

Draft TECHNICAL MEMORANDUM

Date: May 2, 2024
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Subject: WR-510 and WR-306 Performance Monitoring Report for the ODOT Facility in Portland Harbor – Water Years 2022 to 2024

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Introduction

This technical memorandum presents the results of performance monitoring conducted in water years (WY) 2022 through 2024 for Oregon Department of Transportation (ODOT) in accordance with the *Performance Monitoring Quality Assurance Project Plan* (QAPP; Herrera 2021). The objective of the monitoring program was to evaluate the pollutant removal performance of two proprietary hydrodynamic separator (PHS) units maintained by ODOT within the Portland Harbor Superfund Site (Portland Harbor). The work is intended to fulfill monitoring requirements under ODOT's Source Control Measure Implementation Plan as required by Oregon Department of Environmental Quality (DEQ). This technical memorandum includes discussion of the following:

- Background and monitoring objectives
- Sampling activities and deviations from the QAPP
- Sampling results
- Conclusions and next steps

Background

ODOT has been identified by the US Environmental Protection Agency (EPA) and DEQ as a party potentially responsible for the cleanup of Portland Harbor. For the purposes of this report, the Portland Harbor Project Area (Project Area) includes the ODOT facility consisting of five main thoroughfares (Interstate 5 [I-5], Interstate 405 [I-405], Highway 26 [US 26], Highway 30 [US 30], and US 30 bypass) and two bridges (Fremont Bridge and St. Johns Bridge) that drain to Portland Harbor. ODOT's responsibilities include identifying, evaluating, and controlling sources of potential recontamination to Portland Harbor from the State transportation system, consistent with source control objectives outlined in the Portland Harbor Joint Source Control Strategy (JSCS; DEQ 2007).

To date, ODOT has implemented a variety of source control measures (SCMs) to control transportation-related sources of pollution into the Willamette River, conducted ongoing pollutant monitoring of stormwater that discharges from ODOT facilities into Portland Harbor, and initiated a Feasibility Study (FS) in 2021 to guide selection of additional SCMs. ODOT prepared two FS documents. The Portland Harbor Source Control Feasibility Study (ODOT and Herrera 2021) includes structural SCM selections for most ODOT drainage areas within the Portland Harbor, with the exception of some drainage along the US 30 corridor. Structural SCM selections for US 30 drainage areas were provided to DEQ in a Supplemental Feasibility Study (ODOT 2022) and included selection of structural SCMs for all but nine of the 21 US 30 drainage areas (outfall basins).

ODOT is currently preparing a Source Control Monitoring and Analysis Plan (Work Plan) to guide upcoming monitoring, analysis, and reporting, in order to ensure that all basins within the Project Area are adequately characterized and begin demonstrating the effectiveness of scheduled SCMs (Herrera 2023). Analysis of the performance monitoring results contained herein, as they relate to broader source control objectives, will be included in a Source Control Status Update report in WY 2025. A source

control framework described in the Work Plan will be used to guide the determination of the source control status of all basins in the Project Area.

Objectives

The primary objective of the WY 2022–2024 performance monitoring program is to determine the pollutant removal performance of two structural SCMs implemented by ODOT, in order to support the evaluation of overall SCM effectiveness within the ODOT facility draining to Portland Harbor, in accordance with the Portland Harbor JSCS (DEQ 2007). A secondary objective is to evaluate PHS unit sediment depths, in order to inform maintenance cycle requirements.

ODOT's source control objectives for this facility are (1) to prevent recontamination of Portland Harbor sediments at concentrations above the Record of Decision (ROD) Table 21 (EPA 2017) remedial action levels and (2) to prevent impairment of long-term remedial action objectives. The performance monitoring results described herein provide ODOT general water quality data for basins WR-510 and WR-306 and pollutant removal performance results for two structural SCMs implemented by ODOT in Portland Harbor.

Sampling Activities

The stormwater monitoring goals for performance monitoring were to collect seven paired flow-weighted composite samples at the influent and effluent of two hydrodynamic separators and, if feasible, to collect one stormwater solids (sediment) sample at each PHS after the conclusion of stormwater monitoring.

This section summarizes methods and results of stormwater sampling conducted between October 2021 and December 2023 (monitoring period), in accordance with the QAPP, including:

- Description of the monitoring stations
- Overview of sampling activities and deviations from the QAPP
- Discussion of representativeness of the flow-weighted composite samples to the event mean concentration

Monitoring Stations

Two PHS units were selected for monitoring: (1) a Contech® Stormceptor® in drainage basin WR-510 and (2) a Contech® CDS® unit in basin WR-306. Water quality monitoring stations were located at each unit's influent and effluent conveyance for a total of four monitoring stations. Each PHS unit included an internal bypass mechanism; flow was only monitored at the effluent station for each PHS unit, which included all treated effluent and untreated bypass flow. The four monitoring stations are shown in Figures A-1 and A-2 (Appendix A).

WR-510

The Contech® Stormceptor® installed in drainage basin WR-510 receives runoff from the western half of the St. Johns Bridge to the intersection with Northwest Bridge Avenue; it is located directly underneath the bridge, in an industrial yard occupied by Advanced American Construction, Inc. (Figure A-2). Effluent from the PHS unit discharges to outfall WR-510 in the Linnton georegion. No additional stormwater inlets are connected to the stormwater system between the PHS effluent and the WR-510 outfall.

WR-306

The Contech® CDS® unit installed in drainage basin WR-306 receives runoff from I-5, from approximately North Russell Street to North Alberta Street and I-405 interchange and on- and off-ramps (Figure A-1). The PHS unit is located beneath the I-5/I-405 interchange, in a Portland Bureau of Transportation maintenance yard in the Albina georegion. Several additional ODOT and City stormwater inlets are connected to the stormwater system between the PHS effluent and the WR-306 outfall.

Monitoring Events

The sampling objective—to collect seven paired flow-weighted composite stormwater samples at each PHS unit—was met. Field staff targeted storms that met the following criteria for sampling:

- Antecedent dry period of at least 24 hours (as defined by less than 0.1 inches over the previous 24 hours)
- Minimum predicted rainfall amount of greater than 0.2 inches per event
- Expected duration of storm event of at least 3 hours

Criteria and goals for valid samples included:

- Minimum of 10 sample aliquots
- Goal of 75 percent coverage of overall stormwater runoff volume (through the first 24 hours of flow)

Table 1 presents all of the stormwater sampling events and the associated storm event details, as measured by the Water Pollution Control Laboratory (WPCL) rain gage at 6543 North Burlington Avenue and the Albina rain gage at 2920 North Larrabee Avenue for monitoring stations in WR-510 and WR-306, respectively (City of Portland 2023). Storm event criteria and goals were met for all storm events, with exceptions described below.

The three monitoring events listed below were conducted during small storm events (less than 0.2 inches). The events were sampled and submitted for laboratory analysis, because the predicted rainfall at the time of the pre-storm visit was at least 0.2 inches and because the storm event provided adequate flow for sampling. The specific rainfall amounts for each storm are as follows:

- Total precipitation of the WR-510 storm event on February 20, 2022, was 0.11 inches. The results of this event were qualified due, in part, to the minimal precipitation.
- Total precipitation of the WR-510 storm event on March 19, 2022, was 0.18 inches.
- Total precipitation of the WR-306 storm event on December 20, 2022, was 0.15 inches.

Composite sampling criteria and goals were met for all samples, with the following exceptions:

- Sample coverage for four storm events at WR-510 and two events at WR-306 did not meet the target criterion of 75 percent; this was a goal, not a requirement, for samples to be considered valid. Samples with storm coverage of less than half the goal were qualified as estimates.
- The minimum aliquot criterion was not met during the WR-510 storm event on March 13, 2022. The samples were considered valid and submitted to the laboratory for analysis, because (1) sufficient volume was collected, (2) the storm coverage met the project goal, and (3) the number of aliquots collected (eight) was close to the criterion of ten aliquots.

Table 1. Stormwater Sampling Summary.

Sample Date	Antecedent Period (hrs)	Storm Depth (in)	Storm Duration (hrs)	Sample Coverage (%)	Aliquots: Influent	
					Effluent	
WR-510						
10/21/21	35	0.79	9	<u>44, 31</u> ^a	20	Minimal flow during post-storm, but water level near bypass level.
					15	
12/18/21	46	1.12	23	<u>55</u>	20	No evidence of bypass.
					20	
2/20/22	102	<u>0.11</u>	24	<u>22</u>	18	
					18	
2/26/22	119	0.47	24	<u>53</u>	20	
					20	
3/13/22	81	0.44	38	84	<u>8</u>	
					<u>8</u>	
3/19/22	97	<u>0.18</u>	9	93	12	Final aliquot observed on site during post-storm.
					12	
4/4/22	311	0.90	22	89	12	
					12	
5/30/22	35	0.74	51	96	11	Storm still on falling limb, but over 24 hours have passed since first aliquot.
					11	
WR-306						
6/10/22	96	0.46	11	87	10	Sampler pacing value appears to be incorrectly calculated, but sample is still representative of storm event.
					11	
10/24/22	47	<u>0.18</u>	7	85	11	
					11	
11/22/22	193	0.29	5	90	12	Effluent sample appears darker than usual. May indicate bypass.
					12	
12/8/22	85	0.5	31	95	21	CDS unit was recently maintained.
					21	
12/20/22	50	<u>0.15</u>	8	88	13	
					13	
1/18/23	72	0.29	10	<u>67</u>	24	
					25	
12/22/23	72	0.32	5	<u>71</u>	25	
					25	

^a During the 10/21/21 storm event, sample WR510-OUT coverage was lower than WR510-IN due to a calibration issue that resulted in premature filling of the effluent sample container.

Bold underlined values indicate that the QAPP storm or sampling goal or criterion was not met.

The sampling goal—to collect one sediment sample at each PHS unit upon completion of the stormwater sampling period—was not met. One sediment sample was collected at the WR-510 PHS, after the conclusion of stormwater monitoring during dry weather on July 22, 2022. Due to the limited accessibility of the WR-306 PHS unit sump, collection of a sediment sample was not feasible.

QAPP Deviations

Monitoring was conducted in accordance with the QAPP, with the following deviations:

- The QAPP originally described PHS performance monitoring at two locations near the St. Johns Bridge. Monitoring was conducted at the WR-510 (West St. Johns Bridge) PHS unit, as described in the QAPP, but the monitoring stations at OF-52 (East St. Johns Bridge) were abandoned. With DEQ approval, monitoring was conducted at a replacement location: the WR-306 PHS unit. Analysis of Dioxins/Furans was originally planned for samples collected at OF-52; however, the samples at the replacement location, WR-306, were not analyzed.
- Flow measurements at WR-510 were logged on 15-minute intervals instead of the 5-minute intervals described in the QAPP. However, cumulative flow was calculated on a shorter interval (1-minute or less), so distribution and timing of sample aliquots was not impacted.
- The methods of flow measurement or calculation were modified from the QAPP. A Flo Tote 3 area-velocity sensor was installed at the WR-510 stations, as described in the QAPP, but preliminary flow monitoring exhibited poor performance from the velocity sensor. Flow was instead calculated using the depth sensor and Manning's Equation. Flow at WR-306 was calculated using water level data from a Campbell Scientific LevelVueB10 bubbler and Manning's equation.
- Measurement of accumulated sediment in the WR-306 PHS unit sump was attempted during each pre- and post-storm site visit, as described in the QAPP. However, due to accumulated floating debris and limited sump accessibility, field staff could not guarantee accurate measurements.
- No sediment sample was collected at the WR-306 PHS unit sump. The QAPP calls for collection of one sediment sample, if feasible, at the conclusion of stormwater sampling. Due to the depth of the PHS sump and the challenging confined space entry conditions, collection of the sediment sample was deemed infeasible.

Results

Sampling results and analyses are presented in the following appendices:

- **Appendix B: Result Tables and Figures**
 - Results table presenting all monitoring results
 - Summary statistics tables
 - Figures, including scatterplots and DEQ rank order curves
- **Appendix C: Storm Event Hydrographs and Statistics** – Sample event summary and hydrographs
- **Appendix D: Quality Assurance Worksheets** – Documentation of quality assurance audits of the laboratory data
- **Appendix E: Field Sampling Forms** – Records of field sampling activities
- **Appendix F: Laboratory Reports** – Results of laboratory analysis

Quality Assurance Review

Data from laboratory reports for the stormwater and sediment samples underwent a quality assurance (QA) audit, in accordance with the QAPP (Herrera 2021). The quality assurance audit results for the water quality data are provided in Table 2, and these results caused some data to be classified as estimated (J flag). No data were rejected as a result of this review, and the audit determined that all stormwater and sediment data are valid and acceptable for use.

Table 2. Summary of Laboratory Data Qualifiers.

Event	Monitoring Station(s)	Parameter(s)	Qualifier and Description
10/21/21	WR510-IN	All phthalates	J – high surrogate recovery indicating potential high bias
	WR510-IN WR510-OUT	Di-n-butyl phthalate	J – high LCS and LCSD recovery indicating potential high bias
	WR510-OUT	Aroclor 1254	J – high confirmation column RPD
12/18/21	WR510-IN	Fluoranthene	J – low LCS and LCSD recovery indicating potential low bias
	WR510-OUT	BEHP	J – CCV sample outside upper control criterion indicating potential high bias
	WR510-OUT	Aroclor 1254	J – high confirmation column RPD
4/4/22	WR510-IN	TSS	J – holding time exceedance due to laboratory power outage
	WR510-OUT	All phthalates	J – extraction holding time exceedance
	WR510-OUT	BEHP	UJ – sample detected at concentration below the associated method blank and de facto RL
10/24/22	WR306-IN WR306-OUT	BEHP	J – sample detected at concentrations within 5 times the de facto RL due to method blank detection
	WR306-OUT	Butyl benzyl phthalate	J – sample detected at concentrations within 5 times the de facto RL due to method blank detection
12/8/22	WR306-IN WR306-OUT	All PAHs	J – extraction holding time exceedance
12/20/22	WR306-IN WR306-OUT	All PCB Aroclors	J – high LCS/LCSD RPD
1/18/23	WR306-IN WR306-OUT	Acenaphthylene Benz(a)anthracene Benzo(a)pyrene Pyrene	J – high LCS and LCSD recovery indicating potential high bias
12/22/23	WR306-IN WR306-OUT	Chrysene Pyrene	J – high LCS recovery indicating potential high bias
7/22/22	WR510-SUMP	All metals except arsenic	J – high laboratory duplicate RPD
		BEHP Di-n-octyl phthalate	J – high MS and MSD recovery and high MS/MSD RPD
		Aroclors 1242, 1254, 1232	J – high surrogate recovery due to matrix interference

J = value is estimated; UJ = value is estimated and undetected at the reporting limit

CCV = continuing calibration verification; LCS = laboratory control sample; LCSD = laboratory control sample duplicate; MS = matrix spike;

MSD = matrix spike duplicate; RL = reporting limit; RPD = relative percent difference

BEHP = Bis(2-ethylhexyl) phthalate

PAH = polycyclic aromatic hydrocarbons

PCB = polychlorinated biphenyls

TSS = total suspended solids

Storm event flow monitoring data and hydrographs also underwent a quality assurance (QA) audit, in accordance with the QAPP (Herrera 2021). The quality assurance audit results of the hydrologic data are provided in Table 3, and these results caused some data to qualify as estimated (j flag). The audit determined that all data from stormwater samples are valid.

Table 3. Summary of Hydrologic Data Qualifiers.

Event Date	Monitoring Station	Flag	Comment
10/21/21	WR510-OUT	j	Effluent station first 24-hour sampling coverage (31 percent)
2/20/22	WR510-IN & WR510-OUT	j	Total event precipitation (0.11 inches) and first 24-hour sampling coverage (22 percent) did not meet target storm criteria. A makeup sample was collected on May 30, 2022.

j flag: Value is an estimate based on storm sampling criteria

Stormwater Sampling Results

Pollutant concentrations at both monitored PHS units were generally higher at the influent station, relative to the effluent, indicating that the PHS units were providing some pollutant reduction. In addition to the differences between influent and effluent concentrations, for most parameters the WR-510 influent monitoring station saw slightly higher concentrations than the WR-306 influent monitoring station.

Higher pollutant reductions at the WR-510 PHS unit, relative to the WR-306 PHS unit (see Table 4), are likely due to influent particle size and basin trash loading. While no influent stormwater samples were analyzed for particle size distribution, large highway drainage areas, such as WR-306, typically have finer sediment than smaller basins like WR-510. Observations by field staff support the likelihood that influent suspended sediment was coarser at WR-510. TSS reduction in PHS units typically increases with increasing sediment size. In addition, considerable amounts of floating trash and debris were captured by the WR-306 PHS unit, which may have led to premature fouling of the unit's screen and a decrease in pollutant reductions.

Table 4. PHS Unit Performance.

Station	Monitoring Period	TSS Reduction Goal (%) ^a	TSS Reduction (%)		Effluent TSS Concentration (mg/L)		
			Min	Max	Min	Median	Max
WR-510 Contech Stormceptor	10/21/2021 to 5/30/2022	50	-5	88	24	90	156
WR-306 Contech CDS Unit	6/10/2022 to 12/22/2023	50	0	34	52	116	237

^a TSS reduction is based on the Technology Assessment Protocol – Ecology (TAPE) pretreatment performance goal (Ecology 2018). Both technologies have received general use level designations from the Washington State Department of Ecology for pretreatment.

mg/L = milligrams per liter.

TSS = total suspended solids

Parameter concentrations were compared to the cleanup level (CUL; EPA 2017) or, if no CUL is available, to the screening level values (SLV; DEQ 2007). Butyl benzyl phthalate, diethyl phthalate, 2-methylnaphthalene, acenaphthene, anthracene, fluorene, naphthalene, Aroclor 1016, Aroclor 1221, and Aroclor 1248 were never detected above the corresponding CUL or SLV at any station (influent or effluent). At the WR-306 PHS unit monitoring stations, nickel, di-n-butyl phthalate, di-n-octyl phthalate, dimethyl phthalate, acenaphthylene, fluoranthene, phenanthrene, and all remaining individual PCB Aroclors were also never detected above the corresponding CUL or SLV.

CUL and SLV exceedances in PHS unit effluent occurred for several parameters at both monitoring sites. All metals except for nickel, which did not have any effluent exceedances, exceeded CUL or SLVs in all effluent samples. The magnitude of these exceedances was typically less than two orders of magnitude, except for arsenic, which exceeded the CUL by over two orders of magnitude at least once at each effluent station. Several individual phthalates, PAHs, and PCB Aroclors also consistently exceeded their respective CUL or SLV but by less than two orders of magnitude. Benzo(a)pyrene and total carcinogenic PAHs (cPAHs) exceeded their respective CULs by over two orders of magnitude at both stations, and total PCB concentrations exceeded the CUL by over three and four orders of magnitude for stations WR-306 and WR-510, respectively.

Exceedances in PHS unit influent samples generally followed a similar pattern as the effluent but with slightly higher magnitudes. The magnitude of exceedances at the WR-510 influent was also typically higher than the WR-306 influent station. Additional parameters with exceedances greater than two orders of magnitude above the respective CUL or SLV at WR-510 influent include:

- Copper
- Lead
- Zinc
- BEHP
- Benzo(a)anthracene
- Benzo(b)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Indeno(1,2,3-cd)pyrene

The sample collected at monitoring station WR510-IN on April 4, 2022, exhibited concentrations that appeared to be outliers for many parameters. This is likely due in part to the event's storm characteristics, including a 311-hour antecedent dry period (the longest at either station) paired with relatively intense precipitation (0.9 inches over 22 hours). Parameters with maximum concentrations occurring during this event include:

- TSS
- Arsenic
- Cadmium
- Copper
- Lead
- Nickel
- Zinc
- BEHP
- Several individual PAHs, phthalates, and PCB Aroclors

These metals and organic contaminants are associated with fine sediment and likely accumulated on roadways during the extended antecedent dry period before being mobilized during the April 4, 2022, storm event. Effluent concentrations at the WR-510 PHS unit during this event were comparable to other events, and the TSS reduction for the event was 73 percent.

Based on DEQ rank order curves (DEQ 2010) shown in Appendix B, PHS unit effluent monitoring stations were generally below the knee of the curve, with the following exceptions:

- TSS concentrations tended to be within or above the knee of the curve at both stations.
- Some arsenic concentrations were within or above the knee at both stations, although the majority of samples at both stations were below the knee of the curve.
- Cadmium concentrations during two events at WR-306 were within the knee of the curve.
- Lead concentration during one event at WR-306 was within the knee of the curve.
- Zinc concentrations during two events at WR-510 were within the knee of the curve.
- BEHP concentrations during several events at both stations were within or above the knee of the curve, although the majority of samples at WR-510 were below the knee of the curve.

PHS unit influent monitoring stations generally had higher pollutant concentrations and generally had concentrations ranging from below to above the knee of the curve, with the following exceptions:

- Arsenic concentrations during all WR-306 and the majority of WR-510 events were below the knee of the curve.
- Cadmium concentrations at both stations were generally below or within the knee of the curve.
- Copper, lead, and zinc concentrations at WR-306 were below the knee of the curve.
- Total PAH and PCB concentrations at WR-306 were below the knee of the curve.

Storm Solids Sampling Results

Storm solids results table and rank order plots are provided in Appendix B. Most contaminant concentrations for the July 22, 2023, solids sample collected at the WR-510 PHS unit sump were either below or within one order of magnitude of applicable CULs or SLVs. Parameters exceeding applicable CULs or SLVs by less than one order of magnitude include:

- Cadmium
- Zinc
- Indeno(1,2,3-cd)pyrene
- Di-n-butyl phthalate (undetected at a reporting limit above the applicable SLV)

Parameters exceeding applicable CULs by between one and two orders of magnitude include:

- Total cPAHs
- BEHP
- Total PCBs

Contaminant concentrations were below the knee of the DEQ rank order curves, except for total PCBs which was within the knee of the curve. The elevated total PCBs concentration in this sediment sump and in the WR-510 PHS unit influent stormwater indicates the presence of a current or historical source. However, because WR-510 effluent stormwater samples were all below the knee of the curve, the source appears to be controlled by this SCM.

Approximate sediment depths in the PHS unit sumps are provided in Table 5 below. Because PHS units are designed to capture large pieces of debris and floating trash, in addition to suspended sediment, measurement accuracy was often partly obstructed by this debris.

Table 5. Sediment Sump Volume Measurements.

Date	Depth to Sediment (ft)		Post-Storm Volume (cf) ^a	Relevant Field Comments
	Pre-Storm	Post-Storm		
WR-510				
10/21/21	11.0	11.0	3.5	Unit maintained on 5/31/21.
12/18/21	10.9	10.9	4.0	-
2/20/22	10.9	10.9	4.0	-
2/26/22	10.9	10.9	4.1	-
3/13/22	10.8	10.8	5.7	-
3/19/22	10.8	10.8	6.0	-
4/4/22	10.7	10.7	6.4	-
5/30/22	10.3	10.3	11.6	-
WR-306				
6/10/22	16.2	16.1	3.5	Unit maintained on 5/24/22.
10/24/22	14.6	14.6	82.4	Thick layer of floating trash and debris in and on top of sump.
11/22/22	13.5	13.5	135.2	-
12/8/22	16.3	16.2	1.0	Water in sump, no floating trash. Unit recently maintained.
12/20/22	15.9	15.9	17.1	Soft bottom, difficult to determine measurement.
1/18/23	13.1	13.1	157.8	Soft bottom sump.
12/22/23	12.0	11.9	215.6	Depth to sediment measurements likely obstructed by debris in upper sump and reported sediment volume may be an overestimate. Unit maintained 11/9/23.

^a Sediment sump volumes were calculated by using as-built drawings for sump diameters (4 feet for WR-510 and 8 feet for WR-306) and using reference sump depth measurements immediately after units were maintained.

cf = cubic feet

Conclusions and Next Steps

The project monitoring objective—to collect at least seven paired influent and effluent composite samples at PHS units in basins WR-510 and WR-306—was completed. All sample results were found to be valid and representative, with some qualifications. Effluent pollutant concentrations at both PHS units were typically lower than influent concentrations, indicating that both PHS units are providing some pollutant reduction. TSS reductions varied considerably between events and PHS units, with pollutant reductions generally higher at WR-510 (likely due to coarser sediment and lower trash loading in the influent). Due to the generally lower effluent pollutant concentrations, CUL or SLV exceedances were less frequent and smaller in magnitude in the effluent samples. PHS unit effluent samples were also generally below the knee of the rank order curves, and these samples exceeded the knee of the curves less frequently than influent samples.

ODOT will continue regular maintenance activities of the WR-510 and WR-306 PHS units and prepare a Source Control Status Update report in Water Year 2025, to provide a comprehensive status of source control objectives in the ODOT facilities draining to Portland Harbor. The performance monitoring results described in this memorandum will be analyzed and used as a line of evidence, to help determine source control status in basins WR-510 and WR-306. Additional structural SCMs are planned for both basins, including:

- Stormwater facilities upstream of the existing PHS in WR-306, as part of the I-5 Rose Quarter Improvement project
- Construction of a biofiltration facility downstream of the WR-510 PHS, under the Willamette River Stormwater Source Control Improvements project

No additional monitoring is proposed in these basins prior to construction of planned SCMs in the WR-306 and WR-510 basins. As structural SCMs are designed and implemented in the ODOT facility basins, in accordance with the FS and Supplemental FS (ODOT & Herrera, 2021; ODOT 2022), additional rounds of performance monitoring may be conducted to inform the source control effectiveness evaluation.

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Appendix A

Monitoring Station Location Figures



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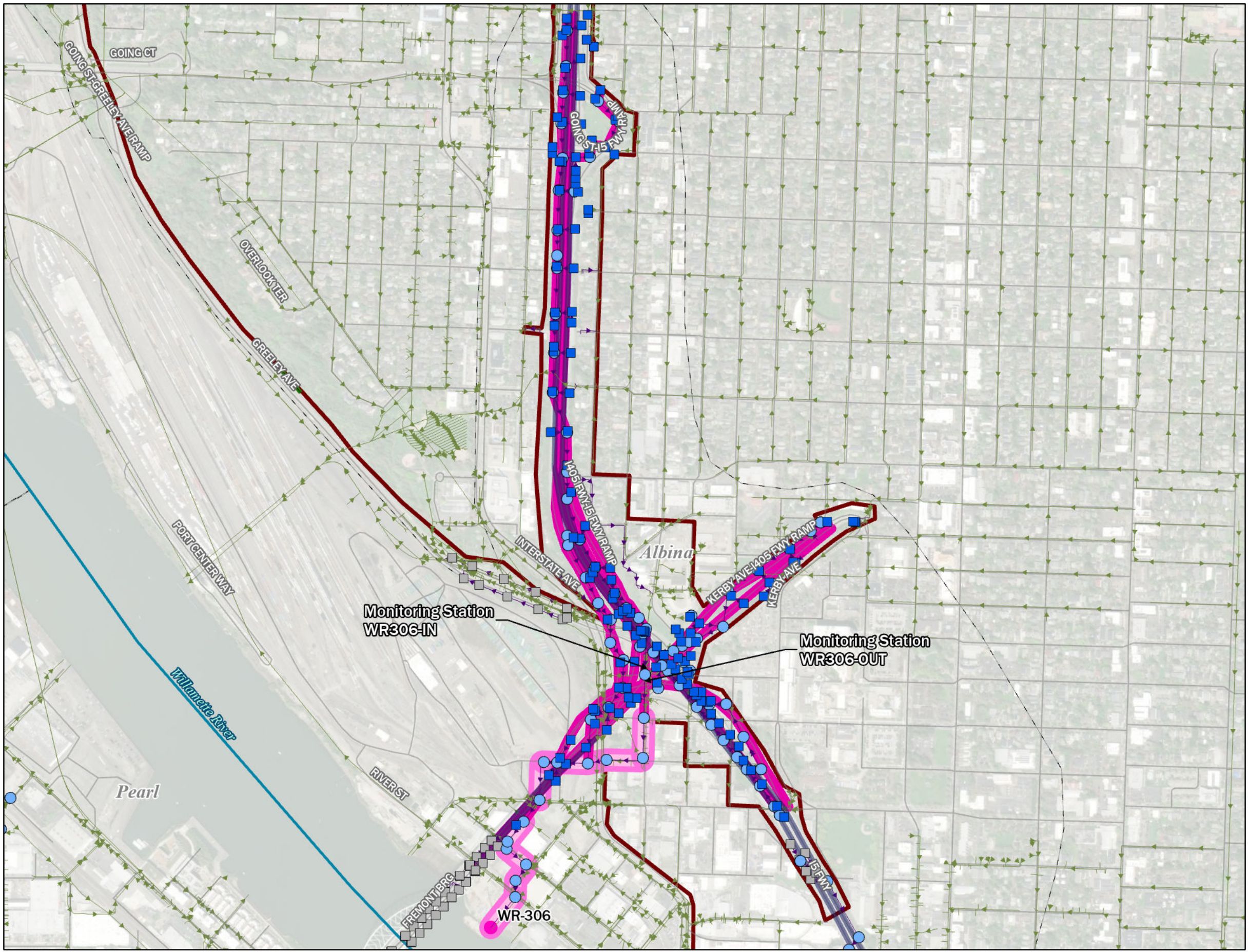


Figure A-1.
Portland Harbor Outfall WR-306
Drainage Extent and Monitoring
Locations.

Legend

- Catch Basin (ODOT)
- Manhole (ODOT)
- Outfalls
- WR-306
- + Culverts
- Portland Harbor Boundary
- Waterbodies
- Georegions
- Stream
- Ditch
- Highway
- Streets
- Pipe Ownership: ODOT
- Pipe Ownership: Other pipe
- Drainage Extent (ODOT)
- Drainage Extent (Outfall)

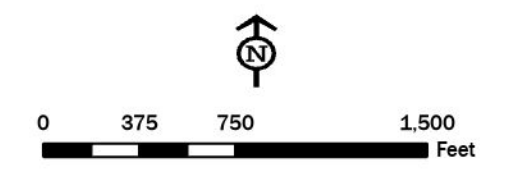
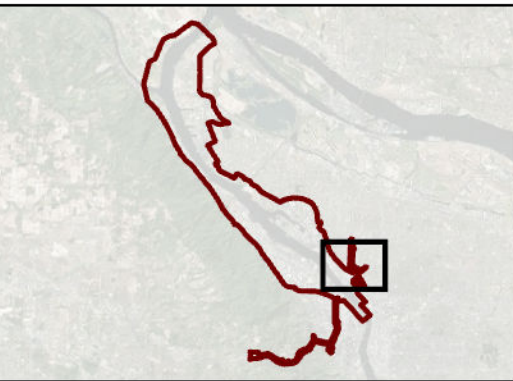
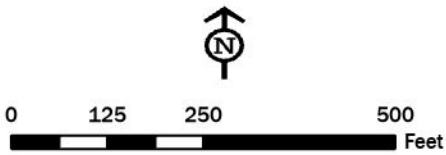




Figure A-2.
Portland Harbor Outfall WR-510
Drainage Extent and Monitoring
Locations.

Legend

- Catch Basin (ODOT)
- Manhole (ODOT)
- Outfalls
- WR-510
- ✚ Culverts
- ▭ Portland Harbor Boundary
- ▭ Waterbodies
- ▭ Georegions
- Stream
- Ditch
- Streets
- Pipe Ownership
 - ODOT
 - Other pipe
- Drainage Extent (ODOT) Drainage Extent (Outfall)
 - Orange
 - Yellow
 - Green
 - Pink
 - Cyan



Appendix B

Monitoring Result Tables and Figures



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Table B-1. Portland Harbor Performance Monitoring Results																																						
Parameter	Criteria	Source ^a	Units	n	WR-510																																	
					10/21/2021				12/18/2021				02/20/2022				2/26/2022				03/13/2022				3/19/2022				04/04/2022				5/30/2022					
					IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT							
					Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual						
Total Suspended Solids	NA		mg/L	30	101		106	j	173		156		194	j	24	j	206		144		155		67		235		86.5		348	J	94	J	62		58.5			
Hardness	NA		mg/L	30	44		42	j	62.8		42		416	j	320	j	360		400		265		270		100		84		275		38		73.2		95.6			
Total Organic Carbon (TOC)	NA		mg/L	30	4		4.2	j	2.9		3.6		64	j	39.8	j	13		13.9		13		15.6		9.7		11.4		8.5		5.9		7		5.8			
Arsenic	0.018	CUL	ug/L	30	0.82		0.74	j	1		0.84		4.39	j	2.36	j	3.86		3.81		2.35		2.31		1.19		0.92		5.02		0.69		0.57		0.51			
Cadmium	0.094	SLV	ug/L	30	0.212		0.223	j	0.328		0.259		0.716	j	0.183	j	0.638		0.403		0.493		0.214		0.464		0.275		3.55		0.177		0.125		0.11			
Copper	2.74	CUL	ug/L	30	28.4		29.7	j	106		31.5		126	j	32.5	j	151		51.9		68.4		25		84.3		23.4		650		20.3		19.9		17			
Lead	0.54	SLV	ug/L	30	14.7		14.9	j	20.4		20.8		81.6	j	7.51	j	143		20.5		38.8		8.17		37.2		12.1		201		10.9		7.86		6.85			
Nickel	16	SLV	ug/L	30	4.17		3.97	j	6.67		4.83		25.8	j	6.36	j	10.7		7.09		15.1		3.9		9.82		3.46		78.8		3.29		2.85		2.28			
Zinc	36.5	CUL	ug/L	30	278		289	j	420		377		2130	j	813	j	1250		784		963		524		1040		449		8590		307		318		271			
Bis(2-ethylhexyl) Phthalate	0.2	CUL	ug/L	30	8.6	J	3.6	Jj	2.6	J	2	J	11	Jj	1.3	j	36		6		16	J	3	J	63		2.7	J	97	J	0.065	Uj	2.3		2.4			
Butyl Benzyl Phthalate	3	SLV	ug/L	30	0.65	J	0.43	Jj	0.15	J	0.097	J	0.21	Uj	0.0105	Uj	0.42		0.0105	U	0.21	U	0.055	U	2.4	J	0.055	U	3	J	0.18	J	0.0105	U	0.18	J		
Di-n-butyl Phthalate	3	SLV	ug/L	30	0.77	J	0.34	Jj	0.14	J	0.11	J	0.57	Jj	0.0115	Uj	2		0.35		11		0.28	J	5.7		0.25	J	1.5	J	0.21	J	0.16	J	0.17	J		
Di-n-octyl Phthalate	3	SLV	ug/L	30	2.2	J	1.1	j	0.48		0.46		0.33	Uj	0.0165	Uj	9		0.0165	U	0.33	U	0.39	J	0.33	U	0.085	U	0.33	Uj	0.0165	Uj	0.0165	U	0.0165	U		
Diethyl Phthalate	3	SLV	ug/L	30	0.43	J	0.26	Jj	0.1	J	0.082	J	0.93	Jj	0.32	j	0.24		0.21		0.3	J	0.0375	U	0.32	J	0.0375	U	0.15	Uj	0.094	J	0.13	J	0.11	J		
Dimethyl Phthalate	3	SLV	ug/L	30	0.58	J	0.28	Jj	0.19	J	0.15	J	1.2	Jj	0.22	j	0.2		0.17	J	0.21	U	0.055	U	1.8	J	0.055	U	4	J	0.053	J	0.16	J	0.13	J		
2-Methylnaphthalene	0.2	SLV	ug/L	30	0.014	J	0.015	Jj	0.014	J	0.021		0.0075	Uj	0.00075	Uj	0.059		0.045		0.035		0.013	J	0.026		0.011	J	0.049		0.0071	J	0.0091	J	0.0099	J		
Acenaphthene	0.2	SLV	ug/L	30	0.0045	J	0.0052	Jj	0.0051	J	0.0006	U	0.007	Uj	0.0007	Uj	0.012	J	0.0006	U	0.0066	J	0.0036	J	0.011	J	0.0006	U	0.02		0.0024	J	0.0012	U	0.0012	U		
Acenaphthylene	0.2	SLV	ug/L	30	0.012	J	0.015	Jj	0.0048	J	0.006	J	1.9	j	0.37	j	0.013	J	0.012	J	0.01	J	0.0061	J	0.0079	J	0.0041	J	0.011	J	0.003	J	0.0011	U	0.0034	J		
Anthracene	0.2	SLV	ug/L	30	0.011	J	0.014	Jj	0.00041	U	0.00041	U	0.00455	Uj	0.000465	Uj	0.00041	U	0.00041	U	0.021		0.012	J	0.026		0.008	J	0.031		0.005	J	0.00085	U	0.00085	U		
Benzo(a)anthracene	0.0012	CUL	ug/L	30	0.022		0.027	j	0.026		0.026		0.23	j	0.00055	Uj	0.056		0.034		0.037		0.021		0.054		0.017	J	0.062		0.01	J	0.018	J	0.013	J		
Benzo(a)pyrene	0.00012	CUL	ug/L	30	0.037		0.044	j	0.033		0.034		0.19	Jj	0.00065	Uj	0.037		0.032		0.047		0.027		0.063		0.023		0.11		0.022		0.0011	U	0.0011	U		
Benzo(b)fluoranthene	0.0012	CUL	ug/L	30	0.033		0.043	j	0.045		0.043		0.28	j	0.00047	Uj	0.064		0.055		0.064		0.035		0.087		0.03		0.15		0.018	J	0.00085	U	0.017	J		
Benzo(g,h,i)perylene	0.2	SLV	ug/L	30	0.036		0.042	j	0.054		0.048		0.31	j	0.031	j	0.17		0.12		0.1		0.06		0.11		0.039		0.21		0.029		0.041		0.029	J		
Benzo(k)fluoranthene	0.0013	CUL	ug/L	30	0.013	J	0.012	Jj	0.015	J	0.014	J	0.11	Jj	0.00055	Uj	0.00047	U	0.016	J	0.017	J	0.0094	J	0.024		0.0087	J	0.035		0.005	J	0.00095	U	0.00095	U		
Chrysene	0.0013	CUL	ug/L	30	0.044		0.054	j	0.054		0.053		0.34	j	0.00043	Uj	0.11		0.083		0.11		0.06		0.14		0.042		0.25		0.03		0.034	J	0.028	J		
Dibenzo(a,h)anthracene	0.00012	CUL	ug/L	30	0.00065	U	0.0044	Jj	0.0062	J	0.0069	J	0.094	Jj	0.00075	Uj	0.00065	U	0.004	J	0.015	J	0.00065	U	0.021		0.00065	U	0.033		0.00065	U	0.0013	U	0.0013	U		
Fluoranthene	0.2	SLV	ug/L	30	0.09		0.11	j	0.098	J	0.11	J	0.45	j	0.035	j	0.22		0.19		0.17		0.11		0.19		0.088		0.29		0.055		0.07		0.06			
Fluorene	0.2	SLV	ug/L	30	0.011	J	0.015	Jj	0.0072	J	0.0095	J	0.0065	Uj	0.00065	Uj	0.02	J	0.014	J	0.018	J	0.015	J	0.026		0.011	J	0.034		0.0062	J	0.0073	J	0.0061	J		
Indeno(1,2,3-cd)pyrene	0.0012	CUL	ug/L	30	0.018	J	0.026	j	0.025		0.025		0.19	Jj	0.00055	Uj	0.059		0.045		0.039		0.021		0.054		0.02		0.11		0.018	J	0.0009	U	0.0009	U		
Naphthalene	12	CUL	ug/L	30	0.025		0.028	j	0.019	J	0.035		0.008	Uj	0.057	j	0.036		0.027		0.026		0.011	J	0.02		0.011	J	0.052		0.0093	J	0.011	J	0.013	J		
Phenanthrene	0.2	SLV	ug/L	30	0.084		0.098	j	0.078		0.08		0.63	j	0.068	j	0.2		0.17		0.15		0.098		0.16		0.08		0.27		0.055		0.047		0.044			
Pyrene	0.2	SLV	ug/L	30	0.14		0.17	j	0.17		0.18		0.6	j	0.1	j	0.0005	U	0.0005	U	0.25		0.17		0.25		0.13		0.41		0.084		0.12		0.096			
Total PAHs ^b	NA		ug/L	30	0.59	J	0.72	Jj	0.65	J	0.69	J	5.3	Jj	0.66	j	1.1	J	0.85	J	1.12	J	0.67	J	1.3	J	0.52	J	2.1	J	0.36	J	0.36	J	0.32	J		
Total cPAH ^c	0.00012	CUL	ug/L	30	0.045	J	0.059	Jj	0.050	J	0.051	J	0.36	Jj	0.00031	j	0.057		0.051	J	0.077	J	0.035	J	0.10		0.030	J	0.18		0.027	J	0.0022	J	0.0033	J		
Aroclor 1016	0.96	SLV	ug/L	30	0.0016	U	0.0016	Uj	0.0016	U	0.0016	U	0.0016	Uj	0.0016	Uj	0.0032	U	0.0024	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U
Aroclor 1221	0.034	SLV	ug/L	30	0.0016	U	0.0016	Uj	0.0016	U	0.0016	U	0.0016	Uj	0.0016	Uj	0.0032	U	0.0024	U	0.0016	U	0.0016	U	0.0016</													

Table B-1 (continued). Portland Harbor Performance Monitoring Results																																
Parameter	Criteria	Source ^a	Units	n	WR-306																											
					6/10/2022				10/24/2022				11/22/2022				12/8/2022				12/20/2022				1/18/2023				12/22/2023			
					IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT		IN		OUT	
					Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Total Suspended Solids	NA		mg/L	30	113		75		68.5		62		161		157		102		102		263		237		144		116		153		144	
Hardness	NA		mg/L	30	153		254		27.3		27.3		153		81		39.1		44		126		147		42.4		42.4		29.7		29.7	
Total Organic Carbon (TOC)	NA		mg/L	30	4.6		4.9		27		24		27.6		30.8		12.4		9.2		24.4		25.2		4.7		4.8		5.2		16.4	
Arsenic	0.018	CUL	ug/L	30	0.88		0.68		0.91		0.94		1.35		1.31		0.98		0.94		1.97		2.16		1.4		1.23		1.05		0.97	
Cadmium	0.094	SLV	ug/L	30	0.377		0.217		0.288		0.288		0.542		0.57		0.471		0.453		0.717		0.717		0.359		0.289		0.372		0.309	
Copper	2.74	CUL	ug/L	30	39.8		27.2		48.2		46.5		61.6		61.6		38.7		39.3		63.3		63.7		39.3		33.2		42.2		39.8	
Lead	0.54	SLV	ug/L	30	8.84		5.74		7.57		7.3		13		12.4		9.55		9.32		16.2		15.8		11		8.57		47.7		40.6	
Nickel	16	SLV	ug/L	30	4.14		2.67		5.31		5.15		6.7		7.64		4.96		5.14		11.8		9.33		5.52		4.86		5.66		5.13	
Zinc	36.5	CUL	ug/L	30	267		167		260		244		427		443		284		285		607		589		300		253		329		291	
Bis(2-ethylhexyl) Phthalate	0.2	CUL	ug/L	30	6.3		5.2		7.3	J	6.9	J	3.4		3.4		4		4		4.5		5.5		7.9	J	5.1	J	3.1		3	
Butyl Benzyl Phthalate	3	SLV	ug/L	30	0.0105	U	0.0105	U	0.0105	U	0.61	J	0.0105	U	0.0105	U	0.26		0.0105	U	0.27		0.49		0.21	U	0.105	U	0.16	J	0.0105	U
Di-n-butyl Phthalate	3	SLV	ug/L	30	0.18	J	0.14	J	0.38		0.37		0.18		0.18		0.34		0.34		0.28		0.33		0.23	U	1.3	J	0.14	J	0.13	J
Di-n-octyl Phthalate	3	SLV	ug/L	30	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.0165	U	0.017	U	0.33	U	0.165	U	0.42		0.56	
Diethyl Phthalate	3	SLV	ug/L	30	0.14	J	0.24		0.16	J	0.16	J	0.17		0.23		0.14	J	0.15	J	0.13	J	0.14	J	0.15	U	0.075	U	0.16	J	0.19	J
Dimethyl Phthalate	3	SLV	ug/L	30	0.47		0.4		0.45		0.47		0.53		0.61		0.33		0.31		0.84		0.85		0.21	U	0.43	J	0.61		0.69	
2-Methylnaphthalene	0.2	SLV	ug/L	30	0.0013	U	0.035		0.021	J	0.022	J	0.021		0.024		0.0052	J	0.0082	J	0.018	J	0.018	J	0.0085	J	0.0068	J	0.02	J	0.02	J
Acenaphthene	0.2	SLV	ug/L	30	0.0012	U	0.011	J	0.00065	U	0.0034	U	0.0095		0.0098	J	0.0052	J	0.0031	J	0.0059	J	0.007	J	0.0057	J	0.0038	J	0.012	J	0.012	J
Acenaphthylene	0.2	SLV	ug/L	30	0.0011	U	0.0025	J	0.097		0.0031	U	0.0089	J	0.011	J	0.0054	J	0.0052	J	0.0072	J	0.0096	J	0.0066	J	0.0048	J	0.0017	J	0.015	J
Anthracene	0.2	SLV	ug/L	30	0.00085	U	0.0088	J	0.00044	U	0.000465	U	0.011	J	0.012	J	0.0092	J	0.00041	UJ	0.005	J	0.0068	J	0.00041	U	0.00041	U	0.016	J	0.014	J
Benzo(a)anthracene	0.0012	CUL	ug/L	30	0.01	J	0.0081	J	0.019	J	0.024		0.018	J	0.023		0.028	J	0.024	J	0.0069	J	0.0089	J	0.024	J	0.014	J	0.024	J	0.022	J
Benzo(a)pyrene	0.00012	CUL	ug/L	30	0.0011	U	0.0092	J	0.0006	U	0.00065	U	0.057		0.065		0.082	J	0.061	J	0.00055	U	0.025		0.043	J	0.032	J	0.026	J	0.024	J
Benzo(b)fluoranthene	0.0012	CUL	ug/L	30	0.025	J	0.014	J	0.034		0.04		0.025		0.031		0.048	J	0.041	J	0.013	J	0.016	J	0.043		0.029		0.044		0.039	
Benzo(g,h,i)perylene	0.2	SLV	ug/L	30	0.042		0.02	J	0.053		0.056		0.028		0.035		0.049	J	0.043	J	0.016	J	0.021		0.058		0.042		0.066		0.058	
Benzo(k)fluoranthene	0.0013	CUL	ug/L	30	0.00095	U	0.0045	J	0.013	J	0.015	J	0.0049	J	0.0056	J	0.015	J	0.014	J	0.0029	J	0.00047	U	0.011	J	0.0077	J	0.016	J	0.013	J
Chrysene	0.0013	CUL	ug/L	30	0.045		0.022		0.051		0.055		0.045		0.058		0.068	J	0.058	J	0.017	J	0.022		0.058		0.041		0.066	J	0.057	J
Dibenzo(a,h)anthracene	0.00012	CUL	ug/L	30	0.0013	U	0.00065	U	0.0007	U	0.00075	U	0.00065	U	0.00065	U	0.00065	UJ	0.0043	J	0.00065	U	0.00065	U	0.00065	U	0.00065	U	0.001	U	0.001	U
Fluoranthene	0.2	SLV	ug/L	30	0.056		0.041		0.13		0.14		0.12		0.14		0.15	J	0.13	J	0.048		0.066		0.11		0.073		0.15		0.13	
Fluorene	0.2	SLV	ug/L	30	0.0031	J	0.021		0.0006	U	0.0031	U	0.015	J	0.019	J	0.0083	J	0.0064	J	0.0085	J	0.0092	J	0.012	J	0.0082	J	0.02	J	0.018	J
Indeno(1,2,3-cd)pyrene	0.0012	CUL	ug/L	30	0.013	J	0.0074	J	0.02	J	0.024		0.014	J	0.016	J	0.032	J	0.025	J	0.0082	J	0.009	J	0.025		0.017	J	0.026	J	0.022	J
Naphthalene	12	CUL	ug/L	30	0.0031	J	0.026		0.033		0.036		0.029		0.031		0.007	J	0.0064	J	0.025		0.028		0.011	J	0.0067	J	0.033		0.031	
Phenanthrene	0.2	SLV	ug/L	30	0.03	J	0.041		0.095		0.097		0.13		0.15		0.075	J	0.063	J	0.06		0.072		0.09		0.064		0.13		0.12	
Pyrene	0.2	SLV	ug/L	30	0.12		0.081		0.22		0.23		0.23		0.27		0.3	J	0.26	J	0.091		0.14		0.29	J	0.19	J	0.3	J	0.28	J
Total PAHs ^b	NA		ug/L	30	0.35	J	0.35	J	0.79	J	0.74	J	0.77	J	0.90	J	0.89	J	0.75	J	0.33	J	0.46	J	0.80	J	0.54	J	0.97	J	0.88	J
Total cPAH ^c	0.00012	CUL	ug/L	30	0.0053	J	0.012	J	0.0080	J	0.0096	J	0.063	J	0.072	J	0.094	J	0.075	J	0.0030	J	0.029	J	0.053	J	0.039	J	0.036	J	0.033	J
Aroclor 1016	0.96	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.0024	U	0.0024	U
Aroclor 1221	0.034	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.0024	U	0.0024	U
Aroclor 1232	0.034	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.0024	U	0.0024	U
Aroclor 1242	0.034	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.021		0.012	
Aroclor 1248	0.034	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.0024	U	0.0024	U
Aroclor 1254	0.033	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.025	J	0.0032	UJ	0.0032	U	0.0032	U	0.0097		0.018	
Aroclor 1260	0.034	SLV	ug/L	30	0.0032	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0032	U	0.0032	U	0.0032	UJ	0.0032	UJ	0.0032	U	0.0032	U	0.011		0.01	
Total PCBs ^b	0.000064	CUL	ug/L	30																												

^a Clean up level from Table 17 of ROD (US EPA 2017). Screening level values from Portland Harbor JSCS (DEQ 2007).

