of surrogate for Methods 1613B and 1668C
b) Were surrogate recoveries within control limits?	☐	☒	☐	See Note 6 and Table 4
c) If not, were samples analyzed at dilution factors 20x or greater?	☐	☒	☐	

Isotope Dilution Standards	**YES**	**NO**	**NA**	**COMMENTS**
a) Were the correct isotope dilution standards added to each sample?	☒	☐	☐	
b) Were isotope dilution standard recoveries within control limits?	☐	☒	☐	See Note 7 and Table 5

LCS/LCSD/OPR	**YES**	**NO**	**NA**	**COMMENTS**
a) Were LCS/LCSD or OPR reported at the appropriate frequency?	☒	☐		
b) Were proper analytes included in the LCS/LCSD or OPR?	☒	☐		
c) Were LCS/LCSD or OPR recoveries within control limits?	☐	☒		See Note 8 and Table 6
d) Were RPD values within control limits (if LCSD or OPRD was analyzed)?	☒	☐	☐	

MS/MSDs	YES	NO	NA	COMMENTS
a) Were project-specific MS (and MSD) reported?	☒	☐		MS/MSD not required for Methods 1613B, 1668C and 1699
b) Were proper analytes reported in the MS/MSD?	☒	☐	☐	
c) Were project-specific MS/MSD recoveries within control limits?	☐	☒	☐	See Note 9 and Table 7
d) If not, were sample concentrations greater than the spiking concentration?	☐	☒	☐	See Note 9 and Table 7
e) Was the RPD or absolute difference within control limits (if project-specific MSD analyzed)?	☐	☒	☐	See Note 9 and Table 7
f) Were project-specific post-digestion spikes analyzed?	☐	☒	☐	
g) Were project-specific post-digestion spike recoveries within control limits?	☐	☐	☒	

Duplicates	YES	NO	NA	COMMENTS
a) Were project-specific laboratory duplicates reported?	☒	☐	☐	22B-U-S-20230628, 22B-U-D-20230628
b) Was laboratory duplicate RPD or absolute difference criteria acceptable?	☐	☒	☐	See Note 10 and Table 8
c) Were field duplicates reported?	☒	☐	☐	22B-U-S-20230628 / 22B-U-D-20230628 22B-F-S-20230629 / 22B-F-D-20230629 22B-U-S-20230629 / 22B-U-D-20230629
d) Was field duplicate RPD or absolute difference criteria acceptable (30%)?	☐	☒	☐	See Note 11 and Table 9

ICP Serial Dilution (SD)	YES	NO	NA	COMMENTS
a) Was project-specific ICP SD data provided?	☐	☒	☐	
b) Were project-specific ICP SD within acceptable criteria?	☐	☐	☒	

Overall Evaluation	YES	NO	NA	COMMENTS
a) Were there any other technical problems not previously addressed?	☒	☐		See Notes 12, 13 and 14
b) Were data acceptable and usable, except where noted?	☒	☐		

Comments/Notes:

1. A trip blank collected on July 28, 2023 was not included on the COC but was received by the laboratory. The laboratory noted the discrepancy on the cooler receipt form. The trip blank was analyzed for project VOCs by method 8260D. No further action is required other than to note.
2. Select samples were analyzed at dilutions to bring sample concentrations within the instrument calibration range. Reporting limits were elevated proportional to the dilution when undiluted results were not provided by the laboratory. The laboratory also flagged ('EST_s' qualifier) total suspended solid results that were estimated due to minimum residue not being met for method SM2540D. The reporting level was adjusted to reflect the increased uncertainty in the result. The Guidelines do not require qualification based on dilution, but the end user is alerted that the sensitivity of non-detect results should be considered as part of determining data usability.
3. Sample 22B-U-D-20230628 was flagged ('PRES' qualifier) for method NWTPH-HCID due to incomplete field preservation which resulted in sample pH out of range for the analysis. The laboratory added preservative to adjust the pH within the appropriate range. No further action is required other than to note.

4. Detections in the method blanks for high resolution Methods 1668 and 1699, including results identified as Estimated Maximum Potential Concentrations (EMPC), are summarized in Table 3, attached. See the table below for the blank qualifications applied to the samples using professional judgement informed by the High Resolution Superfund Methods (HRSM) Guidelines.

Blank Results	Sample Result	Action
All analytes except OCDD/OCDF* ≥ MDL or EDL and < 1/2 QL (OCDD/OCDF <QL)	Non-detect	No qualification necessary
	≥ MDL or EDL but < QL	Report at QL, raise MDL to sample result, and qualify as non-detect (U)
	≥ QL	Per professional judgment no qualification necessary
All analytes except OCDD/OCDF* ≥ 1/2x QL (OCDD/OCDF <3xQL)	Non-detect	No qualification necessary
	< QL	Report at QL, raise MDL to sample result, and qualify as non-detect (U)
	≥ QL and < Blank Result	Raise MDL and QL to sample result and qualify as non-detect (U)
	≥ QL and ≥ Blank Result	Qualify J+ if sample result is < 10x Blank Result.
Estimated Maximum Possible Concentration (EMPC)	EMPC	Qualify EMPC results for same analyte using actions above.
	non-EMPC	No qualification necessary
Gross Contamination (>3xQL)	All	Qualify R/UR

5. Analytes were detected in non-high-resolution analyses in the rinsate blank, as noted in the table below. Rinsate blanks were associated with samples collected on the same day. Following Inorganic Guidelines and using professional judgement, when the blank concentration was above the RL, associated detected sample results detected below 10x the blank concentration were qualified as estimated, biased high (J+).

Sample ID	Method	Analyte	Blank Result	Reporting Limit	Units
22B-F-RB-20230629	218.6	Hexavalent Chromium	0.031	0.02	ug/L

6. Surrogate recoveries were outside of acceptance criteria for select samples, as noted in Table 4. Following the Guidelines for SVOCs established by the QAPP, when a single acid-extractable surrogate was below the lower acceptance limit, results for analytes associated with that surrogate as listed in the QAPP were qualified as estimated (J/UJ). When 2 base-neutral surrogates were below the lower acceptance limit, all results associated with the base-neutral fraction were qualified as estimated (J/UJ).

Certain surrogate recoveries were outside QC criteria in QC samples. As per the QAPP, primary samples do not need to be qualified according to QC sample surrogate recoveries. The surrogate recoveries are shown in Table 4 and the deficiency identified by the laboratory is noted here for completeness.

7. Labeled isotope dilution standard recoveries were outside control limits in project samples as summarized in Table 5. Following the HRSM Guidelines and using professional judgement, sample results were qualified as shown in the table below. Using professional judgement, no qualification was applied to lab QC samples.

Criteria	Action for Detects	Action for Non-detects
%R < 10%* and S/N ratio < 10	R	R
%R < 10%* and S/N ratio ≥ 10	J-	R
%R ≥ 10% but < Lower Acceptance Limit	J-	UJ
%R > Upper Acceptance Limit	J+	No qualification

*or < Lower Acceptance Limit when the Lower Acceptance Limit <10%

8. LCS and LCSD recoveries were outside control limits as summarized in Table 6. Following the QAPP and historical project practice, when the LCS recovery was below the lower acceptance limit but above 10%, associated non-detect sample results were qualified as estimated (UJ). When the LCS recovery was above the upper acceptance limit, associated non-detect sample results did not require qualification.

9. MS/MSD recoveries were outside of acceptance criteria for select analytes, as shown in Table 7. Only MS/MSD samples associated with project-specific samples reported in this SDG were evaluated. Qualifications for MS/MSD deficiencies were applied to both the parent sample and field duplicate. Using professional judgment, samples are only qualified when two indicators are outside criteria. In accordance with the QAPP, organic samples are only qualified when the spiking concentration is greater than the sample concentration. Following Guidelines, inorganic samples are only qualified when the spiking concentration is greater than 4x the sample concentration.

Following Organic Guidelines, when MS/MSD recoveries are below recovery criteria and greater than 10%, associated non-detects are qualified as estimated (UJ). When MS/MSD recoveries were below 10%, associated non-detect sample results were rejected (R).

10. Laboratory duplicate RPDs were above the QC criteria. Sample results not meeting the applicable laboratory duplicate criteria are shown in Table 7. Following Guidelines established by the QAPP, when either the sample result or field duplicate result was below 5x the RL and the absolute difference between the results was greater than the RL, associated results were qualified as estimated (J/UJ). When the absolute difference between the results was less than the RL, no qualifications were necessary.

11. Field duplicate RPDs were above the QC criteria established in the QAPP (30%). Sample results not meeting the applicable field duplicate criteria are shown in Table 8. Following Guidelines established by the QAPP, when both the primary and field duplicate results were greater than 5x the RL and the RPD was outside QC criteria, the associated results were qualified as estimated (J). When either the sample result or field duplicate result was below 5x the RL and the absolute difference between the results was greater than the RL, associated results were qualified as estimated (J/UJ). When the absolute difference between the results was less than the RL, no qualifications were necessary.

12. Following historical precedent for this project, results that are reported as estimated maximum potential concentrations (EMPC) in the report are reported as non-detects and qualified “EMPC, U” in the EDD. This designation has been retained in the data tables.

13. Apex applied other flags to the data to identify potential deviations. WSP reviewed these items, to the extent that supporting data was provided, and determined that no rejection of data was necessary. These flags are defined by the laboratory below.

a. Q-01 – Matrix spike recovery and/or RPD was outside acceptance limits.

b. Q-05 – Analyses were not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.

c. Q-16 – Reanalysis of an original batch QC sample.

d. Q-19 – Blank spike duplicate sample analyzed in place of MS/MSD samples due to limited sample amount available for analysis.

e. Q-31 – Estimated results as recovery of CCV sample below lower control limit for this analyte. Results are likely biased low.

f. Q-41 – Estimated results as recovery of CCV sample above upper control limit for this analyte. Results are likely biased high.

g. Q-42 – MS/MSD analysis was performed on sample and recovery or RPD is outside laboratory control limits.

h. Q-52 – Due to known erratic recoveries, the result and reporting levels for this analyte are reported as estimated values. The analyte may not have passed all QC requirements.

i. Q-54 and Q-54a – Daily CCV recovery failed the +-20% criteria listed in the method. The results are reported as estimated values.

j. Q-55 – Daily CCV/LCS recovery was below the +-20% criteria listed in the method, however there is adequate sensitivity to ensure detection at the reporting level.

k. Q-56 – Daily CCV/LCS recovery was below the +-20% criteria listed in the method.

l. Q-65 – Spike recovery is estimated due to high analyte concentration of the source sample.

m. S-03 – Sample re-extract, or the analysis of an associate batch QC sample, confirmed surrogate failure due to sample matrix effect.

n. S-06 – Surrogate recovery is outside of established control limits.

o. E – Estimated value as the result was above the calibration range of the instrument.

14. The EDD contained 2 entries for CAS number 2051-24-3. One of these was intended to be the result for PCB-209 as an individual compound. The 2nd was intended to be the value for Decachlorobiphenyl, total. The database can only hold one entry per sample for each CAS number. The duplicate entry for Decachlorobiphenyl, total was deleted from the EDD prior to uploading to the project database.

Definitions:

%D:	Percent Difference / Drift
%R:	Percent Recovery
CCB:	Continuing Calibration Blank
CCV:	Continuing Calibration Verification
COC:	Chain of Custody
CRQL:	Contract Required Quantitation Limit
DMC:	Deuterated Monitoring Compound
DRO:	Diesel Range Organics
EB:	Equipment Blank
FB:	Field Blank
GRO:	Gasoline Range Organics
HT:	Holding Time
ICB:	Initial Calibration Blank
ICV:	Initial Calibration Verification
IS:	Internal Standard
LCS:	Laboratory Control Sample
LCSD:	Laboratory Control Sample Duplicate
MB:	Method Blank
MDL:	Method Detection Limit
MS:	Matrix Spike
MSD:	Matrix Spike Duplicate
PCB:	Polychlorinated Biphenyl
PQL:	Practical Quantitation Limit
QAPP:	Quality Assurance Project Plan
QC:	Quality Control
QL:	Quantitation Limit
RB:	Rinsate Blank
RDL:	Reported Detection Limit
RL:	Reporting Limit
RPD:	Relative Percent Deviation
RRF:	Relative Response Factor
RSD:	Relative Standard Deviation
SD:	Serial Dilution
SDG:	Sample Delivery Group
SPLP:	Synthetic Precipitate Leachate Procedure
SVOC:	Semivolatile Organic Compound
TAL:	Target Analyte List
TAT:	Turn Around Time
TB:	Trip Blank
TCL:	Target Compound List
TCLP:	Toxicity Characteristic Leachate Procedure
TDS:	Total Dissolved Solids
TOC:	Total Organic Carbon
TPH:	Total Petroleum Hydrocarbons
TSS:	Total Suspended Solids
VOC:	Volatile Organic Compound
ZHE:	Zero Headspace Extraction

Table 1
Sample Collection and Analysis Summary
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

							Parameters / Analytical Methods / Laboratories																
							Apex								*Weck*				*Matrix*	*Enthalpy Analytical*			
SDG	**Field Identification**	**Collection Date**	**Location**	**Lab Identification**	**Matrix**	**QC Samples**	**Hydrocarbon Identification** by NWTPH-HCID	**Diesel/Oil Hydrocarbons** by NWTPH-Dx/SG	**GRO** by NWTPH-Gx	**VOCs** by 8260D	**SVOCs** by 8270E	**Total Metals** by E200.8 (ICPMS)	**Dissolved Metals** by E200.8 (ICPMS)	**TSS** by SM2540D	**Total Hexavalent Chromium** by E218.6	**Dissolved Hexavalent Chromium** by E218.6	**Total Mercury** by 1631E low level	**Dissolved Mercury** by 1631E low level	**Herbicides** by 8151A Mod	**Dioxins / Furans** by 1613B	**PCBs** by 1668C	**Pesticides** by 1699
A3F1632	22B-U-S-20230628	6/28/2023	Outfall 22B	A3F1632-01	GW	-	X	X	X	X	X	X	-	X	-	-	-	-	-	-	-	-
	22B-U-D-20230628	6/28/2023	Outfall 22B	A3F1632-02	GW	FD (22B-U-S-20230628)	X	X	X	X	X	X	-	X	-	-	-	-	-	-	-	-
	Trip Blank	6/28/2023	-	A3F1632-03	WQ	TB	-	-		X	-	-	-	-	-	-	-	-	-	-	-	-
A3F1661	22B-F-D-20230629	6/29/2023	Outfall 22B	A3F1661-01	GW	FD (22B-F-S-20230629)	-	-	-	-	-	-	X	-	-	X	-	X	-	-	-	-
	22B-F-S-20230629	6/29/2023	Outfall 22B	A3F1661-02	GW	-	-	-	-	-	-	-	X	-	-	X	-	X	-	-	-	-
	22B-U-S-20230629	6/29/2023	Outfall 22B	A3F1661-03	GW	-	-	-	-	-	-	X	-	-	X	-	X	-	-	-	-	-
	22B-F-RB-20230629	6/29/2023	-	A3F1661-04	WQ	RB	-	-	-	-	-	-	X	-	-	X	-	X	-	-	-	-
	22B-U-D-20230629	6/29/2023	Outfall 22B	A3F1661-05	GW	FD (22B-U-S-20230629)	-	-	-	-	-	X	-	-	X	-	X	-	-	-	-	-
2307001	22B-U-S-20230628	6/28/2023	Outfall 22B	2307001-01	GW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
	22B-U-D-20230628	6/28/2023	Outfall 22B	2307001-02	GW	FD (22B-U-S-20230628)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
2307059	22B-U-S-20230628	6/28/2023	Outfall 22B	2307059-01	GW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-
	22B-U-D-20230628	6/28/2023	Outfall 22B	2307059-02	GW	FD (22B-U-S-20230628)	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-
P231062	22B-U-S-20230628	6/28/2023	Outfall 22B	P231062-01	GW	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
	22B-U-D-20230628	6/28/2023	Outfall 22B	P231062-02	GW	FD (22B-U-S-20230628)	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-

Notes:
1) Analyses performed by Apex, Vista Analytical, Enthalpy Analytical, and/or Matrix Sciences Pacific Agricultural Laboratories, detailed above.
2) Samples designated with "F" in the Field ID were field filtered. Samples designated with "U" in the Field ID were unfiltered.
3) One primary sample designated with "S" and one field duplicate samples designated with "D" was submitted to the laboratories

Abbreviations:
FD: Field Duplicate
GRO: Gasoline Range Organics
GW: Groundwater
MS/MSD: Matrix Spike / Matrix Spike Duplicate
QC: Quality Control
RB: Rinsate Blank
SDG: Sample Delivery Group
SVOCs: Semivolatile Organic Compounds
TB: Trip Blank
VOCs: Volatile Organic Compounds
WQ: Quality Control Water

Table 2
Qualifier Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample Name	Analysis	CAS RN	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22B-U-D-20230628	8270E	105-67-9	2,4-Dimethylphenol	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	120-83-2	2,4-Dichlorophenol	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	1319-77-3	3 & 4-Methylphenol	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	95-48-7	2-Methylphenol	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	65-85-0	Benzoic Acid	-	-	-	UR	Surrogate recovery below QC criteria, MS/MSD recovery below 10%
22B-U-D-20230628	8270E	88-75-5	2-Nitrophenol	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	95-57-8	2-Chlorophenol	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	206-44-0	Fluoranthene	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	85-01-8	Phenanthrene	-	-	-	J	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	100-01-6	4-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	100-25-4	1,4-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	100-51-6	Benzyl Alcohol	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	101-55-3	4-Bromophenyl phenyl ether	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	103-23-1	Di-(2-ethylhexyl)adipate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	103-33-3	Azobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	106-46-7	1,4-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	106-47-8	4-Chloroaniline	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	110-86-1	Pyridine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	111-44-4	bis(2-Chloroethyl) Ether	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	111-91-1	Bis(2-Chloroethoxy) methane	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	117-81-7	bis(2-Ethylhexyl) Phthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	117-84-0	di-n-Octyl Phthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	118-74-1	Hexachlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	120-12-7	Anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	120-82-1	1,2,4-Trichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	121-14-2	2,4-Dinitrotoluene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	129-00-0	Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	131-11-3	Dimethylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	132-64-9	Dibenzofuran	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	1570-65-6	4,6-Dichloro-o-cresol	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	191-24-2	Benzo(G,H,I)Perylene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	193-39-5	Indeno(1,2,3-CD)Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	205-99-2	Benzio(B)Fluoranthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	207-08-9	Benzo(K)Fluoranthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	208-96-8	Acenaphthylene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	218-01-9	Chrysene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	39638-32-9	2,2'-Oxybis(1-Chloropropane)	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	50-32-8	Benzo(A)Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	528-29-0	1,2-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	53-70-3	Dibenzo(A,H)anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	541-73-1	1,3-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	56-55-3	Benz(A)Anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	606-20-2	2,6-Dinitrotoluene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	621-64-7	n-Nitrosodi-n-propyl amine	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	62-53-3	Aniline	-	-	-	UR	Surrogate recovery below QC criteria; MS recovery < 10%
22B-U-D-20230628	8270E	62-75-9	n-Nitrosodimethylamine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	67-72-1	Hexachloroethane	-	-	-	UJ	Surrogate recovery below QC criteria

Table 2
Qualifier Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample Name	Analysis	CAS RN	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22B-U-D-20230628	8270E	7005-72-3	4-Chlorophenyl phenyl ether	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	77-47-4	Hexachlorocyclopentadiene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	78-59-1	Isophorone	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	83-32-9	Acenaphthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	84-66-2	Diethylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	84-74-2	Di-n-butylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	85-68-7	Butylbenzylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	86-30-6	n-Nitrosodiphenylamine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	86-73-7	Fluorene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	86-74-8	Carbazole	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	87-68-3	Hexachlorobutadiene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	88-74-4	2-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	90-12-0	1-Methylnaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	91-20-3	Naphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	91-57-6	2-Methylnaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	91-58-7	2-Chloronaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	91-94-1	3,3'-Dichlorobenzidine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8270E	95-50-1	1,2-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	98-95-3	Nitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	99-09-2	3-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-D-20230628	8270E	99-65-0	1,3-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	85-01-8	Phenanthrene	-	-	-	J	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	100-01-6	4-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	100-25-4	1,4-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	100-51-6	Benzyl Alcohol	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	101-55-3	4-Bromophenyl phenyl ether	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	103-23-1	Di-(2-ethylhexyl)adipate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	103-33-3	Azobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	106-46-7	1,4-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	106-47-8	4-Chloroaniline	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	110-86-1	Pyridine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	111-44-4	bis(2-Chloroethyl) Ether	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	111-91-1	Bis(2-Chloroethoxy) methane	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	117-81-7	bis(2-Ethylhexyl) Phthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	117-84-0	di-n-Octyl Phthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	118-74-1	Hexachlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	120-12-7	Anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	120-82-1	1,2,4-Trichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	121-14-2	2,4-Dinitrotoluene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	129-00-0	Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	131-11-3	Dimethylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	132-64-9	Dibenzofuran	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	1570-65-6	4,6-Dichloro-o-cresol	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	191-24-2	Benzo(G,H,I)Perylene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	193-39-5	Indeno(1,2,3-CD)Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria

Table 2
Qualifier Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample Name	Analysis	CAS RN	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22B-U-S-20230628	8270E	205-99-2	Benzio(B)Fluoranthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	206-44-0	Fluoranthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	207-08-9	Benzo(K)Fluoranthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	208-96-8	Acenaphthylene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	218-01-9	Chrysene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	39638-32-9	2,2'-Oxybis(1-Chloropropane)	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	50-32-8	Benzo(A)Pyrene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	528-29-0	1,2-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	53-70-3	Dibenzo(A,H)anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	541-73-1	1,3-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	56-55-3	Benz(A)Anthracene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	606-20-2	2,6-Dinitrotoluene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	621-64-7	n-Nitrosodi-n-propyl amine	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	62-53-3	Aniline	-	-	-	UR	Surrogate recovery below QC criteria; MS recovery < 10%
22B-U-S-20230628	8270E	62-75-9	n-Nitrosodimethylamine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	67-72-1	Hexachloroethane	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	7005-72-3	4-Chlorophenyl phenyl ether	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	77-47-4	Hexachlorocyclopentadiene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	78-59-1	Isophorone	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	83-32-9	Acenaphthene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	84-66-2	Diethylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	84-74-2	Di-n-butylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	85-68-7	Butylbenzylphthalate	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	86-30-6	n-Nitrosodiphenylamine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	86-73-7	Fluorene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	86-74-8	Carbazole	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	87-68-3	Hexachlorobutadiene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	88-74-4	2-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	90-12-0	1-Methylnaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	91-20-3	Naphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	91-57-6	2-Methylnaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	91-58-7	2-Chloronaphthalene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	91-94-1	3,3'-Dichlorobenzidine	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-S-20230628	8270E	95-50-1	1,2-Dichlorobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	98-95-3	Nitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	99-09-2	3-Nitroaniline	-	-	-	UJ	Surrogate recovery below QC criteria, MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	99-65-0	1,3-Dinitrobenzene	-	-	-	UJ	Surrogate recovery below QC criteria
22B-U-D-20230628	8260D	110-75-8	2-Chloroethylvinyl ether	-	-	-	UJ	LCS recovery below QC criteria
22B-U-S-20230628	8260D	110-75-8	2-Chloroethylvinyl ether	-	-	-	UJ	LCS recovery below QC criteria
22B-U-S-20230628	8270E	95-57-8	2-Chlorophenol	-	-	-	UJ	MS/MSD recovery below QC criteria
22B-U-S-20230628	8270E	108-95-2	Phenol	-	-	-	UR	MS/MSD recovery below 10%
22B-U-S-20230628	8270E	65-85-0	Benzoic Acid	-	-	-	UR	MS/MSD recovery below 10%
22B-U-D-20230628	8270E	108-95-2	Phenol	-	-	-	UR	MS/MSD recovery below 10%
22B-U-S-20230628	1668C	2050-67-1	3,3'-Dichlorobiphenyl	-	19	-	U	Method blank detection
22B-U-D-20230628	1668C	2050-67-1	3,3'-Dichlorobiphenyl	-	18	-	U	Method blank detection
22B-U-S-20230628	1668C	2051-60-7	2-Chlorobiphenyl (PCB 1)	-	4.62	-	U	Method blank detection

Table 2
Qualifier Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample Name	Analysis	CAS RN	Constituent	New Result	New MDL	New RL	Qualifier	Reason
22B-U-D-20230628	1668C	2051-60-7	2-Chlorobiphenyl (PCB 1)	-	7.81	-	U	Method blank detection
22B-U-D-20230628	1668C	25512-42-9	Dichlorobiphenyl, Total	-	-	-	J+	Method blank detection
22B-U-S-20230628	200.8	7439-89-6	Iron	-	-	-	J	Field duplicate RPD above QC criteria
22B-U-D-20230628	200.8	7440-02-0	Nickel	-	-	-	J	Field duplicate Abs Diff above QC criteria
22B-F-D-20230629	218.6	18540-29-9	Hexavalent Chromium, Dissolved	-	-	-	J+	Rinsate blank detection
22B-F-S-20230629	218.6	18540-29-9	Hexavalent Chromium, Dissolved	-	-	-	J+	Rinsate blank detection
22B-U-D-20230629	218.6	18540-29-9	Hexavalent Chromium	-	-	-	J+	Rinsate blank detection
22B-U-S-20230629	218.6	18540-29-9	Hexavalent Chromium	-	-	-	J+	Rinsate blank detection
22B-U-D-20230628	E1699	72-43-5	Methoxychlor	-	-	-	J+	Isotope dilution standards recoveries above QC criteria
22B-U-S-20230628	E1699	72-43-5	Methoxychlor	-	-	-	J+	Isotope dilution standards recoveries above QC criteria
22B-U-D-20230628	E1699	2051-61-8	PCB-2	-	2.41	-	U	Blank contamination. EMPC value reported for sample not valid, use MDL.
22B-U-S-20230628	E1699	PCB020_021_033	PCB-20/21/33	-	13.9	-	U	Blank contamination. EMPC value reported for sample not valid, raise MDL to original sample response.
All samples	All analyses	--	--	--	--	--	--	Laboratory applied U-qualifiers indicating non-detect results and J-qualifiers indicating results below the reporting limit are retained unless other qualifications are indicated in this table. All other laboratory qualifiers are removed.
All Samples	All analyses	All 'EMPC' results	All 'EMPC' results	--	--	--	EMPC, U	Result qualified as EMPC in the PDF, final qualifiers are EMPC, U in the EDD and project database unless other qualifiers are indicated in this table.
All Samples	All analyses	All 'EMPC' results	All 'EMPC' results	--	varies	--	EMPC, U	Laboratory placed EMPC value in RDL field and reported EMPCs with numerical values above the MDL. MDL raised to the value of the EMPC.

Abbreviations:
LCS: Laboratory Control Sample
MDL: Method Detection Limit
MS/MSD: Matrix Spike / Matrix Spike Duplicate
QC: Quality Control
RL: Reporting Limit
EDD : Electronic Data Deliverable
EMPC: Estimated maximum possible concentration

Qualifiers:
J: Estimated result
J+: Estimated result, biased high
UR: Rejected result
U: Non-detect result
UJ: Non-detect result, RL is estimated

Table 3
High Resolution Blanks Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample ID	Method	CAS RN	EDD Analyte Name	Laboratory Analyte Name	Blank Result	Quantitation Limit	Units	Lab Qualifier	Notes
B23G004-BLK1	E1699	118-74-1	Hexachlorobenzene	Hexachlorobenzene	8.14	40	pg/L	J	MB<1/2QL, smpls >QL, no qual
B23H092-BLK1	1668C	2051-60-7	2-Chlorobiphenyl (PCB 1)	PCB-1	5.52	10	pg/L	J	MB>1/2QL, smpls<QL, qual
B23H092-BLK1	1668C	2051-62-9	4-Chlorobiphenyl	PCB-3	3.06	15	pg/L	J	MB<1/2QL, smpls ND, no qual
B23H092-BLK1	1668C	2050-67-1	3,3'-Dichlorobiphenyl	PCB-11	6.65	20	pg/L	J	MB<1/2QL, smpls <QL, qual
B23H092-BLK1	1668C	PCB052_069	PCB-52/69	PCB-52/69	1.16	20	pg/L	J	MB<1/2QL, smpls ND, no qual
B23H092-BLK1	1668C	27323-18-8	Monochlorobiphenyl, Total	Total monoCB	8.58	9.7	pg/L	EMPC	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	25512-42-9	Dichlorobiphenyl, Total	Total diCB	6.65	5.0	pg/L		MB>1/2QL, qual smpl<10xMB
B23H092-BLK1	1668C	26914-33-0	Tetrachlorobiphenyl, Total	Total tetraCB	1.16	5.0	pg/L		MB>1/2QL, smpls>10xMB, no qual
B23H092-BLK1	1668C	1336-36-3	Polychlorinated Biphenyls	Total PCB	16.4	5.0	pg/L		MB>1/2QL, smpls>10xMB, no qual
B23H092-BLK1	1668C	2051-61-8	3-Chlorobiphenyl	PCB-2		5.0	pg/L	EMPC, U	MB EMPC, spl EMPC, qual raise to MDL
B23H092-BLK1	1668C	PCB016_032	PCB-16/32	PCB-16/32		10.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	37680-65-2	2,2',5-Trichlorobiphenyl	PCB-18		10.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	PCB020_021_033	PCB-20/21/33	PCB-20/21/33		15.0	pg/L	EMPC, U	MB EMPC, smpls EMPC > MDL, qual U raise MDL
B23H092-BLK1	1668C	7012-37-5	2,4,4'-Trichlorobiphenyl	PCB-28		10.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	16606-02-3	2,4',5-Trichlorobiphenyl (PCB 31)	PCB-31		10.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	2437-79-8	2,2',4,4'-Tetrachlorobiphenyl	PCB-47		10.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual
B23H092-BLK1	1668C	25323-68-6	Trichlorobiphenyl, Total	Total triCB		5.0	pg/L	EMPC, U	MB EMPC, smpls not EMPC, no qual

Table 4
Surrogate Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample ID	Method	Dilution Fraction	Cas RN	Laboratory Analyte Name	EDD Analyte Name	Result (%)	Criteria Range (%)
22B-U-D-20230628	8270E	1	321-60-8	2-Fluorobiphenyl	2-Fluorobiphenyl	41	44 - 120
22B-U-D-20230628	8270E	1	367-12-4	2-Fluorophenol	2-Fluorophenol	17	19 - 120
22B-U-D-20230628	8270E	1	4165-60-0	Nitrobenzene-d5	Nitrobenzene-d5	33	44 - 120
22B-U-S-20230628	8270E	1	321-60-8	2-Fluorobiphenyl	2-Fluorobiphenyl	41	44 - 120
22B-U-S-20230628	8270E	1	4165-60-0	Nitrobenzene-d5	Nitrobenzene-d5	34	44 - 120
23G0047-MS1	8270E	4	321-60-8	2-Fluorobiphenyl	2-Fluorobiphenyl	37	44 - 120
23G0047-MS1	8270E	4	367-12-4	2-Fluorophenol	2-Fluorophenol	17	19 - 120
23G0047-MS1	8270E	4	4165-60-0	Nitrobenzene-d5	Nitrobenzene-d5	32	44 - 120
23G0047-MSD1	8270E	4	321-60-8	2-Fluorobiphenyl	2-Fluorobiphenyl	42	44 - 120
23G0047-MSD1	8270E	4	367-12-4	2-Fluorophenol	2-Fluorophenol	17	19 - 120
23G0047-MSD1	8270E	4	4165-60-0	Nitrobenzene-d5	Nitrobenzene-d5	34	44 - 120