^b Summed concentrations including total PAH and total PCB were calculated by summing all detections for a given sample. If all parameters were non-detect, the largest undetected result was used (reported at one half of the detection limit).

^c Total cPAH concentrations were calculated by summing all individual cPAH detections multiplied by the benzo(a)pyrene toxicity equivalency factors.

Undetected values are reported as one half of the detection limit and qualified with a "U" flag.

NA: Not applicable

mg/L: milligrams per liter

ug/L: micrograms per liter

cPAH: carcinogenic polycyclic aromatic hydrocarbons

PAH: polycyclic aromatic hydrocarbons

PCB: polychlorinated biphenyls

Table B-2. Portland Harbor Performance Monitoring Results and Exceedances Summary

Parameter	Criteria	Source ^a	Units	WR-510-OUT									Minimum Magnitude Above CUL or SLV	Maximum Magnitude Above CUL or SLV
				n	Minimum	25th Percentile	Median	Mean	75th Percentile	Maximum	Percent Detected	Percent Above CUL or SLV		
Total Suspended Solids	NA		mg/L	8	24	64.9	90.3	92.0	116	156	100%	NA	-	-
Hardness	NA		mg/L	8	38.0	42.0	89.8	161	283	400	100%	NA	-	-
Total Organic Carbon (TOC)	NA		mg/L	8	3.6	5.4	8.7	13	14	40	100%	NA	-	-
Arsenic	0.018	CUL	ug/L	8	0.51	0.73	0.88	1.52	2.32	3.81	100%	100%	30	210
Cadmium	0.094	SLV	ug/L	8	0.110	0.182	0.219	0.231	0.263	0.403	100%	100%	0	0
Copper	2.74	CUL	ug/L	8	17.0	22.6	27.4	28.9	31.8	51.9	100%	100%	10	20
Lead	0.54	SLV	ug/L	8	6.85	8.01	11.5	12.7	16.3	20.8	100%	100%	10	40
Nickel	16	SLV	ug/L	8	2.28	3.42	3.94	4.40	5.21	7.09	100%	0%	-	-
Zinc	36.5	CUL	ug/L	8	271	303	413	477	589	813	100%	100%	10	20
Bis(2-ethylhexyl) Phthalate	0.2	CUL	ug/L	8	0.065	1.8	2.6	2.6	3.2	6	88%	88%	0	30
Butyl Benzyl Phthalate	3	SLV	ug/L	8	0.011	0.044	0.076	0.13	0.18	0.43	50%	0%	-	-
Di-n-butyl Phthalate	3	SLV	ug/L	8	0.012	0.16	0.23	0.22	0.30	0.35	88%	0%	-	-
Di-n-octyl Phthalate	3	SLV	ug/L	8	0.017	0.017	0.051	0.26	0.41	1.1	38%	0%	-	-
Diethyl Phthalate	3	SLV	ug/L	8	0.038	0.071	0.10	0.14	0.22	0.32	75%	0%	-	-
Dimethyl Phthalate	3	SLV	ug/L	8	0.053	0.055	0.14	0.14	0.18	0.28	75%	0%	-	-
2-Methylnaphthalene	0.2	SLV	ug/L	8	0.00075	0.0092	0.012	0.015	0.017	0.045	88%	0%	-	-
Acenaphthene	0.2	SLV	ug/L	8	0.00060	0.00060	0.00095	0.0019	0.0027	0.0052	38%	0%	-	-
Acenaphthylene	0.2	SLV	ug/L	8	0.0030	0.0039	0.0061	0.052	0.013	0.37	100%	13%	0	0
Anthracene	0.2	SLV	ug/L	8	0.00041	0.00045	0.0029	0.0051	0.0090	0.014	50%	0%	-	-
Benzo(a)anthracene	0.0012	CUL	ug/L	8	0.00055	0.012	0.019	0.019	0.026	0.034	88%	88%	0	30
Benzo(a)pyrene	0.00012	CUL	ug/L	8	0.00065	0.017	0.025	0.023	0.033	0.044	75%	100%	10	370
Benzo(b)fluoranthene	0.0012	CUL	ug/L	8	0.00047	0.018	0.033	0.030	0.043	0.055	88%	88%	0	50
Benzo(g,h,i)perylene	0.2	SLV	ug/L	8	0.029	0.031	0.041	0.050	0.051	0.12	100%	0%	-	-
Benzo(k)fluoranthene	0.0013	CUL	ug/L	8	0.00055	0.0040	0.0091	0.0083	0.013	0.016	75%	75%	0	10
Chrysene	0.0013	CUL	ug/L	8	0.00043	0.030	0.048	0.044	0.056	0.083	88%	88%	0	60
Dibenzo(a,h)anthracene	0.00012	CUL	ug/L	8	0.00065	0.00065	0.0010	0.0024	0.0041	0.0069	38%	100%	10	60
Fluoranthene	0.2	SLV	ug/L	8	0.035	0.059	0.099	0.095	0.11	0.19	100%	0%	-	-
Fluorene	0.2	SLV	ug/L	8	0.00065	0.0062	0.010	0.0097	0.014	0.015	88%	0%	-	-
Indeno(1,2,3-cd)pyrene	0.0012	CUL	ug/L	8	0.00055	0.014	0.021	0.020	0.025	0.045	75%	75%	0	40
Naphthalene	12	CUL	ug/L	8	0.0093	0.011	0.020	0.024	0.030	0.057	100%	0%	-	-
Phenanthrene	0.2	SLV	ug/L	8	0.044	0.065	0.080	0.087	0.098	0.17	100%	0%	-	-
Pyrene	0.2	SLV	ug/L	8	0.00050	0.093	0.12	0.12	0.17	0.18	88%	0%	-	-
Total PAHs ^b	NA		ug/L	8	0.32	0.48	0.67	0.60	0.70	0.85	100%	NA	-	-
Total cPAH ^c	0.00012	CUL	ug/L	8	0.00031	0.021	0.033	0.032	0.051	0.059	100%	100%	0	490
Aroclor 1016	0.96	SLV	ug/L	8	0.0016	0.0016	0.0016	0.0019	0.0018	0.0032	0%	0%	-	-
Aroclor 1221	0.034	SLV	ug/L	8	0.0016	0.0016	0.0016	0.0019	0.0018	0.0032	0%	0%	-	-
Aroclor 1232	0.034	SLV	ug/L	8	0.0016	0.0016	0.0016	0.015	0.0020	0.11	13%	13%	0	0
Aroclor 1242	0.034	SLV	ug/L	8	0.0024	0.021	0.027	0.030	0.037	0.066	88%	25%	0	0
Aroclor 1248	0.034	SLV	ug/L	8	0.0016	0.0016	0.0016	0.0019	0.0018	0.0032	0%	0%	-	-
Aroclor 1254	0.033	SLV	ug/L	8	0.0055	0.012	0.015	0.016	0.020	0.032	88%	0%	-	-
Aroclor 1260	0.034	SLV	ug/L	8	0.0061	0.0066	0.0085	0.010	0.010	0.023	88%	0%	-	-
Total PCBs ^b	0.0000064	CUL	ug/L	8	0.0214	0.040	0.056	0.068	0.076	0.17	100%	100%	3340	25780

^a Clean up level from Table 17 of ROD (US EPA 2017). Screening level values from Portland Harbor JSCS (DEQ 2007).

^b Summed concentrations including total PAH and total PCB were calculated by summing all detections for a given sample. If all parameters were non-detect, the largest undetected result was used (reported at one half of the detection limit).

^c Total cPAH concentrations were calculated by summing all individual cPAH detections multiplied by the benzo(a)pyrene toxicity equivalency factors.

Undetected values are reported as one half of the detection limit and qualified with a "U" flag.

NA: Not applicable

mg/L: milligrams per liter

ug/L: micrograms per liter

cPAH: carcinogenic polycyclic aromatic hydrocarbons

PAH: polycyclic aromatic hydrocarbons

PCB: polychlorinated biphenyls

Table B-3. Portland Harbor Performance Monitoring Solids Results					
Parameter	Criteria	Source ^a	Units	WR-510	
				PHS Unit	
				7/22/2023	
				Value	Qual
Total Sediment	NA	-	%	39.8	
Total Organic Carbon (TOC)	NA	-	%	6.7	
Gravel (>2 mm)	NA	-	%	13.1	
Sand (1.0 - 2.0 mm)	NA	-	%	7.2	
Sand (0.5-1.0 mm)	NA	-	%	16.6	
Sand (0.25 -0.5 mm)	NA	-	%	20.0	
Sand (0.125 - 0.250 mm)	NA	-	%	12.4	
Sand (0.0625 - 0.125 mm)	NA	-	%	6.5	
Silt (0.0039 - 0.0625 mm)	NA	-	%	15.5	
Clay (< 0.0039 mm)	NA	-	%	1.9	
Arsenic	3	CUL	mg/kg	2.2	
Cadmium	0.51	CUL	mg/kg	1.7	
Copper	359	CUL	mg/kg	61.0	
Lead	196	CUL	mg/kg	43.2	
Nickel	48.6	SLV	mg/kg	23.2	
Zinc	459	CUL	mg/kg	781	
2-Methylnaphthalene	200	SLV	ug/kg	37.0	
Acenaphthene	300	SLV	ug/kg	33.0	
Acenaphthylene	200	SLV	ug/kg	13.0	
Anthracene	845	SLV	ug/kg	75.0	
Benzo(a)anthracene	1050	SLV	ug/kg	330	
Benzo(a)pyrene	1450	SLV	ug/kg	250	
Benzo(b)fluoranthene	NA	-	ug/kg	370	
Benzo(g,h,i)perylene	300	SLV	ug/kg	210	
Benzo(k)fluoranthene	13000	SLV	ug/kg	120	
Chrysene	1290	SLV	ug/kg	460	
Dibenzo(a,h)anthracene	1300	SLV	ug/kg	26.0	
Fluoranthene	2230	SLV	ug/kg	1100	
Fluorene	536	SLV	ug/kg	85.0	
Indeno(1,2,3-cd)pyrene	100	SLV	ug/kg	130	
Naphthalene	561	SLV	ug/kg	34.0	
Phenanthrene	1170	SLV	ug/kg	880	
Pyrene	1520	SLV	ug/kg	1000	
Total PAHs ^b	23000	CUL	ug/kg	5153	
Total cPAH ^c	12	CUL	ug/kg	352.2	
Bis(2-ethylhexyl) Phthalate	135	CUL	ug/kg	3300	J
Butyl Benzyl Phthalate	NA	-	ug/kg	170	
Di-n-butyl Phthalate	60	SLV	ug/kg	69	UJ
Di-n-octyl Phthalate	NA	-	ug/kg	25	U
Diethyl Phthalate	600	SLV	ug/kg	25	
Dimethyl Phthalate	NA	-	ug/kg	46	
Aroclor 1016	530	SLV	ug/kg	4.7	U
Aroclor 1221	NA	-	ug/kg	4.7	U
Aroclor 1232	NA	-	ug/kg	4.7	UJ
Aroclor 1242	NA	-	ug/kg	160	J
Aroclor 1248	1500	SLV	ug/kg	4.7	U
Aroclor 1254	300	SLV	ug/kg	47	J
Aroclor 1260	200	SLV	ug/kg	32	
Total PCBs ^b	9	CUL	ug/kg	239	

^a Clean up level from Table 17 of ROD (US EPA 2017). Screening level values from Portland Harbor JSCS (DEQ 2007).

^b Summed concentrations including total cPAH, total PAH, and total PCBs were calculated by summing all detections for a given sample. If all parameters were non-detect, the largest undetected result was used (reported at one half of the detection limit).

^c Total cPAH concentrations were calculated by summing all individual cPAH detections multiplied by the benzo(a)pyrene toxicity equivalency factors.

Undetected values are reported as one half of the detection limit and qualified with a "U" flag.

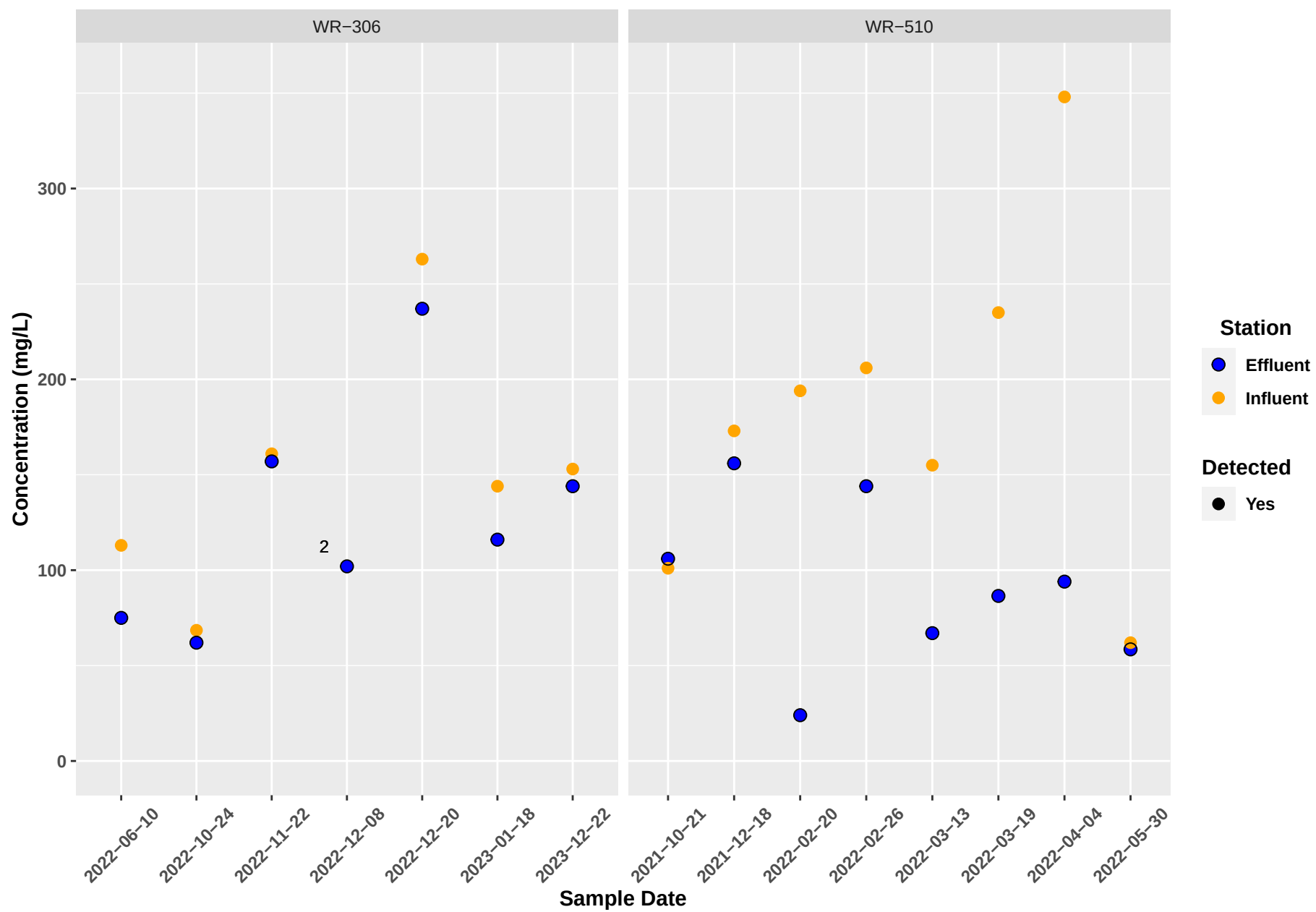
NA: Not applicable

mg/kg: milligrams per kilogram

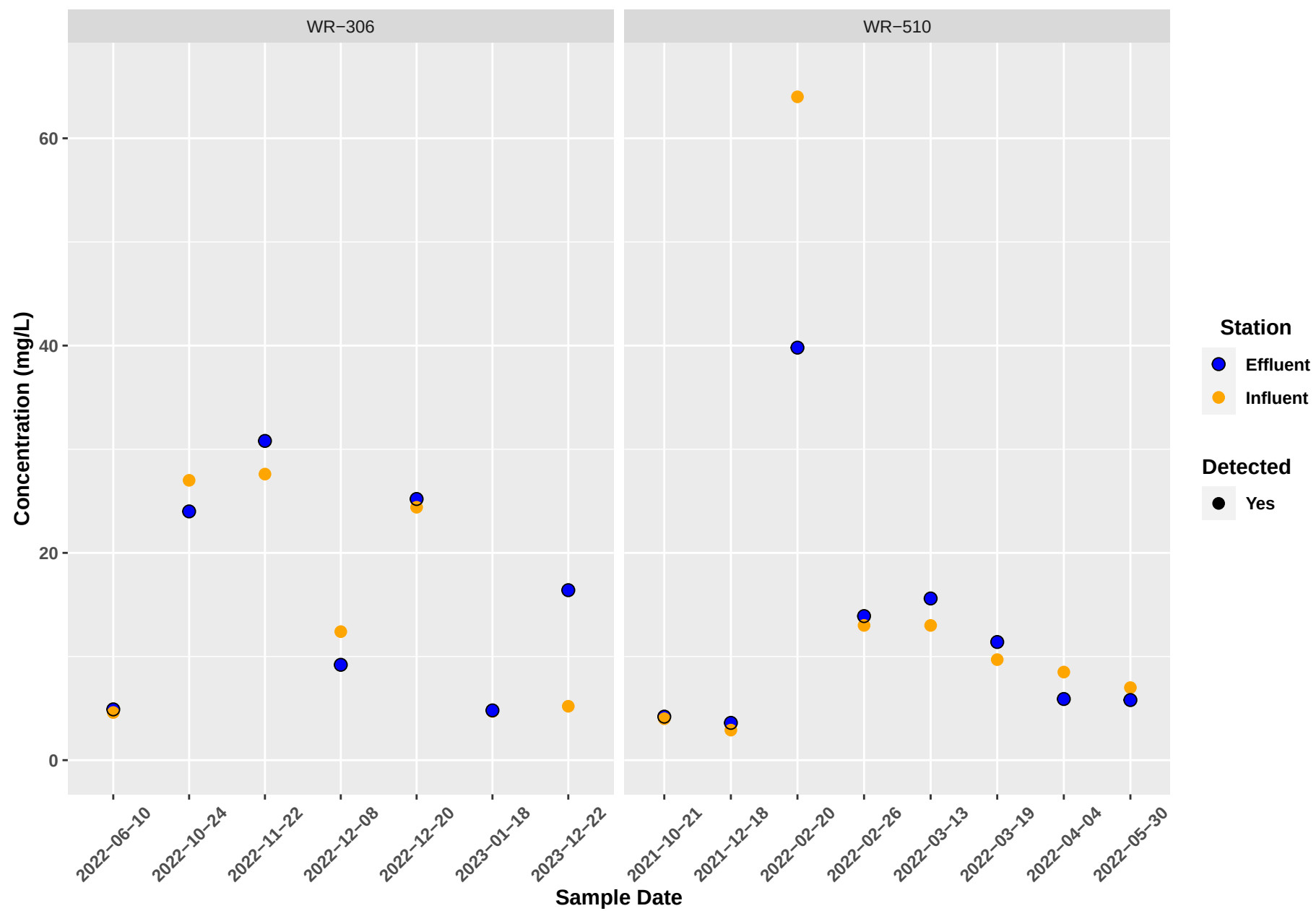
ug/kg: micrograms per kilogram

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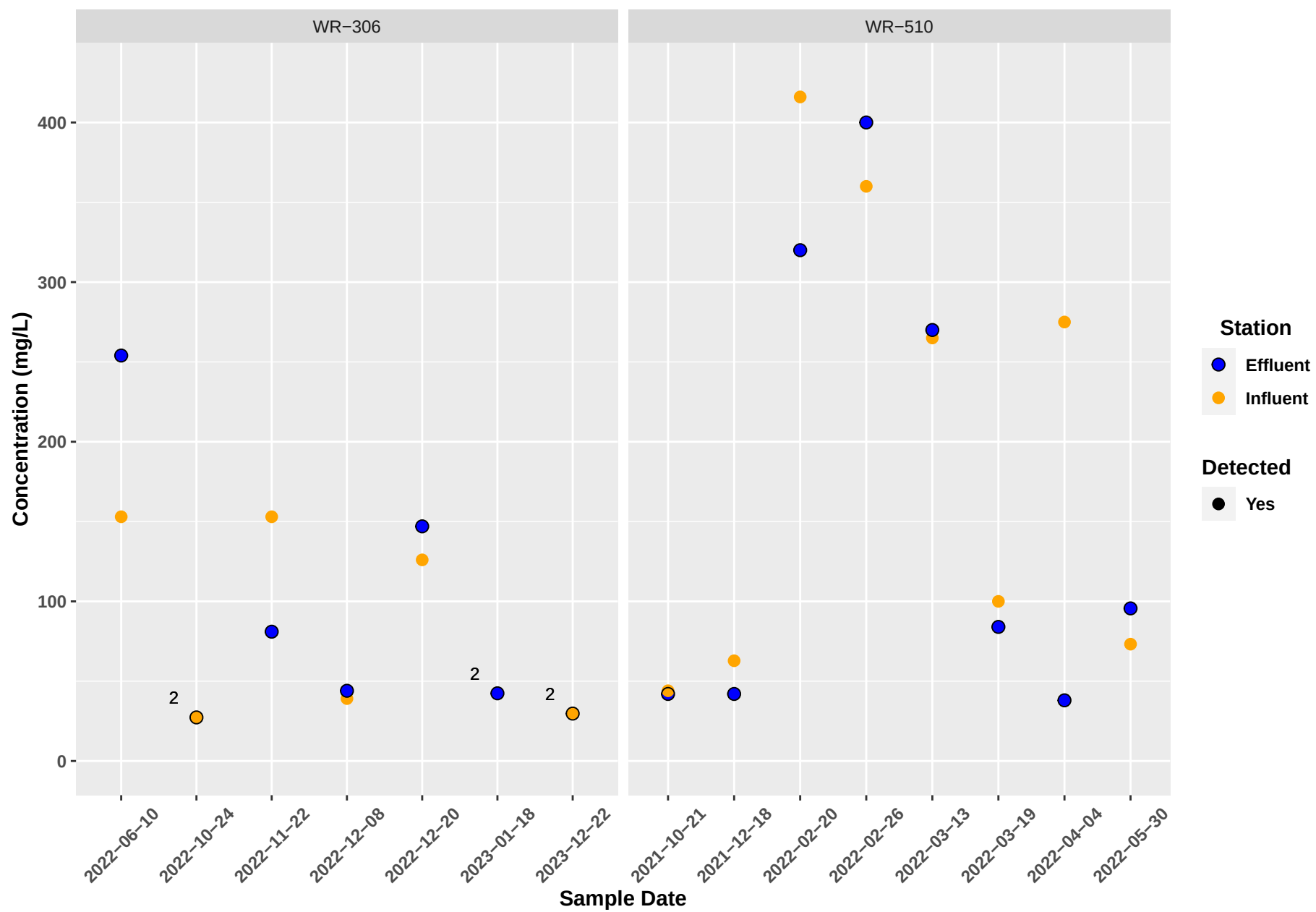
Total Suspended Solids



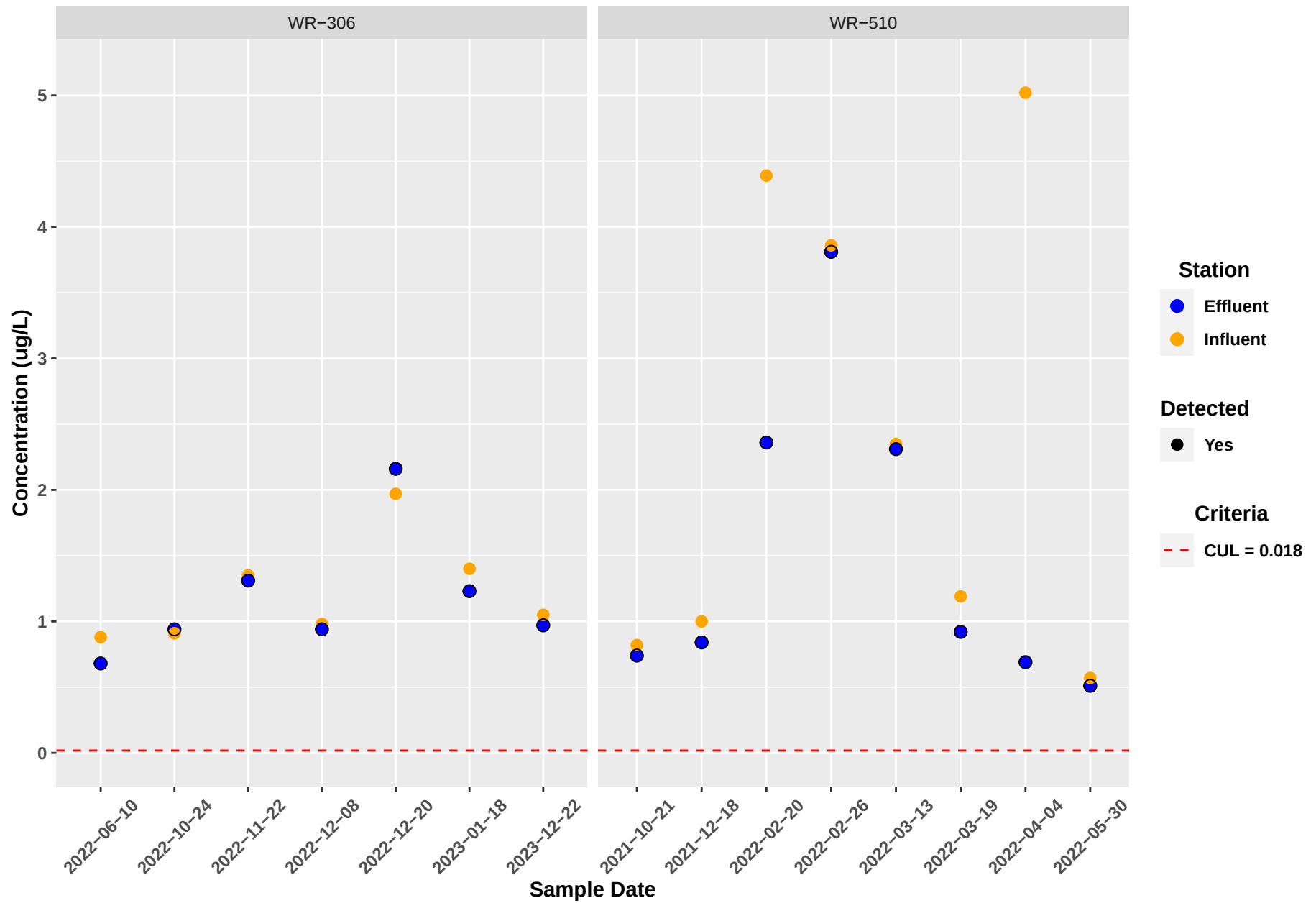
Total Organic Carbon (TOC)