Table 5
High Resolution Internal Standards Summary Table
StarLink/Uplands Support
Outfall 22B 2023 Monitoring

Sample ID	Method	Laboratory Analyte Name	EDD Analyte Name	Result (%)	Criteria Range (%)
22B-U-D-20230628	E1699	13C12-Methoxychlor	13C12-METHOXYCHLOR	130	5-120
22B-U-S-20230628	E1699	13C12-Methoxychlor	13C12-METHOXYCHLOR	137	5-120
B23G004-BLK1	E1699	13C12-Methoxychlor	13C12-METHOXYCHLOR	142	5-120
B23G004-BLK1	E1699	13C12-4,4'-DDD	13C-P,P-DDD	159	5-120
B23G004-BLK1	E1699	13C12-4,4'-DDT	13C-P,P-DDT	172	5-120
B23G004-BLK1	E1699	13C12-2,4'-DDE	13C-O,P-DDE	19.8	47-160
B23G004-MS1	E1699	13C12-Methoxychlor	13C12-METHOXYCHLOR	122	5-120
B23H092-BS1	E1668	13C-PCB-95	13C-PCB-95	35.4	40-145
B23H092-BS1	E1668	13C-PCB-180	13C-PCB-180	36.6	40-145
B23H092-BS1	E1668	13C-PCB-80	13C-PCB-80	37.5	40-145
B23H092-BS1	E1668	13C-PCB-97	13C-PCB-97	37.8	40-145
B23H092-BS1	E1668	13C-PCB-141	13C-PCB-141	38.9	40-145
B23H092-BS1	E1668	13C-PCB-101	13C-PCB-101	36.7	40-145
B23H092-BS1	E1668	13C-PCB-118	PCB 118L	38.1	40-145
B23H092-BS1	E1668	13C-PCB-77	PCB 77L	37.3	40-145
B23H092-BS1	E1668	13C-PCB-202	2,2',3,3',5,5',6,6'-Octachlorobiphenyl-C13	37.9	40-145
B23H092-BS1	E1668	13C-PCB-209	Decachlorobiphenyl-C13	34.3	40-145
B23H092-BS1	E1668	13C-PCB-170	13C12-2 2' 3 3' 4 4' 5-HpCB	33.8	40-145
B23H092-BS1	E1668	13C-PCB-126	13C-PCB-126	35.4	40-145
B23H092-BS1	E1668	13C-PCB-114	PCB 114L	38.9	40-145
B23H092-BS1	E1668	13C-PCB-123	PCB 123L	38.2	40-145
B23H092-BS1	E1668	13C-PCB-156	13C12-2 3 3 4 4 5-HxCB	36.2	40-145
B23H092-BS1	E1668	13C-PCB-167	PCB 167L	39.5	40-145
B23H092-BS1	E1668	13C-PCB-169	PCB 169L	32.3	40-145
B23H092-BS1	E1668	13C-PCB-189	PCB 189L	32.8	40-145
B23H092-BS1	E1668	13C-PCB-194	13C-PCB-194	34.9	40-145
B23H092-BS1	E1668	13C-PCB-206	PCB 206L	32.3	40-145
B23H092-BS1	E1668	13C-PCB-81	PCB 81L	35.9	40-145
B23H092-BS1	E1668	13C-PCB-104	PCB 104L	37.6	40-145
B23H092-BS1	E1668	13C-PCB-155	PCB 155L	34.2	40-145
B23H092-BS1	E1668	13C-PCB-188	PCB 188L	37.2	40-145
B23H092-BS1	E1668	13C-PCB-208	PCB 208L	38	40-145
B23H092-BS1	E1668	13C-PCB-157	13C12-2 3 3 4 4 5'-HxCB	37.5	40-145

Table 6
LCS/LCSD Exceedances Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Sample ID	Method	CAS RN	Analyte	LCS / LCSD Recovery (%)	RPD (%)	Recovery / RPD Criteria (%)
23F1132-BS1	8260D	110-75-8	2-Chloroethylvinyl ether	**70** / -	-	80-120 / -
23F1132-BS1	8260D	74-83-9	Bromomethane	**127** / -	-	80-120 / -

Table 7
MS/MSD Exceedances Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

Primary Sample ID	Method	CAS RN	Analyte	MS / MSD Recovery (%)	RPD (%)	Recovery / RPD Criteria (%)
22B-U-S-20230628	200.8	7440-70-2	Calcium**	77 / **44**	2	70-130 / 20
22B-U-S-20230628	8260D	74-83-9	Bromomethane	139 / **146**	5	53-141 / 30
22B-U-S-20230628	8270E	95-50-1	1,2-Dichlorobenzene	**27 / 26**	0.9	32-120 / 30
22B-U-S-20230628	8270E	541-73-1	1,3-Dichlorobenzene	**25 / 26**	0.9	28-120 / 30
22B-U-S-20230628	8270E	106-46-7	1,4-Dichlorobenzene	**23 / 26**	0.3	29-120 / 30
22B-U-S-20230628	8270E	90-12-0	1-Methylnaphthalene	**37 / 39**	6	41-120 / 30
22B-U-S-20230628	8270E	39638-32-9	2,2'-Oxybis(1-Chloropropane)	**29 / 30**	3	41-120 / 30
22B-U-S-20230628	8270E	120-83-2	2,4-Dichlorophenol	**45** / 58	20	47-121 / 30
22B-U-S-20230628	8270E	51-28-5	2,4-Dintrophenol	124 / **145**	16	23-143 / 30
22B-U-S-20230628	8270E	91-58-7	2-Chloronaphthalene	**39** / 45	14	40-120 / 30
22B-U-S-20230628	8270E	95-57-8	2-Chlorophenol	**33 / 36**	10	38-120 / 30
22B-U-S-20230628	8270E	91-57-6	2-Methylnaphthalene	**38 / 39**	4	40-121 / 30
22B-U-S-20230628	8270E	99-09-2	3-Nitroaniline	**32 / 31**	2	41-128 / 30
22B-U-S-20230628	8270E	1570-65-6	4,6-Dichloro-o-cresol	128 / **141**	9	44-137 / 30
22B-U-S-20230628	8270E	106-47-8	4-Chloroaniline	**17 / 16**	10	33-120 / 30
22B-U-S-20230628	8270E	62-53-3	Aniline	**9** / 12	25	10-120 / 30
22B-U-S-20230628	8270E	65-85-0	Benzoic Acid	**0 / 0**	**200**	10-120 / 30
22B-U-S-20230628	8270E	111-91-1	Bis(2-Chloroethoxy) methane	**36 / 38**	5	48-120 / 30
22B-U-S-20230628	8270E	111-44-4	bis(2-Chloroethyl) Ether	**33 / 34**	4	43-120 / 30
22B-U-S-20230628	8270E	78-59-1	Isophorone	**40 / 41**	3	42-124 / 30
22B-U-S-20230628	8270E	91-20-3	Naphthalene	**34 / 34**	2	40-121 / 30
22B-U-S-20230628	8270E	98-95-3	Nitrobenzene	**37 / 38**	4	45-121 / 30
22B-U-S-20230628	8270E	62-75-9	n-Nitrosodimethylamine	19 / **18**	5	19-120 / 30
22B-U-S-20230628	8270E	621-64-7	n-Nitrosodi-n-propyl amine	**35 / 35**	2	49-120 / 30
22B-U-S-20230628	8270E	108-95-2	Phenol	**0 / 0**	**200**	10-120 / 30
22B-U-S-20230628	E1699	5103-71-9	cis-Chlordane (alpha)	66.5 / 93.4	**33.6**	50-150 / 25
22B-U-S-20230628	E1699	60-57-1	Dieldrin*	**212 / 189**	11.5	50-150 / 25
22B-U-S-20230628	E1699	28044-83-9	trans-Heptachlor Epoxide*	**384 / 180**	**72.3**	50-150 / 25

* Sample concentration greater than the spiking concentration

** Sample concentration greater than 4x the spiking concentration

Table 8
Laboratory Duplicate Summary Table
Starlink / Uplands Support
Outfall 22B 2023 Monitoring

				Primary Sample		Laboratory Duplicate						
				22B-U-S-20230628		23G0115-DUP1						
Method	**Fraction**	**CAS RN**	**Analyte**	**Result**	**RL**	**Result**	**RL**	**Abs Diff**	**RPD**	**RPD Limit**	**Criteria**	**Qualifier**
200.8	T	7440-02-0	Nickel	2.94	2	2.29	2	1	25	20	Abs Diff	**OK**
200.8	T	7440-50-8	Copper	1.75	2	2	2	0.25	13	20	Abs Diff	**OK**

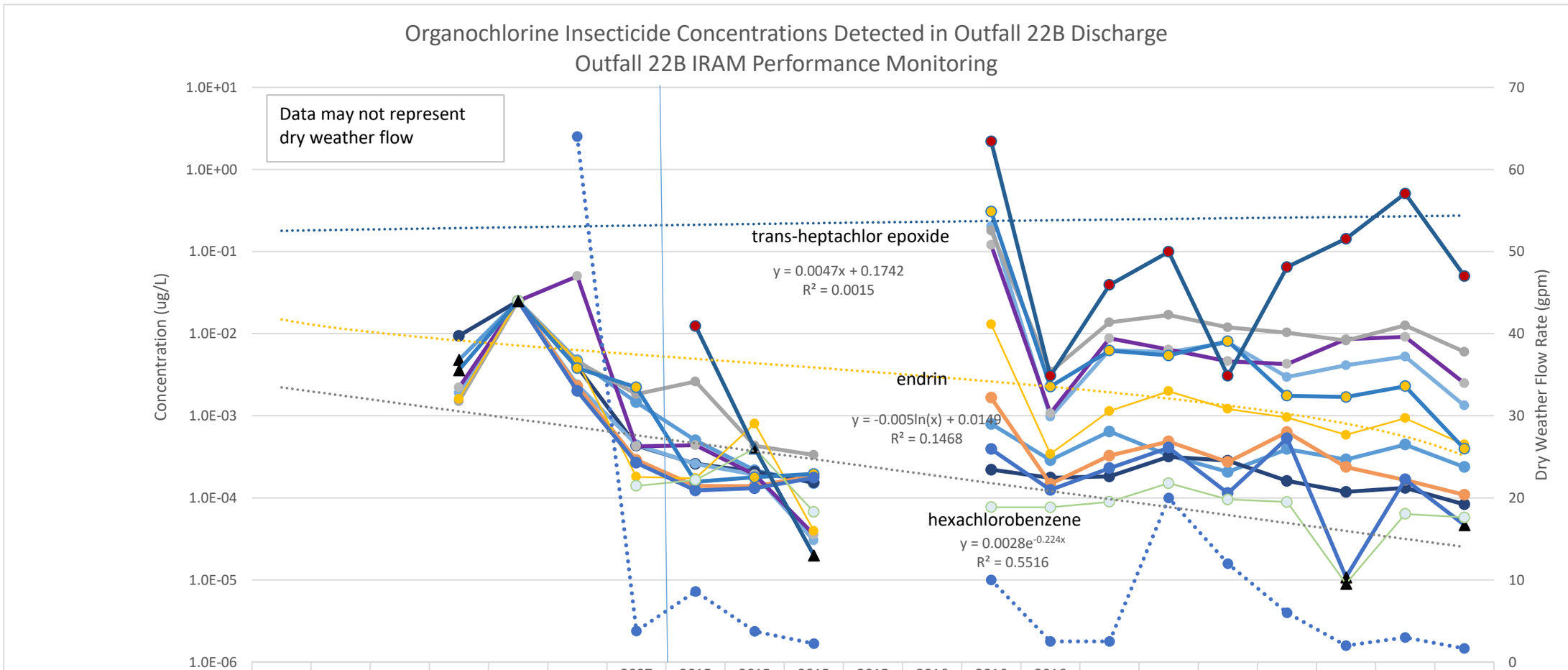
Table 9
Field Duplicate Summary Table
StarLink / Uplands Support
Outfall 22B 2023 Monitoring