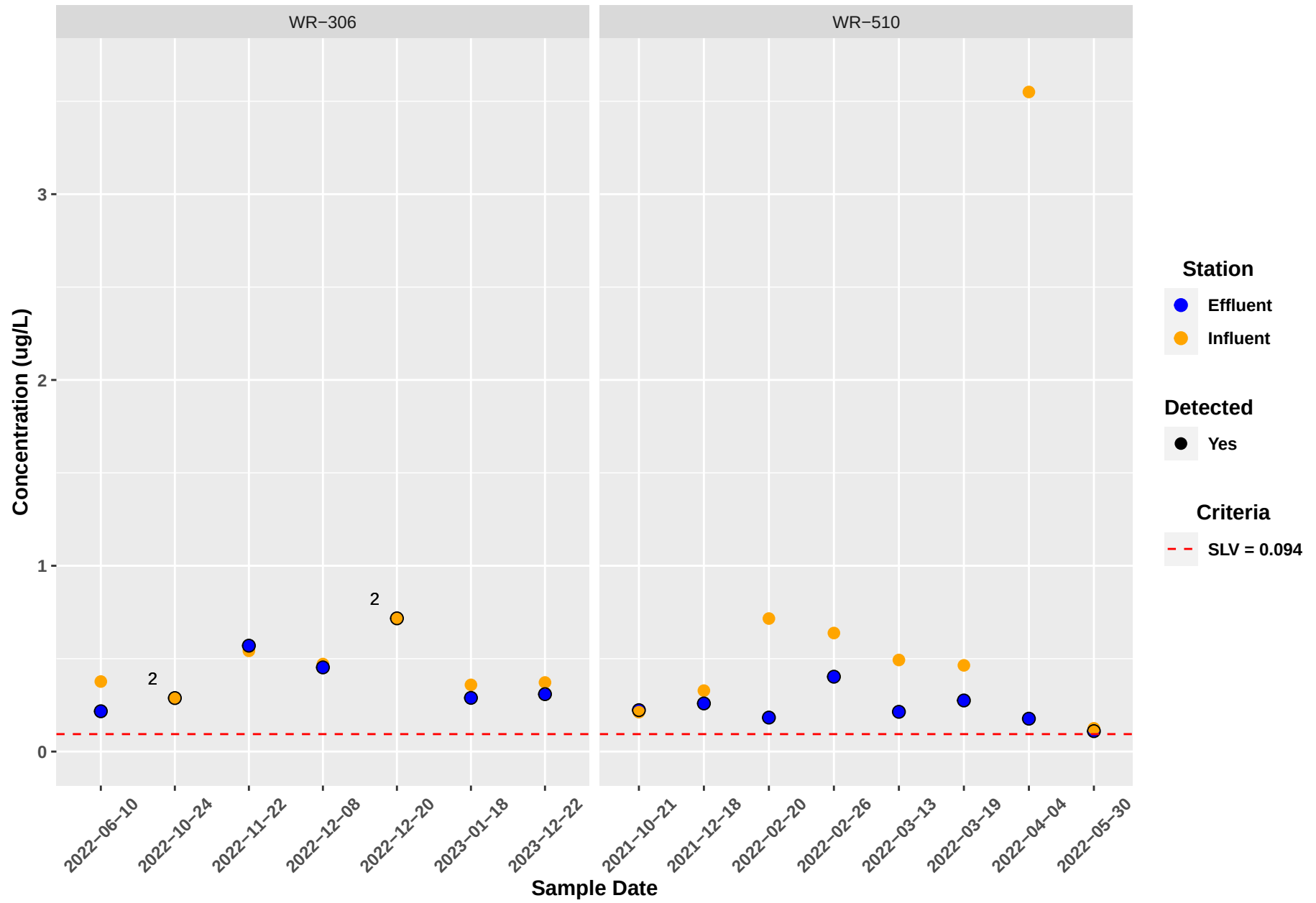
Hardness



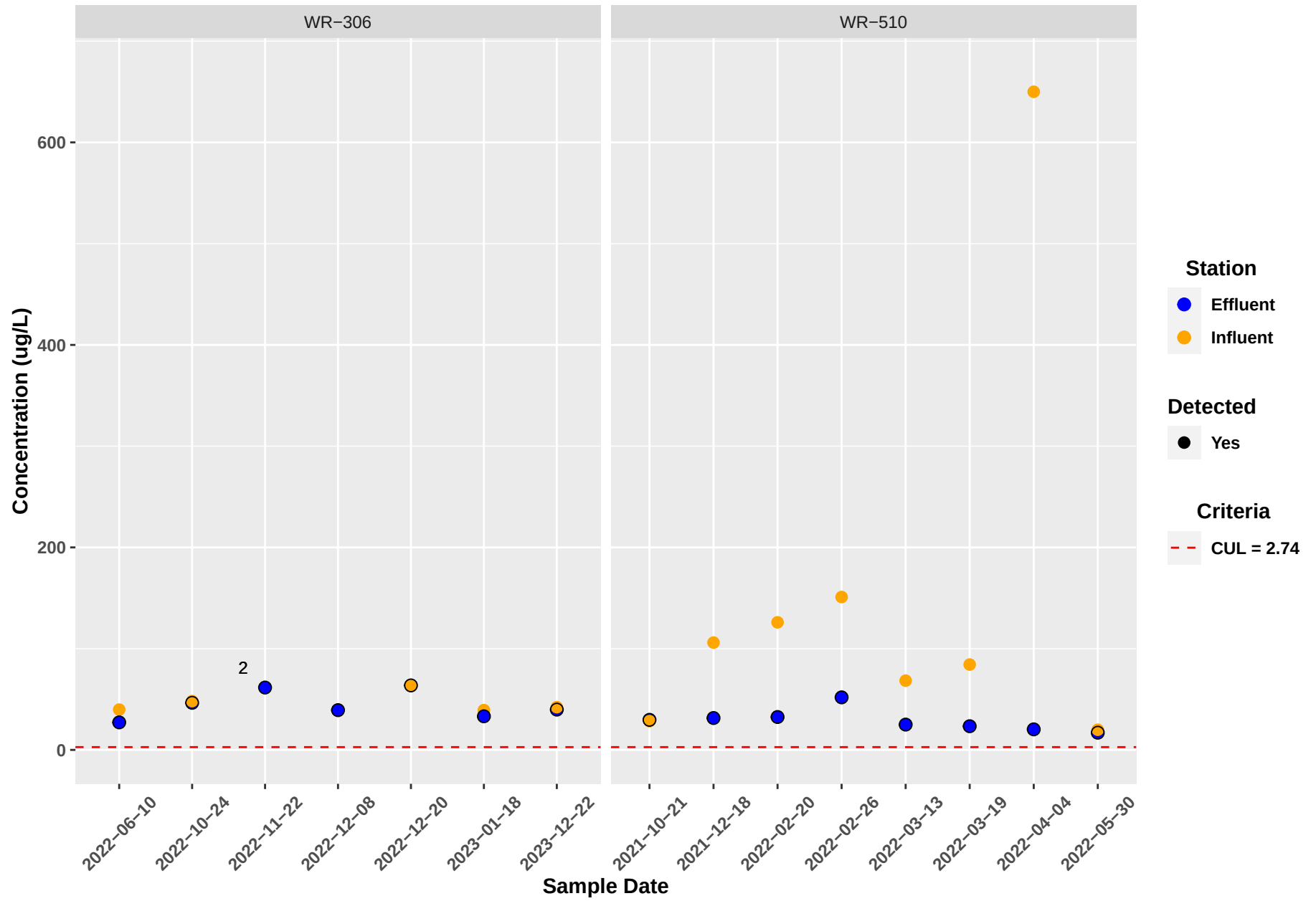
Arsenic



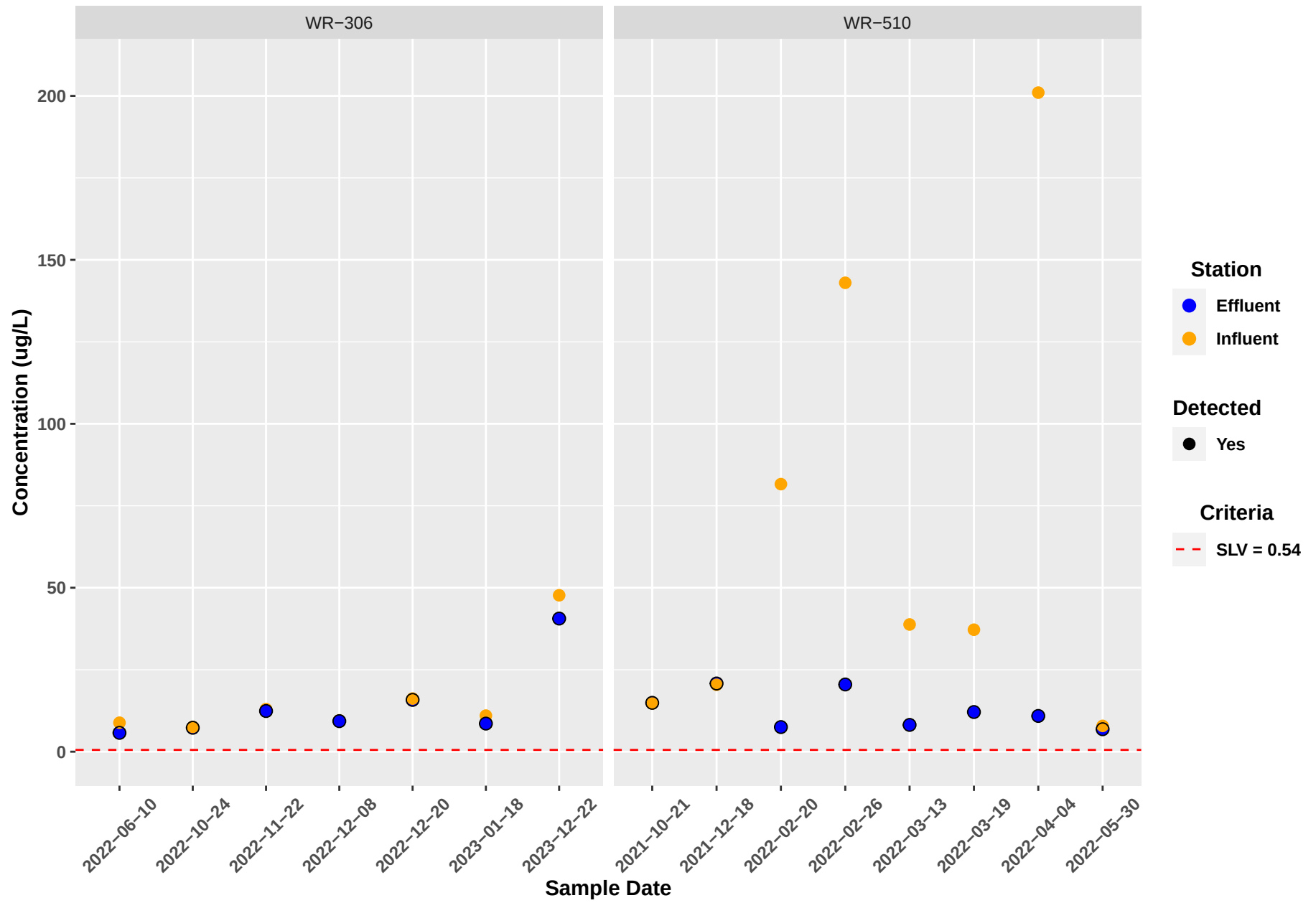
Cadmium



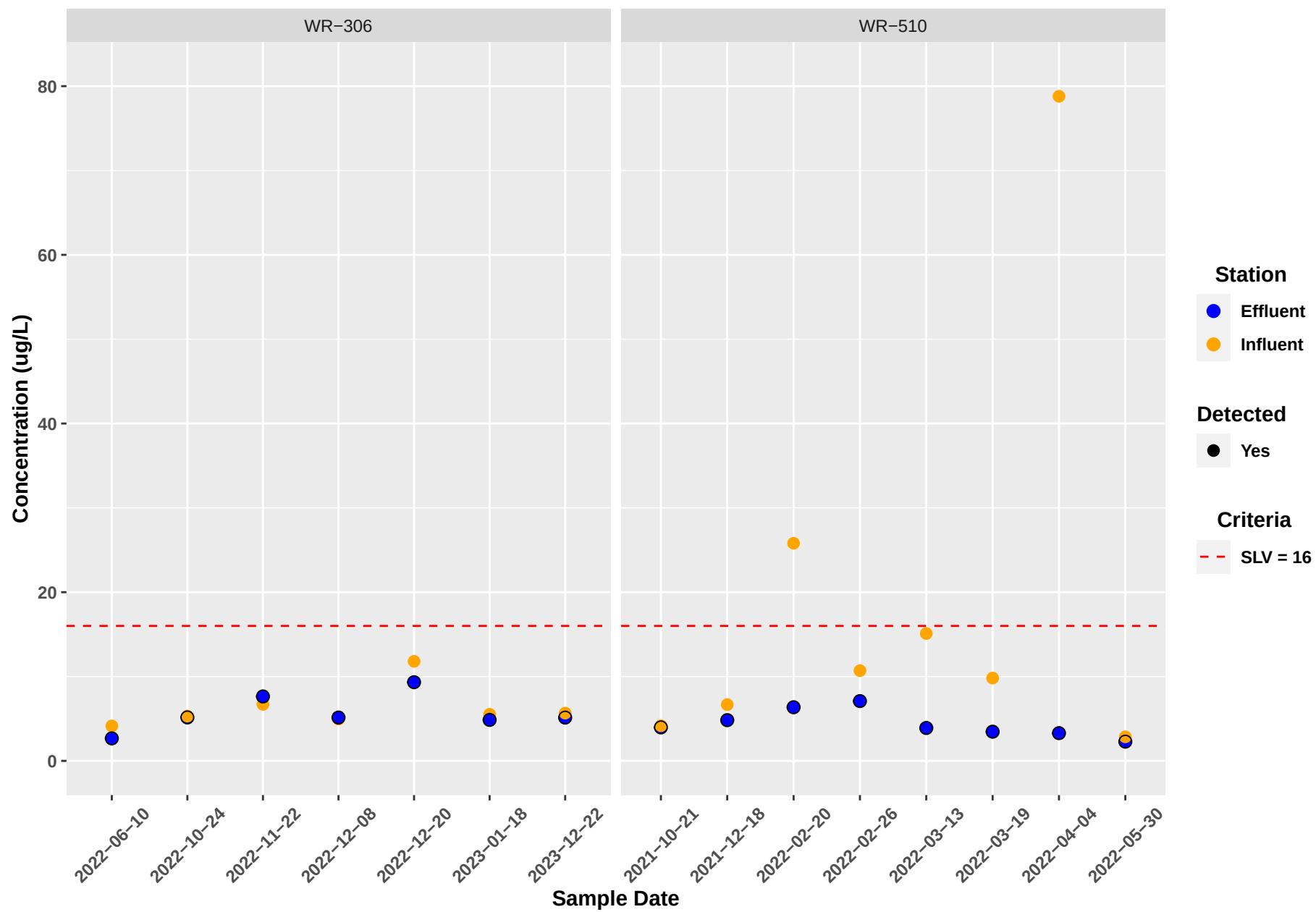
Copper



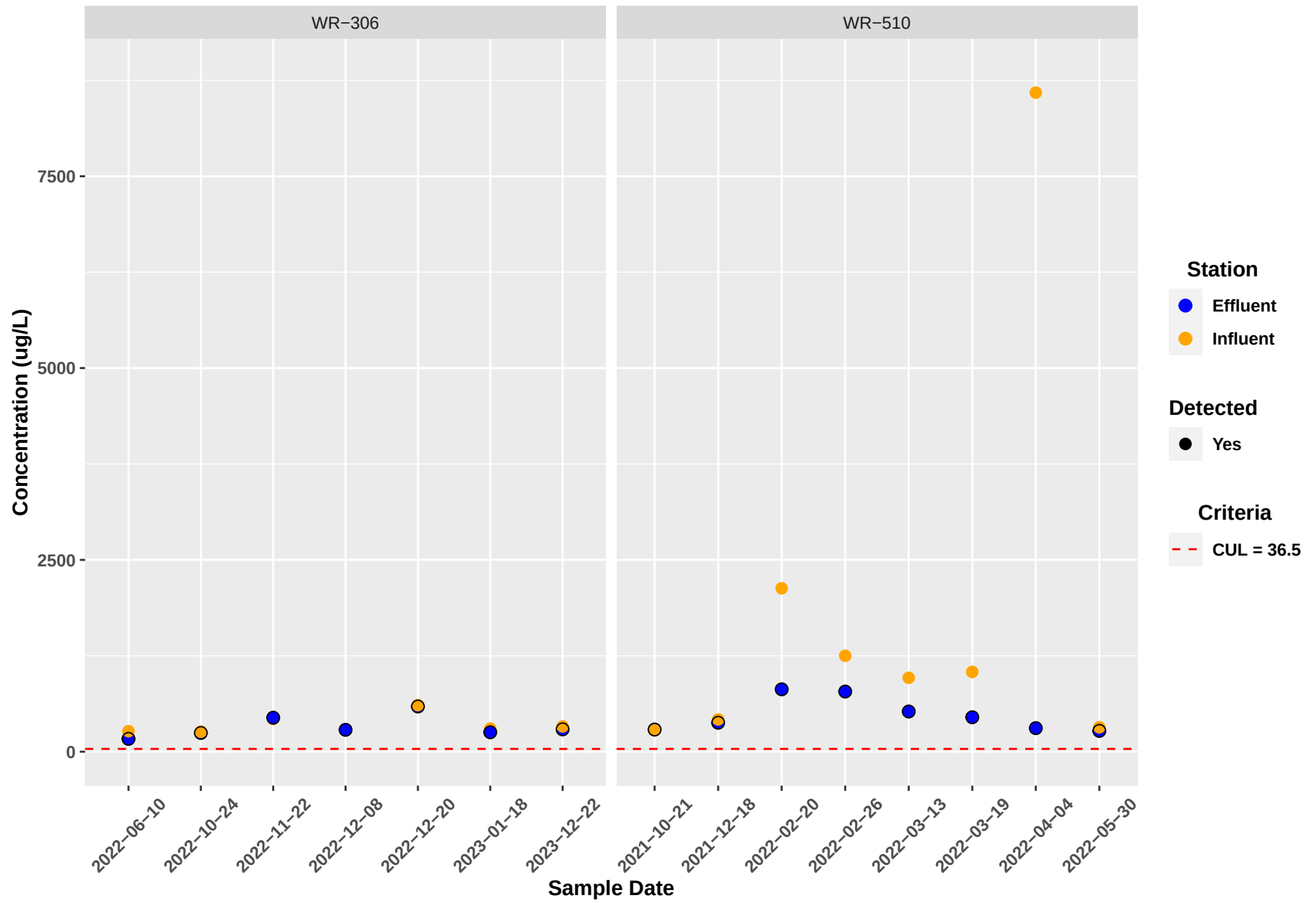
Lead



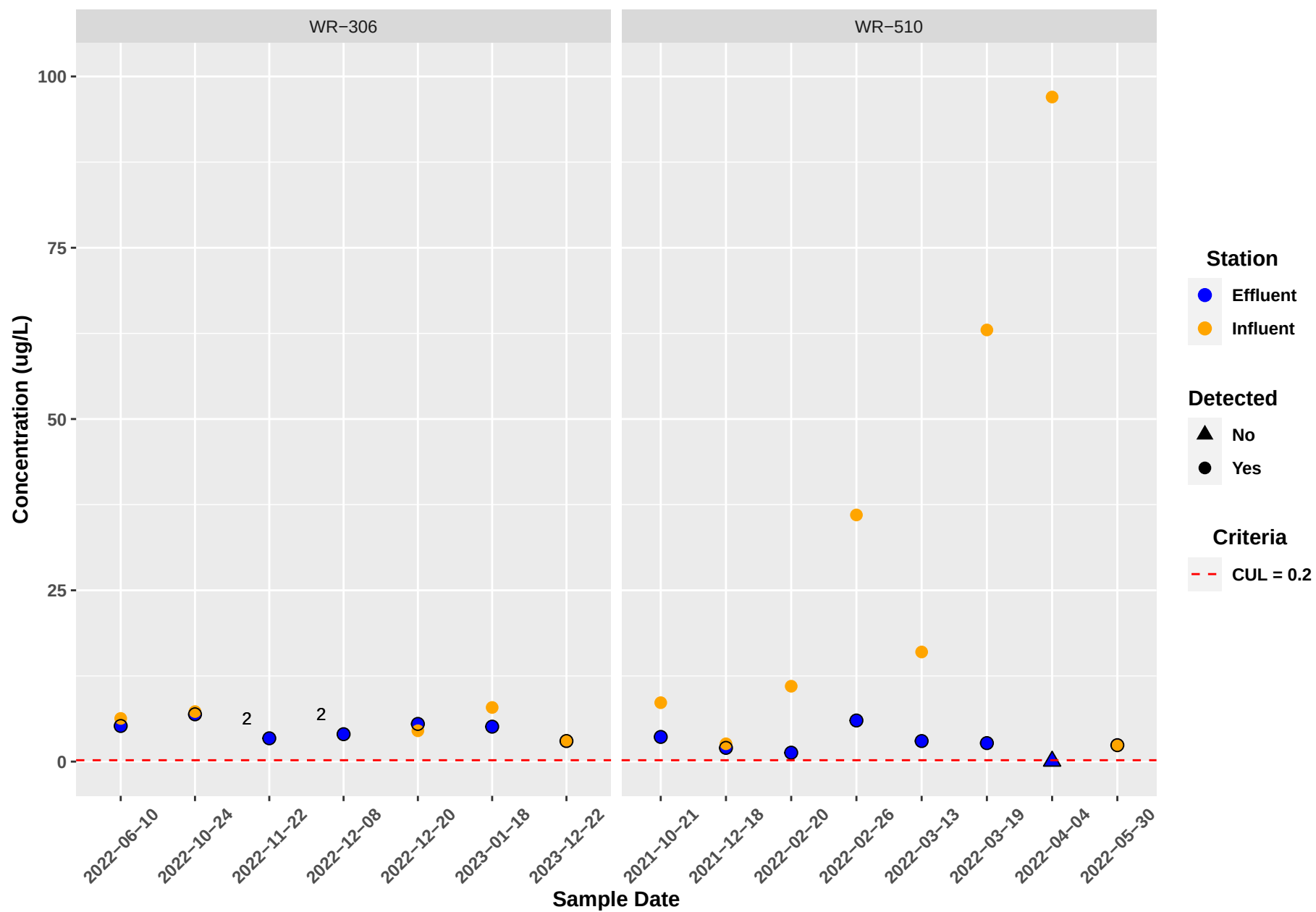
Nickel



Zinc

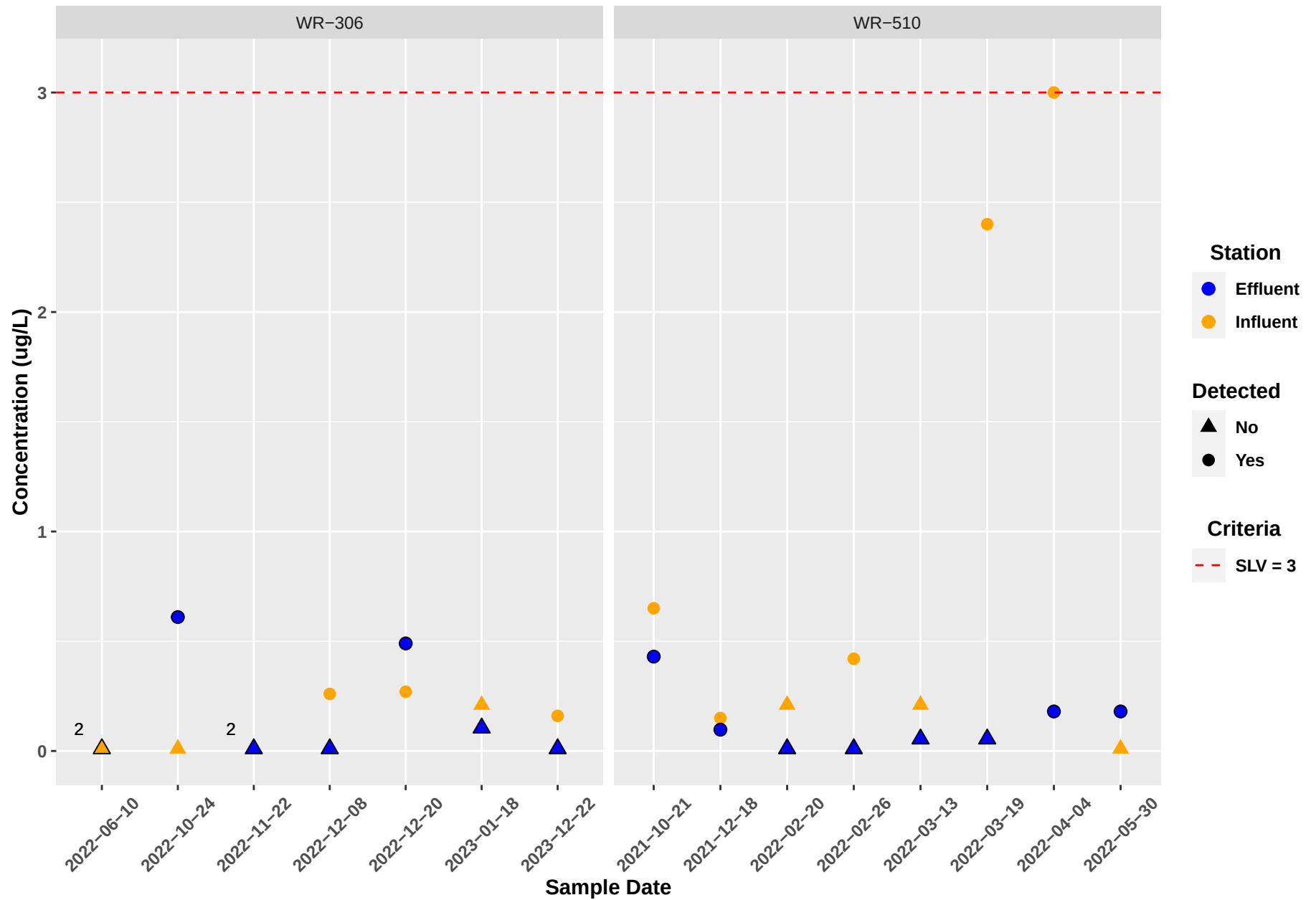


Bis(2-ethylhexyl) Phthalate



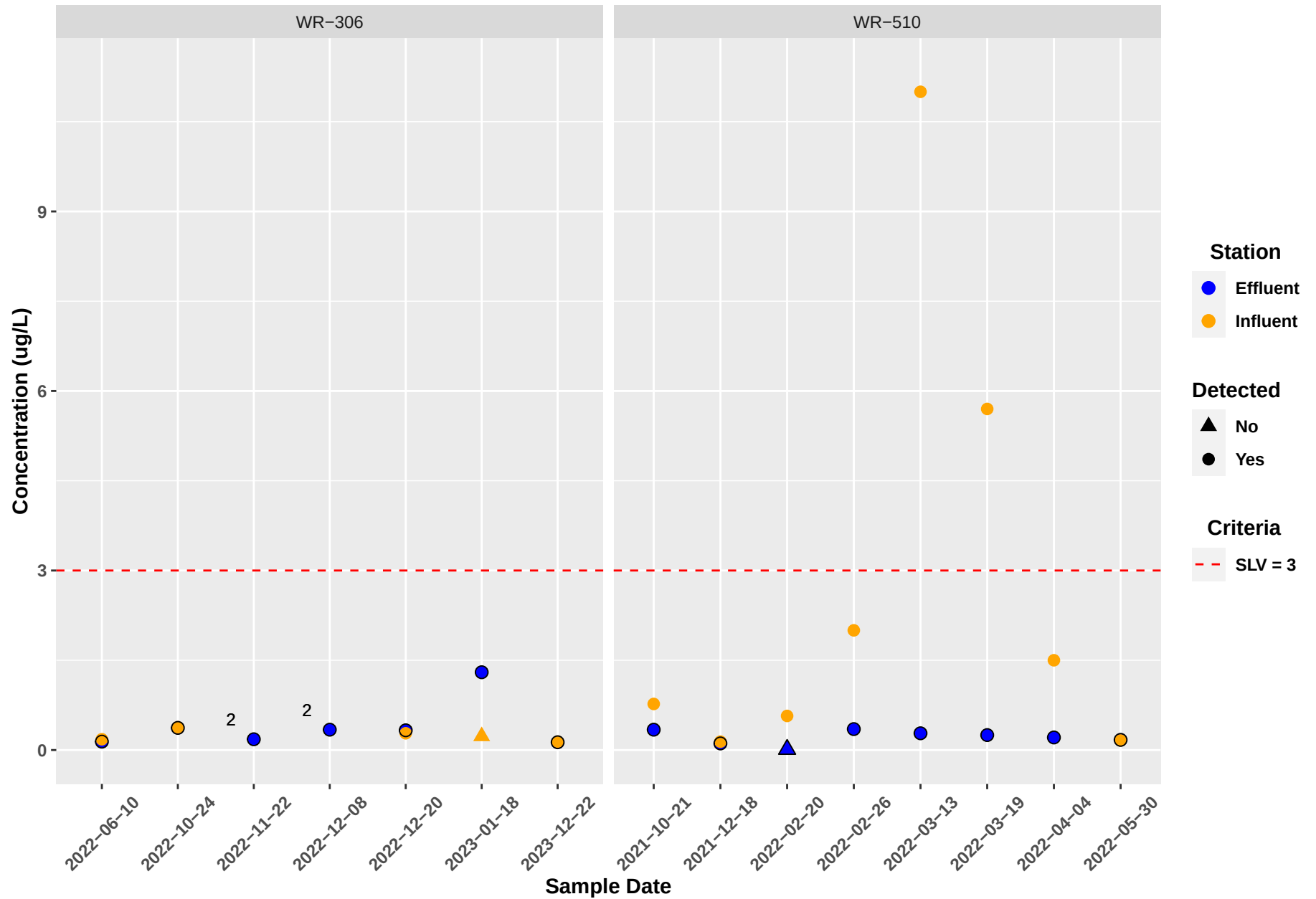
non-detects shown as 1/2 detection limit

Butyl Benzyl Phthalate



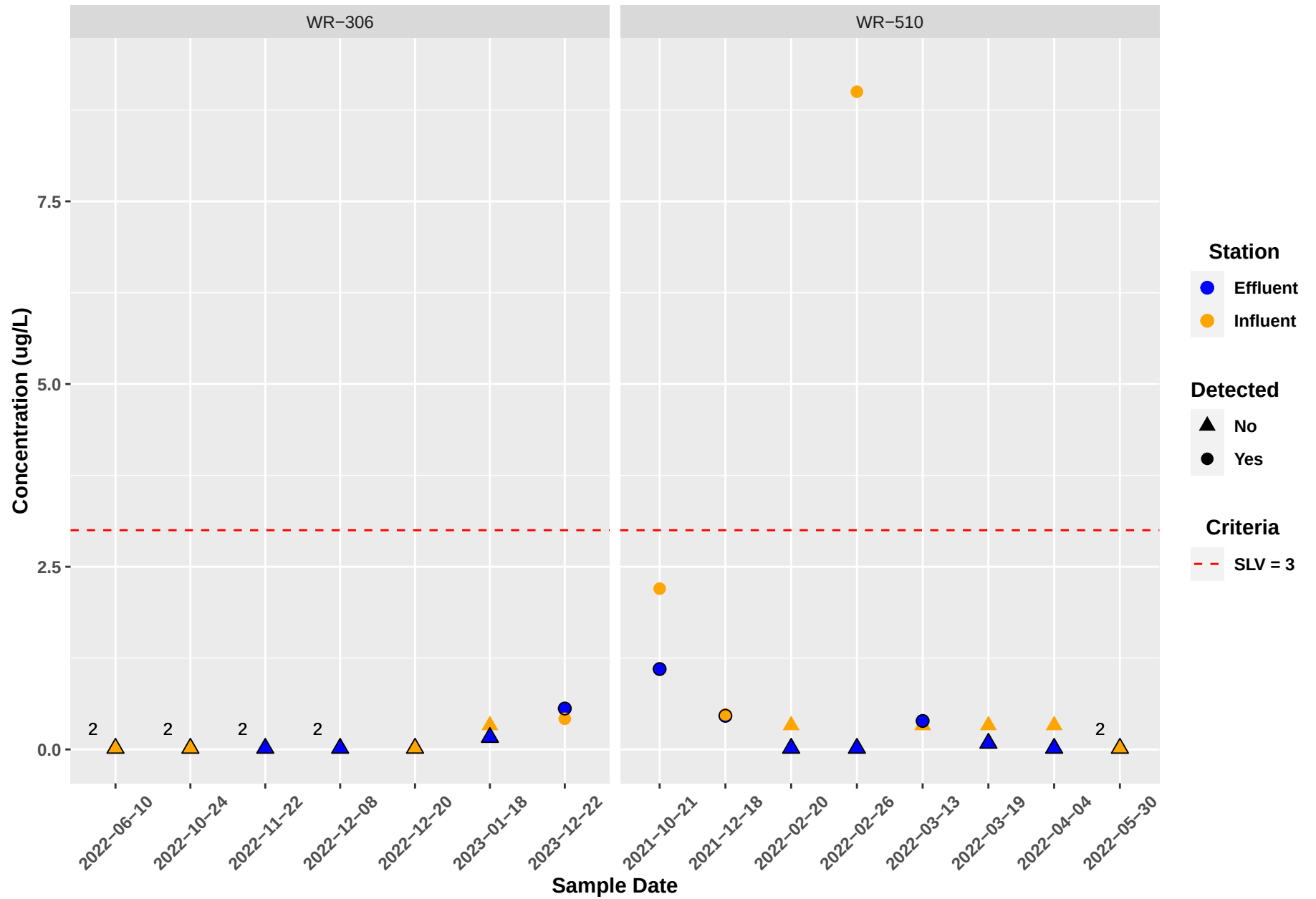
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Di-n-butyl Phthalate



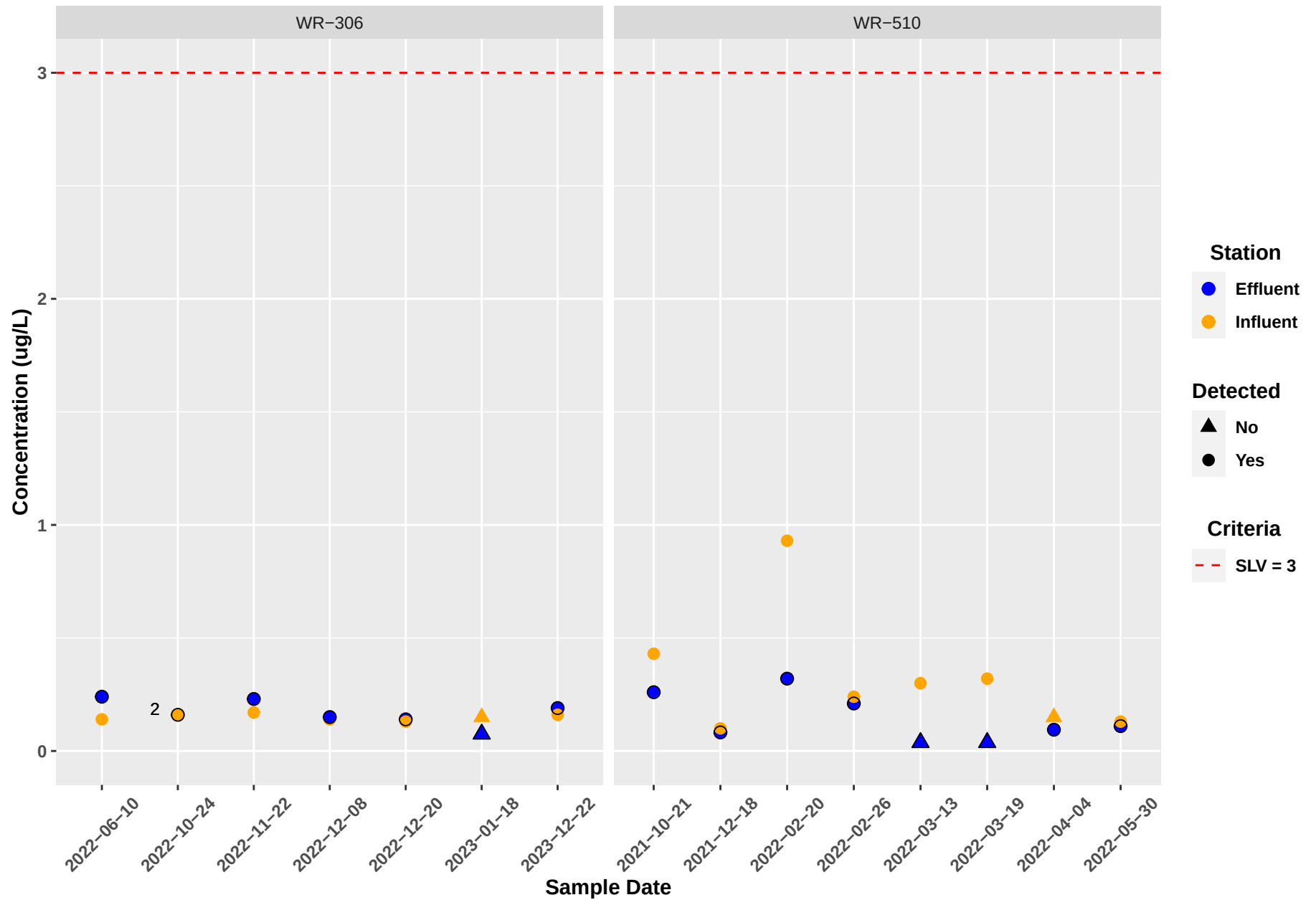
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Di-n-octyl Phthalate



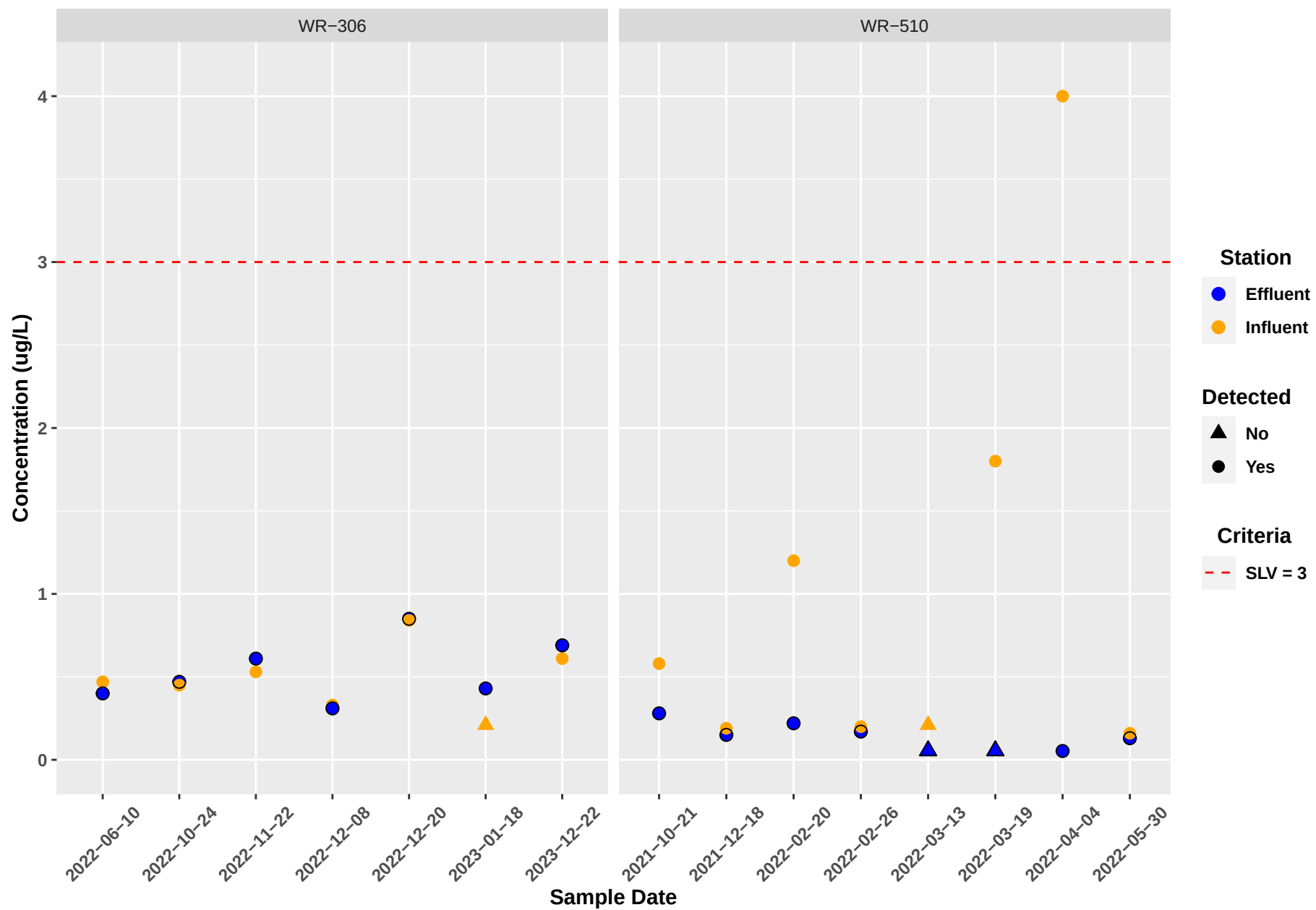
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Diethyl Phthalate



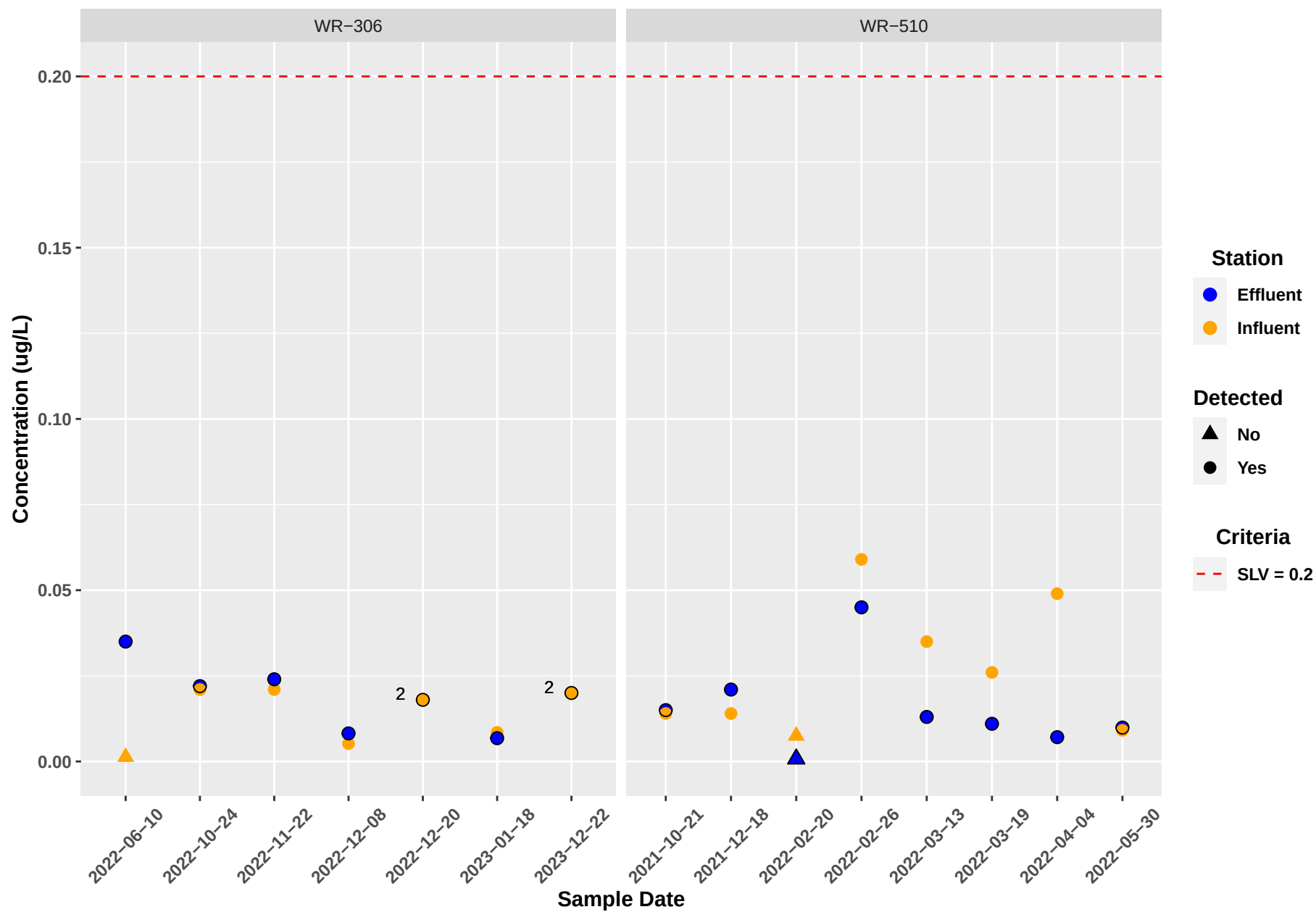
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Dimethyl Phthalate



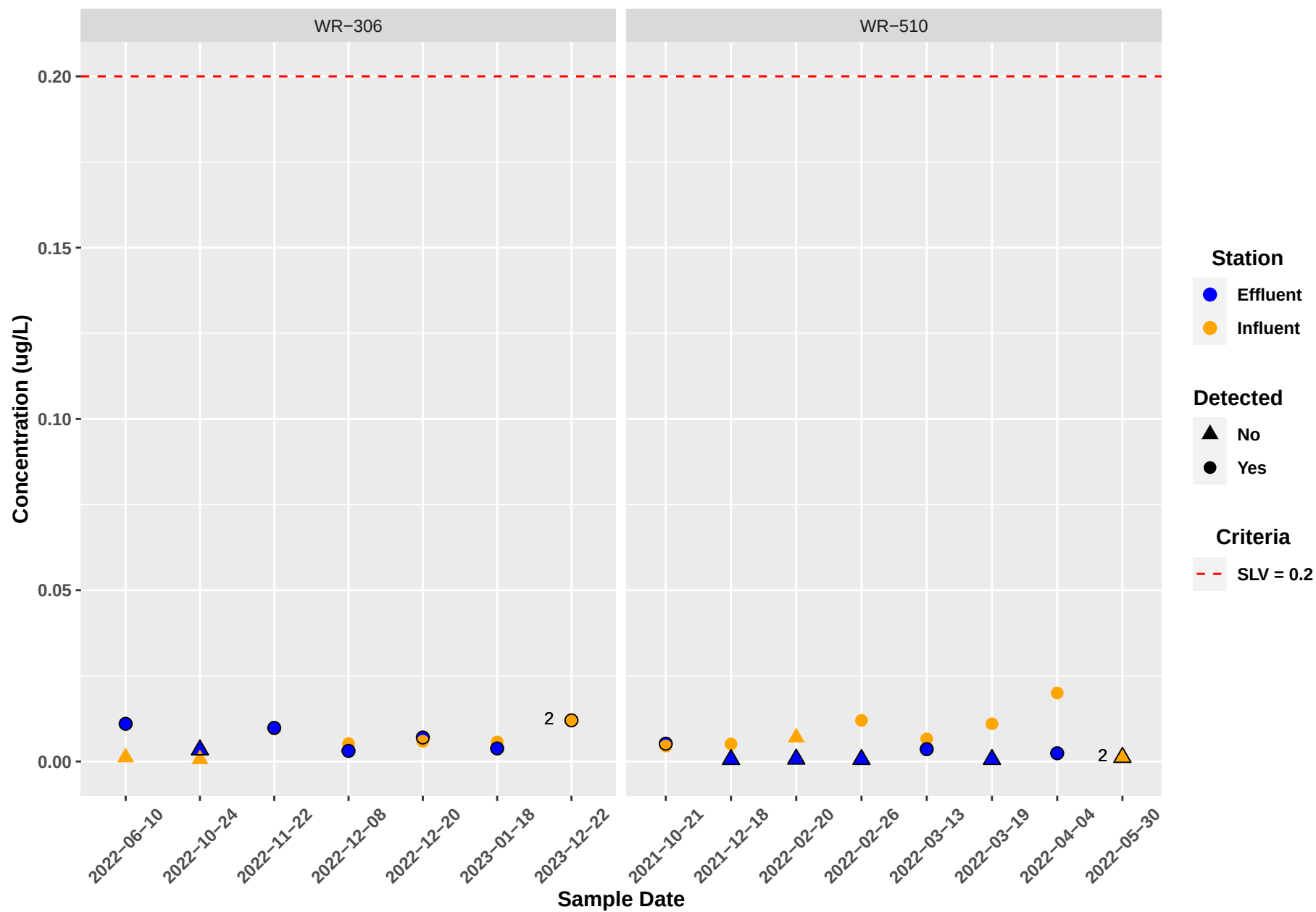
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2-Methylnaphthalene



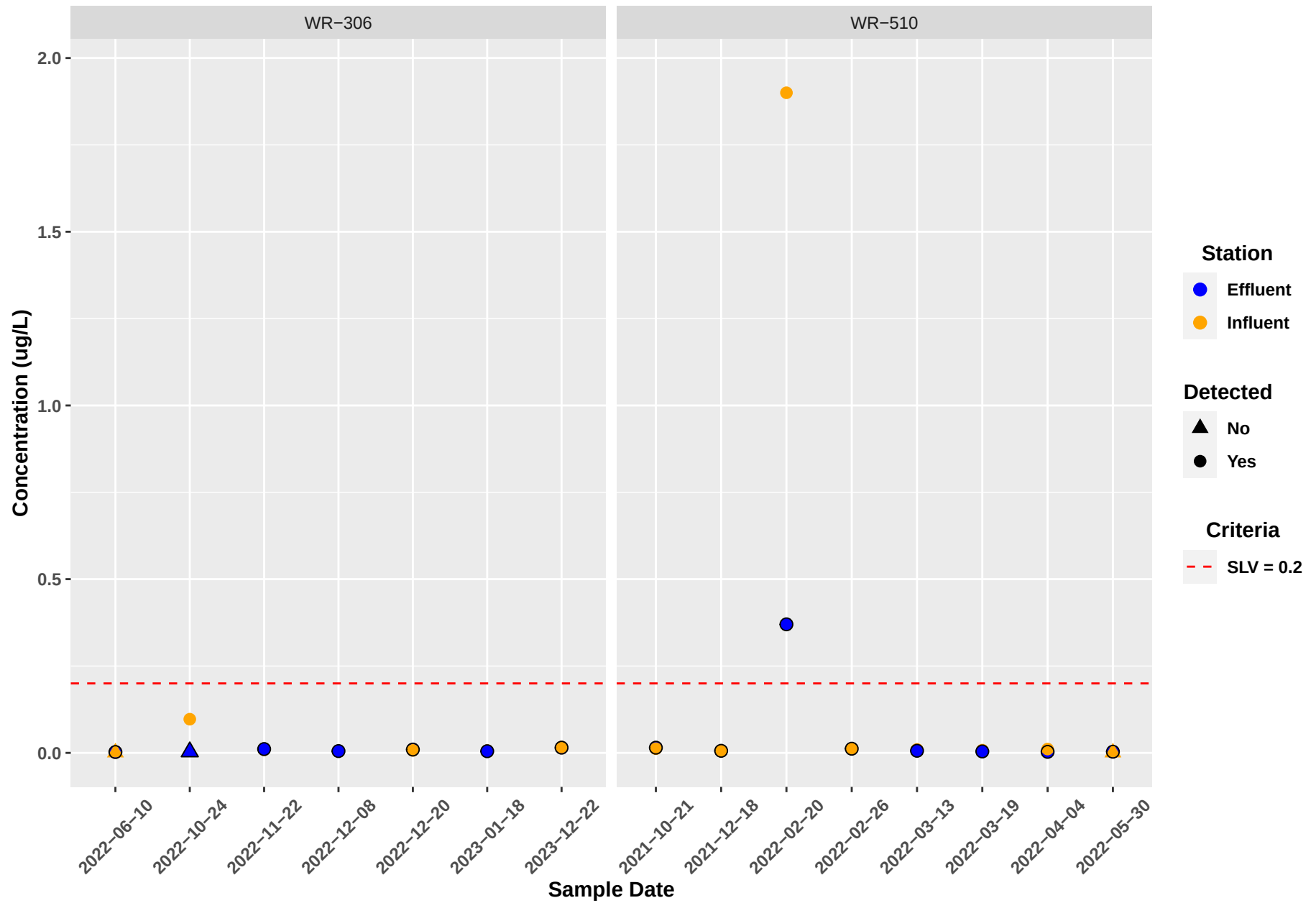
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Acenaphthene



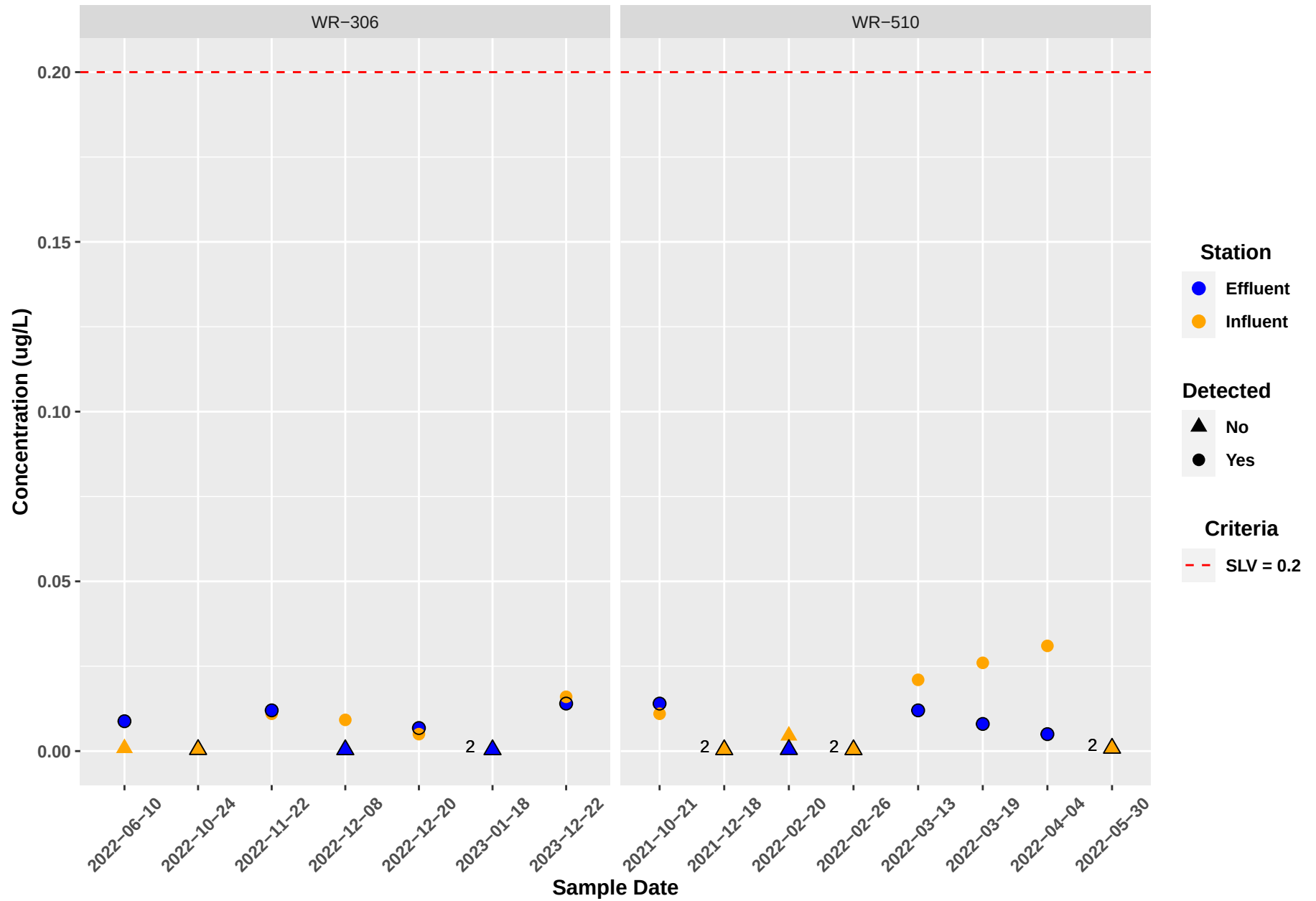
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Acenaphthylene



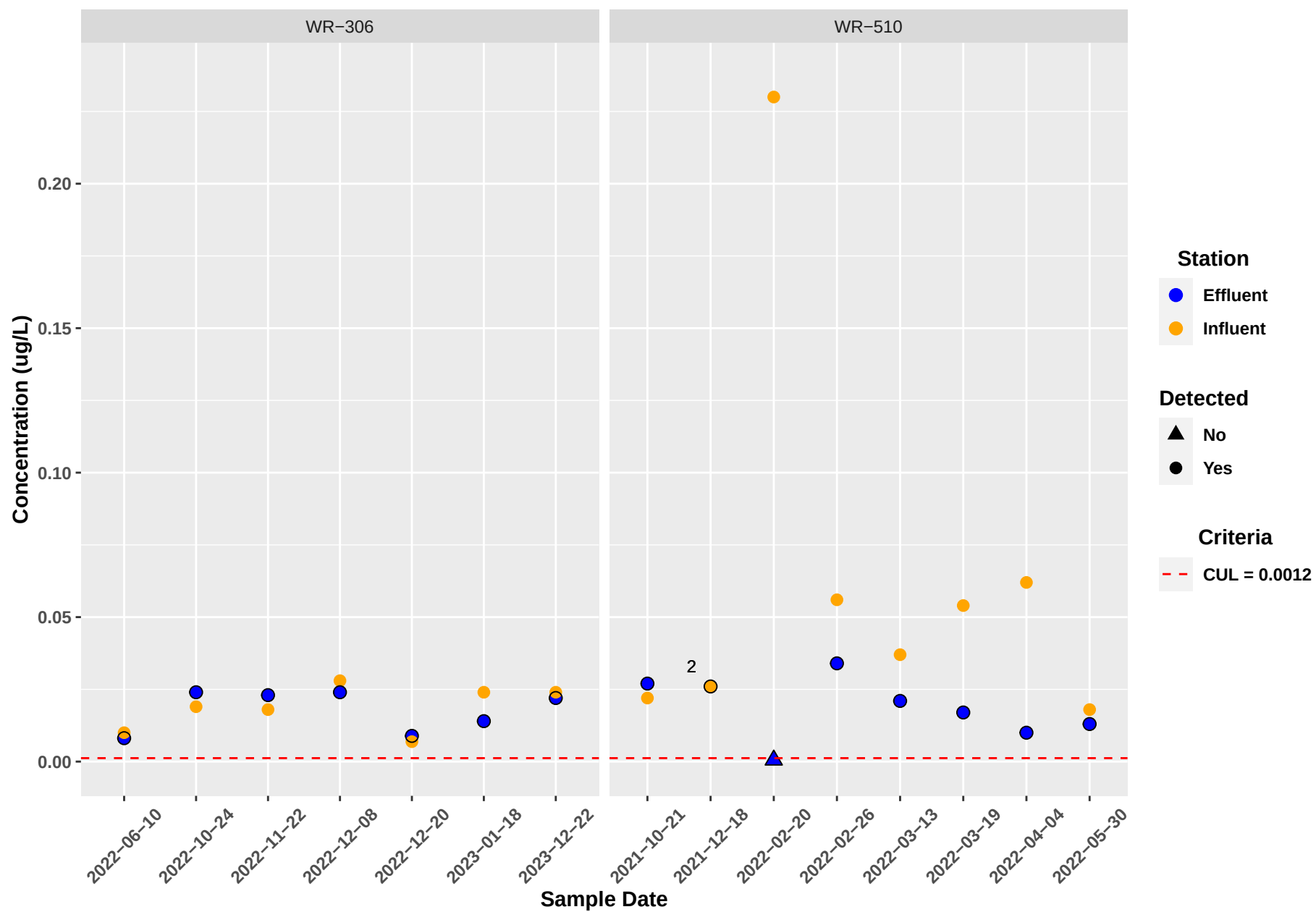
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Anthracene



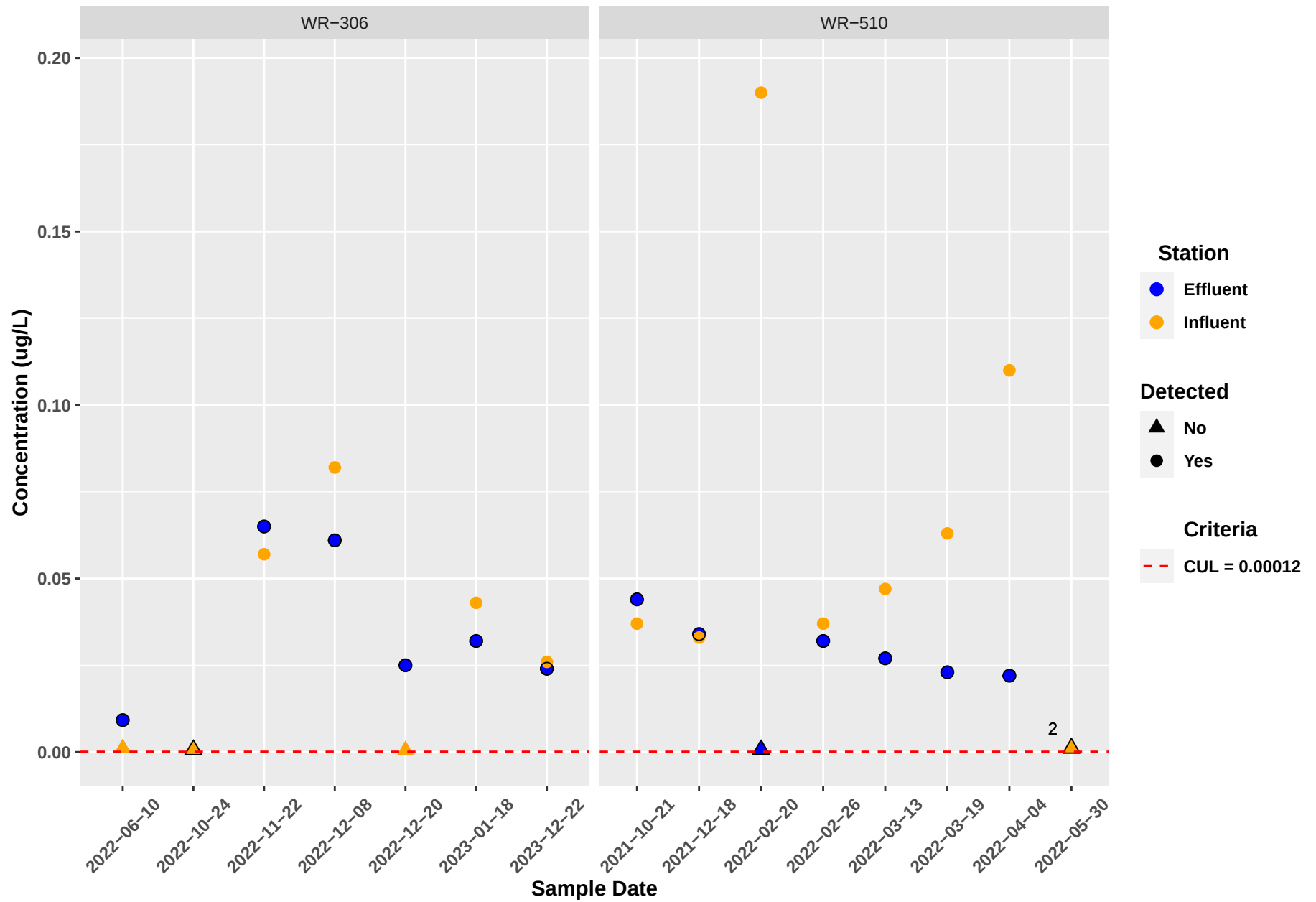
non-detects shown as 1/2 detection limit

Benzo(a)anthracene



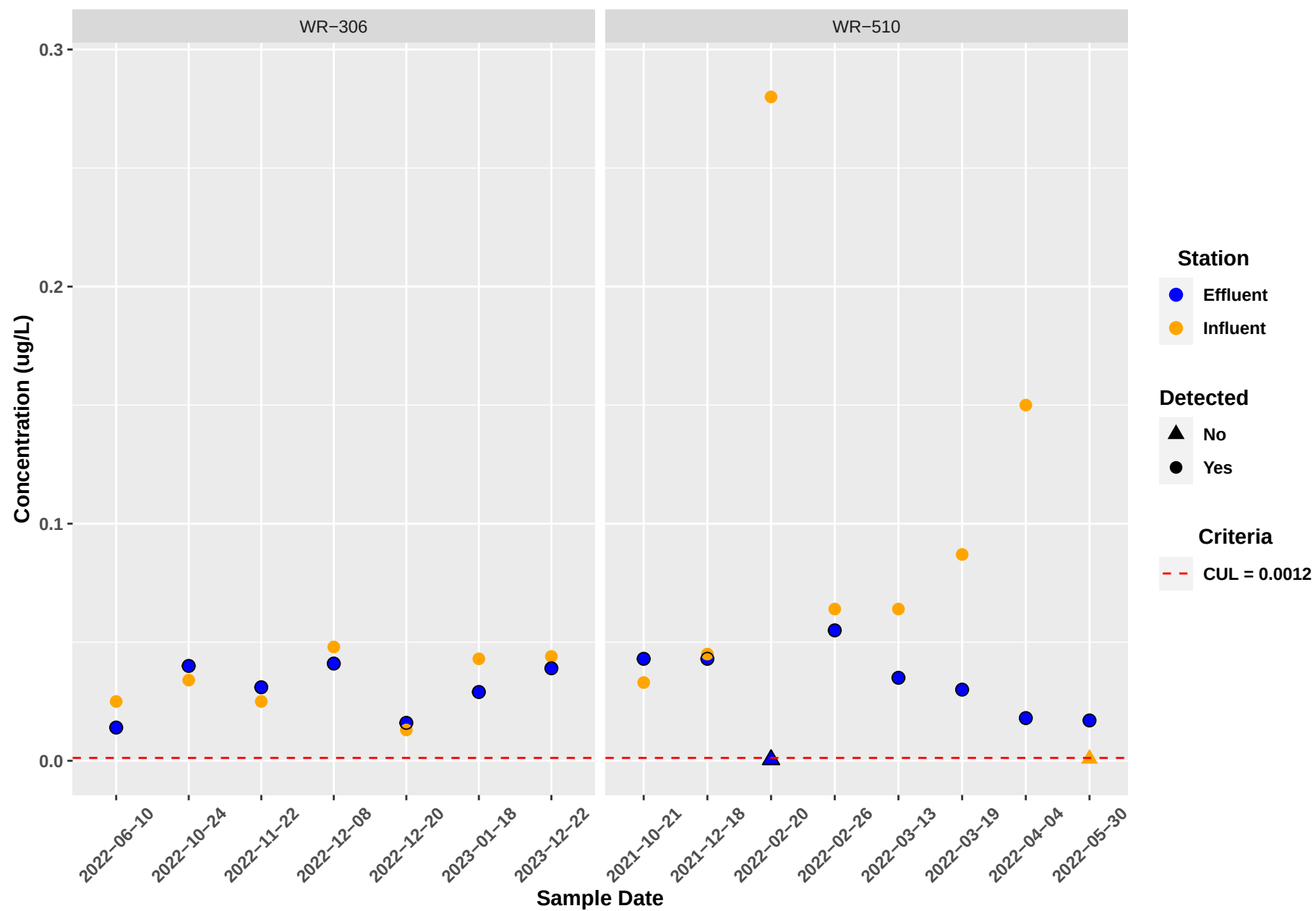
non-detects shown as 1/2 detection limit

Benzo(a)pyrene



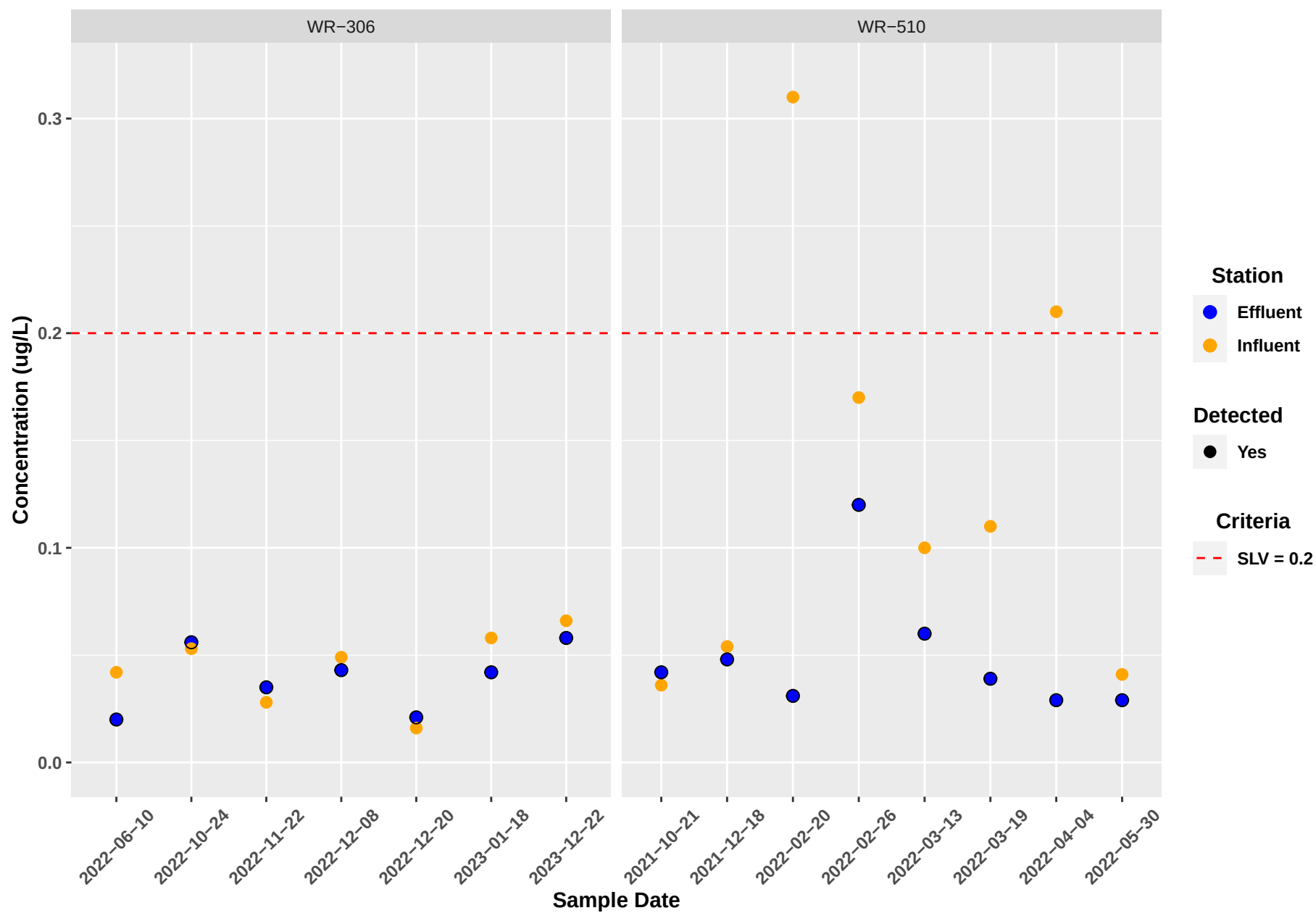
non-detects shown as 1/2 detection limit

Benzo(b)fluoranthene

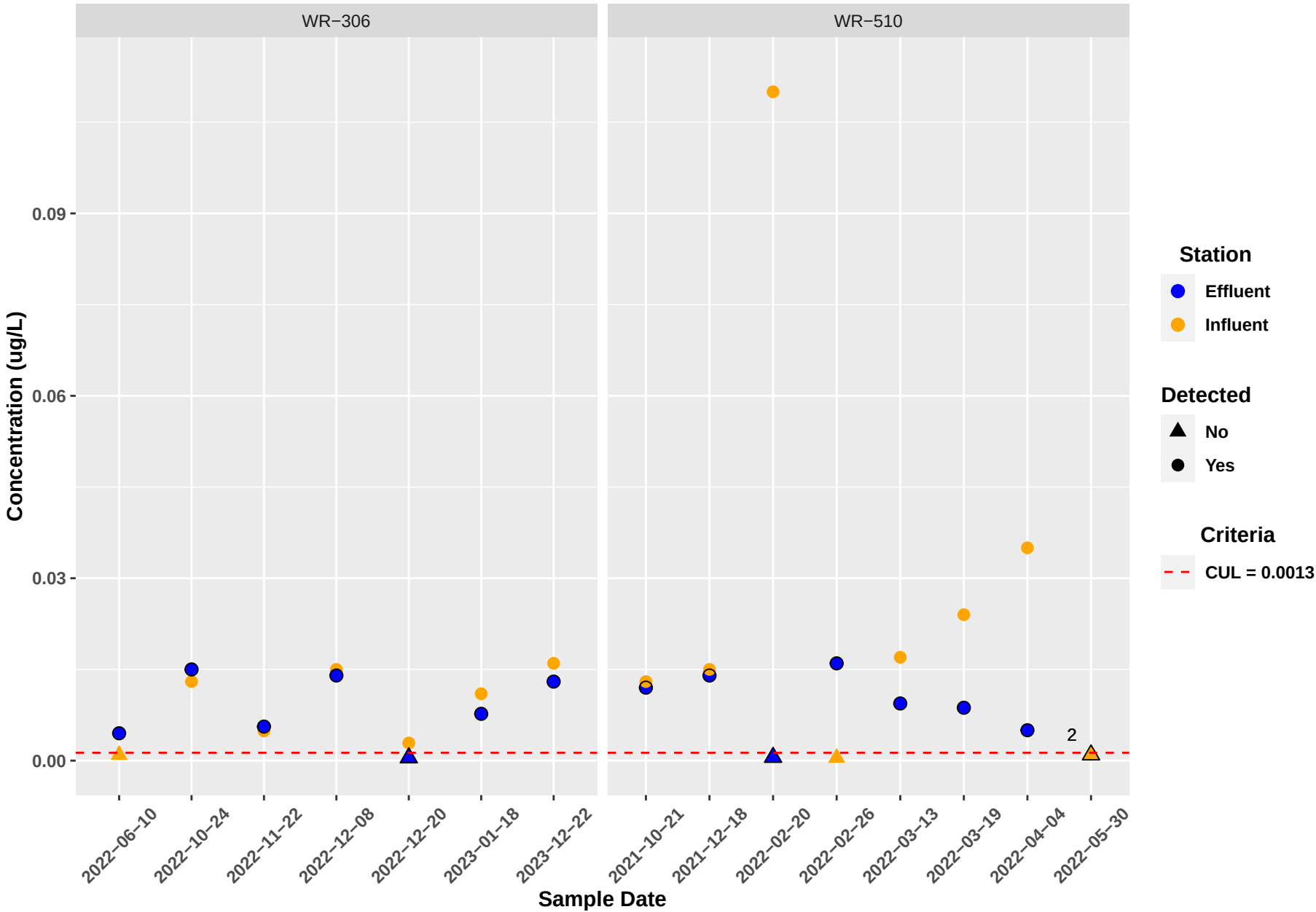


non-detects shown as 1/2 detection limit

Benzo(g,h,i)perylene

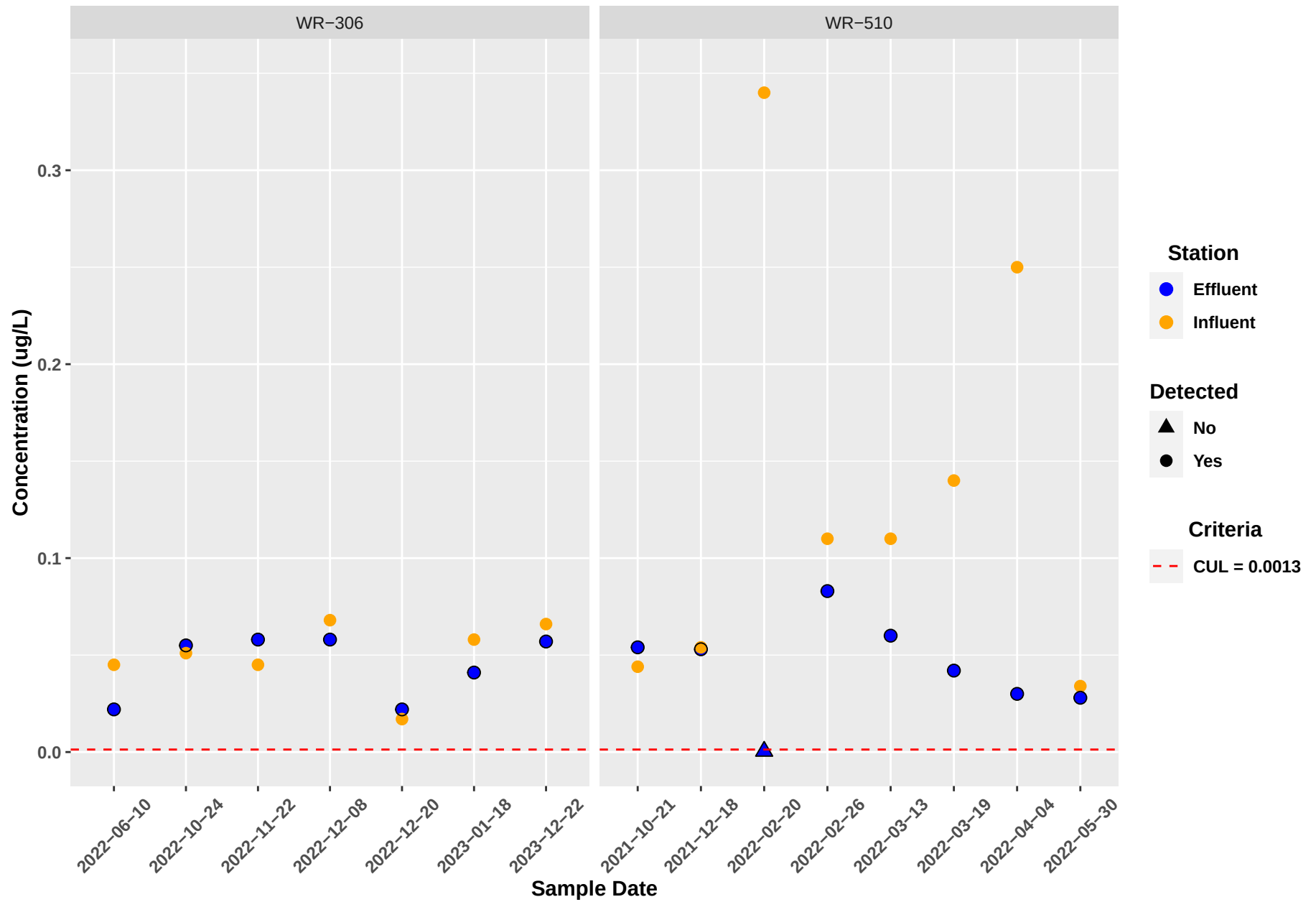


Benzo(k)fluoranthene



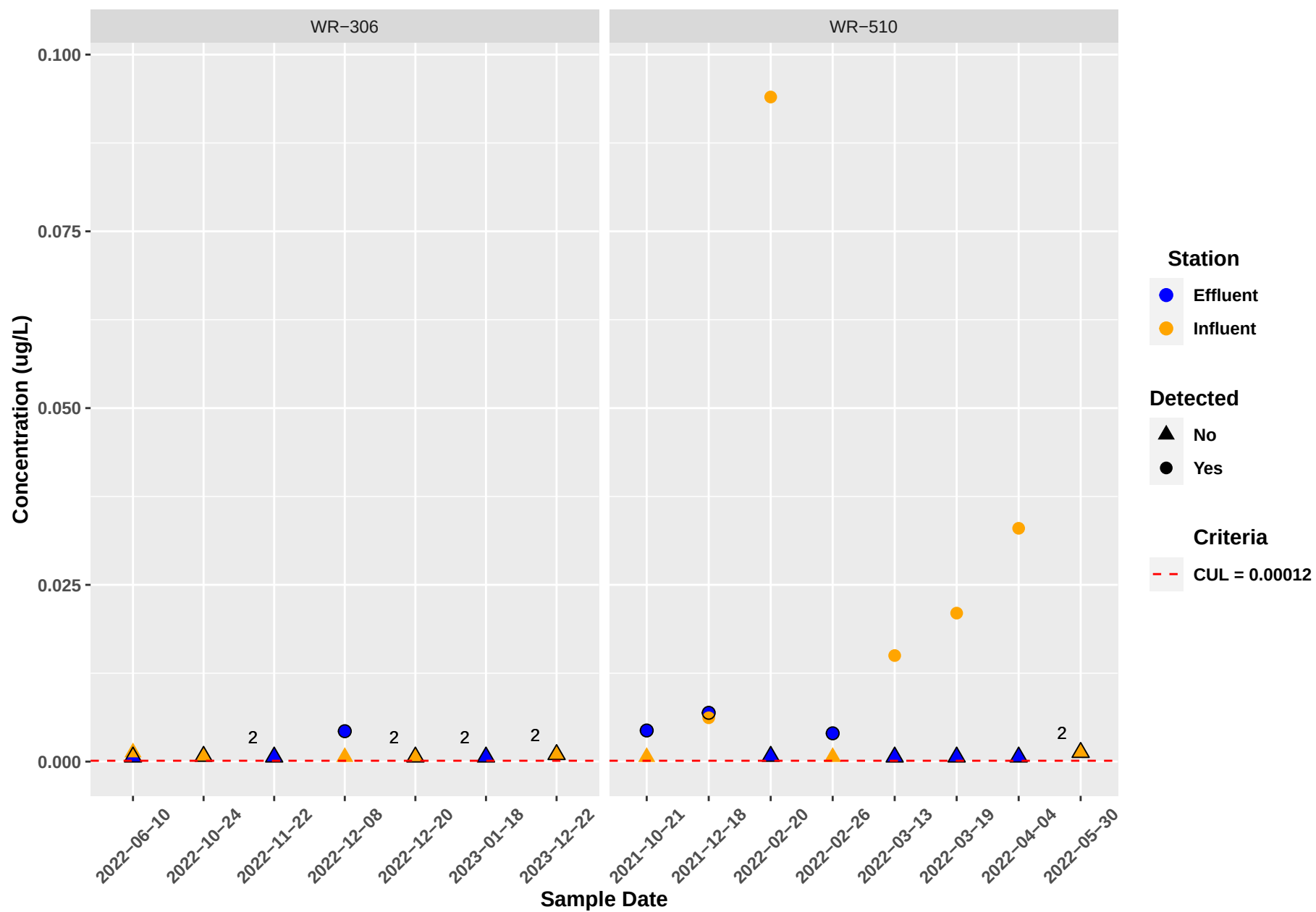
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Chrysene



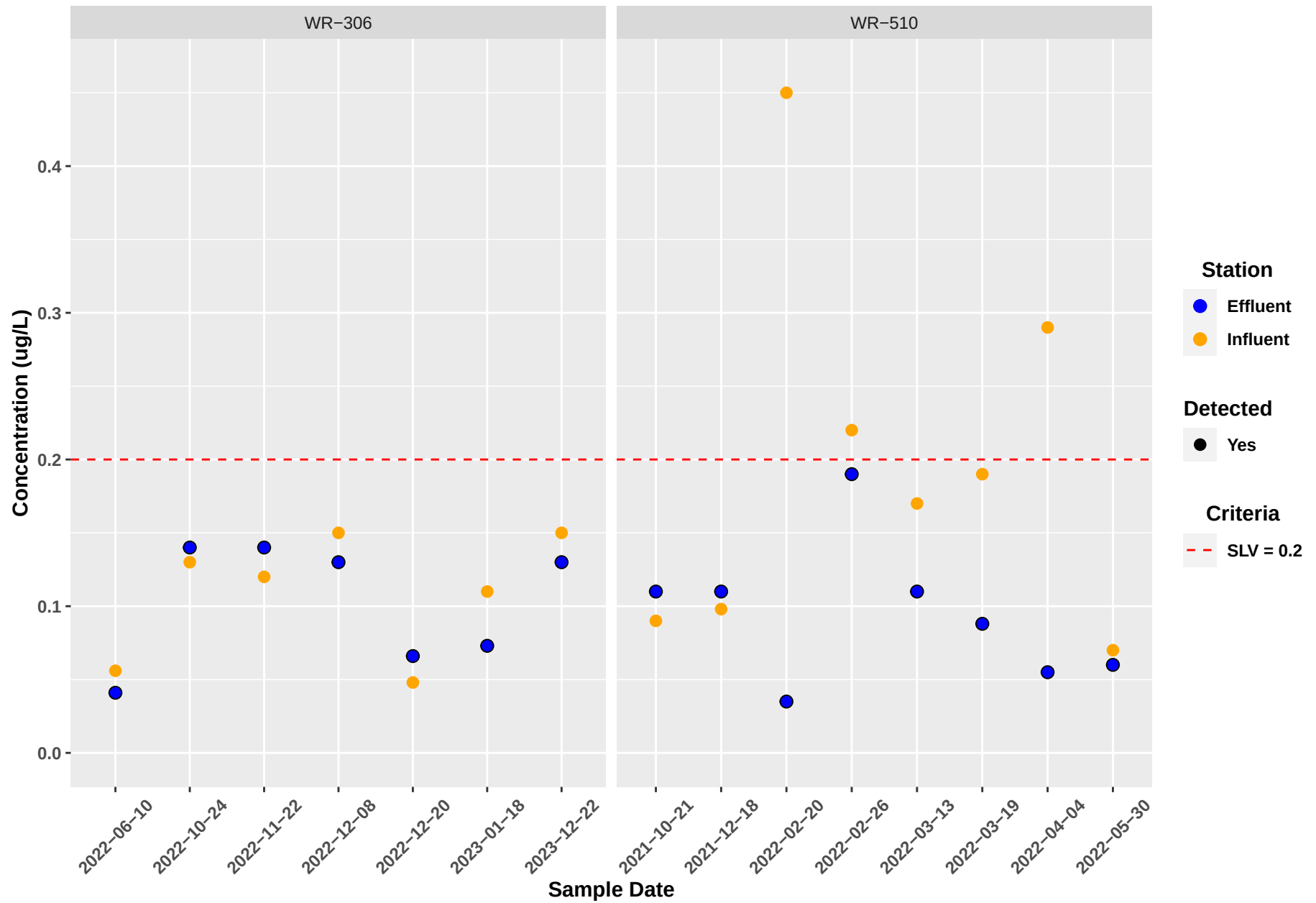
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Dibenzo(a,h)anthracene

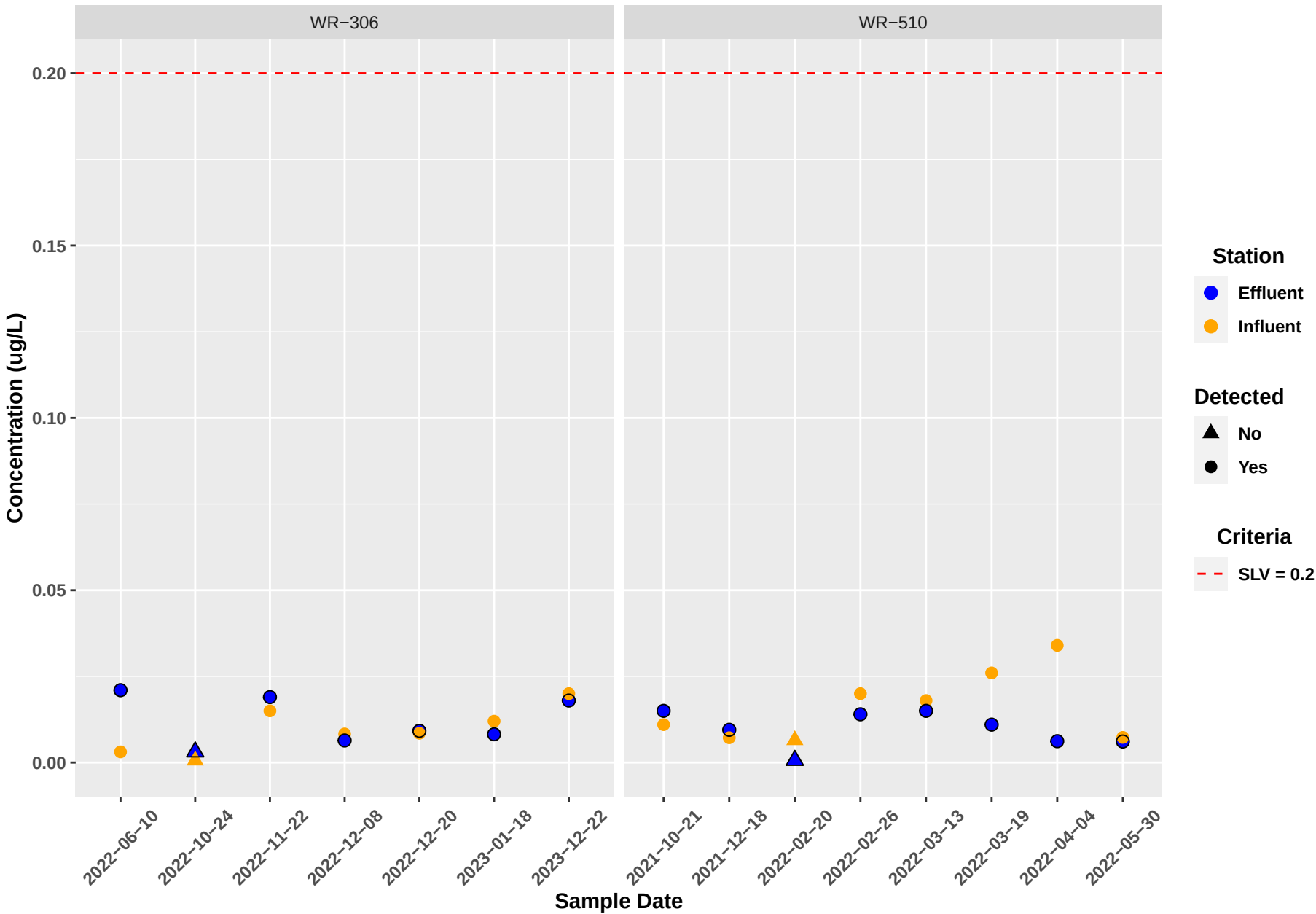


non-detects shown as 1/2 detection limit

Fluoranthene

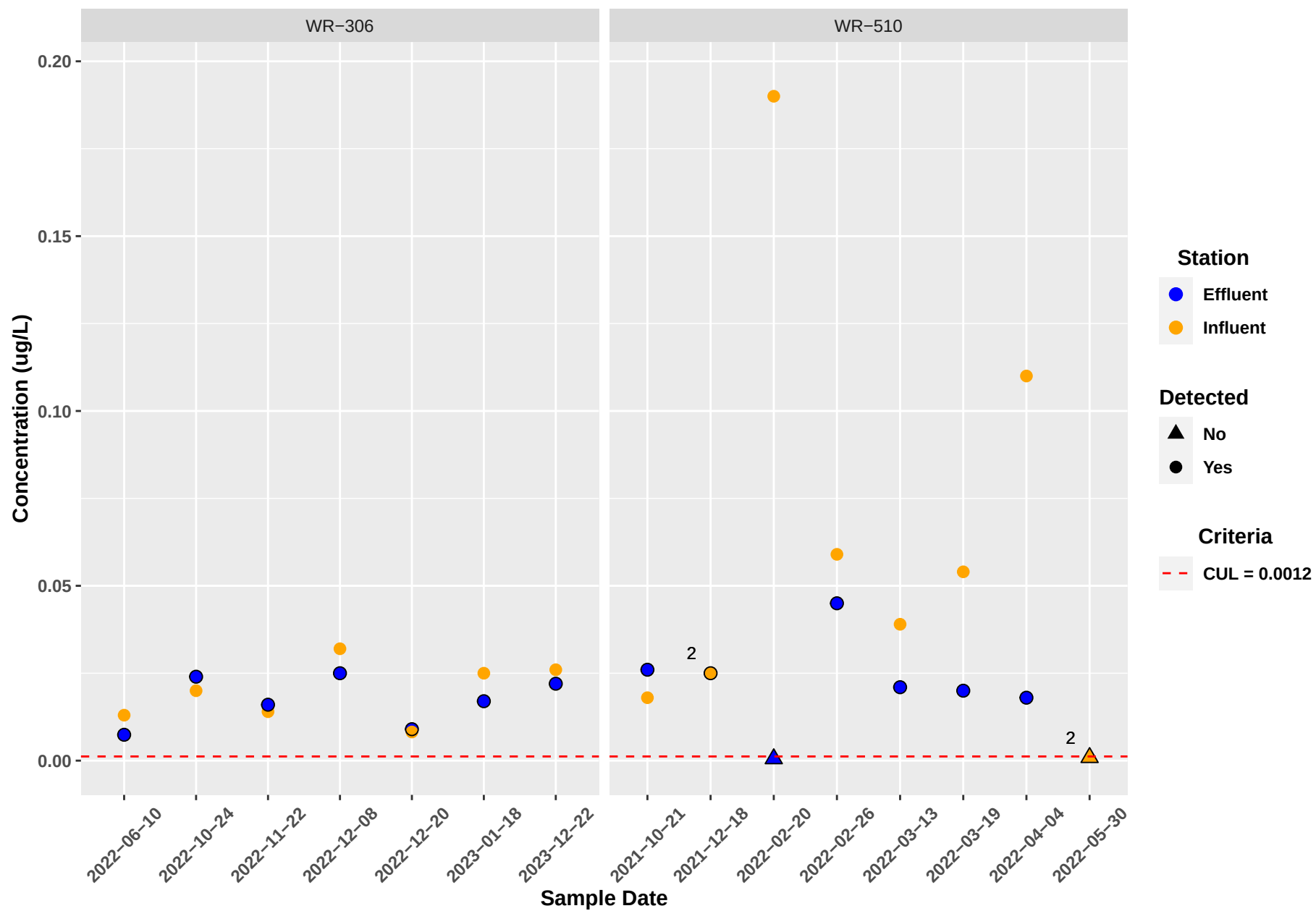


Fluorene



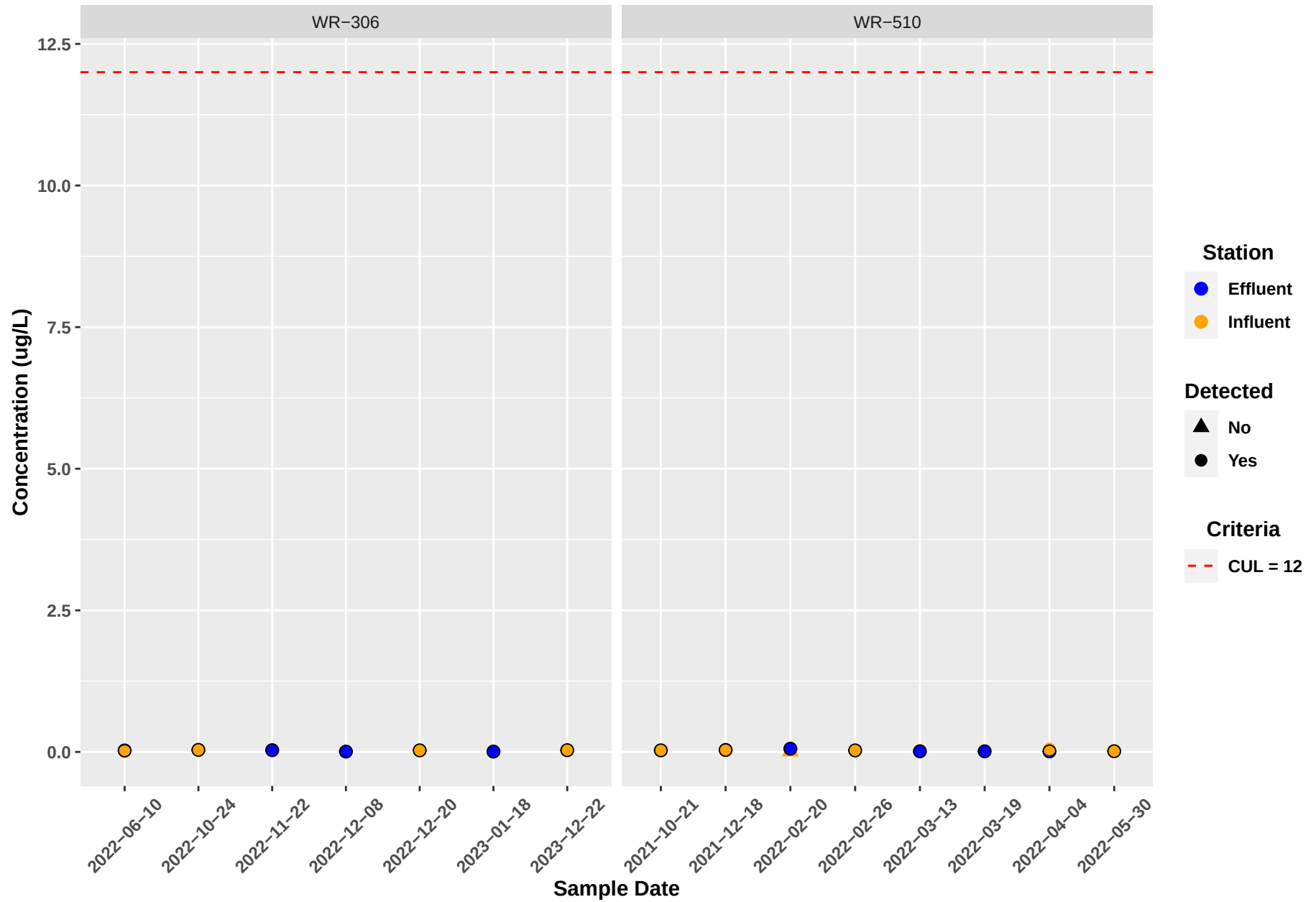
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Indeno(1,2,3-cd)pyrene



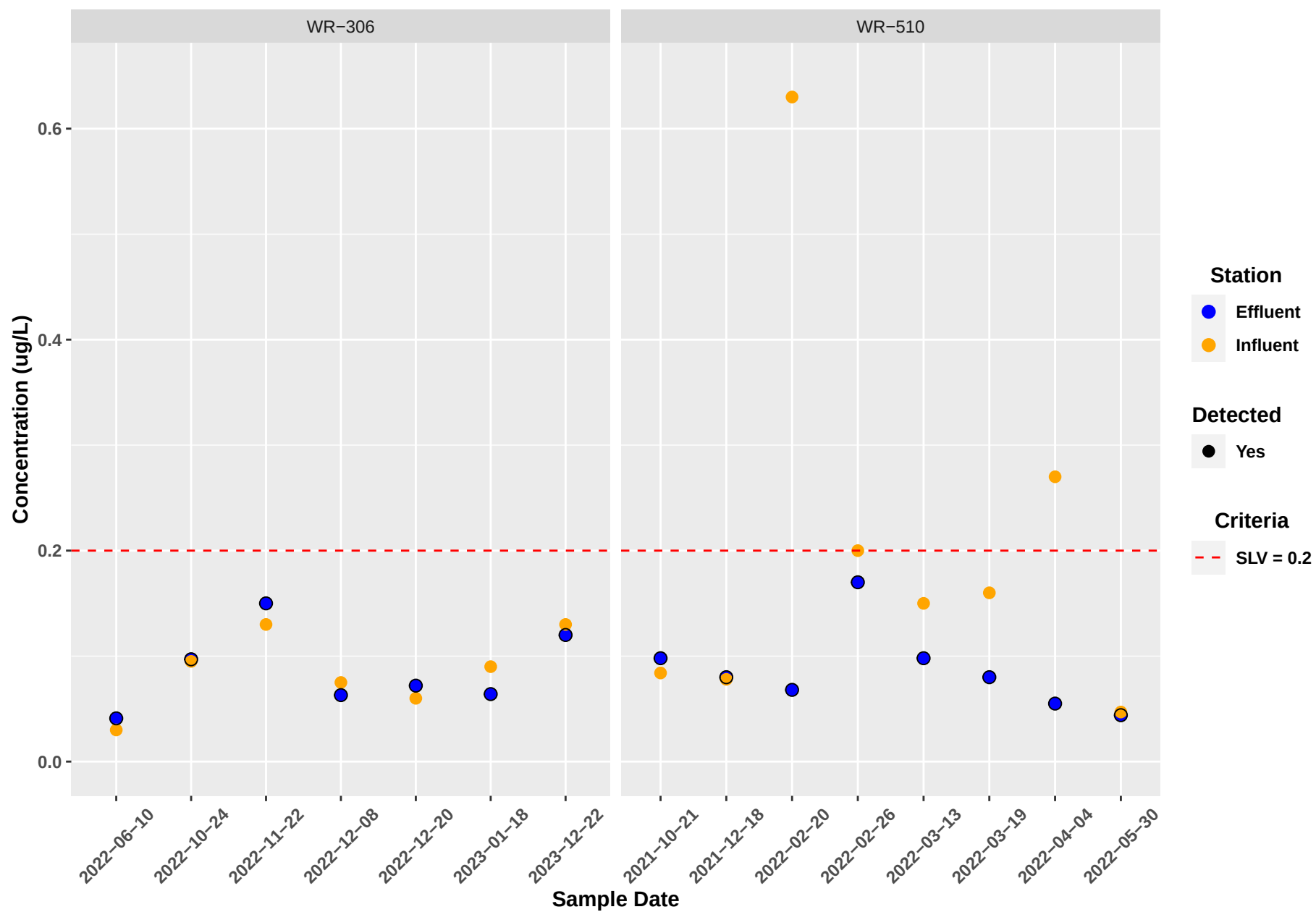
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Naphthalene