				Primary Sample		Laboratory Duplicate						
				22B-U-S-071322		22B-U-D-071322						
Method	**Fraction**	**CAS RN**	**Analyte**	**Result**	**RL**	**Result**	**RL**	**Abs Diff**	**RPD**	**RPD Limit**	**Criteria**	**Qualifier**
200.8	T	7439-89-6	Iron	413	50	794	50	381	63	20	RPD	**J**
200.8	T	7440-02-0	Nickel	2.94	2	25.7	2	22.76	159	20	Abs Diff	**J/UJ**

APPENDIX E

Temporal Data Plots

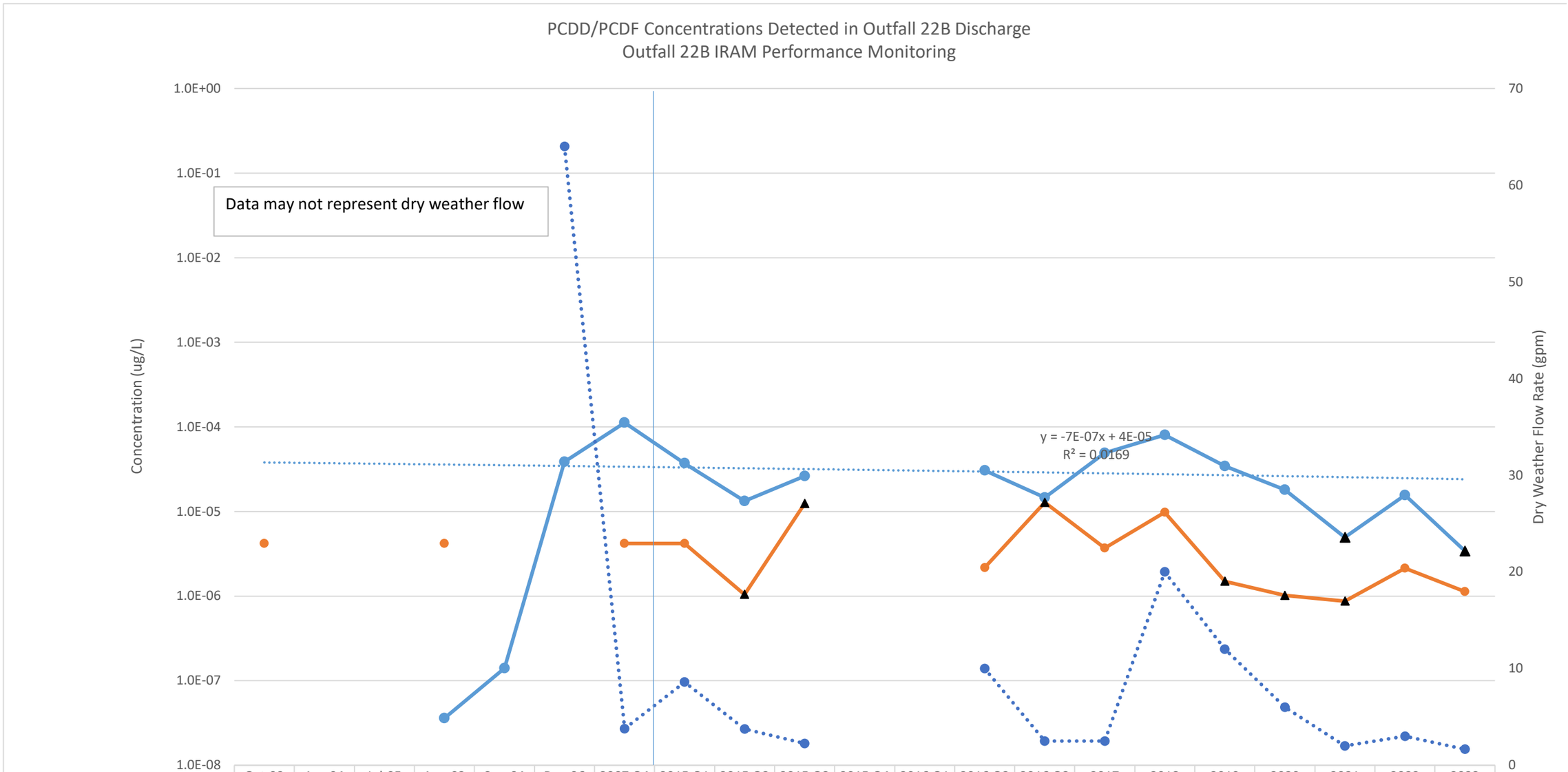
Figure E-1
Appendix E - Temporal Data Plots
Outfall 22B IRAM Annual 2023 Report



	Oct-93	Apr-94	Jul-95	Aug-02	Sep-04	Dec-06	2007 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2017	2018	2019	2020	2021	2022	2023
4,4'-DDD	Prior to routine monitoring			4.8E-03	2.5E-02	4.8E-03	1.5E-03	5.0E-04	2.2E-04	1.5E-04	No Qualifying Dry Weather Events during Fourth Quarter 2015 or First Quarter 2016		7.9E-04	2.9E-04	6.4E-04	3.3E-04	2.1E-04	3.9E-04	2.9E-04	4.5E-04	2.4E-04
4,4'-DDE				9.4E-03	2.5E-02	4.0E-03	4.3E-04	2.6E-04	2.1E-04	1.5E-04			2.2E-04	1.8E-04	1.8E-04	3.2E-04	2.8E-04	1.6E-04	1.2E-04	1.3E-04	8.3E-05
alpha-BHC				1.9E-03	2.5E-02	2.4E-03	4.4E-04	2.6E-04	1.9E-04	3.0E-05			2.0E-01	9.7E-04	6.3E-03	6.0E-03	7.8E-03	3.0E-03	4.1E-03	5.3E-03	1.3E-03
alpha-Chlordane					2.5E-02	2.3E-03	2.9E-04	1.4E-04	1.4E-04	1.9E-04			1.7E-03	1.5E-04	3.3E-04	4.9E-04	2.7E-04	6.3E-04	2.4E-04	1.7E-04	1.1E-04
beta-BHC				2.2E-03	2.5E-02	5.0E-02	4.3E-04	4.4E-04	1.9E-04	3.6E-05			1.2E-01	1.1E-03	8.8E-03	6.4E-03	4.6E-03	4.3E-03	8.5E-03	9.1E-03	2.5E-03
Dieldrin				1.5E-03	2.5E-02	4.6E-03	1.8E-03	2.6E-03	4.3E-04	3.3E-04			1.8E-01	3.4E-03	1.4E-02	1.7E-02	1.2E-02	1.0E-02	8.2E-03	1.3E-02	6.0E-03
Endrin				1.6E-03	2.5E-02	4.6E-03	1.8E-04	1.7E-04	8.0E-04	3.9E-05			1.3E-02	3.4E-04	1.1E-03	2.0E-03	1.2E-03	9.6E-04	5.9E-04	9.4E-04	4.5E-04
gamma-BHC (Lindane)				3.6E-03	2.5E-02	3.8E-03	2.2E-03	1.6E-04	1.8E-04	2.0E-04			3.1E-01	2.3E-03	6.2E-03	5.4E-03	8.1E-03	1.8E-03	1.7E-03	2.3E-03	4.0E-04
gamma-Chlordane					2.5E-02	2.0E-03	2.7E-04	1.2E-04	1.3E-04	1.8E-04			3.9E-04	1.3E-04	2.3E-04	4.1E-04	1.1E-04	5.3E-04	1.1E-05	1.7E-04	4.7E-05
Hexachlorobenzene					2.5E-02		1.4E-04	1.7E-04	4.0E-04	6.7E-05			7.7E-05	7.7E-05	8.9E-05	1.5E-04	9.6E-05	8.9E-05	9.0E-06	6.4E-05	5.8E-05
trans-Heptachlor Epoxide					2.5E-02			1.2E-02	4.0E-04	2.0E-05			2.2E+00	3.1E-03	3.9E-02	1.0E-01	3.1E-03	6.5E-02	1.4E-01	5.1E-01	5.0E-02
Outfall 22B Flow Rate						64	3.77	8.6	3.75	2.25			10	2.5	2.5	20	12	6	2	3	1.65

Notes:
gpm = gallons per minute
MDL = method detection limit
ND = not detected (shown as ▲)
ug/L = micrograms per liter
Concentrations shown are the maximum detected at the 22B outfall during each monitoring event. Non-detects were given the value one half the respective MDL.
Additional organochlorine insecticide constituents detected above the SLV during at least one event but not displayed include: 2,4'-DDD, 2,4'-DDT, 4.4'-DDT, Endrin Aldehyde, Endrin Ketone, Heptachlor, trans-nonachlor.