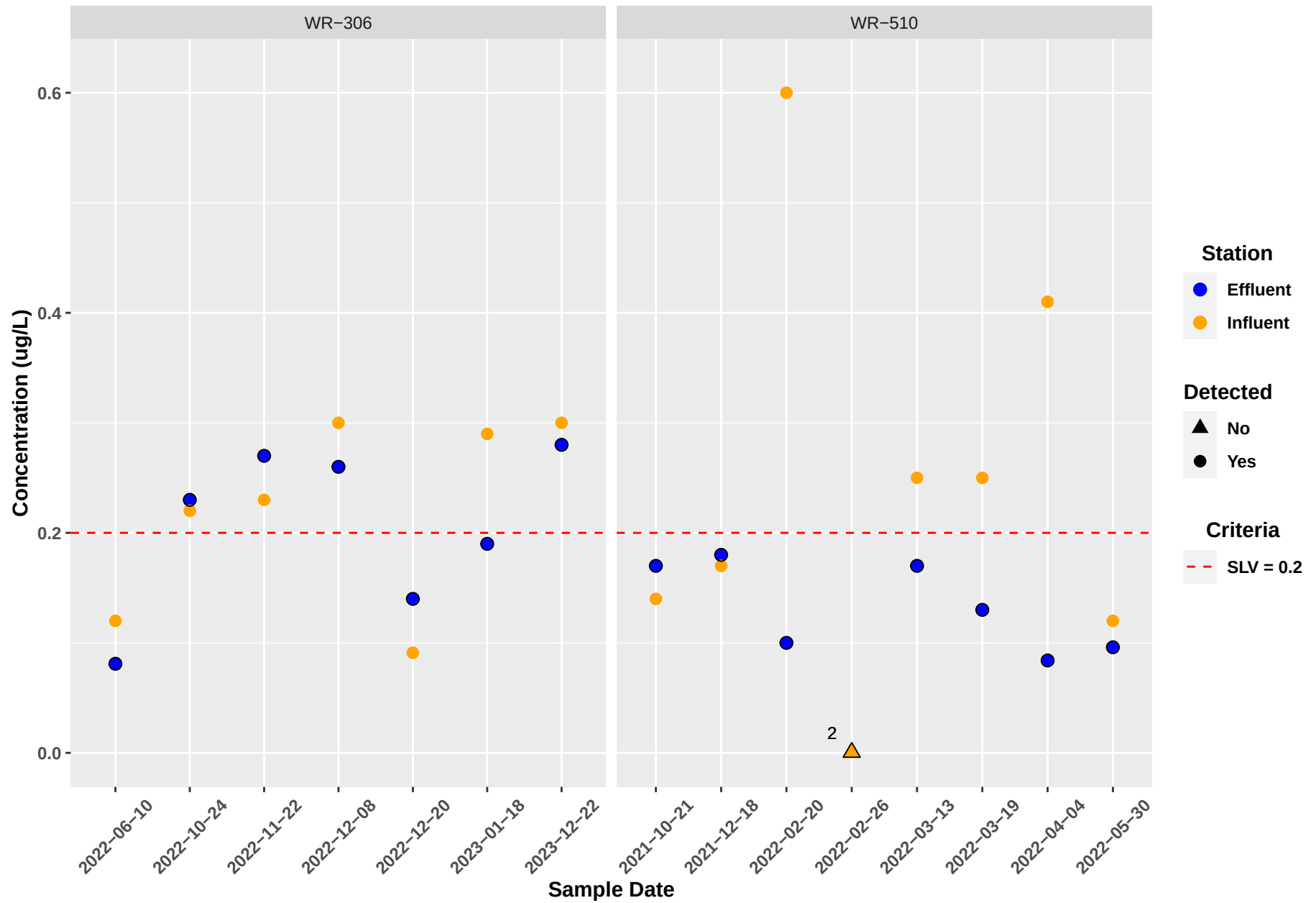


non-detects shown as 1/2 detection limit

Phenanthrene

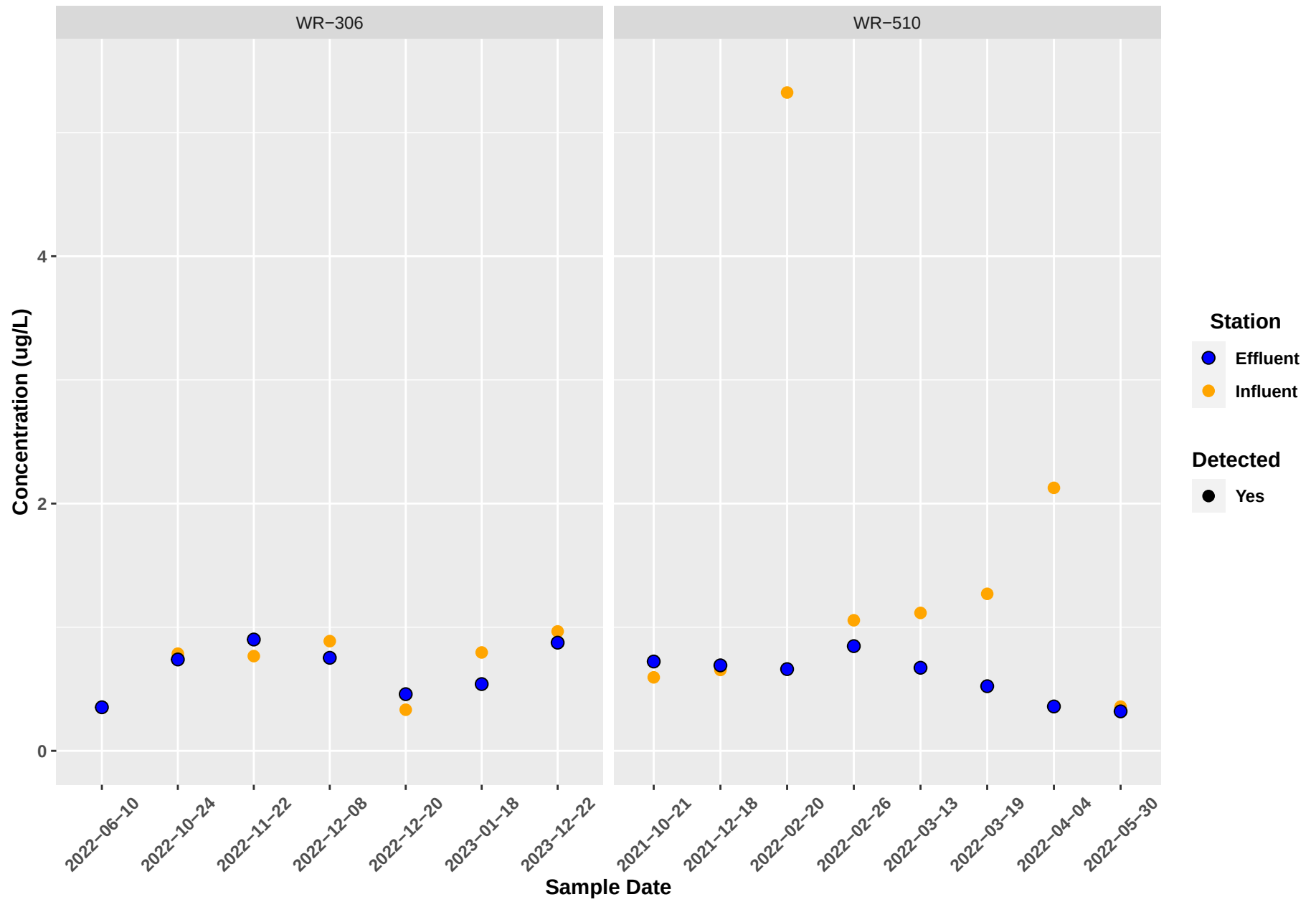


Pyrene

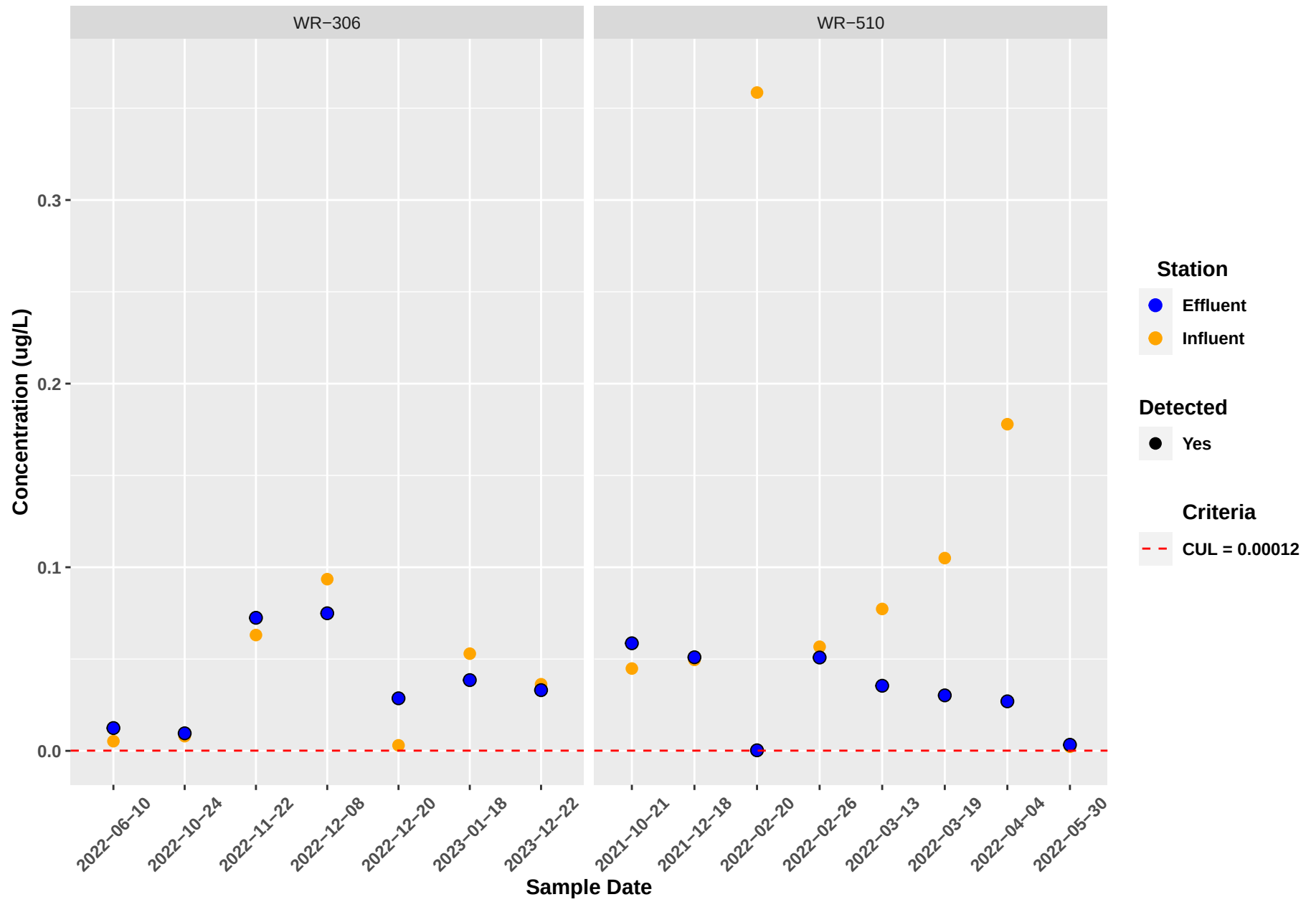


non-detects shown as 1/2 detection limit

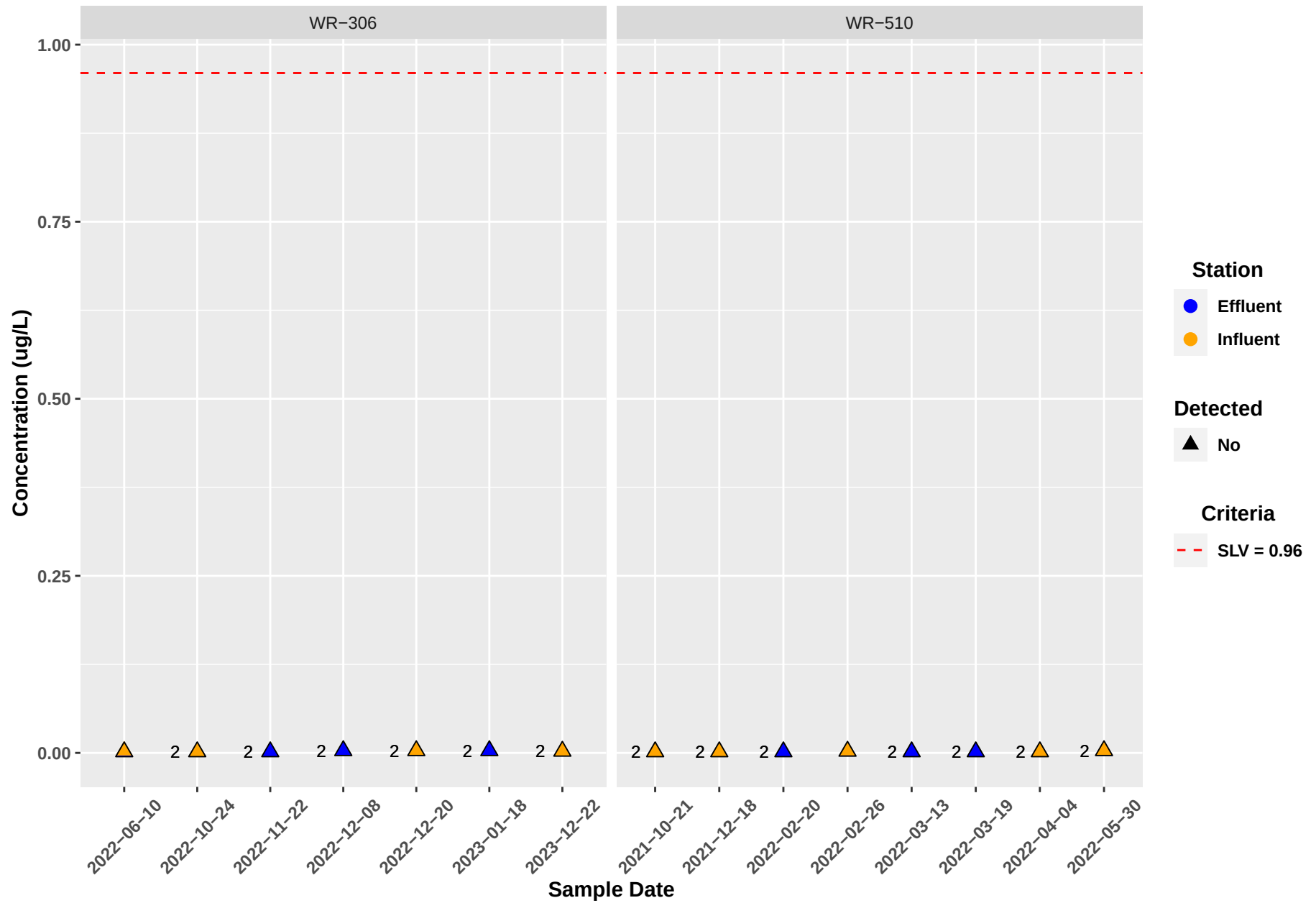
Total PAHs



Total cPAH

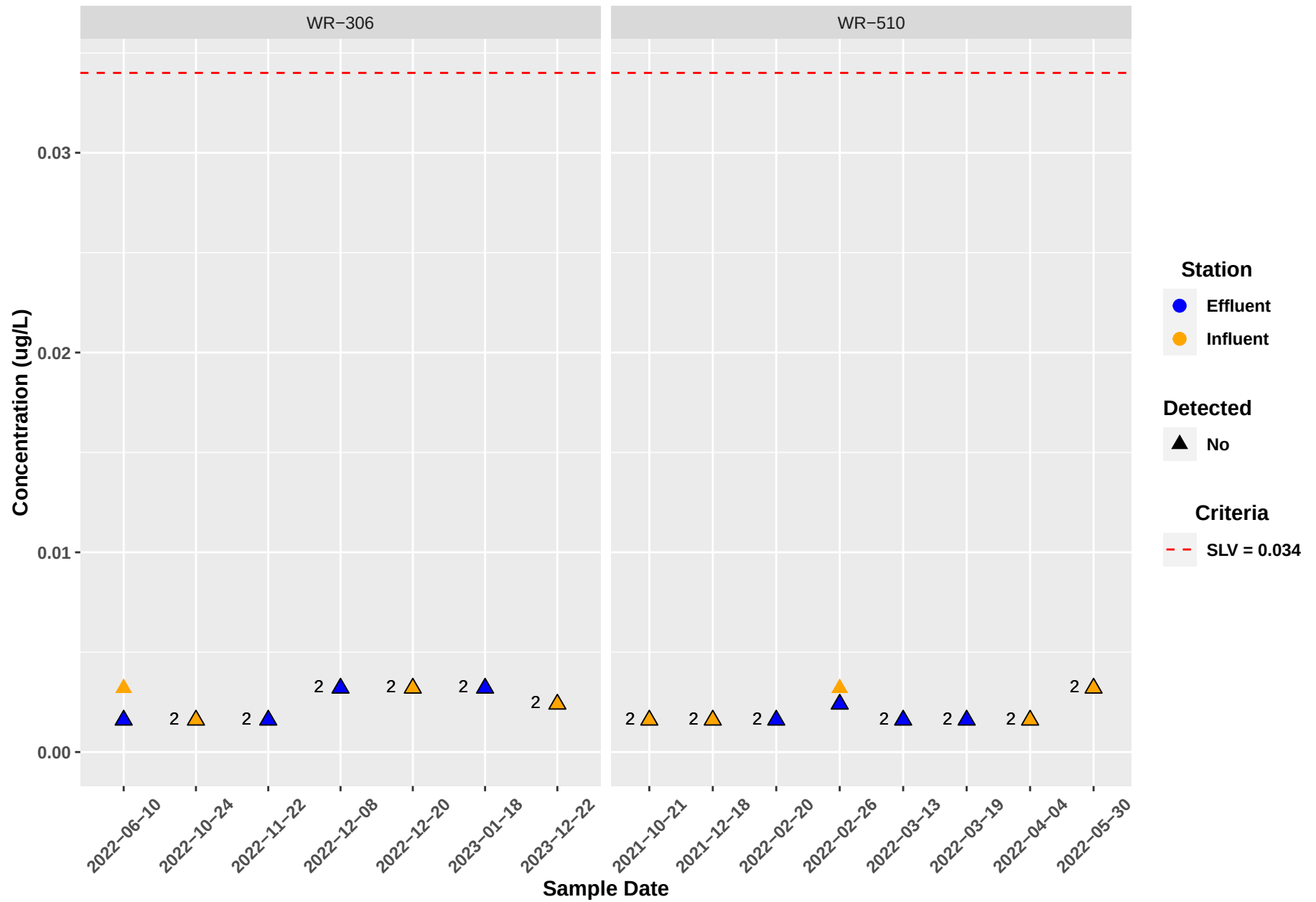


Aroclor 1016



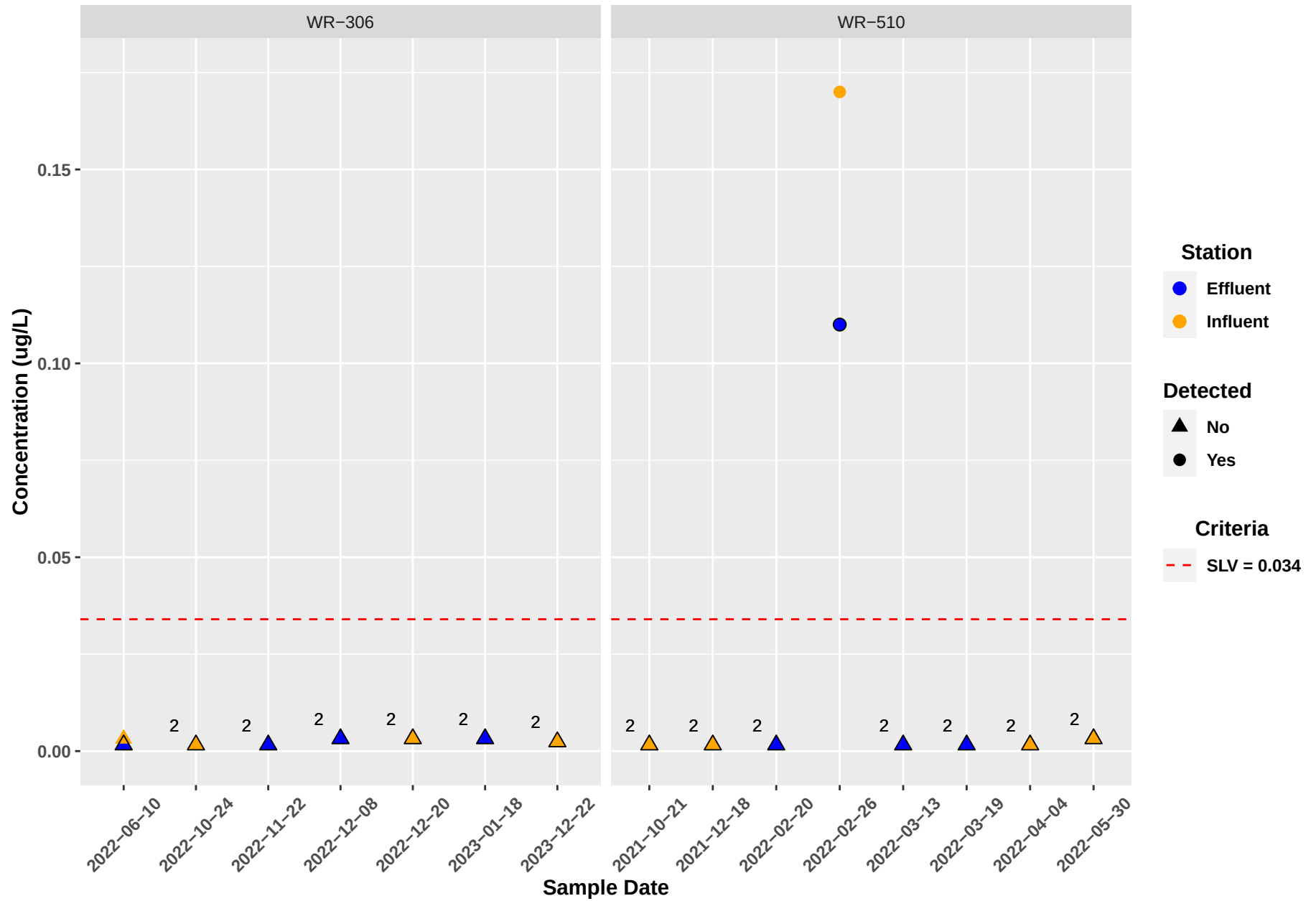
non-detects shown as 1/2 detection limit

Aroclor 1221



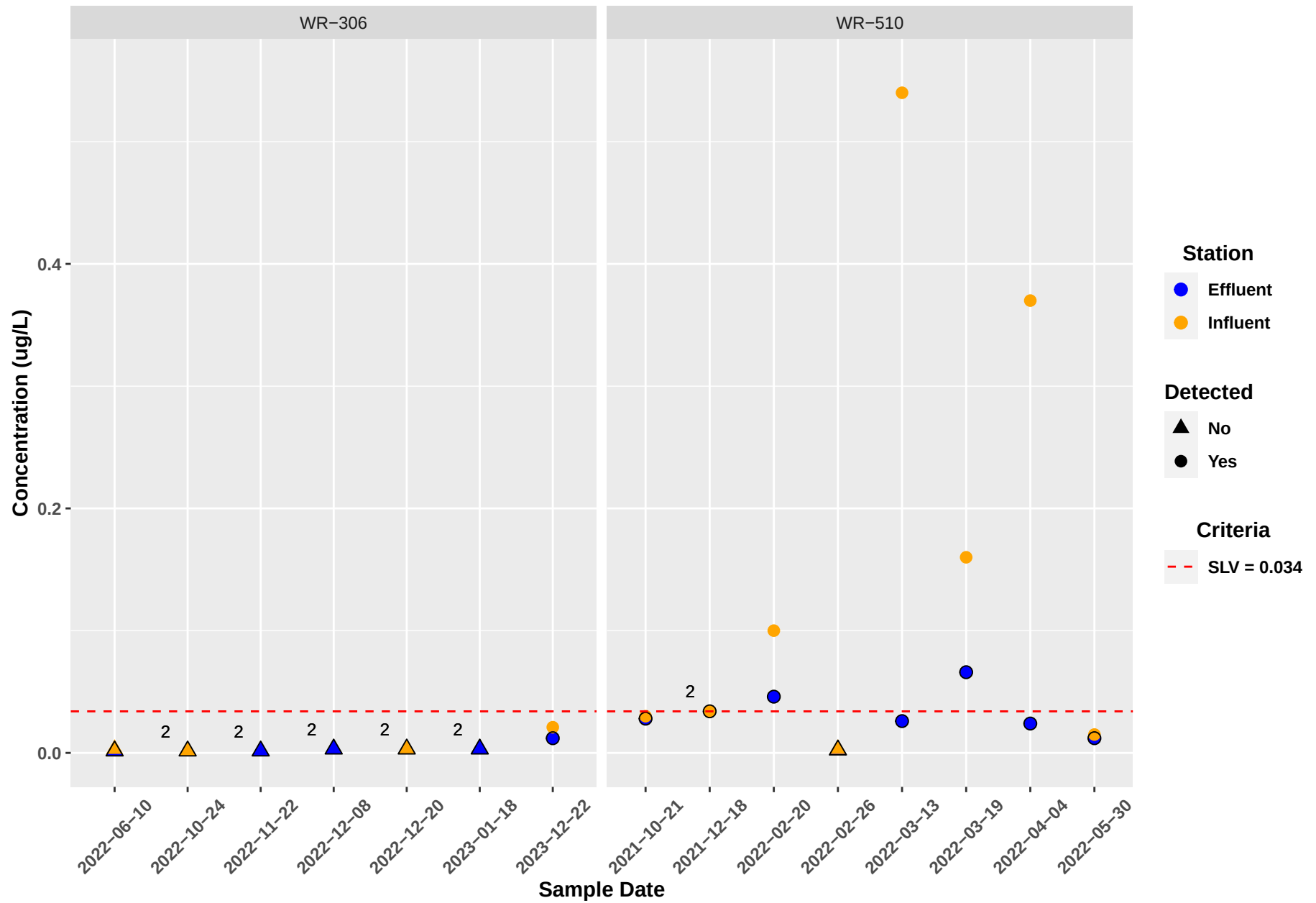
non-detects shown as 1/2 detection limit

Aroclor 1232



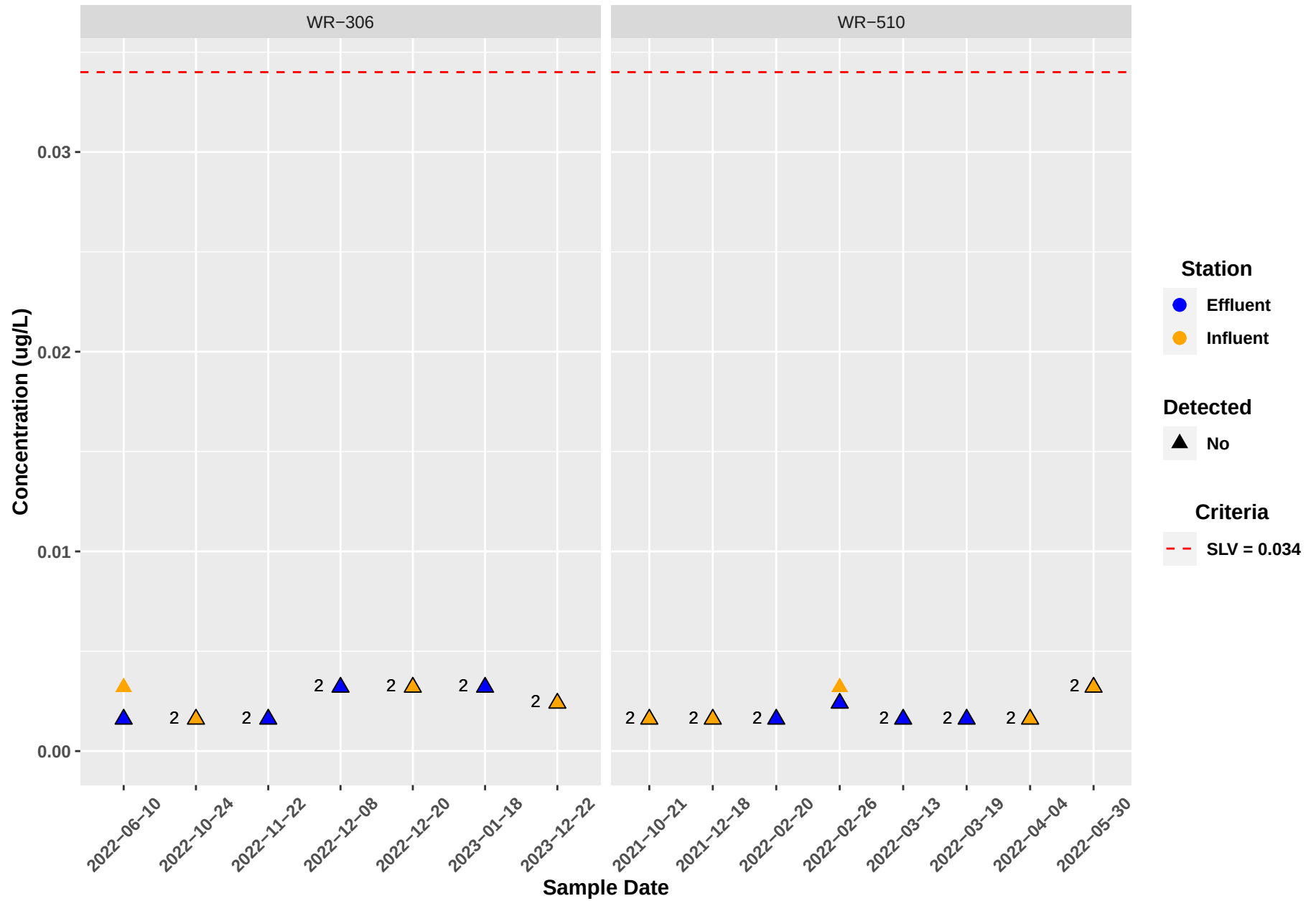
non-detects shown as 1/2 detection limit

Aroclor 1242



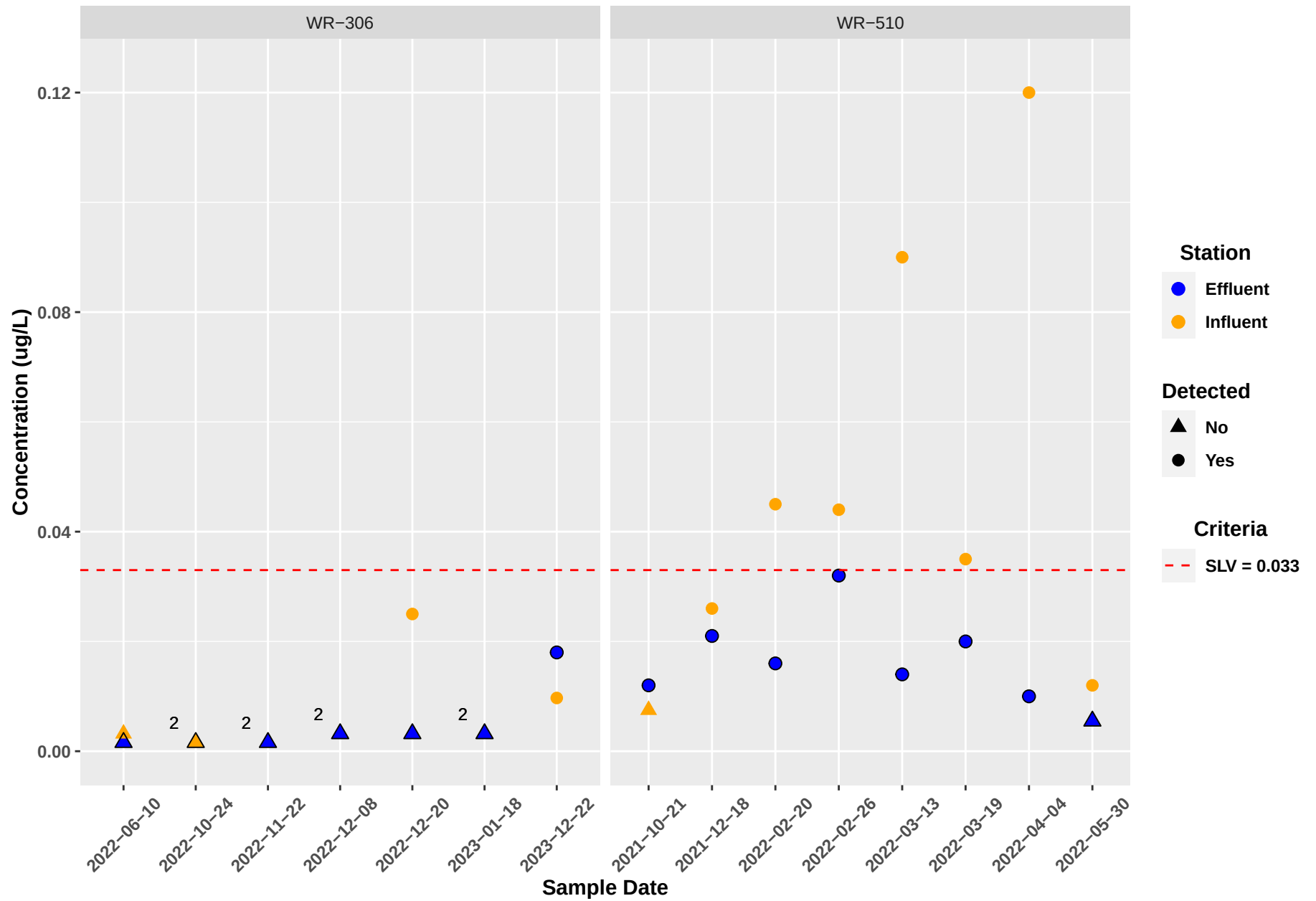
non-detects shown as 1/2 detection limit

Aroclor 1248



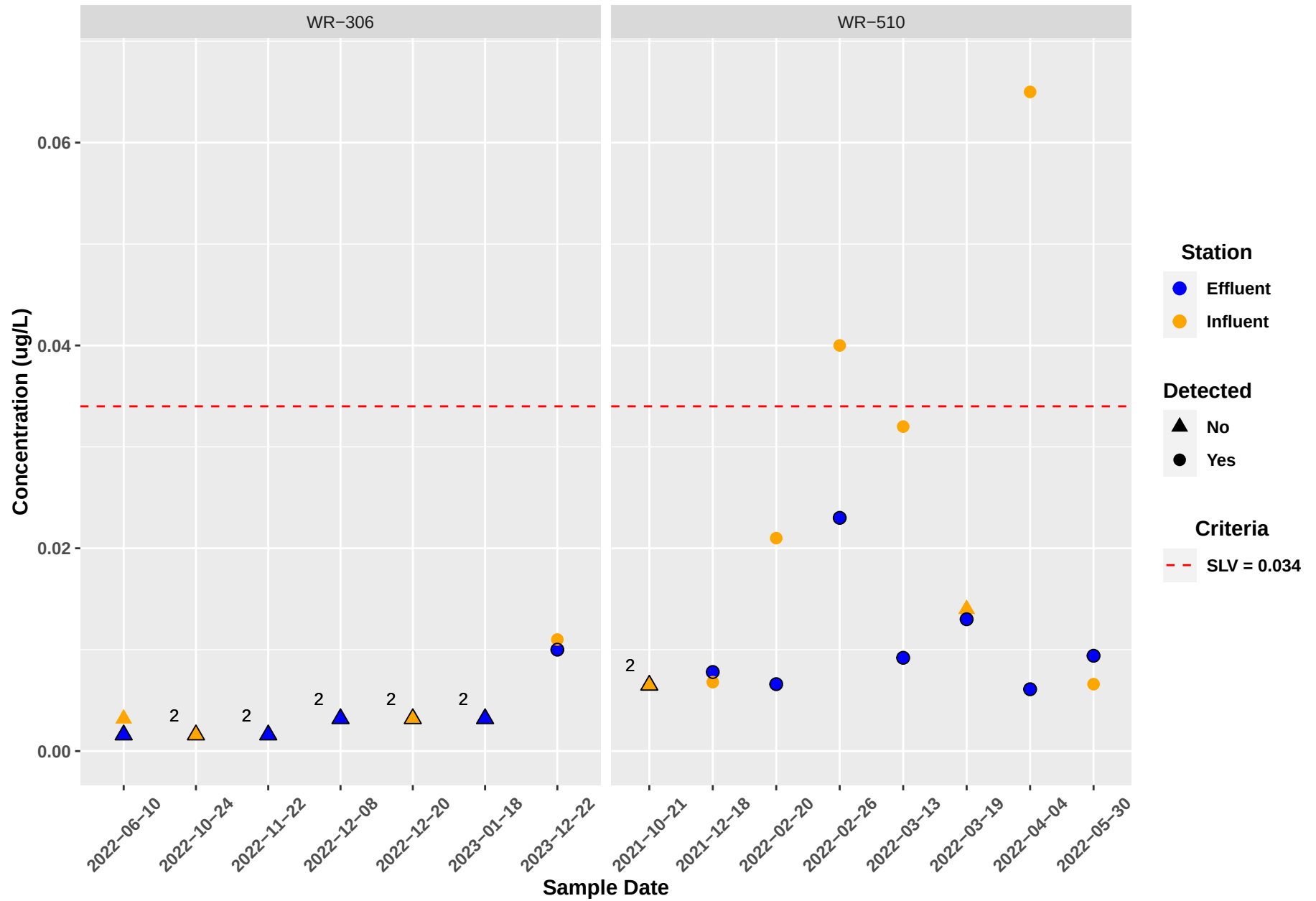
non-detects shown as 1/2 detection limit

Aroclor 1254



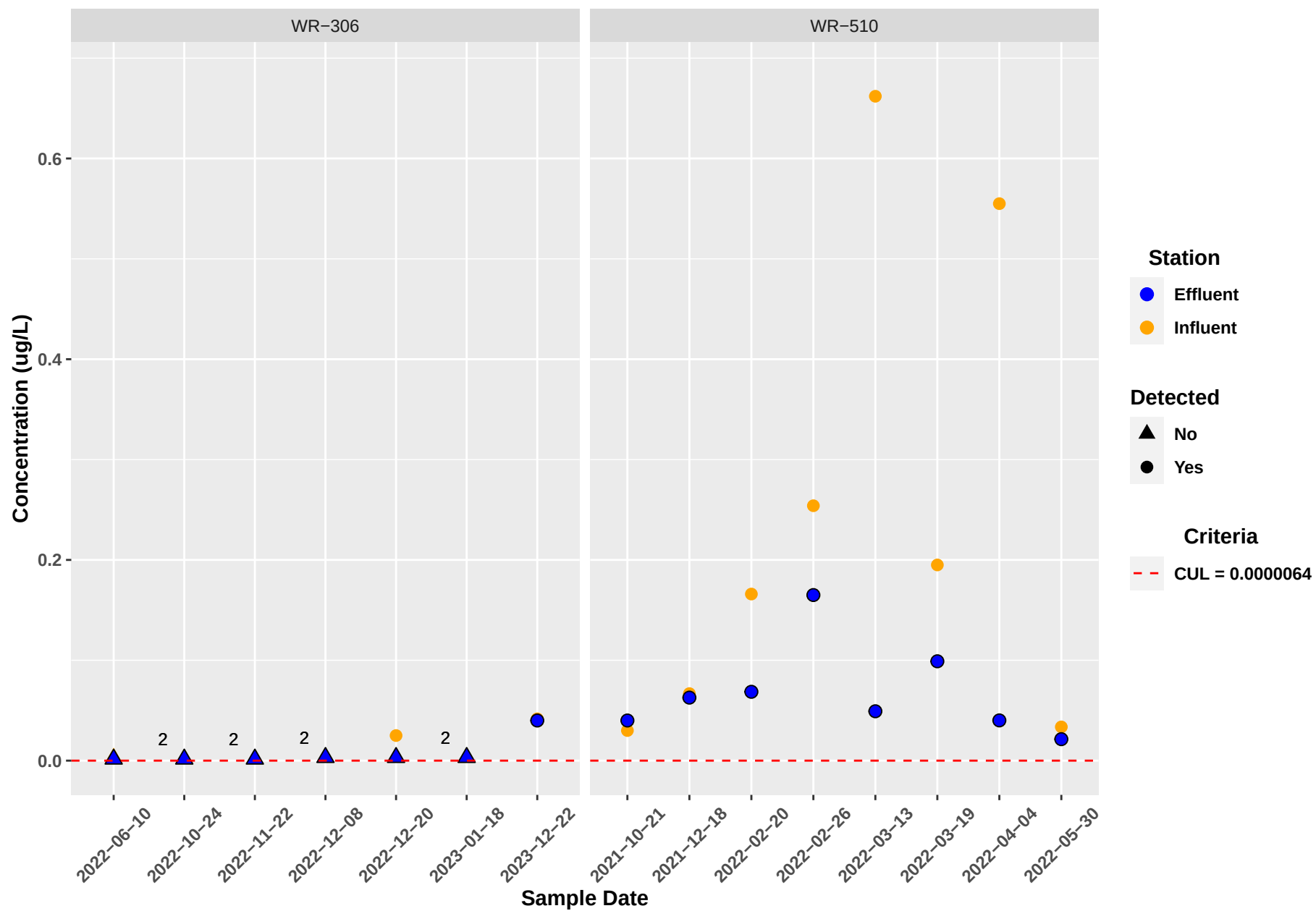
non-detects shown as 1/2 detection limit