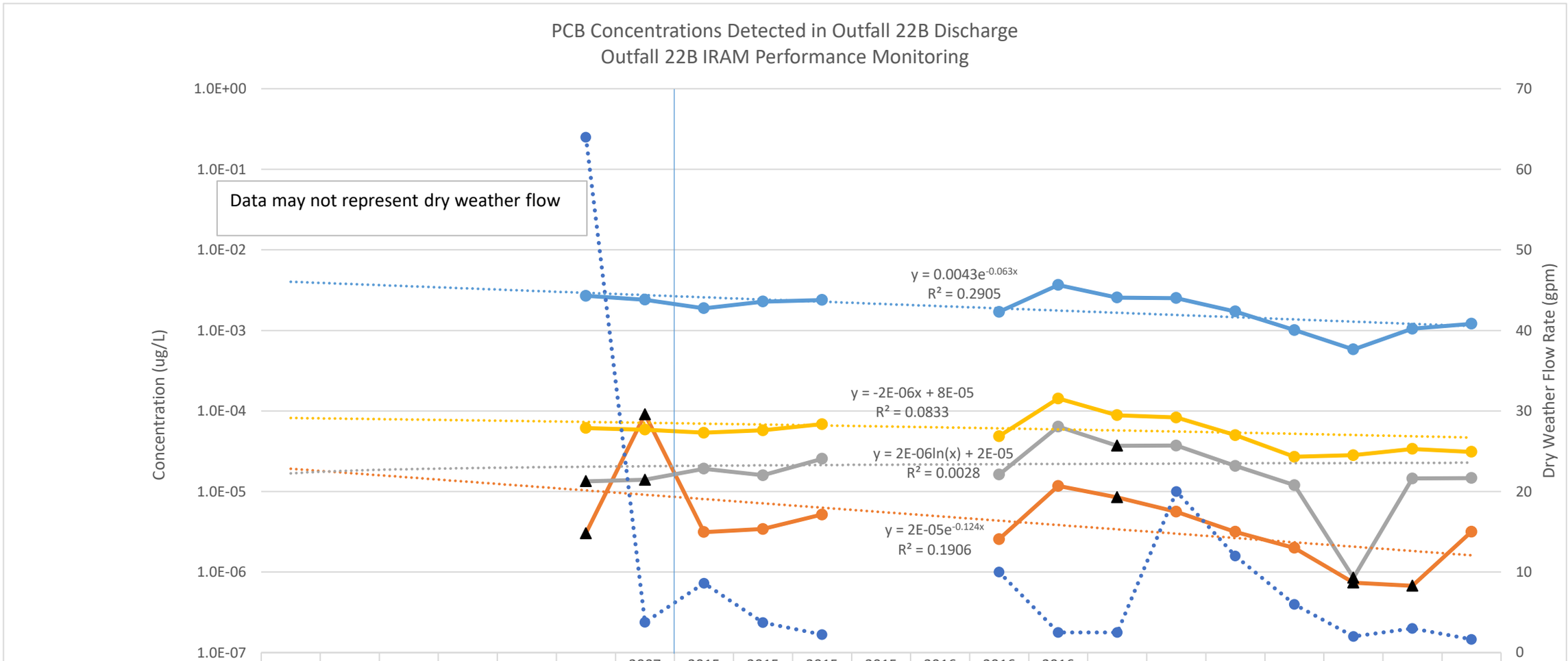
Figure E-2
Appendix E - Temporal Data Plots
Outfall 22B IRAM Annual 2023 Report



	Oct-93	Apr-94	Jul-95	Aug-02	Sep-04	Dec-06	2007 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2017	2018	2019	2020	2021	2022	2023
OCDD	Prior to routine monitoring			3.6E-08	1.4E-07	3.9E-05	1.1E-04	3.7E-05	1.3E-05	2.6E-05	No Qualifying Dry Weather Events during Fourth Quarter 2015 or First Quarter 2016		3.1E-05	1.5E-05	4.9E-05	8.0E-05	3.4E-05	1.8E-05	5.0E-06	1.6E-05	3.4E-06
1,2,3,4,6,7,8-HpCDD				4.2E-06			4.2E-06	4.2E-06	1.0E-06	1.2E-05			2.2E-06	1.3E-05	3.7E-06	9.8E-06	1.5E-06	1.0E-06	8.7E-07	2.1E-06	1.1E-06
Outfall 22B Flow Rate						64	3.77	8.6	3.75	2.25			10	2.5	2.5	20	12	6	2	3	1.65

Notes:
gpm = gallons per minute
MDL = method detection limit
ND = not detected (shown as ▲)
PCDD/PCDF = Polychlorinated dibenzo-p-dioxins / Polychlorinated dibenzofurans
OCDD = Octoochlorodibenzodioxin
ug/L = micrograms per liter
Concentrations shown are the maximum detected at the 22B outfall during each monitoring event. Non-detects were given the value one half the respective MDL.

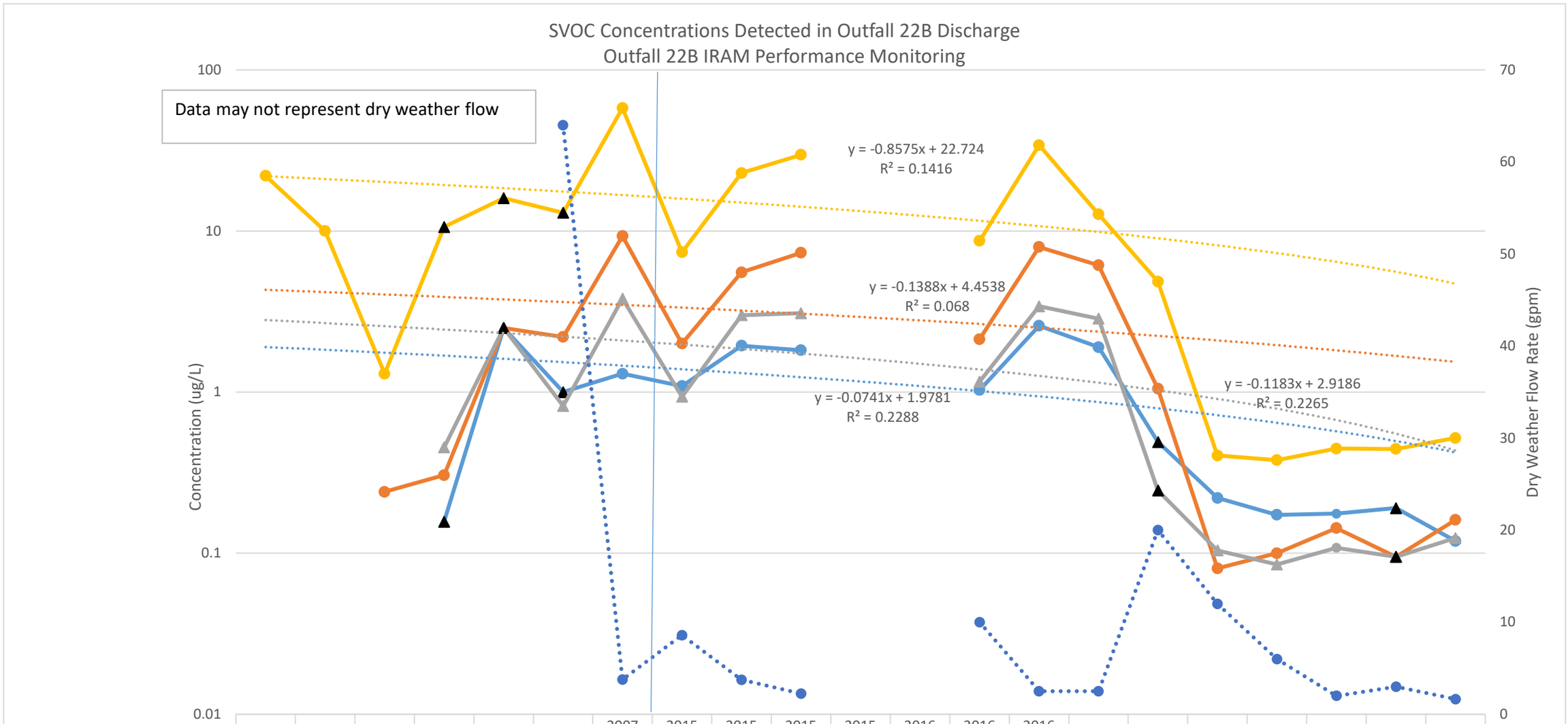
Figure E-3
Appendix E - Temporal Data Plots
Outfall 22B IRAM Annual 2023 Report



	Oct-93	Apr-94	Jul-95	Aug-02	Sep-04	Dec-06	2007 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2017	2018	2019	2020	2021	2022	2023
Total Congeners	Prior to routine monitoring					2.7E-03	2.4E-03	1.9E-03	2.3E-03	2.4E-03	No Qualifying Dry Weather Events during Fourth Quarter 2015 or First Quarter 2016		1.7E-03	3.7E-03	2.6E-03	2.5E-03	1.7E-03	1.0E-03	5.8E-04	1.0E-03	1.2E-03
PCB 77						3.0E-06	9.1E-05	3.1E-06	3.4E-06	5.2E-06			2.6E-06	1.2E-05	8.5E-06	5.6E-06	3.2E-06	2.0E-06	7.4E-07	6.8E-07	3.2E-06
PCB 105						1.3E-05	1.4E-05	1.9E-05	1.6E-05	2.6E-05			1.6E-05	6.4E-05	3.7E-05	3.7E-05	2.1E-05	1.2E-05	8.5E-07	1.5E-05	1.5E-05
PCB 106 & 118						6.1E-05	5.9E-05	5.4E-05	5.8E-05	6.9E-05			4.9E-05	1.4E-04	8.8E-05	8.3E-05	5.0E-05	2.7E-05	2.8E-05	3.4E-05	3.1E-05
Outfall 22B Flow Rate						64	3.77	8.6	3.75	2.25			10	2.5	2.5	20	12	6	2	3	1.65

Notes:
gpm = gallons per minute
MDL = method detection limit
ND = not detected (shown as ▲)
PCB = Polychlorinated Biphenyl
ug/L = micrograms per liter
Concentrations shown are the maximum detected at the 22B outfall during each monitoring event. Non-detects were given the value one half the respective MDL.