Aroclor 1260



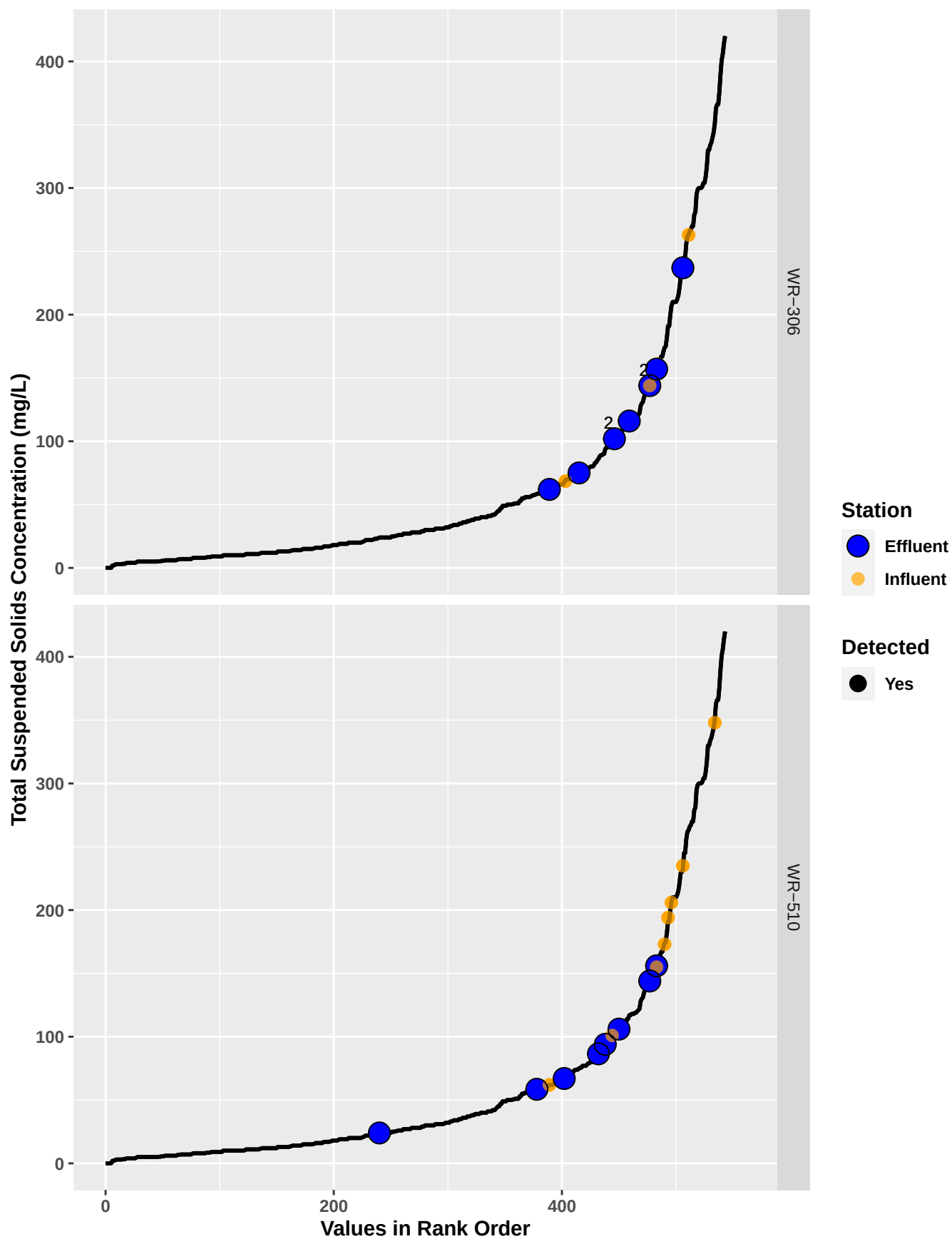
non-detects shown as 1/2 detection limit

Total PCBs

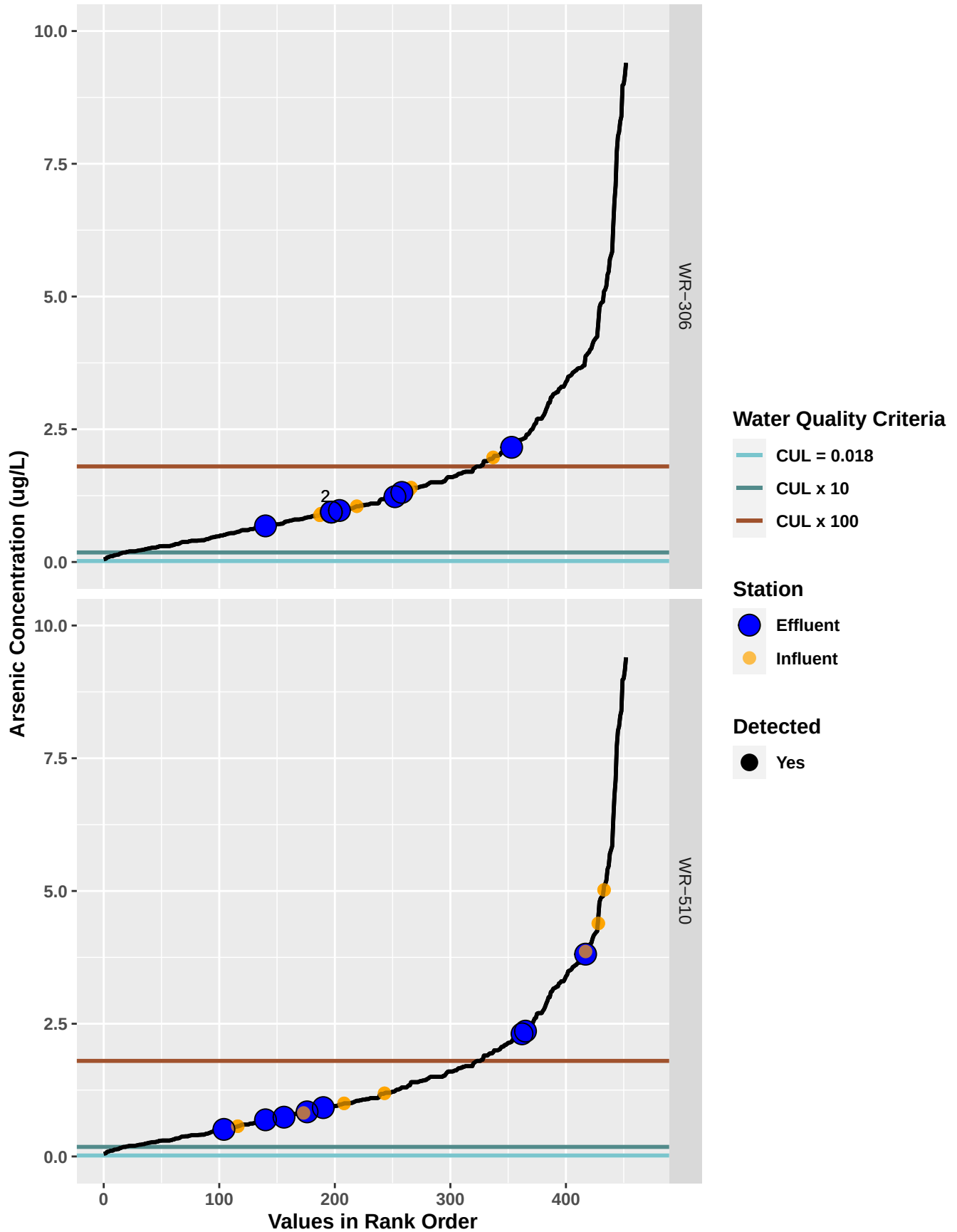


non-detects shown as 1/2 detection limit

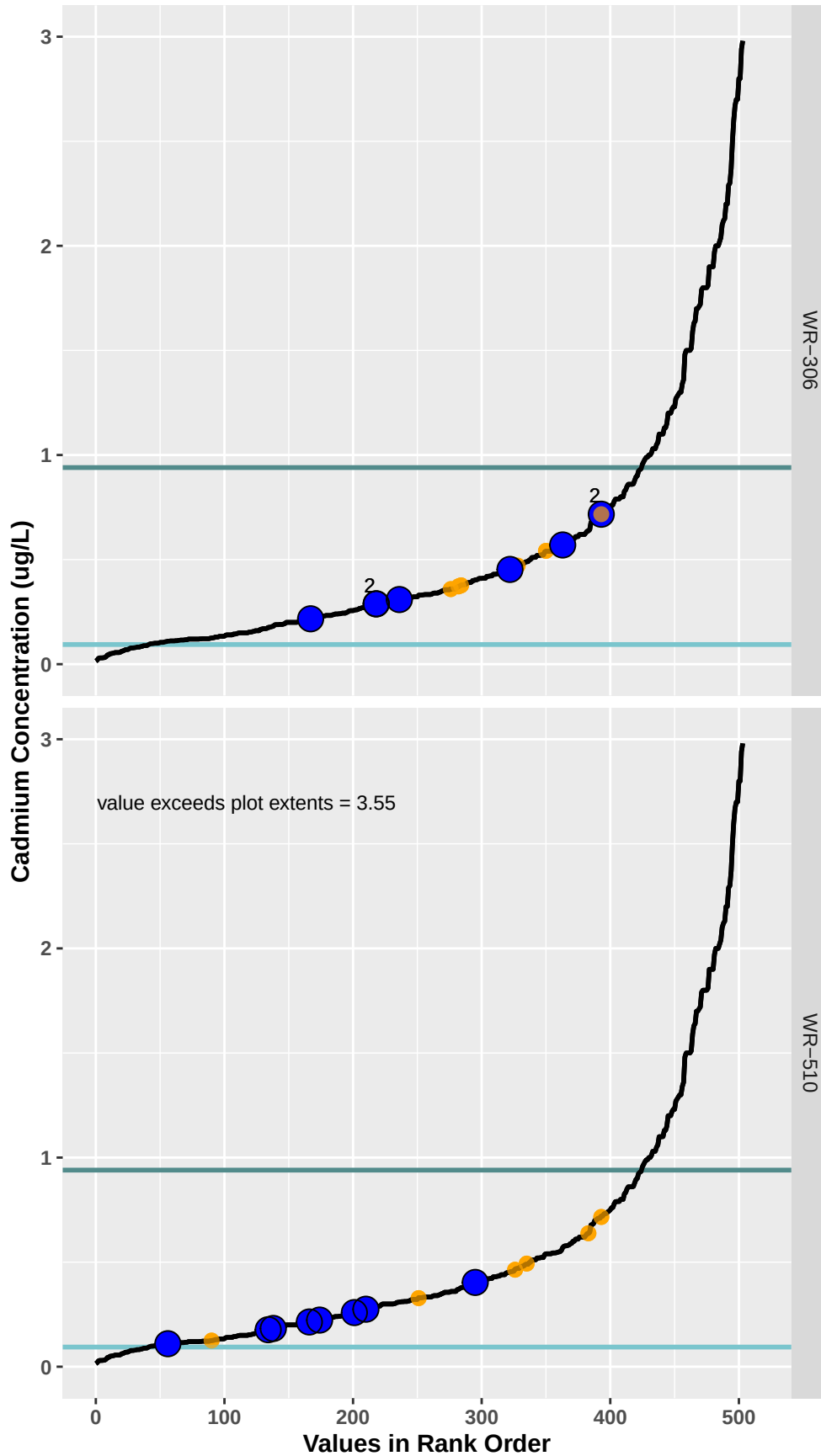
Total Suspended Solids



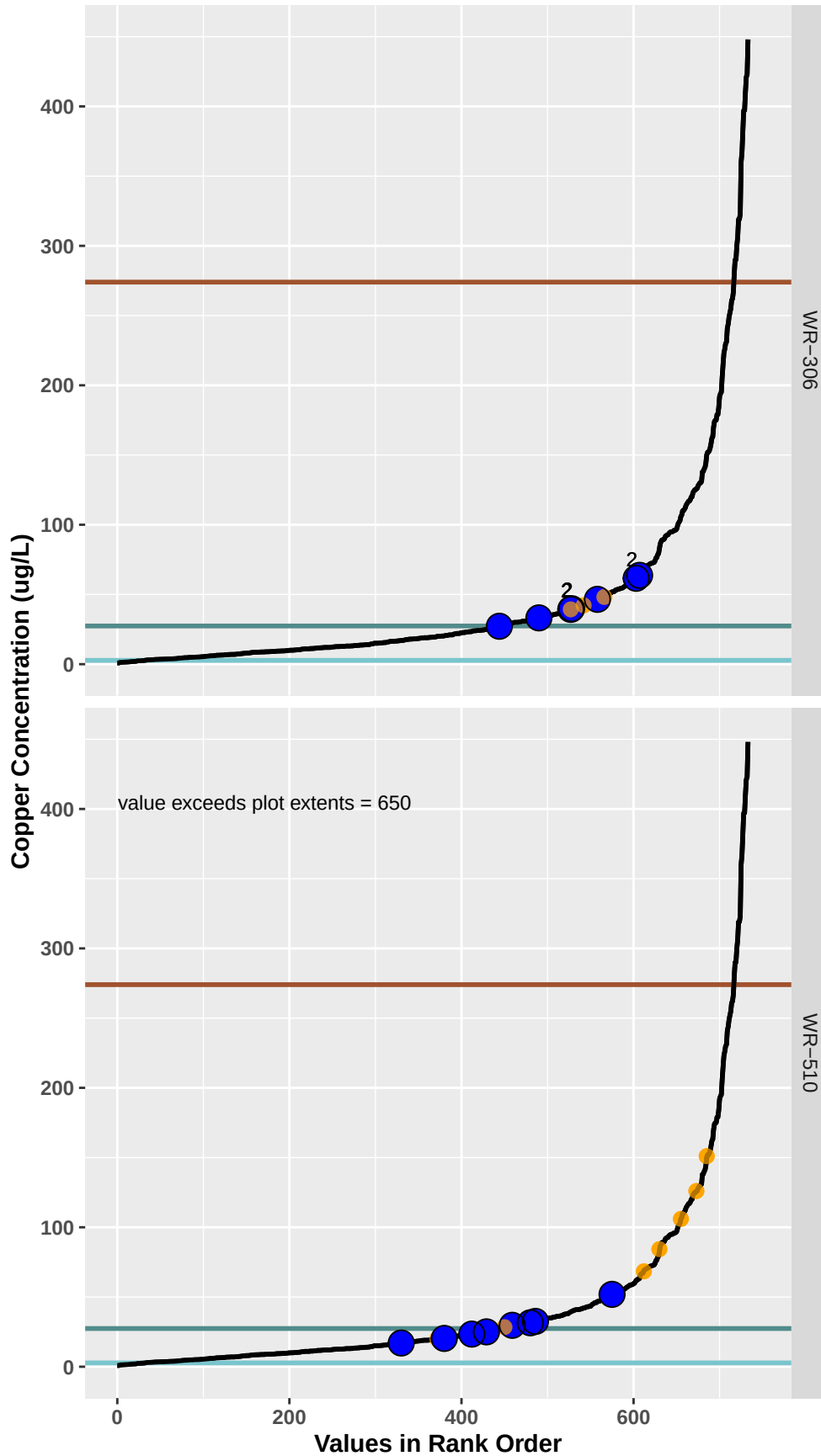
Arsenic



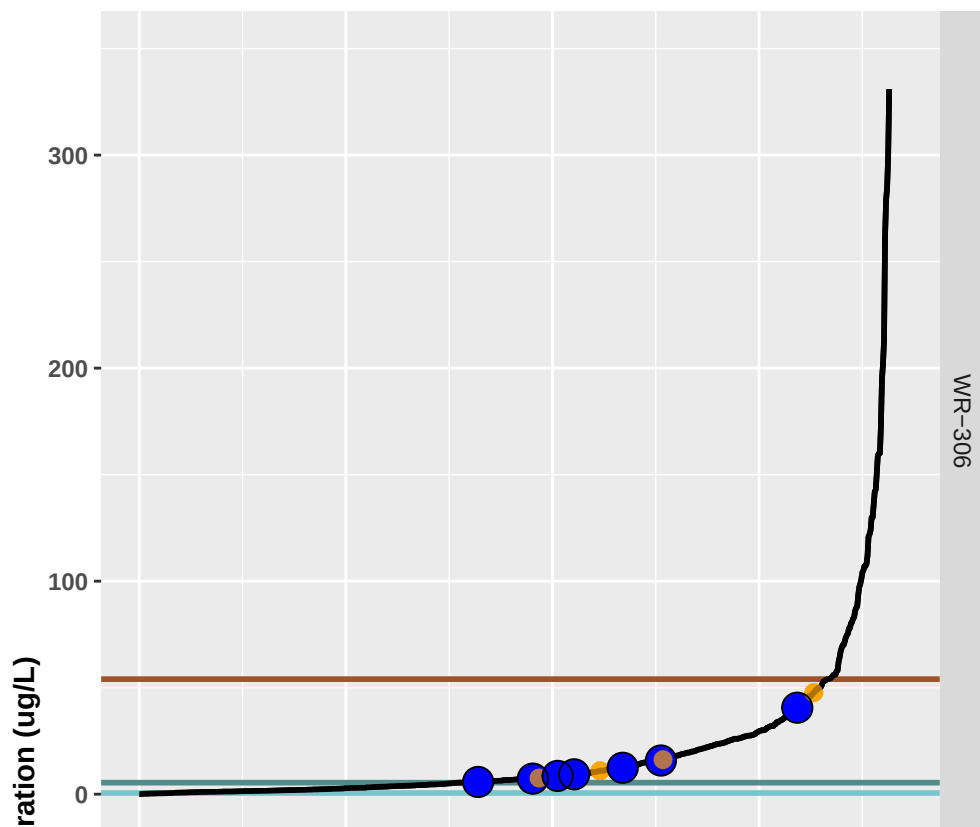
Cadmium



Copper



Lead



Station

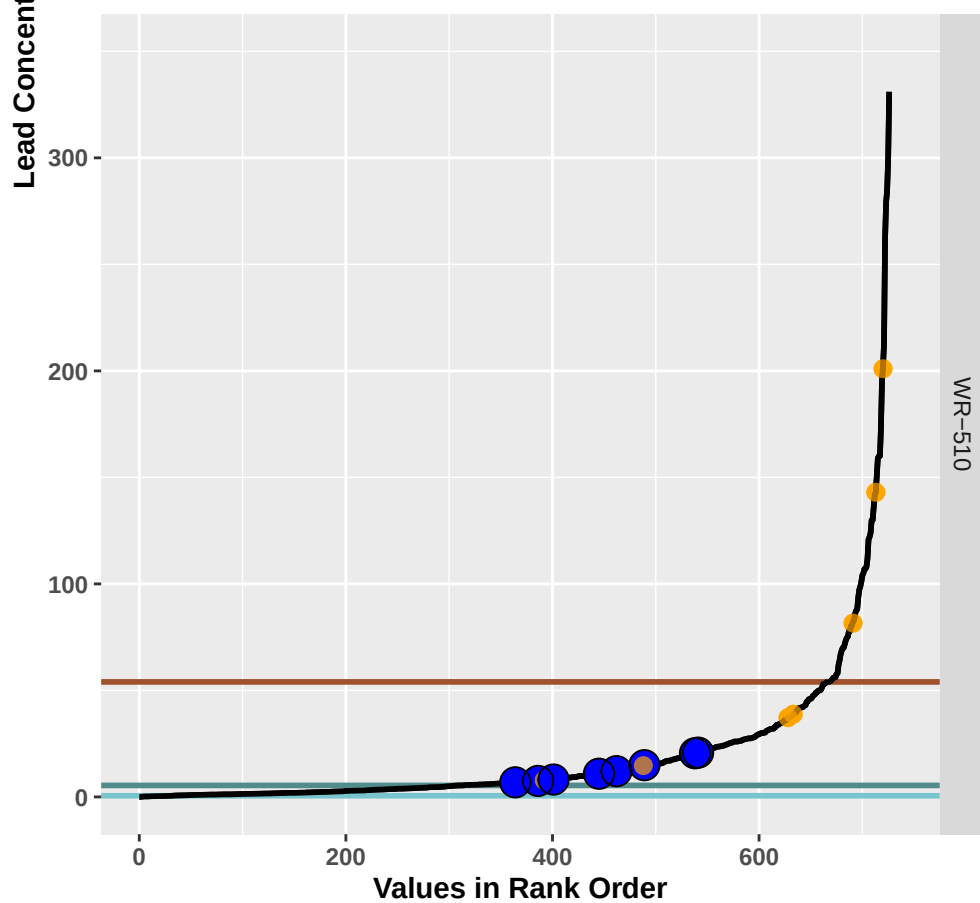
- Effluent
- Influent

Water Quality Criteria

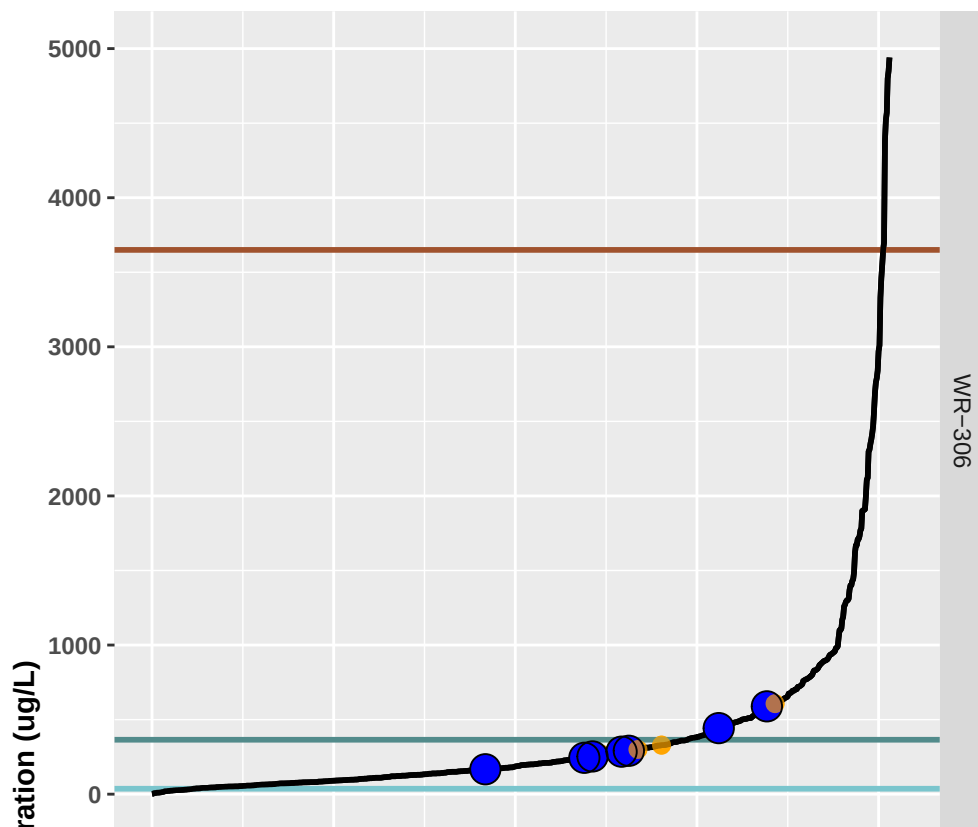
- SLV = 0.54
- SLV x 10
- SLV x 100

Detected

- Yes



Zinc



Water Quality Criteria

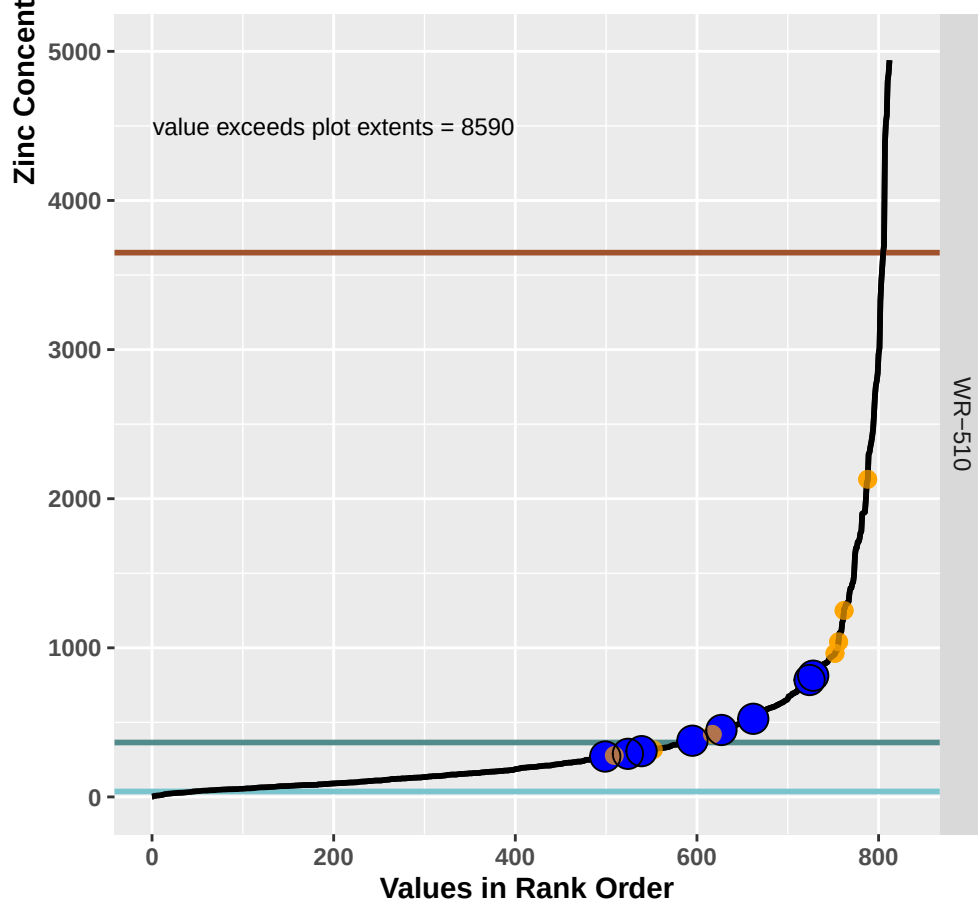
- CUL = 36.5
- CUL x 10
- CUL x 100

Station

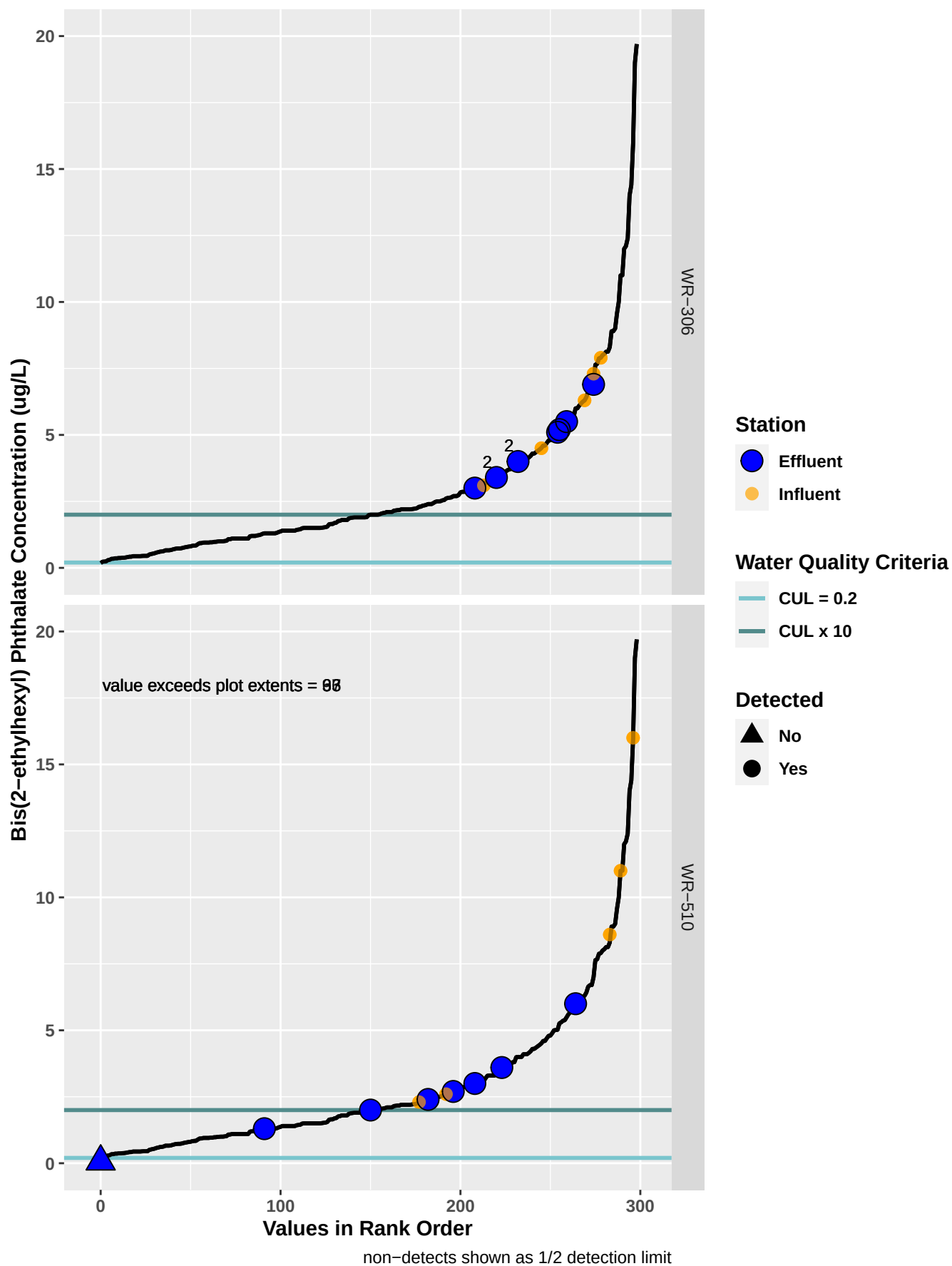
- Effluent
- Influent

Detected

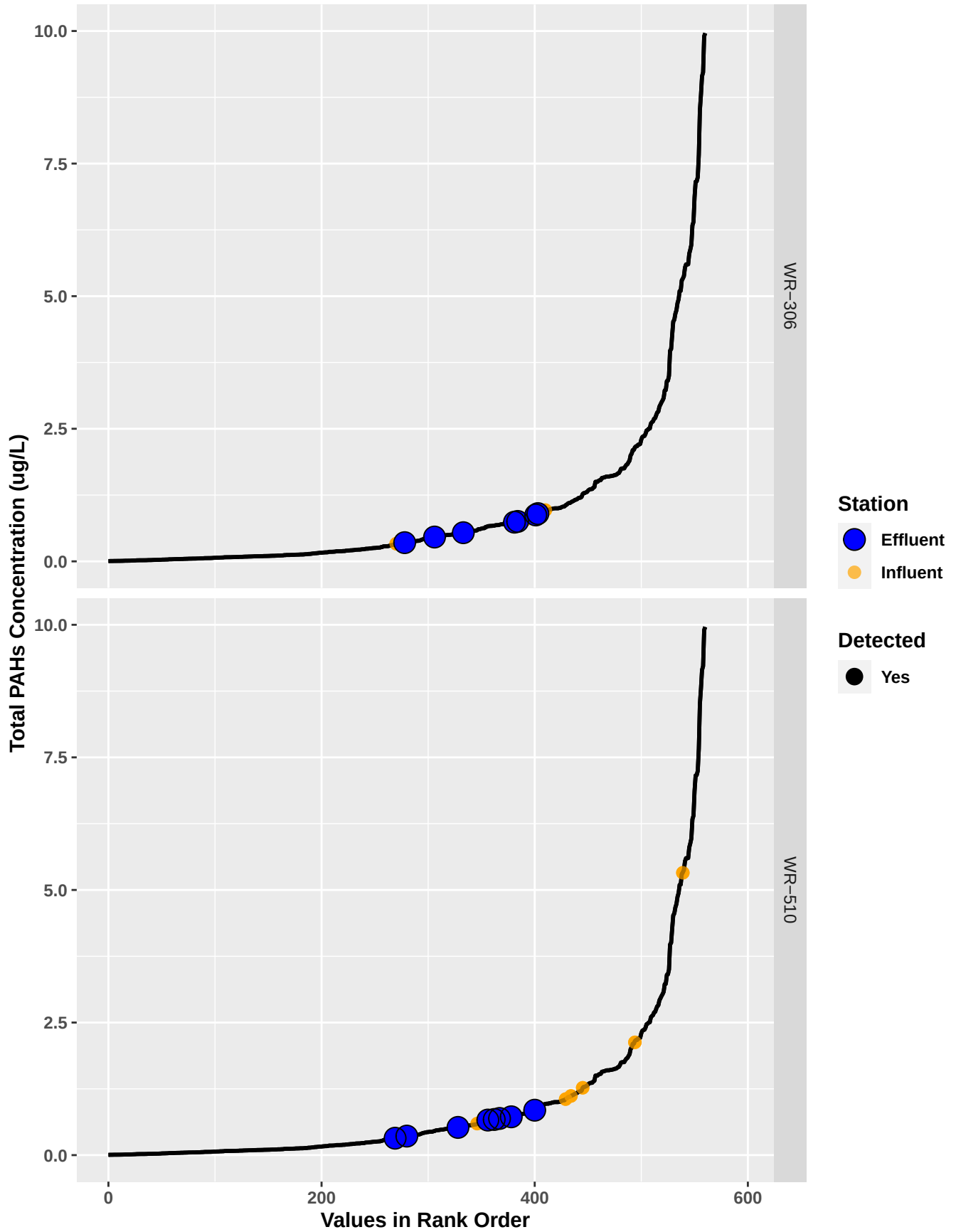
- Yes



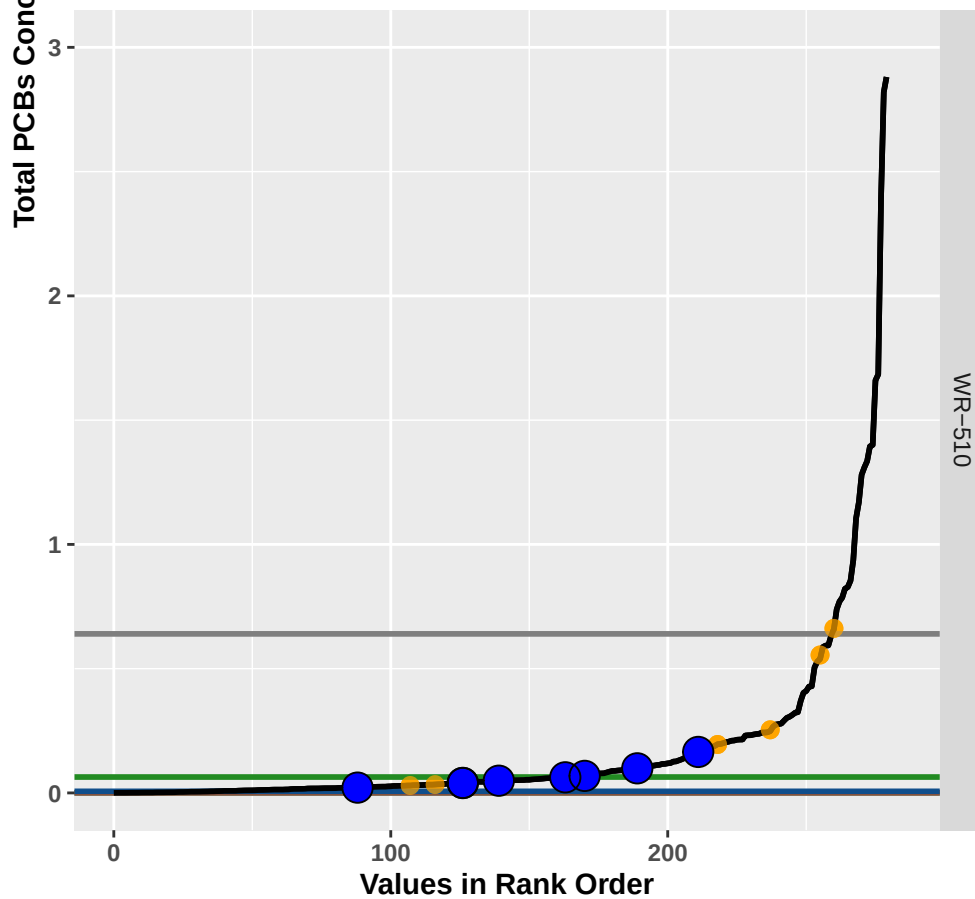
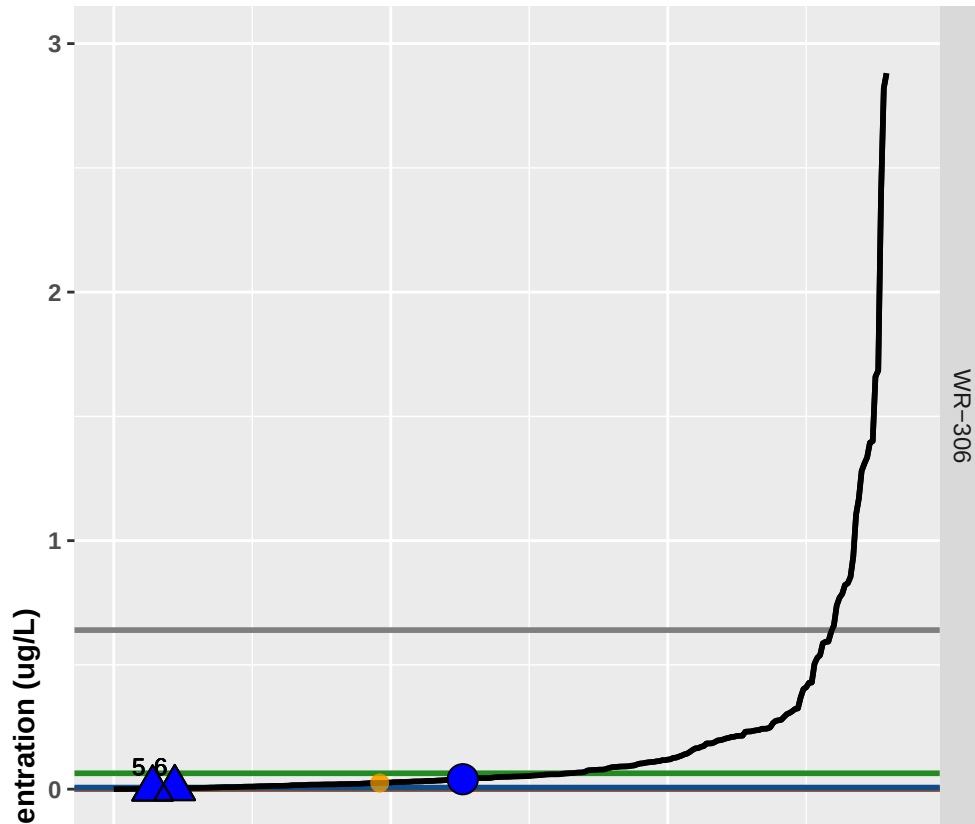
Bis(2-ethylhexyl) Phthalate