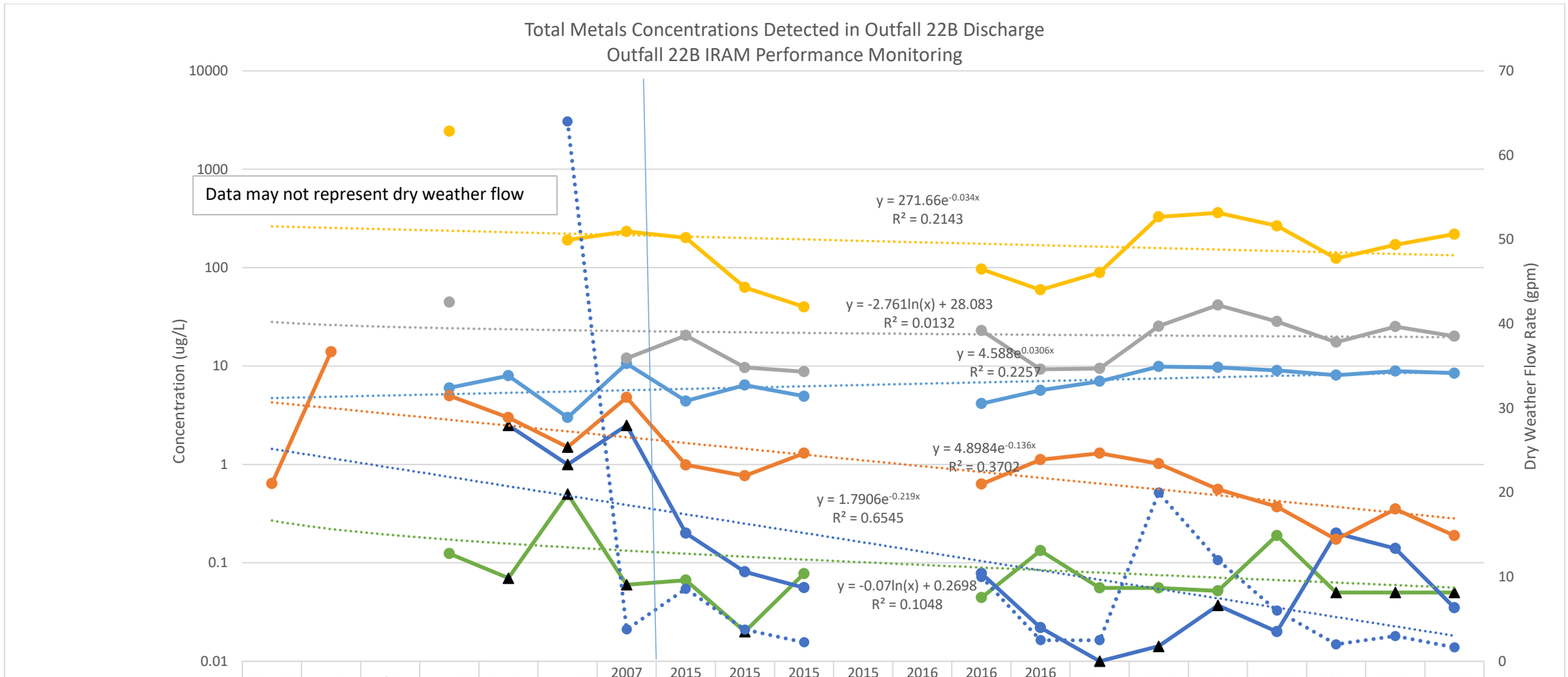
Figure E-4
Appendix E - Temporal Data Plots
Outfall 22B IRAM Annual 2023 Report



	Oct-93	Apr-94	Jul-95	Aug-02	Sep-04	Dec-06	2007 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2017	2018	2019	2020	2021	2022	2023
Pentachlorophenol				0.157	2.5	1	1.3	1.09	1.94	1.82	No Qualifying Dry Weather Events during Fourth Quarter 2015 or First Quarter 2016		1.03	2.58	1.9	0.49	0.22	0.173	0.176	0.1905	0.119
2,4,5-Trichlorophenol			0.24	0.305	2.5	2.2	9.3	2	5.54	7.32			2.13	7.96	6.13	1.05	0.0805	0.1	0.143	0.095	0.161
2,4,6-Trichlorophenol				0.453	2.5	0.82	3.8	0.937	3	3.09			1.16	3.41	2.86	0.245	0.104	0.0851	0.108	0.095	0.124
2,4-Dichlorophenol	22	10	1.3	10.6	16	13	58	7.38	22.9	29.7			8.68	34.1	12.7	4.85	0.404	0.378	0.446	0.443	0.519
Outfall 22B Flow Rate						64	3.77	8.6	3.75	2.25			10	2.5	2.5	20	12	6	2	3	1.65

Notes:
gpm = gallons per minute
MDL = method detection limit
ND = not detected (shown as ▲)
SVOC = Semi-volatile organic compound
ug/L = micrograms per liter
Concentrations shown are the maximum detected at the 22B outfall during each monitoring event. Non-detects were given the value one half the respective MDL.

Figure E-5
Appendix E - Temporal Data Plots
Outfall 22B IRAM Annual 2023 Report



	Oct-93	Apr-94	Jul-95	Aug-02	Sep-04	Dec-06	2007 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2017	2018	2019	2020	2021	2022	2023
Arsenic				6	8	3	10.6	4.41	6.4	4.94	No Qualifying Dry Weather Events during Fourth Quarter 2015 or First Quarter 2016		4.16	5.67	6.99	9.87	9.71	9.03	8.07	8.9	8.48
Barium				44.7			12	20.5	9.67	8.76			23	9.29	9.47	25.4	41.7	28.4	17.5	25.2	20.1
Cadmium				0.124	0.07	0.5	0.06	0.0667	0.02	0.0778			0.0444	0.133	0.0556	0.0556	0.0519	0.19	0.05	0.05	0.05
Hexavalent Chromium					2.5	1	2.5	0.2	0.081	0.056			0.078	0.022	0.01	0.0142	0.037	0.02	0.2	0.14	0.035
Lead	0.64	14		5	3	1.5	4.8	0.989	0.767	1.3			0.633	1.12	1.3	1.02	0.559	0.372	0.173	0.353	0.189
Manganese				2440		191	233	201	63	40			96.6	59.6	89.3	328	361	266	124	171	219
Outfall 22B Flow Rate						64	3.77	8.6	3.75	2.25			10	2.5	2.5	20	12	6	2	3	1.65

Notes:
gpm = gallons per minute
MDL = method detection limit
ND = not detected (shown as▲)
ug/L = micrograms per liter
Concentrations shown are the maximum detected at the 22B outfall during each monitoring event. Non-detects were given the value one half the respective MDL.

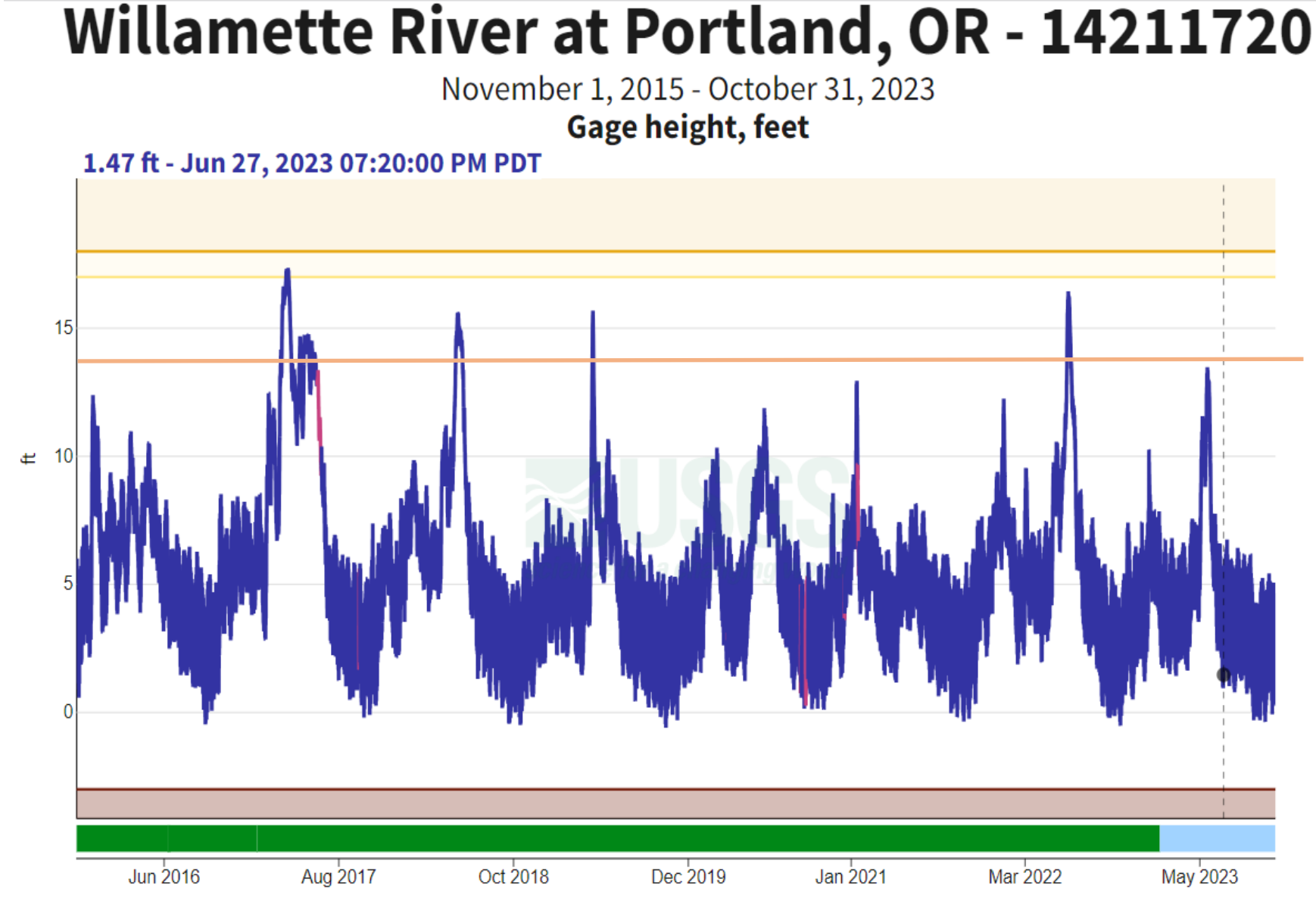


Figure from OWRD (2023) for Monitoring location 14211720

November 2023

Mann-Kendall Trend Test Analysis

User Selected Options	
Date/Time of Computation	ProUCL 5.111/1/2023 12:47:00 PM
From File	RP 2022 stats for Appendix E_a.xls
Full Precision	OFF
Confidence Coefficient	0.95
Level of Significance	0.05

Outfall 22B Flow Rate

General Statistics	
Number of Events Reported (m)	13
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	1.65
Maximum	20
Mean	6.002
Geometric Mean	4.417
Median	3.75
Standard Deviation	5.38
Coefficient of Variation	0.896

Mann-Kendall Test	
M-K Test Value (S)	-17
Tabulated p-value	0.184
Standard Deviation of S	16.36
Standardized Value of S	-0.978
Approximate p-value	0.164

Insufficient evidence to identify a significant
trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

OCDD

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	3.40E-06
Maximum	1.12E-04
Mean	3.42E-05
Geometric Mean	2.39E-05
Median	2.62E-05
Standard Deviation	3.09E-05
Coefficient of Variation	9.04E-01

Mann-Kendall Test	
M-K Test Value (S)	-30
Tabulated p-value	0.038
Standard Deviation of S	16.39
Standardized Value of S	-1.769
Approximate p-value	0.0384

Statistically significant evidence of a decreasing trend at the specified level of significance.

PCB 105

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	1.70E-06
Maximum	6.40E-05
Mean	2.25E-05
Geometric Mean	1.75E-05
Median	1.62E-05
Standard Deviation	1.58E-05
Coefficient of Variation	7.02E-01

Mann-Kendall Test	
M-K Test Value (S)	-10
Tabulated p-value	0.295
Standard Deviation of S	16.39
Standardized Value of S	-0.549
Approximate p-value	0.291

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

PCB 77

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	6.75E-07
Maximum	9.10E-05
Mean	1.09E-05
Geometric Mean	4.24E-06
Median	3.17E-06
Standard Deviation	2.43E-05
Coefficient of Variation	2.227

Mann-Kendall Test	
M-K Test Value (S)	-32
Tabulated p-value	0.029
Standard Deviation of S	16.39
Standardized Value of S	-1.891
Approximate p-value	0.0293

Statistically significant evidence of a decreasing trend at the specified level of significance.

PCB 106 & 118

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	2.70E-05
Maximum	1.43E-04
Mean	5.93E-05
Geometric Mean	5.29E-05
Median	5.36E-05
Standard Deviation	3.19E-05
Coefficient of Variation	0.537

Mann-Kendall Test	
M-K Test Value (S)	-28
Tabulated p-value	0.05
Standard Deviation of S	16.39
Standardized Value of S	-1.647
Approximate p-value	0.0498

Statistically significant evidence of a decreasing trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

Total Congeners

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	5.08E-04
Maximum	3.66E-03
Mean	0.00192
Geometric Mean	0.00171
Median	0.00188
Standard Deviation	8.45E-04
Coefficient of Variation	4.41E-01

Mann-Kendall Test	
M-K Test Value (S)	-30
Tabulated p-value	0.038
Standard Deviation of S	16.39
Standardized Value of S	-1.769
Approximate p-value	0.0384

Statistically significant evidence of a decreasing trend at the specified level of significance.

4,4'-DDD

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	1.51E-04
Maximum	1.46E-03
Mean	4.58E-04
Geometric Mean	3.75E-04
Median	3.29E-04
Standard Deviation	3.53E-04
Coefficient of Variation	7.70E-01

Mann-Kendall Test	
M-K Test Value (S)	-14
Tabulated p-value	0.218
Standard Deviation of S	16.39
Standardized Value of S	-0.793
Approximate p-value	0.214

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

4,4'-DDE

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	8.32E-05
Maximum	4.34E-04
Mean	2.10E-04
Geometric Mean	1.92E-04
Median	1.82E-04
Standard Deviation	9.47E-05
Coefficient of Variation	4.51E-01

Mann-Kendall Test	
M-K Test Value (S)	-40
Tabulated p-value	0.007
Standard Deviation of S	16.39
Standardized Value of S	-2.379
Approximate p-value	0.00867

Statistically significant evidence of a decreasing trend at the specified level of significance.

alpha-BHC

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	3.02E-05
Maximum	2.04E-01
Mean	0.0184
Geometric Mean	0.00186
Median	0.00296
Standard Deviation	0.0558
Coefficient of Variation	3.028

Mann-Kendall Test	
M-K Test Value (S)	18
Tabulated p-value	0.153
Standard Deviation of S	16.39
Standardized Value of S	1.037
Approximate p-value	0.15

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

alpha-Chlordane

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	1.09E-04
Maximum	1.66E-03
Mean	3.69E-04
Geometric Mean	2.64E-04
Median	2.37E-04
Standard Deviation	4.16E-04
Coefficient of Variation	1.13E+00

Mann-Kendall Test	
M-K Test Value (S)	-2
Tabulated p-value	0.476
Standard Deviation of S	16.39
Standardized Value of S	-0.061
Approximate p-value	0.476

Insufficient evidence to identify a significant trend at the specified level of significance.

beta-BHC

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	3.57E-05
Maximum	1.20E-01
Mean	0.0128
Geometric Mean	0.00224
Median	0.00426
Standard Deviation	0.0324
Coefficient of Variation	2.532

Mann-Kendall Test	
M-K Test Value (S)	26
Tabulated p-value	0.064
Standard Deviation of S	16.39
Standardized Value of S	1.525
Approximate p-value	0.0636

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

Dieldrin

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	3.33E-04
Maximum	1.79E-01
Mean	0.0206
Geometric Mean	0.00575
Median	0.00822
Standard Deviation	0.0479
Coefficient of Variation	2.331

Mann-Kendall Test	
M-K Test Value (S)	18
Tabulated p-value	0.153
Standard Deviation of S	16.39
Standardized Value of S	1.037
Approximate p-value	0.15

Insufficient evidence to identify a significant trend at the specified level of significance.

Endrin

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	3.95E-05
Maximum	1.30E-02
Mean	0.00168
Geometric Mean	6.36E-04
Median	8.00E-04
Standard Deviation	3.44E-03
Coefficient of Variation	2.054

Mann-Kendall Test	
M-K Test Value (S)	12
Tabulated p-value	0.255
Standard Deviation of S	16.39
Standardized Value of S	0.671
Approximate p-value	0.251

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

gamma-BHC (Lindane)

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	1.57E-04
Maximum	3.06E-01
Mean	0.0259
Geometric Mean	0.00196
Median	0.00222
Standard Deviation	0.0842
Coefficient of Variation	3.249

Mann-Kendall Test	
M-K Test Value (S)	10
Tabulated p-value	0.295
Standard Deviation of S	16.39
Standardized Value of S	0.549
Approximate p-value	0.291

Insufficient evidence to identify a significant trend at the specified level of significance.

gamma-Chlordane

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	2.16E-05
Maximum	5.32E-04
Mean	2.10E-04
Geometric Mean	1.57E-04
Median	1.68E-04
Standard Deviation	1.52E-04
Coefficient of Variation	7.20E-01

Mann-Kendall Test	
M-K Test Value (S)	-10
Tabulated p-value	0.295
Standard Deviation of S	16.39
Standardized Value of S	-0.549
Approximate p-value	0.291

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

Hexachlorobenzene

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	5.78E-05
Maximum	4.00E-04
Mean	1.20E-04
Geometric Mean	1.03E-04
Median	8.93E-05
Standard Deviation	9.06E-05
Coefficient of Variation	7.52E-01

Mann-Kendall Test	
M-K Test Value (S)	-28
Tabulated p-value	0.05
Standard Deviation of S	16.39
Standardized Value of S	-1.647
Approximate p-value	0.0498

Statistically significant evidence of a decreasing trend at the specified level of significance.

trans-Heptachlor Epoxide

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	12
Number Values Reported (n)	13
Number Values Missing	1
Number Values Used	12
Minimum	1.99E-05
Maximum	2.19E+00
Mean	0.26
Geometric Mean	0.0187
Median	0.0448
Standard Deviation	0.624
Coefficient of Variation	2.405

Mann-Kendall Test	
M-K Test Value (S)	25
Tabulated p-value	0.058
Standard Deviation of S	14.55
Standardized Value of S	1.65
Approximate p-value	0.0495

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

Arsenic (U)

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	4.16
Maximum	10.6
Mean	7.479
Geometric Mean	7.153
Median	8.07
Standard Deviation	2.194
Coefficient of Variation	0.293

Mann-Kendall Test	
M-K Test Value (S)	18
Tabulated p-value	0.153
Standard Deviation of S	16.39
Standardized Value of S	1.037
Approximate p-value	0.15

Insufficient evidence to identify a significant trend at the specified level of significance.

Barium (U)

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	8.76
Maximum	41.7
Mean	19.31
Geometric Mean	17.17
Median	20.1
Standard Deviation	9.702
Coefficient of Variation	0.503

Mann-Kendall Test	
M-K Test Value (S)	22
Tabulated p-value	0.102
Standard Deviation of S	16.39
Standardized Value of S	1.281
Approximate p-value	0.1

Insufficient evidence to identify a significant trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

Cadmium (U)

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	0.02
Maximum	0.19
Mean	0.0735
Geometric Mean	0.0636
Median	0.0556
Standard Deviation	0.0447
Coefficient of Variation	0.609

Mann-Kendall Test	
M-K Test Value (S)	-2
Tabulated p-value	0.476
Standard Deviation of S	16.33
Standardized Value of S	-0.0612
Approximate p-value	0.476

Insufficient evidence to identify a significant trend at the specified level of significance.

Manganese (U)

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	40
Maximum	361
Mean	173.2
Geometric Mean	141.2
Median	171
Standard Deviation	105
Coefficient of Variation	0.607

Mann-Kendall Test	
M-K Test Value (S)	16
Tabulated p-value	0.184
Standard Deviation of S	16.39
Standardized Value of S	0.915
Approximate p-value	0.18

Insufficient evidence to identify a significant trend at the specified level of significance.

Mann-Kendall Trend Test Analysis

2,4,5-Trichlorophenol

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	0.0805
Maximum	9.3
Mean	3.232
Geometric Mean	1.029
Median	2
Standard Deviation	3.484
Coefficient of Variation	1.078

Mann-Kendall Test	
M-K Test Value (S)	-40
Tabulated p-value	0.007
Standard Deviation of S	16.39
Standardized Value of S	-2.379
Approximate p-value	0.00867

Statistically significant evidence of a decreasing trend at the specified level of significance.

2,4,6-Trichlorophenol

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	0.0851
Maximum	3.8
Mean	1.463
Geometric Mean	0.589
Median	0.937
Standard Deviation	1.509
Coefficient of Variation	1.031

Mann-Kendall Test	
M-K Test Value (S)	-44
Tabulated p-value	0.003
Standard Deviation of S	16.39
Standardized Value of S	-2.623
Approximate p-value	0.00435

Statistically significant evidence of a decreasing trend at the specified level of significance.

November 2023

Mann-Kendall Trend Test Analysis

2,4-Dichlorophenol

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	0.378
Maximum	58
Mean	13.88
Geometric Mean	4.066
Median	7.38
Standard Deviation	17.66
Coefficient of Variation	1.272

Mann-Kendall Test	
M-K Test Value (S)	-42
Tabulated p-value	0.005
Standard Deviation of S	16.39
Standardized Value of S	-2.501
Approximate p-value	0.00619

Statistically significant evidence of a decreasing trend at the specified level of significance.

Pentachlorophenol

General Statistics	
Number or Reported Events Not Used	0
Number of Generated Events	13
Number Values Reported (n)	13
Minimum	0.119
Maximum	2.58
Mean	1.002
Geometric Mean	0.617
Median	1.03
Standard Deviation	0.848
Coefficient of Variation	0.846

Mann-Kendall Test	
M-K Test Value (S)	-46
Tabulated p-value	0.002
Standard Deviation of S	16.39
Standardized Value of S	-2.745
Approximate p-value	0.00302

Statistically significant evidence of a decreasing trend at the specified level of significance.

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