Total PAHs

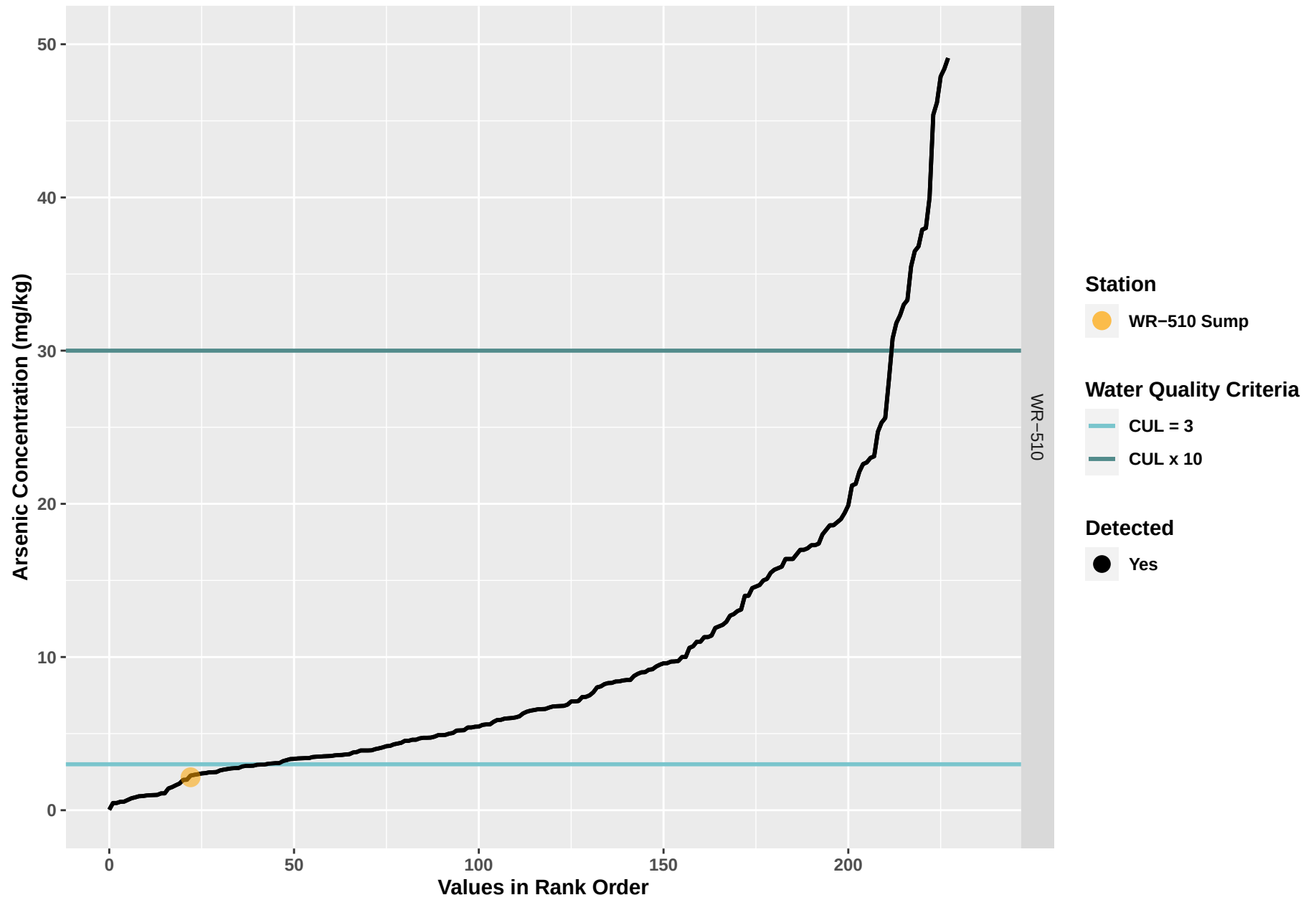


Total PCBs

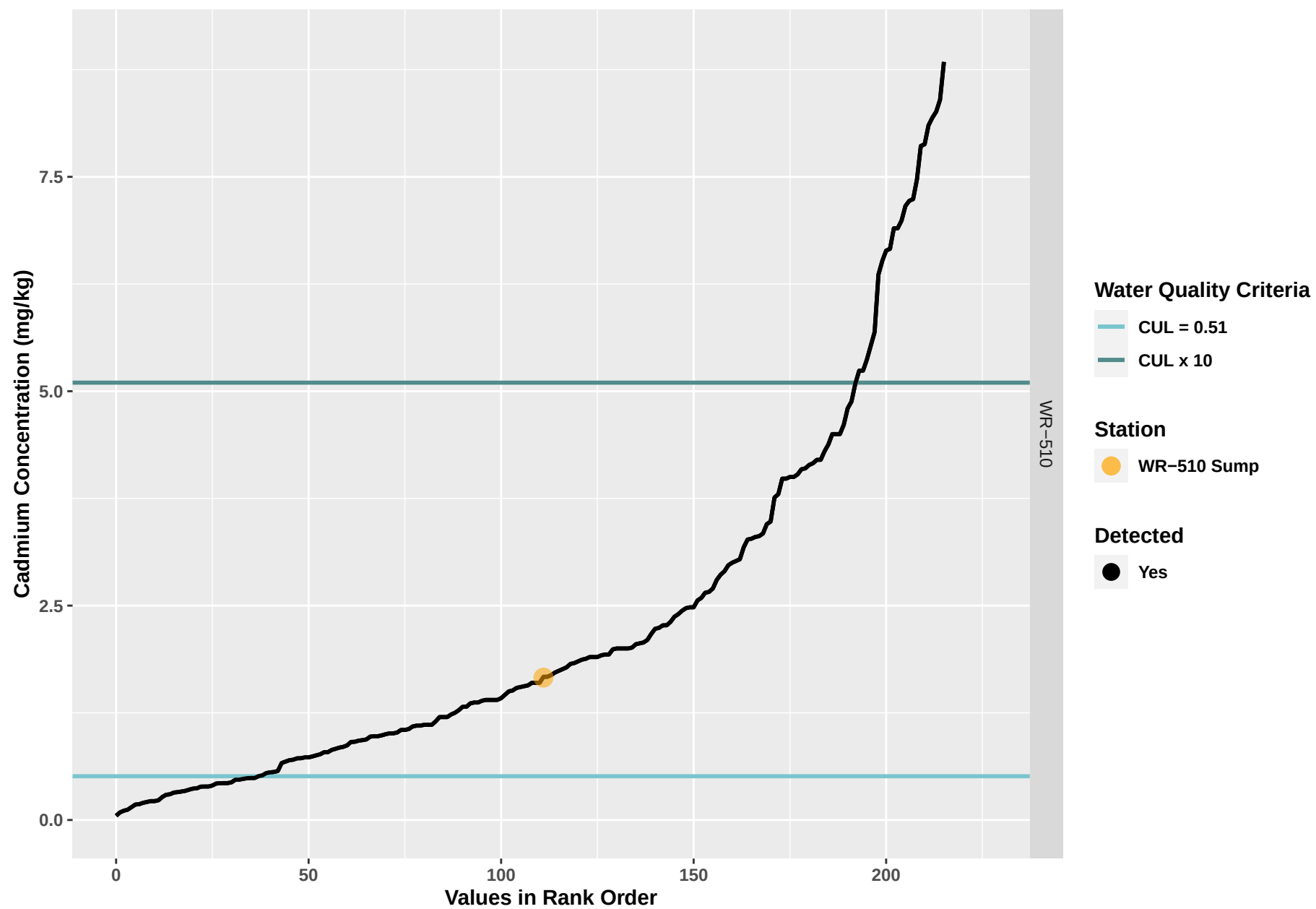


non-detects shown as 1/2 detection limit

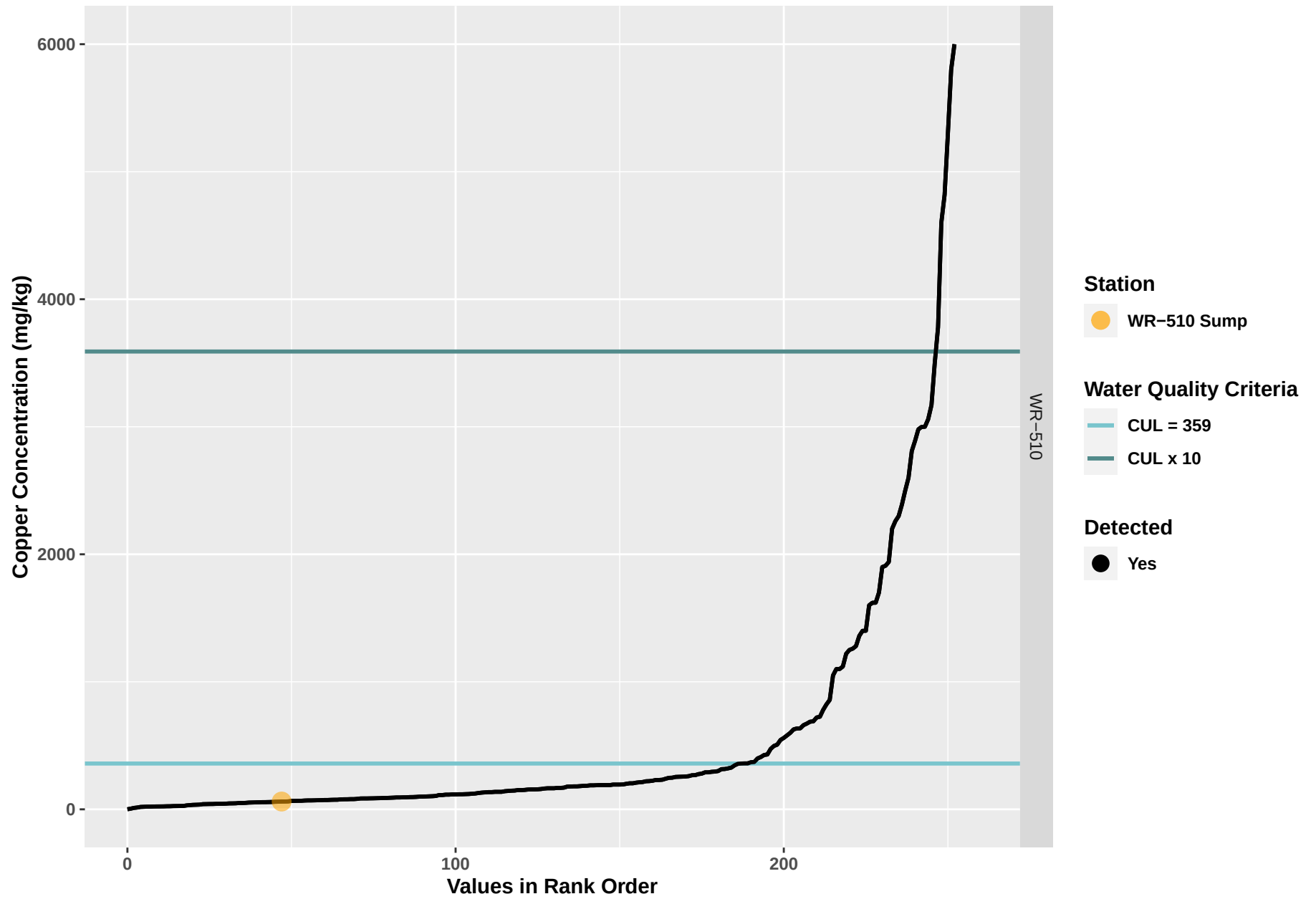
Arsenic



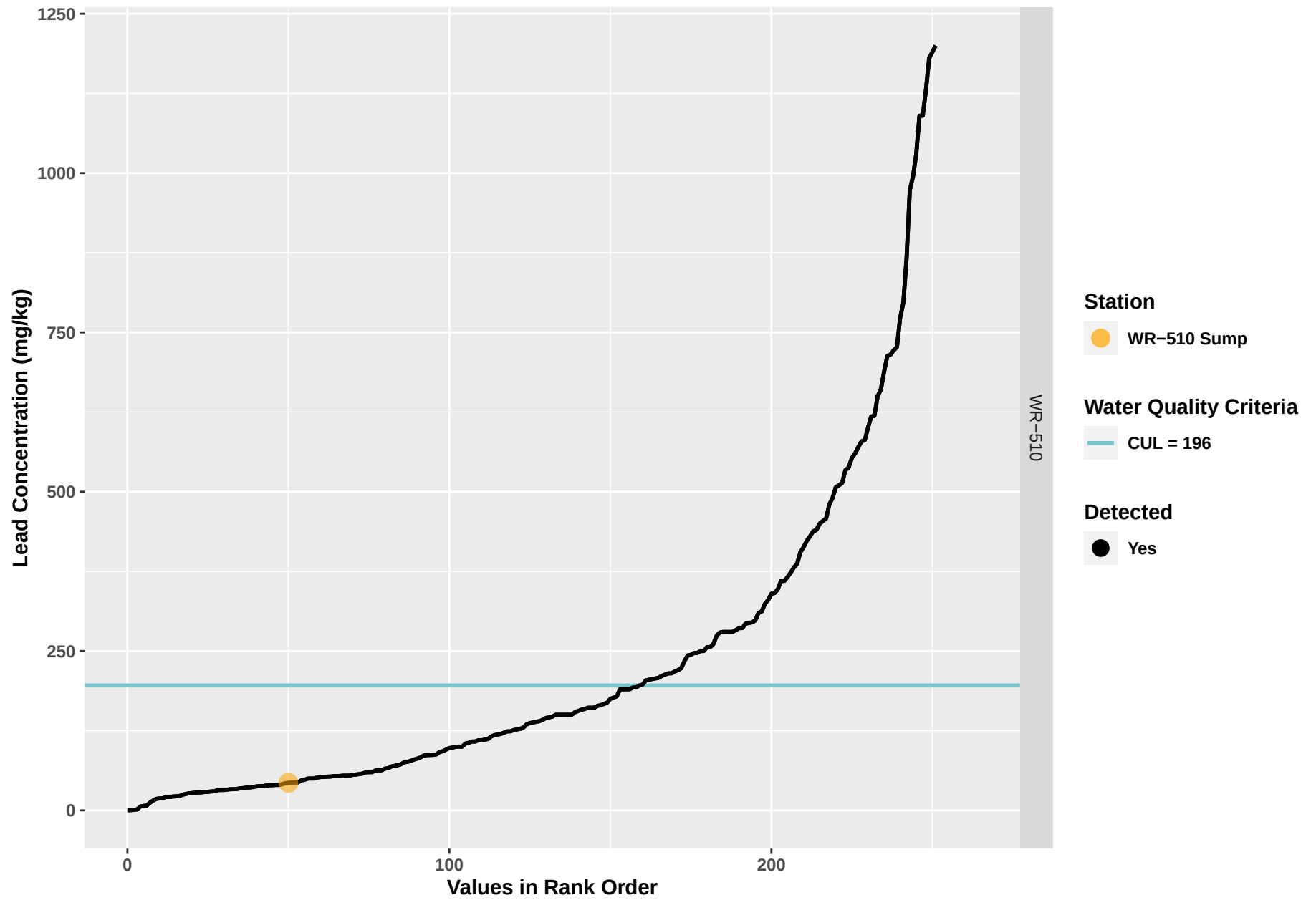
Cadmium



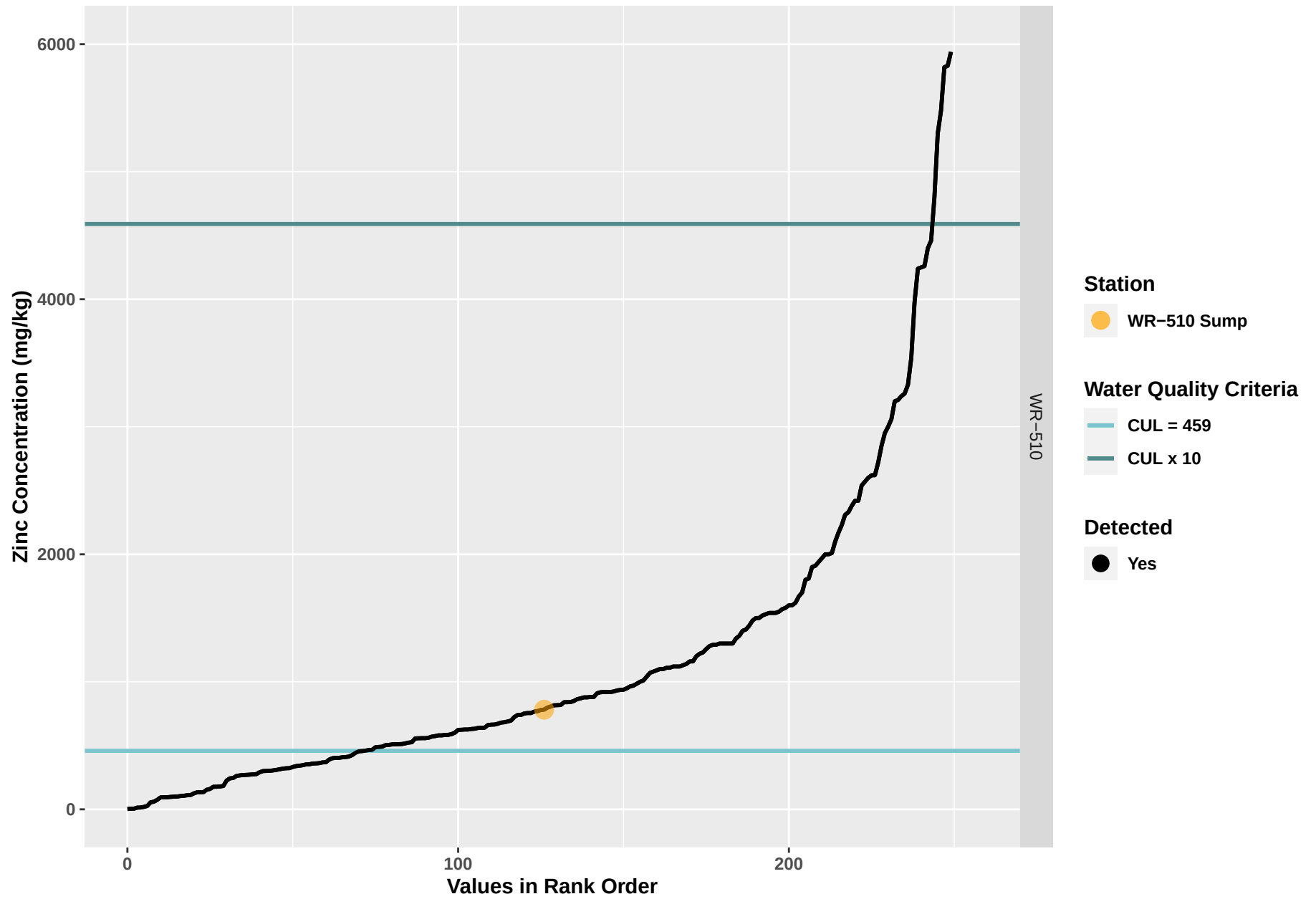
Copper



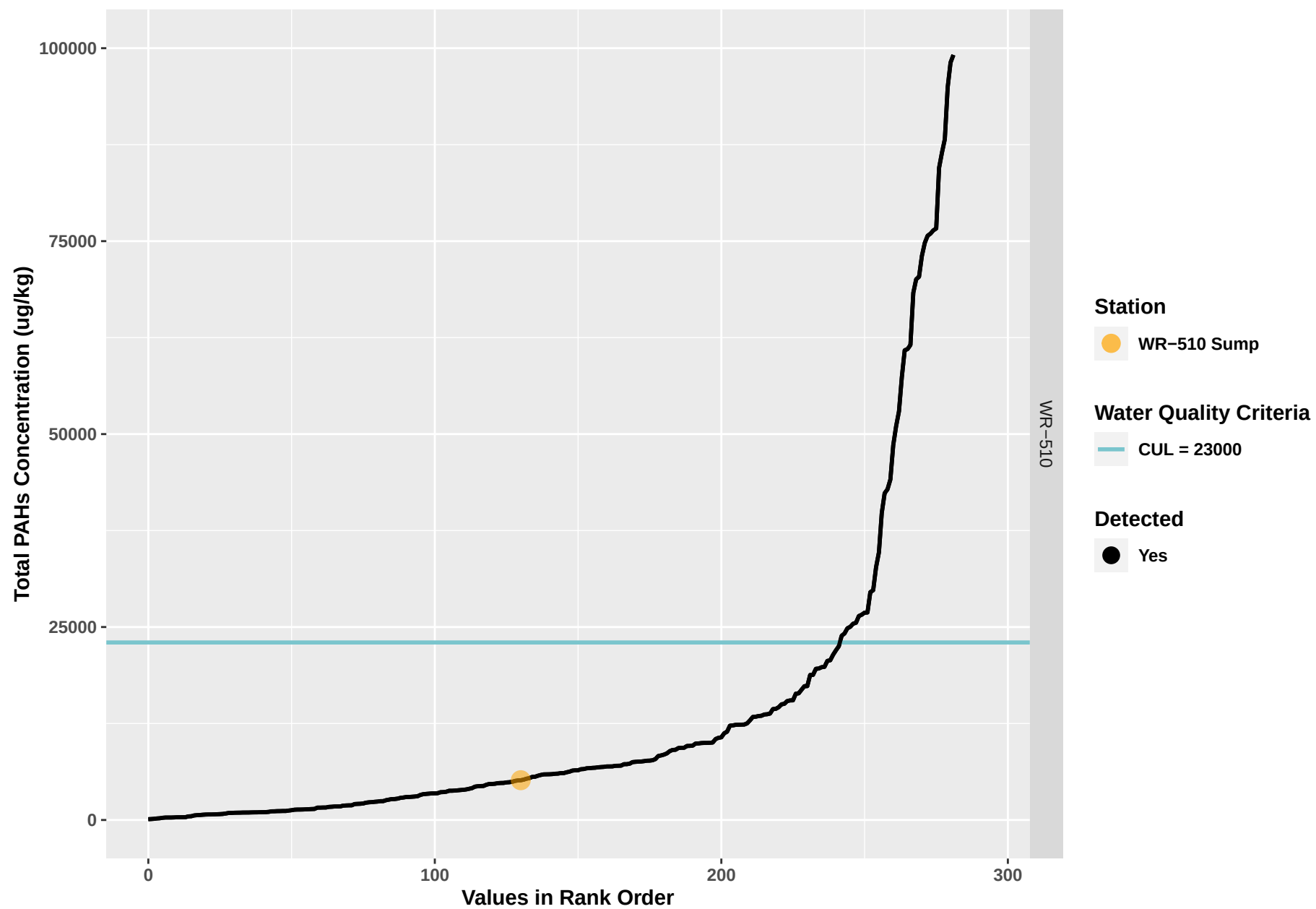
Lead



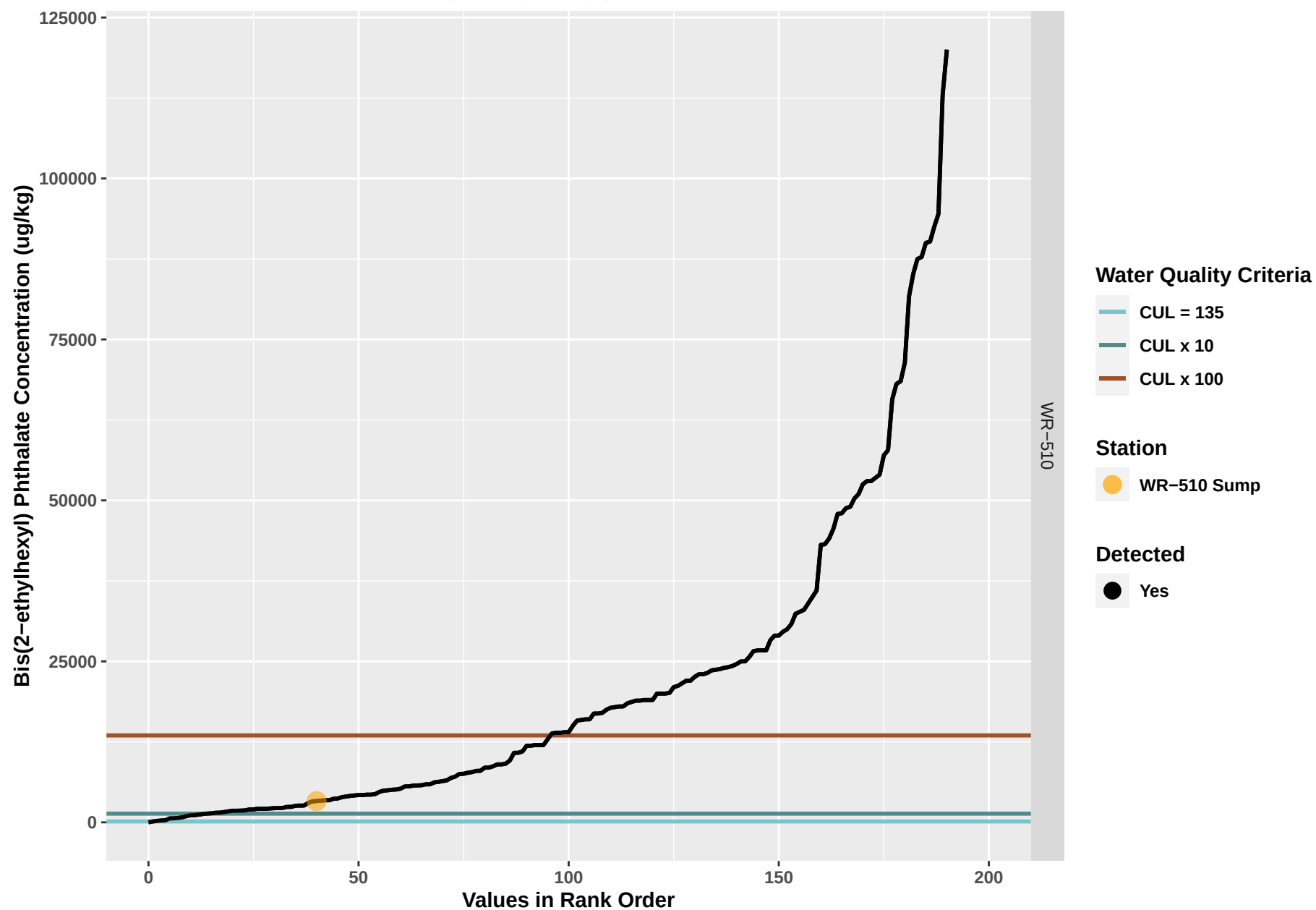
Zinc



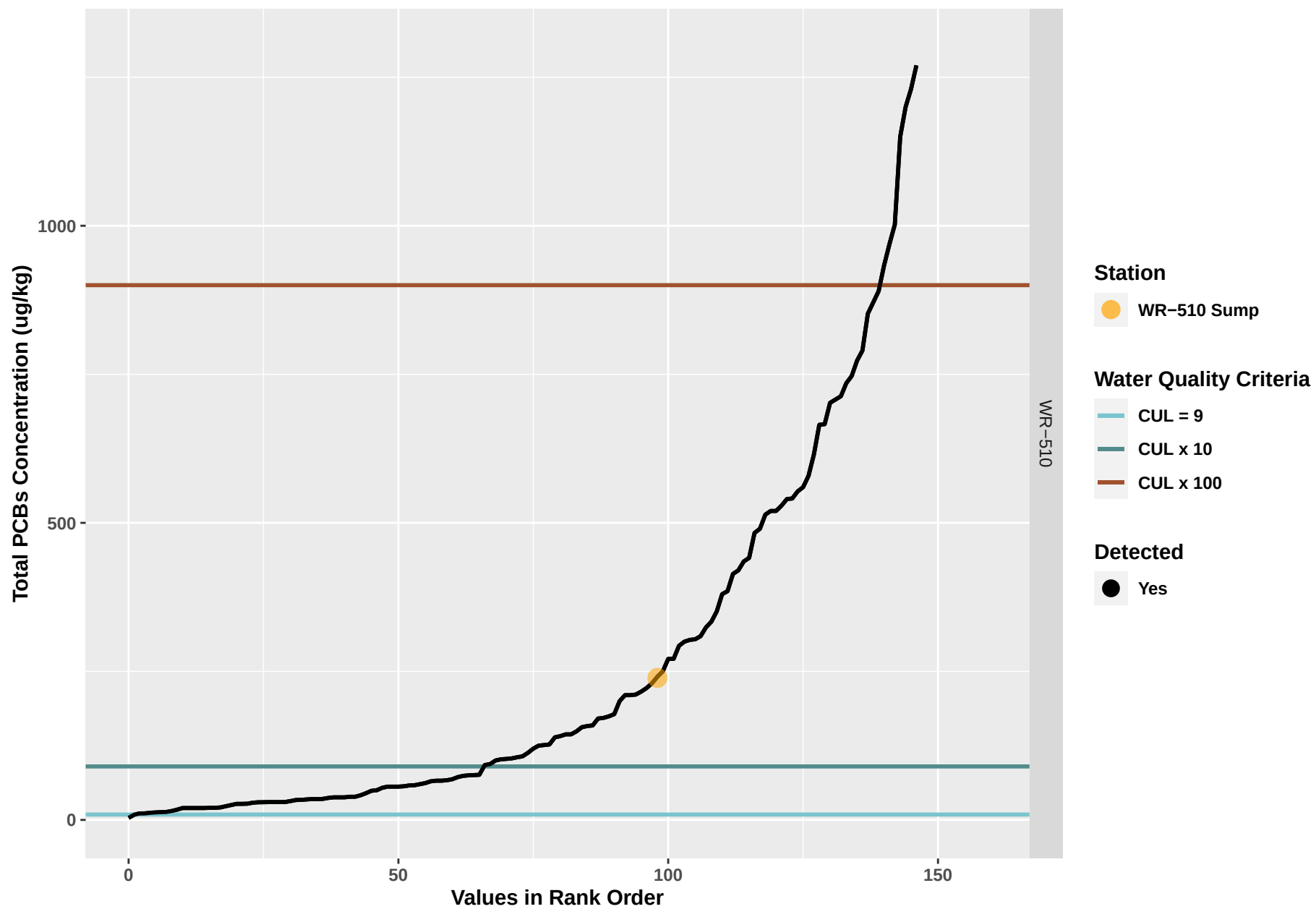
Total PAHs



Bis(2-ethylhexyl) Phthalate



Total PCBs



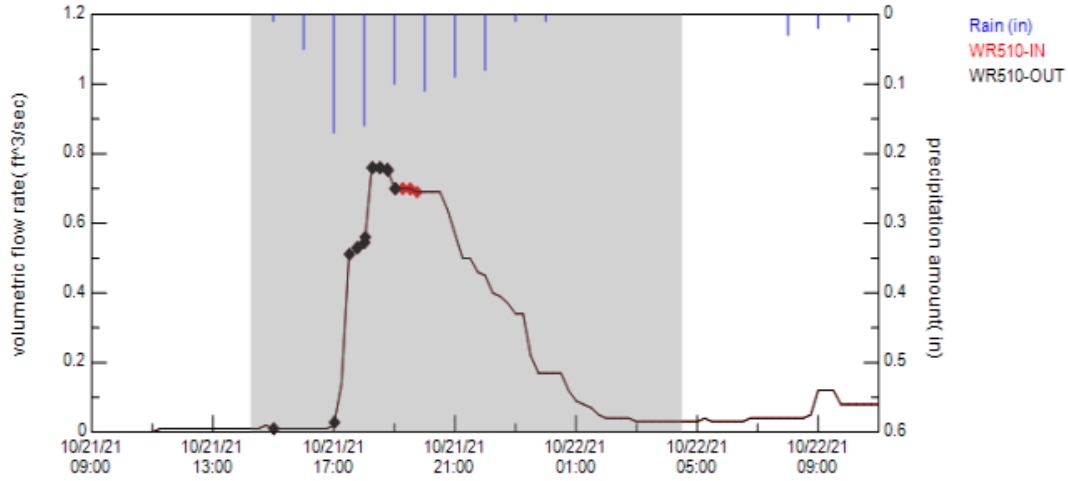
Appendix C

Storm Event Hydrographs



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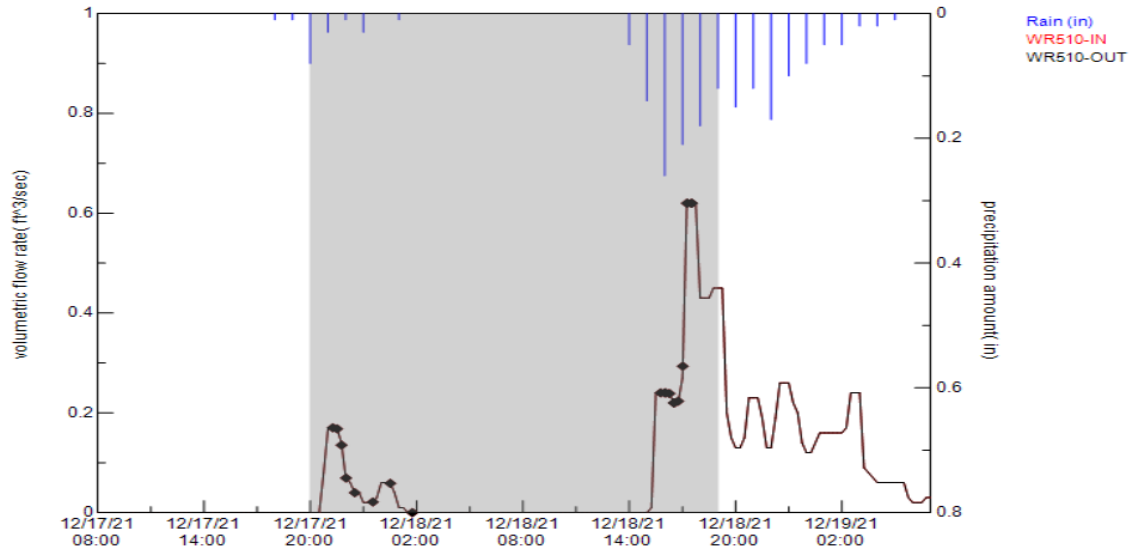
WR-510 10/21/2021



Precipitation Statistics			
Statistic	Units	Value	Matched
Start		10/21/2021 15:00	
Stop		10/22/2021 00:00	
Duration	hour	9	
Total	in	0.79	
Average Intensity	in/hr	0.0878	
Maximum	in	0.17	
Maximum Intensity	in/hr	0.17	
Antecedent Dry Period	hour	35	

Flow Statistics			
Statistic	Units	WR510-OUT	WR510-OUT
Start		10/21/2021 14:15	10/21/2021 14:15
Stop		10/22/2021 04:30	10/22/2021 04:30
Duration	hour	14.5	14.5
Average	ft³/sec	0.2695	0.2695
Maximum	ft³/sec	0.76	0.76
Volume	cf	14067	14067
Sample Count	count	20	15
First Sample Time		10/21/2021 15:01	10/21/2021 15:01
Last Sample Time		10/21/2021 19:45	10/21/2021 19:02
Sample Duration	hour	4.7333	4.0167
Sampled Volume	cf	6182.4	4385.4
Sample Coverage %	%	43.9497	31.1751
Average Sampled Flow	ft³/sec	0.6076	0.5776
Pacing Volume	cf	477	274
Sampled Flow 90th %	ft³/sec	0.76	0.76

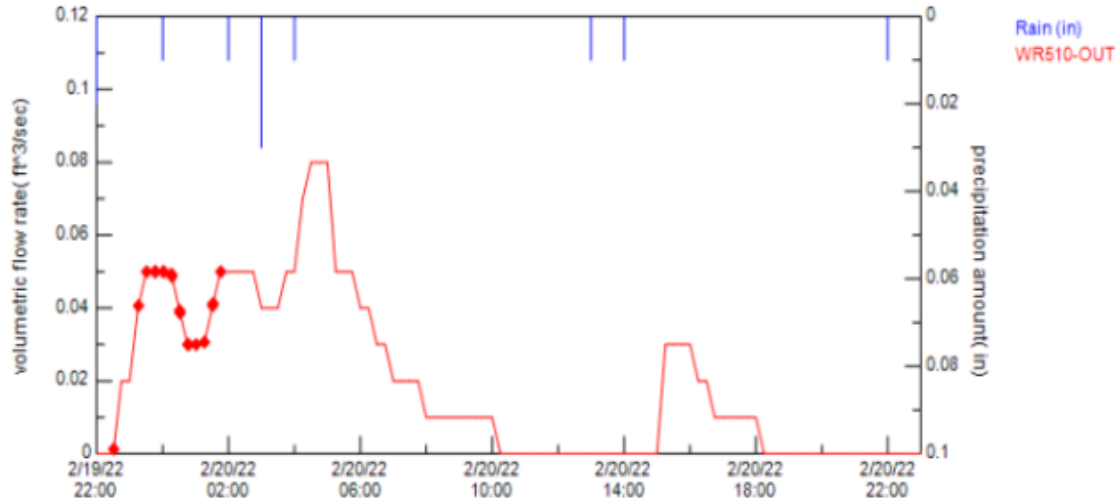
WR-510 12/17/2021



Precipitation Statistics			
Statistic	Units	Value	Matched
Start		12/17/2021 20:00	
Stop		12/18/2021 19:00	
Duration	hour	23	
Total	in	1.12	
Average Intensity	in/hr	0.0487	
Maximum	in	0.26	
Maximum Intensity	in/hr	0.26	
Antecedent Dry Period	hour	46	

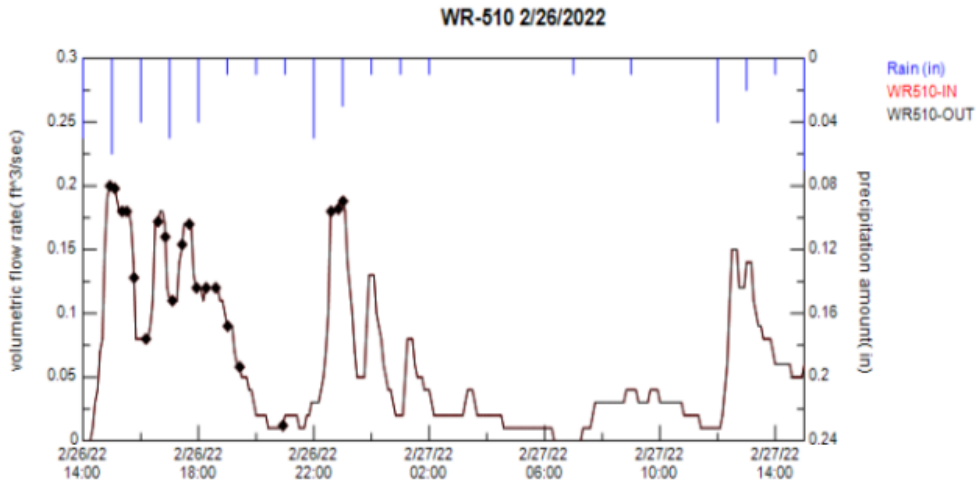
Flow Statistics			
Statistic	Units	WR510-OUT	WR510-OUT
Start		12/17/2021 20:45	12/17/2021 20:45
Stop		12/18/2021 19:00	12/18/2021 19:00
Duration	hour	8.75	8.75
Average	ft³/sec	0.2	0.2
Maximum	ft³/sec	0.62	0.62
Volume	cf	6299.999	6299.999
Sample Count	count	20	20
First Sample Time		12/17/2021 21:16	12/17/2021 21:16
Last Sample Time		12/18/2021 17:32	12/18/2021 17:32
Sample Duration	hour	20.2667	20.2667
Sampled Volume	cf	3457.2	3457.2
Sample Coverage %	%	54.8762	54.8762
Average Sampled Flow	ft³/sec	0.2529	0.2529
Pacing Volume	cf	188	188
Sampled Flow 90th %	ft³/sec	0.62	0.62

WR-510 2/19/2022



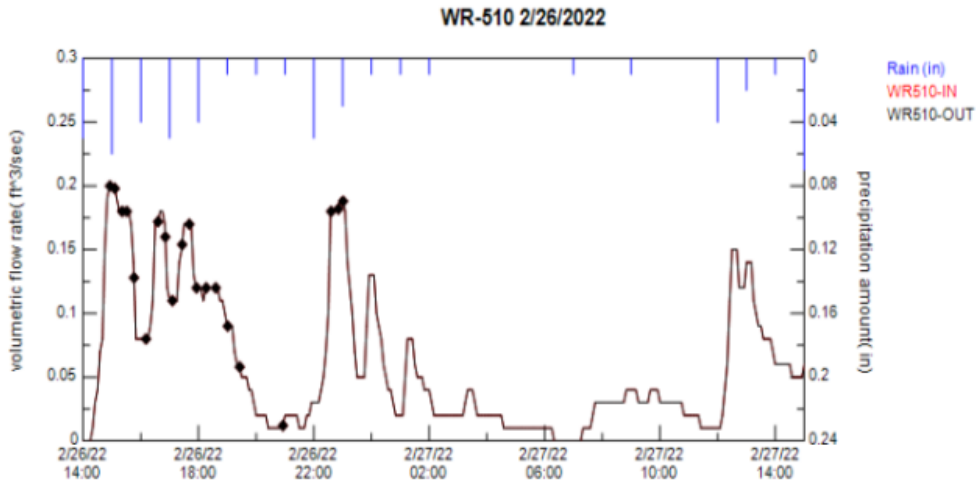
Precipitation Statistics		
	Units	Value
Start		2/19/2022 22:00
Stop		2/20/2022 22:00
Duration	hour	24
Total	in	0.11
Average Intensity	in/hr	0.0046
Maximum	in	0.03
Maximum Intensity	in/hr	0.03
Antecedent Dry Period	hour	102

Flow Statistics		
	Units	WR510-OUT
Start		2/19/2022 22:45
Stop		2/20/2022 18:00
Duration	hour	14.5
Average	ft³/sec	0.0329
Maximum	ft³/sec	0.08
Volume	cf	1719
Sample Count	count	17
First Sample Time		2/19/2022 23:16
Last Sample Time		2/20/2022 01:46
Sample Duration	hour	2.5
Sampled Volume	cf	378
Sample Coverage %	%	21.9895
Average Sampled Flow	ft³/sec	0.0423
Pacing Volume	cf	26
Sampled Flow 90th %	ft³/sec	0.05



Precipitation Statistics		
	Units	Value
Start		2/26/2022 14:00
Stop		2/27/2022 14:00
Duration	hour	24
Total	in	0.47
Average Intensity	in/hr	0.0196
Maximum	in	0.06
Maximum Intensity	in/hr	0.06
Antecedent Dry Period	hour	119

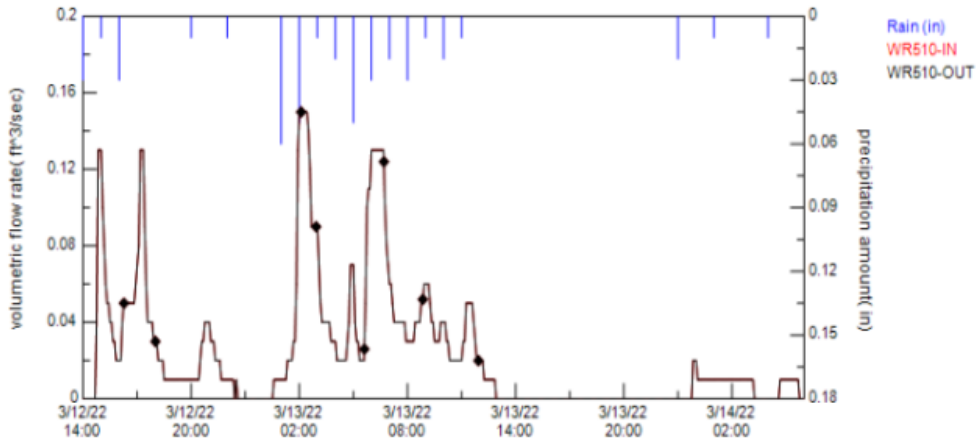
Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		2/26/2022 14:20	2/26/2022 14:20
Stop		2/27/2022 14:15	2/27/2022 14:15
Duration	hour	23	23
Average	ft³/sec	0.0623	0.0623
Maximum	ft³/sec	0.2	0.2
Volume	cf	5160.008	5160.008
Sample Count	count	20	20
First Sample Time		2/26/2022 14:56	2/26/2022 14:56
Last Sample Time		2/26/2022 23:01	2/26/2022 23:01
Sample Duration	hour	8.0833	8.0833
Sampled Volume	cf	2722.8	2722.8
Sample Coverage %	%	52.7674	52.7674
Average Sampled Flow	ft³/sec	0.1401	0.1401
Pacing Volume	cf	144	144
Sampled Flow 90th %	ft³/sec	0.197	0.197



Precipitation Statistics		
	Units	Value
Start		2/26/2022 14:00
Stop		2/27/2022 14:00
Duration	hour	24
Total	in	0.47
Average Intensity	in/hr	0.0196
Maximum	in	0.06
Maximum Intensity	in/hr	0.06
Antecedent Dry Period	hour	119

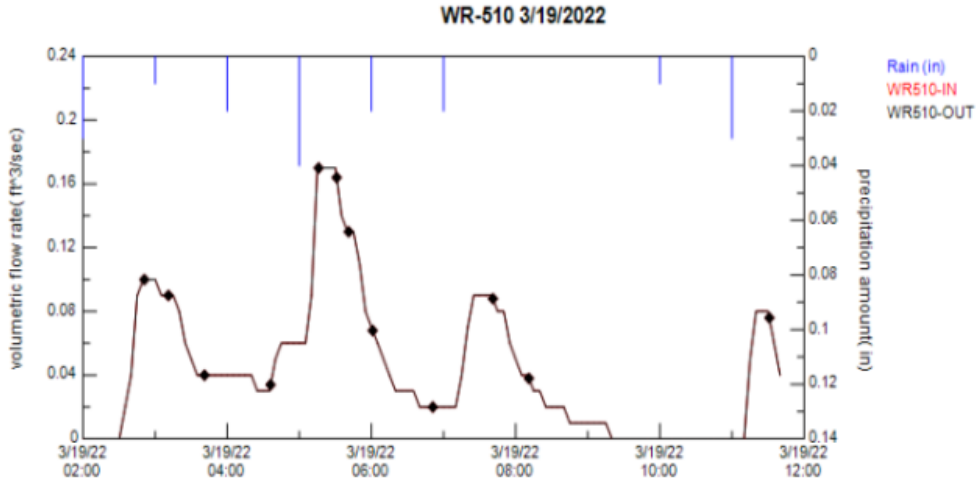
Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		2/26/2022 14:20	2/26/2022 14:20
Stop		2/27/2022 14:15	2/27/2022 14:15
Duration	hour	23	23
Average	ft³/sec	0.0623	0.0623
Maximum	ft³/sec	0.2	0.2
Volume	cf	5160.008	5160.008
Sample Count	count	20	20
First Sample Time		2/26/2022 14:56	2/26/2022 14:56
Last Sample Time		2/26/2022 23:01	2/26/2022 23:01
Sample Duration	hour	8.0833	8.0833
Sampled Volume	cf	2722.8	2722.8
Sample Coverage %	%	52.7674	52.7674
Average Sampled Flow	ft³/sec	0.1401	0.1401
Pacing Volume	cf	144	144
Sampled Flow 90th %	ft³/sec	0.197	0.197

WR-510 3/12/2022



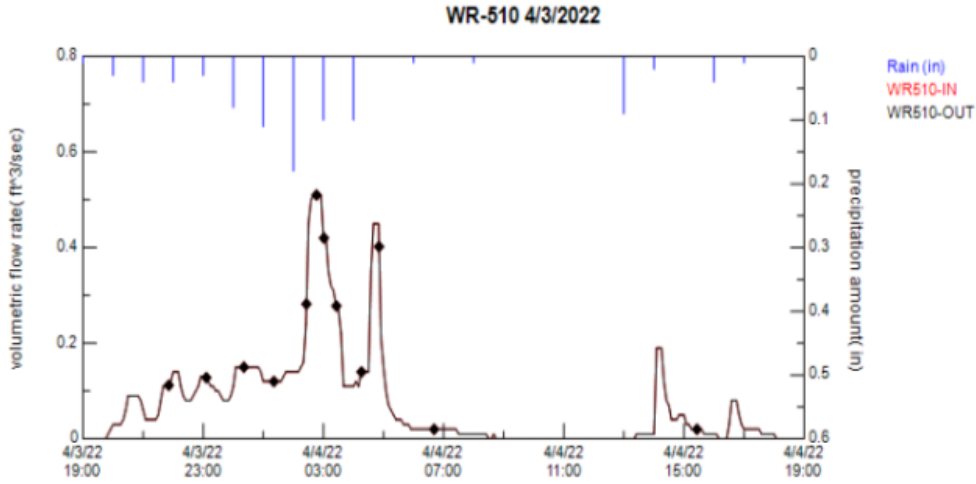
Precipitation Statistics		
	Units	Value
Start		3/12/2022 14:00
Stop		3/14/2022 04:00
Duration	hour	38
Total	in	0.44
Average Intensity	in/hr	0.0116
Maximum	in	0.06
Maximum Intensity	in/hr	0.06
Antecedent Dry Period	hour	81

Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		3/12/2022 14:45	3/12/2022 14:45
Stop		3/14/2022 05:40	3/14/2022 05:40
Duration	hour	24.5833	24.5833
Average	ft³/sec	0.0377	0.0377
Maximum	ft³/sec	0.15	0.15
Volume	cf	3333.007	3333.007
Sample Count	count	8	8
First Sample Time		3/12/2022 16:16	3/12/2022 16:16
Last Sample Time		3/13/2022 11:56	3/13/2022 11:56
Sample Duration	hour	19.6667	19.6667
Sampled Volume	cf	2794.2	2794.2
Sample Coverage %	%	83.8342	83.8342
Average Sampled Flow	ft³/sec	0.0677	0.0677
Pacing Volume	cf	395	395
Sampled Flow 90th %	ft³/sec	0.15	0.15



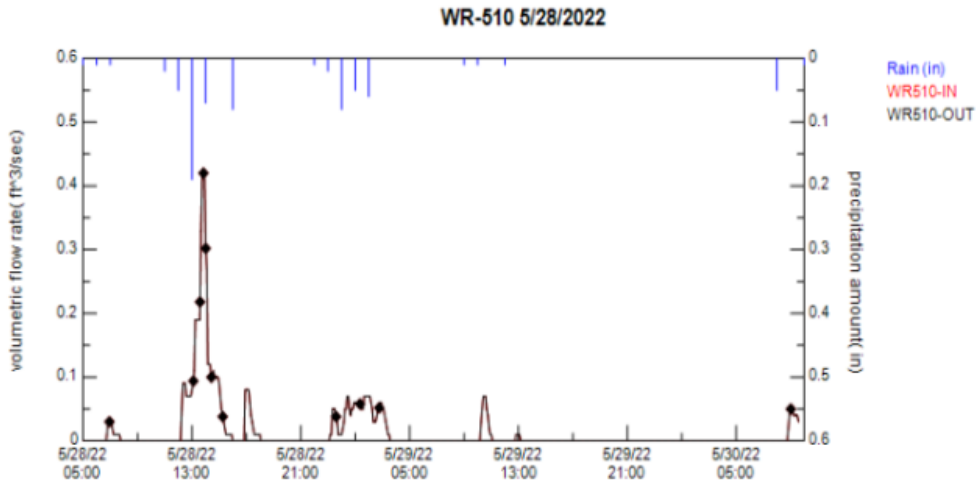
Precipitation Statistics		
	Units	Value
Start		3/19/2022 02:00
Stop		3/19/2022 11:00
Duration	hour	9
Total	in	0.18
Average Intensity	in/hr	0.02
Maximum	in	0.04
Maximum Intensity	in/hr	0.04
Antecedent Dry Period	hour	97

Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		3/19/2022 02:35	3/19/2022 02:35
Stop		3/19/2022 11:40	3/19/2022 11:40
Duration	hour	7.25	7.25
Average	ft³/sec	0.0576	0.0576
Maximum	ft³/sec	0.17	0.17
Volume	cf	1503	1503
Sample Count	count	12	12
First Sample Time		3/19/2022 02:51	3/19/2022 02:51
Last Sample Time		3/19/2022 11:31	3/19/2022 11:31
Sample Duration	hour	8.6667	8.6667
Sampled Volume	cf	1395.6	1395.6
Sample Coverage %	%	92.8543	92.8543
Average Sampled Flow	ft³/sec	0.0848	0.0848
Pacing Volume	cf	124	124
Sampled Flow 90th %	ft³/sec	0.1682	0.1682



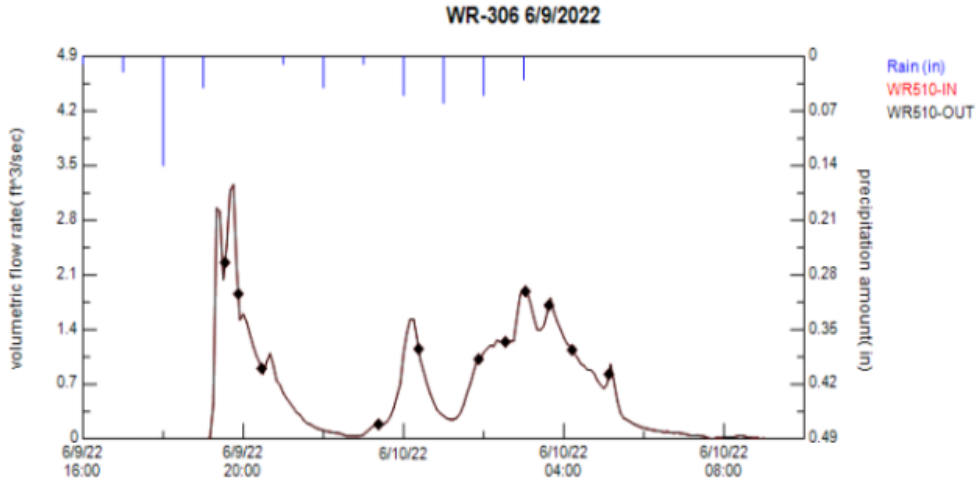
Precipitation Statistics		
	Units	Value
Start		4/3/2022 19:00
Stop		4/4/2022 17:00
Duration	hour	22
Total	in	0.9
Average Intensity	in/hr	0.0409
Maximum	in	0.18
Maximum Intensity	in/hr	0.18
Antecedent Dry Period	hour	311

Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		4/3/2022 19:50	4/3/2022 19:50
Stop		4/4/2022 18:00	4/4/2022 18:00
Duration	hour	17.0833	17.0833
Average	ft³/sec	0.099	0.099
Maximum	ft³/sec	0.51	0.51
Volume	cf	6090.009	6090.009
Sample Count	count	12	12
First Sample Time		4/3/2022 21:51	4/3/2022 21:51
Last Sample Time		4/4/2022 15:26	4/4/2022 15:26
Sample Duration	hour	17.5833	17.5833
Sampled Volume	cf	5439	5439
Sample Coverage %	%	89.3102	89.3102
Average Sampled Flow	ft³/sec	0.2152	0.2152
Pacing Volume	cf	501	501
Sampled Flow 90th %	ft³/sec	0.483	0.483



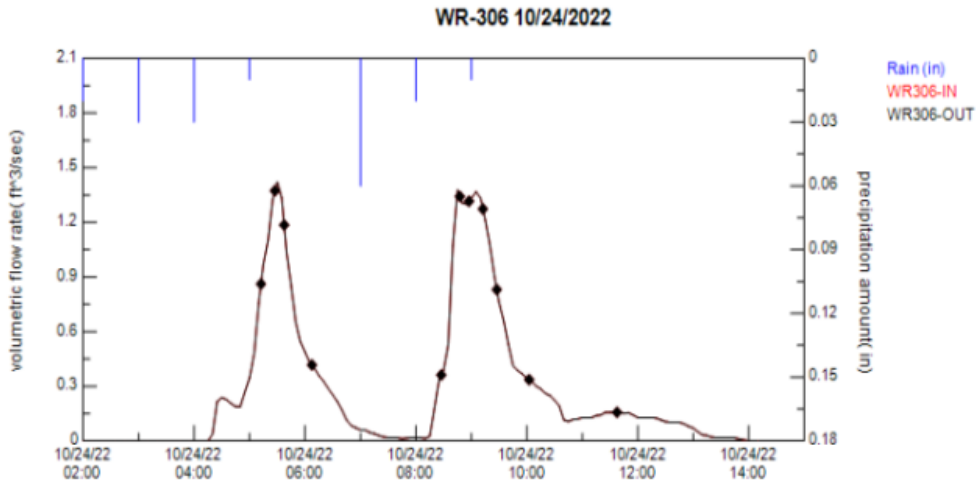
Precipitation Statistics		
	Units	Value
Start		5/28/2022 05:00
Stop		5/30/2022 08:00
Duration	hour	51
Total	in	0.74
Average Intensity	in/hr	0.0145
Maximum	in	0.19
Maximum Intensity	in/hr	0.19
Antecedent Dry Period	hour	35

Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		5/28/2022 06:45	5/28/2022 06:45
Stop		5/30/2022 09:35	5/30/2022 09:35
Duration	hour	12.3333	12.3333
Average	ft ³ /sec	0.0639	0.0639
Maximum	ft ³ /sec	0.42	0.42
Volume	cf	2838.003	2838.003
Sample Count	count	11	11
First Sample Time		5/28/2022 06:56	5/28/2022 06:56
Last Sample Time		5/30/2022 09:01	5/30/2022 09:01
Sample Duration	hour	50.0833	50.0833
Sampled Volume	cf	2731.2	2731.2
Sample Coverage %	%	96.2367	96.2367
Average Sampled Flow	ft ³ /sec	0.1273	0.1273
Pacing Volume	cf	272	272
Sampled Flow 90th %	ft ³ /sec	0.3964	0.3964



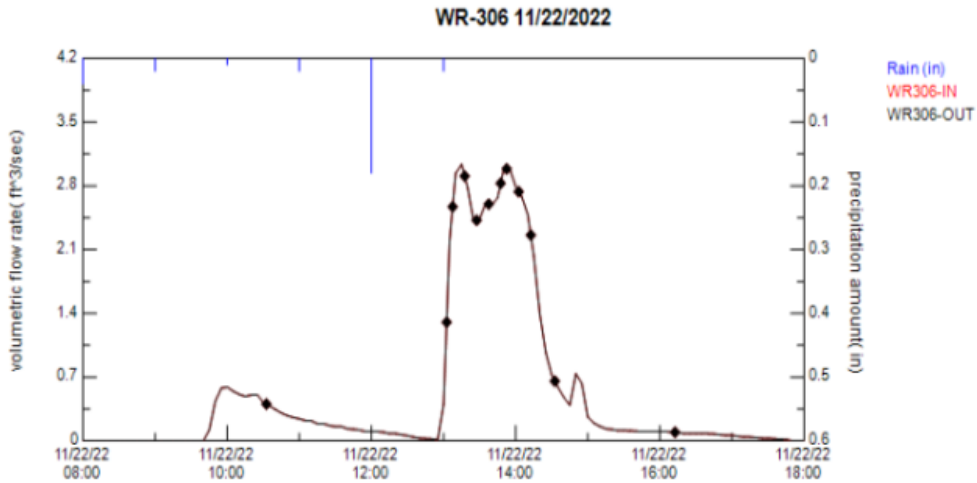
Precipitation Statistics		
	Units	Value
Start		6/9/2022 16:00
Stop		6/10/2022 03:00
Duration	hour	11
Total	in	0.46
Average Intensity	in/hr	0.0418
Maximum	in	0.14
Maximum Intensity	in/hr	0.14
Antecedent Dry Period	hour	91

Flow Statistics			
	Units	WR510-IN	WR510-OUT
Start		6/9/2022 19:10	6/9/2022 19:10
Stop		6/10/2022 09:00	6/10/2022 09:00
Duration	hour	13.9167	13.9167
Average	ft³/sec	0.6737	0.6737
Maximum	ft³/sec	3.256	3.256
Volume	cf	33752.4	33752.4
Sample Count	count	11	11
First Sample Time		6/9/2022 19:32	6/9/2022 19:32
Last Sample Time		6/10/2022 05:07	6/10/2022 05:07
Sample Duration	hour	9.5833	9.5833
Sampled Volume	cf	29337.44	29337.44
Sample Coverage %	%	86.9196	86.9196
Average Sampled Flow	ft³/sec	1.2901	1.2901
Pacing Volume	cf	2893	2893
Sampled Flow 90th %	ft³/sec	2.1852	2.1852



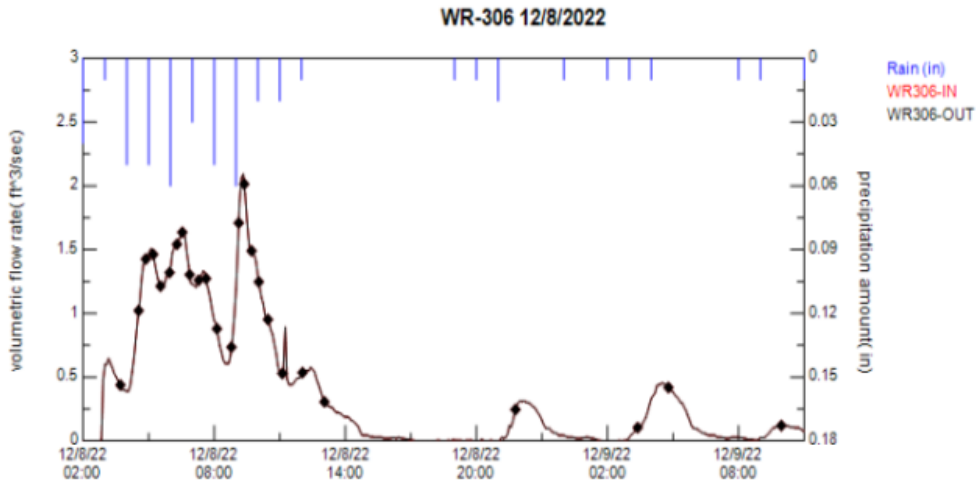
Precipitation Statistics		
	Units	Value
Start		10/24/2022 02:00
Stop		10/24/2022 09:00
Duration	hour	7
Total	in	0.18
Average Intensity	in/hr	0.0257
Maximum	in	0.06
Maximum Intensity	in/hr	0.06
Antecedent Dry Period	hour	47

Flow Statistics			
	Units	WR306-IN	WR306-OUT
Start		10/24/2022 04:20	10/24/2022 04:20
Stop		10/24/2022 14:00	10/24/2022 14:00
Duration	hour	9.75	9.75
Average	ft³/sec	0.3323	0.3323
Maximum	ft³/sec	1.422	1.422
Volume	cf	11663.7	11663.7
Sample Count	count	11	11
First Sample Time		10/24/2022 05:12	10/24/2022 05:12
Last Sample Time		10/24/2022 11:37	10/24/2022 11:37
Sample Duration	hour	6.4167	6.4167
Sampled Volume	cf	9922.5	9922.5
Sample Coverage %	%	85.0716	85.0716
Average Sampled Flow	ft³/sec	0.8596	0.8596
Pacing Volume	cf	989	989
Sampled Flow 90th %	ft³/sec	1.3672	1.3672



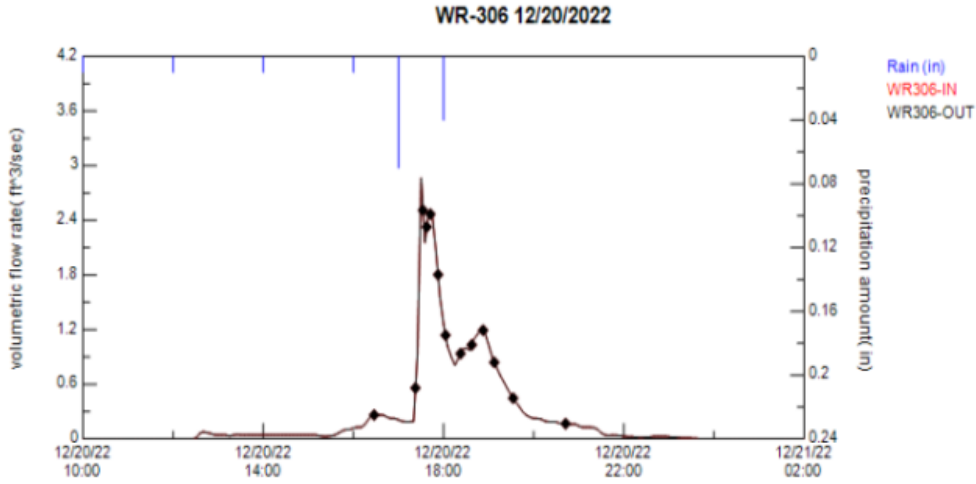
Precipitation Statistics		
	Units	Value
Start		11/22/2022 08:00
Stop		11/22/2022 13:00
Duration	hour	5
Total	in	0.29
Average Intensity	in/hr	0.058
Maximum	in	0.18
Maximum Intensity	in/hr	0.18
Antecedent Dry Period	hour	193

Flow Statistics			
	Units	WR306-IN	WR306-OUT
Start		11/22/2022 09:45	11/22/2022 09:45
Stop		11/22/2022 17:50	11/22/2022 17:50
Duration	hour	8.1667	8.1667
Average	ft³/sec	0.5915	0.5915
Maximum	ft³/sec	3.037	3.037
Volume	cf	17389.2	17389.2
Sample Count	count	12	12
First Sample Time		11/22/2022 10:32	11/22/2022 10:32
Last Sample Time		11/22/2022 16:12	11/22/2022 16:12
Sample Duration	hour	5.6667	5.6667
Sampled Volume	cf	15620.7	15620.7
Sample Coverage %	%	89.8299	89.8299
Average Sampled Flow	ft³/sec	1.9813	1.9813
Pacing Volume	cf	1538	1538
Sampled Flow 90th %	ft³/sec	2.9636	2.9636



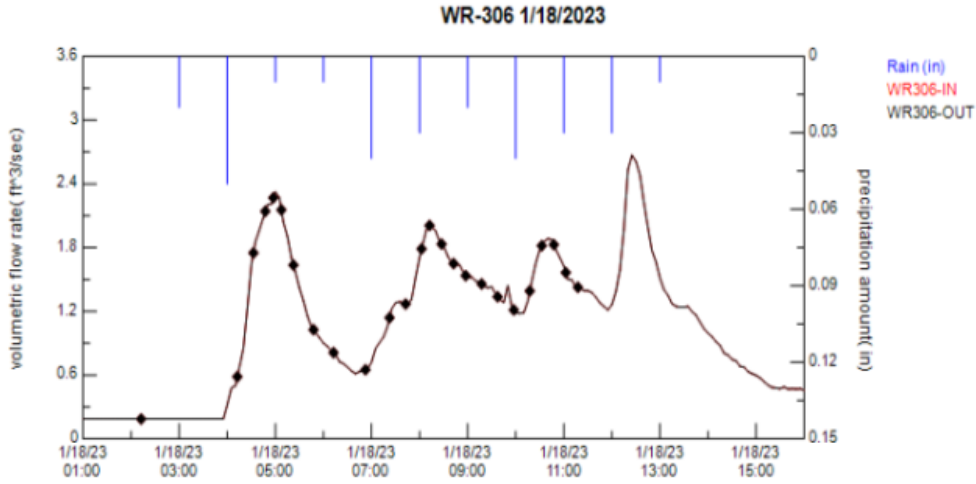
Precipitation Statistics		
	Units	Value
Start		12/8/2022 02:00
Stop		12/9/2022 09:00
Duration	hour	31
Total	in	0.5
Average Intensity	in/hr	0.0161
Maximum	in	0.06
Maximum Intensity	in/hr	0.06
Antecedent Dry Period	hour	85

Flow Statistics			
	Units	WR306-IN	WR306-OUT
Start		12/8/2022 02:50	12/8/2022 02:50
Stop		12/9/2022 10:30	12/9/2022 10:30
Duration	hour	31.75	31.75
Average	ft³/sec	0.3739	0.3739
Maximum	ft³/sec	2.094	2.094
Volume	cf	42732.63	42732.63
Sample Count	count	25	25
First Sample Time		12/8/2022 03:42	12/8/2022 03:42
Last Sample Time		12/9/2022 09:57	12/9/2022 09:57
Sample Duration	hour	30.25	30.25
Sampled Volume	cf	40797.6	40797.6
Sample Coverage %	%	95.4718	95.4718
Average Sampled Flow	ft³/sec	1.0075	1.0075
Pacing Volume	cf	1698	1698
Sampled Flow 90th %	ft³/sec	1.6654	1.6654



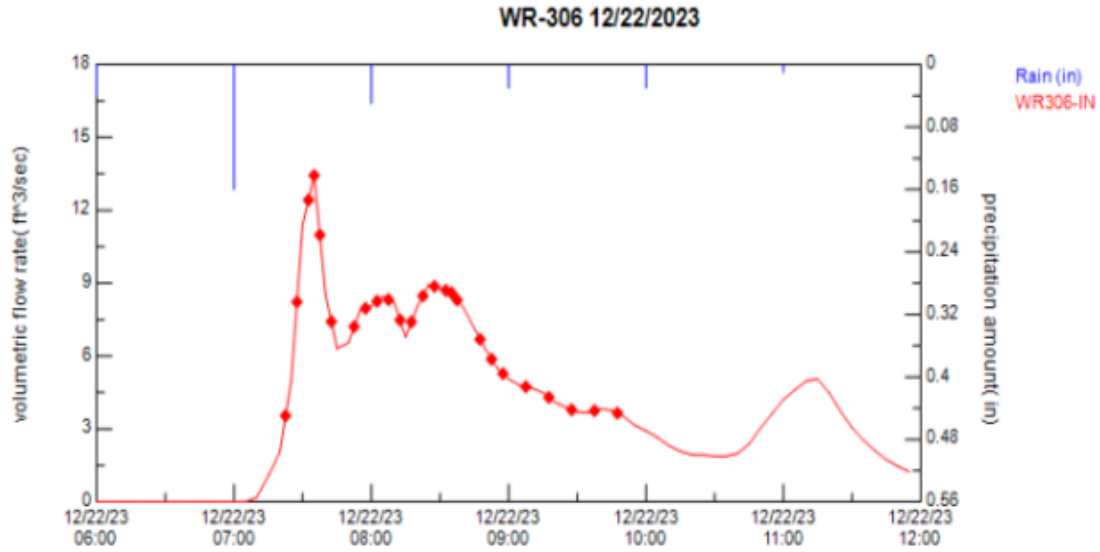
Precipitation Statistics		
	Units	Value
Start		12/20/2022 10:00
Stop		12/20/2022 18:00
Duration	hour	8
Total	in	0.15
Average Intensity	in/hr	0.0188
Maximum	in	0.07
Maximum Intensity	in/hr	0.07
Antecedent Dry Period	hour	50

Flow Statistics			
	Units	WR306-IN	WR306-OUT
Start		12/20/2022 12:30	12/20/2022 12:30
Stop		12/21/2022 01:40	12/21/2022 01:40
Duration	hour	12.0833	12.0833
Average	ft³/sec	0.2946	0.2946
Maximum	ft³/sec	2.864	2.864
Volume	cf	12815.09	12815.09
Sample Count	count	13	13
First Sample Time		12/20/2022 16:27	12/20/2022 16:27
Last Sample Time		12/20/2022 20:42	12/20/2022 20:42
Sample Duration	hour	4.25	4.25
Sampled Volume	cf	11323.35	11323.35
Sample Coverage %	%	88.3595	88.3595
Average Sampled Flow	ft³/sec	1.2069	1.2069
Pacing Volume	cf	896	896
Sampled Flow 90th %	ft³/sec	2.4939	2.4939



Precipitation Statistics		
	Units	Value
Start		1/18/2023 03:00
Stop		1/18/2023 13:00
Duration	hour	10
Total	in	0.29
Average Intensity	in/hr	0.029
Maximum	in	0.05
Maximum Intensity	in/hr	0.05
Antecedent Dry Period	hour	72

Flow Statistics			
	Units	WR306-IN	WR306-OUT
Start		1/18/2023 01:55	1/18/2023 01:55
Stop		1/18/2023 15:20	1/18/2023 15:20
Duration	hour	13.5	13.5
Average	ft³/sec	1.1547	1.1547
Maximum	ft³/sec	2.671	2.671
Volume	cf	56119.49	56119.49
Sample Count	count	25	25
First Sample Time		1/18/2023 02:12	1/18/2023 02:12
Last Sample Time		1/18/2023 11:17	1/18/2023 11:17
Sample Duration	hour	9.0833	9.0833
Sampled Volume	cf	37488.6	37488.6
Sample Coverage %	%	66.8014	66.8014
Average Sampled Flow	ft³/sec	1.4596	1.4596
Pacing Volume	cf	1548	1548
Sampled Flow 90th %	ft³/sec	2.1477	2.1477



Precipitation Statistics		
	Units	Value
Start		12/22/2023 06:00
Stop		12/22/2023 11:00
Duration	hour	5
Total	in	0.32
Average Intensity	in/hr	0.064
Maximum	in	0.16
Maximum Intensity	in/hr	0.16
Antecedent Dry Period	hour	72

Flow Statistics		
	Units	WR306-IN
Start		12/22/2023 07:10
Stop		12/22/2023 11:55
Duration	hour	4.8333
Average	ft³/sec	4.6879
Maximum	ft³/sec	13.44
Volume	cf	81569.39
Sample Count	count	25
First Sample Time		12/22/2023 07:22
Last Sample Time		12/22/2023 09:47
Sample Duration	hour	2.4167
Sampled Volume	cf	57966.45
Sample Coverage %	%	71.064
Average Sampled Flow	ft³/sec	7.3514
Pacing Volume	cf	2365
Sampled Flow 90th %	ft³/sec	11.561

Appendix D

Data Quality Assurance Worksheets



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Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 2/4/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 10/21/21 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2112456)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	7	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	96,93	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	27	≤28	<0.5 mg/L 0.5 mg/L	108,107	83-117	103	83-117	MS/MSd 0.7	≤33	NS	≤40	OK	None
Hardness	SM 2340C	15	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	102	90-110	0	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	12	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	101-107	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	7	≤7 (extract)	0.0013-0.048 <0.02-1.0 0.02-1.0 µg/L	Surr 83-108 (pah) 61-144 (phthal)	10-171	93-128 (pah) 53-76 (phthal)	42-147	LCS 0-7	≤30	NS	≤35	CCV outside control criterion for BEHP, OK per laboratory method	No flag for MB<RL. LCS/LCSD – anthracene = 128% LCS (<127%), no flag marginal. For phthalates – surrogates high for -IN, flag all phthalates J for potential high bias. LCS/LCSD – dimethyl phthalate = 56% LCS (>60), di-n-butyl = 53/55% (>61%). Flag results J for di-n-butyl phthalate due to exceedance.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Sample Date/Sample ID: 10/21/21 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2112456)

Date 2/4/22 Page 2 of 2

Checked: initials JB

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performanc e	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	8	NA	<0.005-0.010 µg/L 0.005-0.010 µg/L	Surr 54-95	25-144 surr 10-140	75-93	50- 103	LCS 5,3	≤30	NS	≤35	Results reported from column with acceptable CCV	J Ar-1254 for -OUT due to column %D.

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 2/4/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, dioxin/furan, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/18/21 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2114781)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	5	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	104	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	25	≤28	<0.5 mg/L 0.5 mg/L	100	83-117	99	83-117	Dup =27 LCS = 1	≤33	NS	≤40	OK	None - -Dup outside lab limits (<20), but met project limits.
Hardness	SM 2340C	12	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	102	90-110	<1	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	16	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	92-102	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	5	≤7 (extract)	<0.02-1.0 0.02-1.0 µg/L	Surr 55-71 (pah) 52-81 (phthal)	10-171	64-86 (pah) 64-94 (phthal)	42-147	LCS 4-13	≤30	NS	≤35	CCV for anthracene outside control limit, OK per method	All results <RL in MB. For LCS/LCSD – benzo(a)pyrene = 74% LCSD (>75%; no flag marginal), and fluoranthene = 69/67 LCS/LCSD (>70), flag both samples J for fluoranthene. For CCVs: anthracene, BEHP, and BBP outside criteria. Flag all results J for BEHP due to potential high bias. No flag for BBP (<RL) or anthracene.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 2/4/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, dioxin/furan, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/18/21 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2114781)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performanc e	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	15	NA	<0.005-0.010 µg/L	Surr 68-75	25-144 Surr 10-140	101-109	50-103	LCS 0,4	≤30	NS	≤35	OK	J Ar-1254 for -OUT due to column %D
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 2/20/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2201904)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	5	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	96	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	15	≤28	<0.5 mg/L 0.5 mg/L	NR	83-117	99, 100	83-117	NA	≤33	NS	≤40	OK	None
Hardness	SM 2340C	8	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	102	90-110	NA	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	12	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	100-106	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	12, 15	40	0.0022, 0.032, 0.25, <0.02-0.2 0.02-1.0 µg/L	Surr 32-41, 43-106	10-171	84-119, 126	42-147	LCS 4-18	≤30	NS	≤35	CCV %D for butyl benzyl phthalate & benzo(a)-pyrene outside control limit, OK per method	No flag for MB < RL. No flag for low surrogate recoveries due to matrix interference. No flag for high butyl benzyl phthalate LCS %R – potential high bias but ND in all samples.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 2/20/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2201904)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performanc e	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	22	NA	<0.005-0.010 µg/L	MS 100-128 Surr 83-128	25-144 surr 10-140	103, 120	50- 103	MS 1, MS 4	≤30	NS	≤35	ICV outside criteria for Aroclor 1260. Results from passing column reported, OK per method.	No flag for mixture of Aroclors detected in both samples and possible coelution.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 2/26/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202103)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	4	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	90	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	13	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	99, 99	83-117	NA	≤33	NS	≤40	OK	None
Hardness	SM 2340C	17	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	102	90-110	<1-4	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	12	≤180	<0.02-2.0 0.02-2.0 µg/L	80-105	75-125	96-100	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	9, 20	40	<0.02-1.0 0.02-1.0 µg/L	Surr 81-96	Surr 10-171	82-122	42-147	LCS <1-4	≤30	NS	≤35	CCV %D for benzo(a)-pyrene outside control limit, OK per method	None



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 2/26/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202103)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	16	NA	<0.005-0.010 µg/L	Batch MS 100-128 Surr 88-102	25-144 Surr 10-140	103, 120	31-182	Batch MS 1, Batch MS 4	≤30	NS	≤35	ICV outside criteria for Aroclor 1260. Results from passing column reported, OK per method.	Detection limits were elevated for all samples due to high levels of heavy sediment and viscous extracts. No flag for potential elution due to Aroclor 1232, 1254, and 1260 detection in all samples.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 3/13/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202680)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	3	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	93, 93	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	16	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	97, 100, 101	83-117	LCS 1	≤33	NS	≤40	OK	None
Hardness	SM 2340C	5	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	98	90-110	<1	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	5	≤180	<0.02-2.0 0.02-2.0 µg/L	97-103	75-125	96-100	80-120	D=0.1, <1-6	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	8, 40	40	0.0016-0.0018, <0.02-1.0 0.02-1.0 µg/L	Surr 69-100	Surr 10-171	74-127	42-147	LCS <1-3	≤30	NS	≤35	CCV %D for several analytes outside control limit, all analytes were ND in associated samples	None



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 3/13/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202680)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performanc e	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	15	NA	<0.005-0.010 µg/L	Surr 59-89	25-144 surr 10-140	84-104	31- 182	LCS 1-5	≤30	NS	≤35	ICV outside criteria for Aroclor 1260. Results from passing column reported, OK per method.	Insufficient volume to run MS/MSD pair, LCS/LCSD was analyzed in lieu. No flag for potential elution due to Aroclor 1232, 1254, and 1260 detection in all samples.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 3/19/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202953)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	5	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	95	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	10	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	97, 100, 101	83-117	LCS 1	≤33	NS	≤40	OK	None
Hardness	SM 2340C	5	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	104	90-110	NA	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	5	≤180	<0.02-2.0 0.02-2.0 µg/L	95-100	75-125	98-103	80-120	D=0.01, <1-9	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	11, 26	40	0.0016-0.0033, 0.03 <0.02-1.0 0.02-1.0 µg/L	Surr 59-101	Surr 10-171	75-127	42-147	LCS <1-8	≤30	NS	≤35	CCV %D for several analytes outside control limit, all analytes were ND in associated samples	No flag for MB < RL. All samples were run at dilution due to high concentrations of non-target background components and have elevated reporting limits.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Sample Date/Sample ID: 3/19/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2202953)

Date 5/10/22 Page 2 of 2

Checked: initials JB

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	9	NA	<0.005-0.010 µg/L	Surr 61-89	25-144 surr 10-140	84-104	31-182	LCS 1-5	≤30	NS	≤35	ICV outside criteria for Aroclor 1260. Results from passing column reported, OK per method.	Insufficient volume to run MS/MSD pair, LCS/LCSD was analyzed in lieu. No flag for potential elution due to 2 or 3 PCB aroclor detections in each sample.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 4/4/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2203582)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	8	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	94	85-115	NA	≤10	2	≤35	OK	Flag all samples J due to holding time exceedance due to lab power outage.
TOC	EPA 415.1	17	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	98, 98, 100	83-117	NA	≤33	2	≤40	OK	None
Hardness	SM 2340C	3	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	102	90-110	7	≤20	10	≤20	OK	None
Total Metals	EPA 6020A	15	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	99-104	80-120	NA	≤20	D=0.02, 1-28	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	16 (4 extract), 22 (8 extract)	40	0.001-0.0072, 0.036, 3.3, <0.02-0.2 0.02-1.0 µg/L	Surr 63-99	Surr 10-171	88-142	42-147	LCS <1-22	≤30	NC, D=0.000 2-0.1	≤35	CCV %D for several analytes outside control limit, all analytes were ND in associated samples	Flag all phthalates for all samples J due to 7-day extraction holding time exceedance. No flag for MB < RL. UJ flag BEHP for WR510-OUT and DUPE due to MB result> sample result. WR510-IN was run at dilution due to high concentrations of non-target background components and has elevated reporting limits.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 5/10/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 4/4/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2203582)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration / Performanc e	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	15	NA	<0.005-0.010 µg/L	Surr 61-101	25-144 surr 10-140	93-99	31- 182	LCS 1-4	≤30	NC, D=0- 0.0022	≤35	CCV exceeded criteria for several analytes. Analytes reran with passing CCV or were ND in sample, OK per method.	Insufficient volume to run MS/MSD pair, LCS/LCSD was analyzed in lieu. No flag for potential elution due to 2 or 3 PCB aroclor detections in each sample.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 6/22/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 5/30/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2205877)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	3	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	95	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	10	≤28	<0.5 mg/L 0.5 mg/L	102	83-117	99, 99	83-117	3	≤33	NS	≤40	OK	None
Hardness	SM 2340C	10	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	113, 115	90-110	NA	≤20	NS	≤20	OK	No flag for slightly high LCS %R, within lab LCS criteria
Total Metals	EPA 6020A	3	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	97-103	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	7-11	40	0.0038, 0.053, 0.061, 0.25, <0.02-0.20 0.02-1.0 µg/L	Surr 71-111	Surr 10-171	72-115	42-147	LCS <1-10	≤30	NS	≤35	OK	No flag for MB < RL.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 6/22/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 5/30/22 / WR510-IN, WR510-OUT (ALS Kelso Lab #K2205877)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	5-9	NA	<0.005-0.010 µg/L	Surr 69-100	25-144 surr 10-140	104-131	31- 182	LCS 3, LCS 3	≤30	NS	≤35	ICV exceeded criteria for Aroclor 1260 Results from passing column were reported. CCV exceeded criteria for several analytes. Results from passing columns were reported.	None
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area / 10-04681-006

Date 9/8/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, TBT, metals (total), SVOCs, Pesticides, PCBs

Checked: initials NV

Sample Date/Sample ID: 7/22/22 / WR510-SUMP (ALS Kelso Lab #2108208)

date 4/9/24

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹		
Total Solids	EPA 160.3	6	≤180	NA	NA	NA	NA	NA	9	NA	OK	None.
Grain size distribution	PSEP	21	≤180	NA	NA	NA	NA	NA	Total fines: 8.3, 8.9	≤10	OK	None
TOC	ASTM D4129-05	12	≤14	<0.05 % 0.05 %	NA	70-122	99	72-122	<1	≤20	OK	None.
Total Metals	EPA 6062A	12	≤180	<0.02-0.5 mg/kg 0.034-0.85 mg/kg	NA	75-125	97-109	73-122	D=1.1, 31-86, LCS<1-2	≤20	OK	No flag for elevated sample RLs due to sample dilutions. All analytes were detected at concentrations > elevated RLs. Flag all total metals except arsenic due to lab duplicate RPD.
SVOCs – PAHs	EPA 8270D SIM	11 (extract) 13 (analysis)	≤14 extract; 40 analyses	<5 µg/kg 12 µg/kg	Surr 87-95	Surr 28-122 ² MS 45-142 ²	75-99	48-136	NA	≤40	OK	No flag for elevated sample RLs. All analytes were detected at concentrations > elevated RLs.
SVOCs – Phthalates	EPA 8270D LL	13 (extract) 36 (analysis)	≤14 extract; 40 analyses	<5-50 µg/kg <5-50 µg/kg	Surr 23-29, 19 MS 25-114, 204, 1023, 1793	Surr 10-105 ² MS 10-171 ²	53-60	42-147 ²	MS <1-35, MS 104, MS 160	≤40	OK	Flag B2EHP and Di-n-octyl phthalate J due to MS %R and MS/MSD RPD. No flag for low surrogate recoveries due to matrix interference.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area / 10-04681-006

Date 9/8/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, TBT, metals (total), SVOCs, Pesticides, PCBs

Checked: initials NV

Sample Date/Sample ID: 7/22/22 / WR510-SUMP (ALS Kelso Lab #2108208)

date 4/9/24

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹		
PCBs	EPA 8082A	13 (extract), 15 (analysis)	≤14	<40-80 µg/kg	<i>Surr</i> >1000						OK	Accurate quantitation of the surrogate standard was not possible due to matrix interference, flag Aroclor 1242, 1254 and 1232 J to due potential high bias.
				40-80 µg/kg	<i>Surr</i> for MB and other QA samples: 86-95	<i>Surr</i> 10-140 MS 25-144 ³	102, 113	50-103 ³	<i>Batch MS</i> 3-16	≤40		
					<i>Batch MS</i> 93-113							

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

² Range represents minimum and maximum control limits for a group of analytes.

³ Ranges represent minimum and maximum control limits for Aroclor 1016 (MS 25-144%, LCS 50-103%) and Aroclor 1260 (MS 40-127, LCS 56-100%) only.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 6/28/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 6/10/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2206479)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	4	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	98, 99	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	13	≤28	<0.5 mg/L 0.5 mg/L	101	83-117	98	83-117	4	≤33	NS	≤40	OK	None
Hardness	SM 2340C	10	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	106	90-110	NA	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	13	≤180	<0.02-2.0 0.02-2.0 µg/L	96-104	75-125	98-103	80-120	D=0.01, <1-8	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	6, 10	40	0.0016, 0.0024, 0.0025, 0.19, 0.33, <0.02-0.20 0.02-1.0 µg/L	Surr 80-107	Surr 10-171	80-122	42-147	LCS 2-11	≤30	NS	≤35	Several CCV analytes out of range. Potential high bias but were ND in samples.	No flag for MB < RL.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 6/28/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 6/10/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2206479)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	8	NA	<0.005-0.010 µg/L	Surr 72-96	25-144 Surr 10-140	94-119	31- 182	LCS 0, LCS 2	≤30	NS	≤35	ICV exceeded criteria for Aroclor 1260 Results from passing column were reported. CCV exceeded criteria for several analytes. Results from passing columns were reported.	None
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 12/2/22 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 10/24/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2212509)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	5	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	98	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	8	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	101	83-117	NA	≤33	NS	≤40	OK	None
Hardness	SM 2340C	21	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	96	90-110	NA	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	3	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	101-106	80-120	NA	≤20	NS	≤35	OK	None
SVOCs (PAHs and Phthalates)	EPA 8270D SIM / LL	18-24	40	0.16, 0.26, 2.0, <0.02-0.02 0.02-1.0 µg/L	Surr 36-81	Surr 10-171	72-132	42-147	LCS <1 – LCS 13	≤30	NS	≤35	One PAH was flagged outside the control criterion for CCV. OK per method.	No flag for Di-n-butyl phthalate MB < RL. Flag BEHP J for all samples due to MB > RL. Flag Butyl benzyl phthalate (BBP) J for WR306-OUT due to MB > RL (no flag for undetected result at WR306-IN for BBP).



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 12/2/22 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 10/24/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2212509)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
PCBs	EPA 8082A LL	22	NA	<0.005-0.010 µg/L	Surr 54, 57	25-144 Surr 10-140	78-93	31- 182	LCS1, LCS1	≤30	NS	≤35	OK	None
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 1/25/23 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 11/22/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2213918)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	7	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	100	85-115	NA	≤10	NS	≤35	OK	None
TOC	EPA 415.1	20	≤28	<0.5 mg/L 0.5 mg/L	102	83-117	100	83-117	1	≤33	NS	≤40	OK	None
Hardness	SM 2340C	10	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	90	90-110	NA	≤20	NS	≤20	OK	None
Total Metals	EPA 6020A	8-14	≤180	0.07, 1.3, <0.02-0.5 0.02-2.0 µg/L	NA	75-125	100-109	80-120	LCS <1	≤20	NS	≤35	OK	No flag for MB < RL.
SVOCs - PAHs	EPA 8270D SIM	7 extract, 1 analysis	40	0.0017, 0.0019, 0.0020, <0.02 0.02 µg/L	Surr 70-97	Surr 32-133	74-105	42-147	LCS <1 – LCS 4	≤30	NS	≤35	OK	No flag for MB detections < RL. Insufficient volume was received to perform a MS/MSD pair, LCS/LCSD pair analyzed in lieu.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 1/25/23 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 11/22/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2213918)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
SVOCs - Phthalates	EPA 8270D LL	6 extract, 40 analysis	40	0.074, 0.11, 0.14, <0.2 0.2-1.0 µg/L	Surr 53-75	Surr 35-117	55-74	42- 147	LCS 7 – LCS 10	≤30	NS	≤35	BEHP was flagged outside CCV control criterion. OK per method, no corrective action	No flag for MB < RL. MB for butyl benzyl phthalate was >RL but was not detected in samples, no flag. Insufficient volume was received to perform a MS/MSD pair, LCS/LCSD pair analyzed in lieu.
PCBs	EPA 8082A LL	30 extract, 16 analysis	40	<0.005-0.010 µg/L 0.005-0.010 µg/L	Surr 32, 32	25-144 Surr 10-140	99-119	31- 182	NA	≤30	NS	≤35	DCB criteria were not met on the CCV confirmation column. Results reported from the passing column. OK per method.	No flag for PCB extraction holding time exceedance—allowable per method and analysis was within holding time.

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 1/23/23 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/08/22 / WR306-IN, WR306-OUT, DUPE (ALS Kelso Lab #K2214619)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	5	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	96	85-115	NA	≤10	3	≤35	OK	None
TOC	EPA 415.1	4	≤28	<0.5 mg/L 0.5 mg/L	NA	83-117	100	83-117	NA	≤33	16	≤40	OK	None
Hardness	SM 2340C	4	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	96	90-110	NA	≤20	3	≤20	OK	None
Total Metals	EPA 6020A	7	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	97-105	80-120	NA	≤20	D=0.06, <1-6	≤35	OK	None
SVOCs - PAHs	EPA 8270D SIM	32 extract, 40 analysis	40	0.0019, 0.0018, <0.02 0.02 µg/L	Surr 74-110	Surr 32-133	62-109	42-147	LCS 12 – LCS 15	≤30	D=0-0.034, 27	≤35	OK	Flag all PAHs J for all samples due to sample extraction holding time. No flag for MB detections < RL. Insufficient volume was received to perform a MS/MSD pair, LCS/LCSD pair analyzed in lieu.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 1/23/23 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/08/22 / WR306-IN, WR306-OUT, DUPE (ALS Kelso Lab #K2214619)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
SVOCs - Phthalates	EPA 8270D LL	7 extract, 26 analysis	40	0.13, 0.33, <0.2	Surr 54-90	Surr 35-117	73-83	42-147	LCS 1 – LCS 3	≤30	D=0-0.02	≤35	OK	No flag for MB < RL. Insufficient volume was received to perform a MS/MSD pair, LCS/LCSD pair analyzed in lieu.
				0.2-1.0 µg/L										
PCBs	EPA 8082A LL	12 extract, 30 analysis	40	<0.005-0.010 µg/L	Surr 76-83	25-144 surr 10-140	95-111	31-182	NA	≤30	NC	≤35	DCB criteria were not met on the CCV confirmation column. Results reported from the passing column. OK per method.	None
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 2/24/23 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/20/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2215101)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	3	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	99	85-115	NA	≤10	NS	≤35	NA	None
TOC	EPA 415.1	14	≤28	<0.5 mg/L 0.5 mg/L	100	83-117	99	83-117	<1	≤33	NS	≤40	NA	None
Hardness	SM 2340C	7	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	93	90-110	NA	≤20	NS	≤20	NA	None
Total Metals	EPA 6020A	16	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	100-103	80-120	NA	≤20	NS	≤35	NA	None
SVOCs - PAHs	EPA 8270D SIM	7 extract 7 analysis	40	0.0016, 0.0022, 0.0030, <0.02 0.02 µg/L	Surr 98-115	Surr 32-133	78-121	42-147	LCS<1- LCS5	≤30	NS	≤35	OK	No flag for MB < RL.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 2/24/23 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 12/20/22 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2215101)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
SVOCs - Phthalates	EPA 8270D LL	7 extract/ 8 analysis	40	0.12, 0.21, <0.2	Surr 40-82	Surr 35-117	64-76	42- 147	LCS<1- LCS15	≤30	NS	≤35	OK	No flag for MB < RL.
				0.2-1.0 µg/L										
PCBs	EPA 8082A LL	48 extract / 7 analysis	40	<0.005-0.010 µg/L	Surr 70-71	25-144 surr 10-140	50-105	31- 182	LCS66, LCS68	≤30	NS	≤35	Confirmation column for decachloro- biphenyl did not meet criteria, results from passing column reported.	Flag all Aroclors for all samples J due to LCS/LCSD RPD.
				0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 3/21/23 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 1/18/23 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2300870)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	6	≤7	<5.0 mg/L 5.0 mg/L	NA	NA	98	85-115	NA	≤10	NS	≤35	NA	None
TOC	EPA 415.1	13	≤28	<0.5 mg/L 0.5 mg/L	116	83-117	100	83-117	6	≤33	NS	≤40	NA	None
Hardness	SM 2340C	8	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	96	90-110	NA	≤20	NS	≤20	NA	None
Total Metals	EPA 6020A	7	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	97-100	80-120	NA	≤20	NS	≤35	NA	None
SVOCs - PAHs	EPA 8270D SIM	6 extract 14 analysis	40	0.0022-0.011 0.02 µg/L	Surr 48-70	Surr 32-133	105-136, 133-134, 129-137	42-147	LCS<1- LCS3	≤30	NS	≤35	OK	No flag for MB < RL. No flag for high Anthracene LCS %R, potential high bias but ND in samples. Flag Acenaphthylene, Benzo(a)anthracene, Benzo(a)pyrene, and pyrene J due to high LCS and LCSD %R—potential high bias.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 3/21/23 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials JB

Sample Date/Sample ID: 1/18/23 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2300870)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
SVOCs - Phthalates	EPA 8270D LL	7 extract	40	0.15, <0.2-1.0	Surr 70-85	Surr 35-117	90-108	42-147	LCS3-LCS9	≤30	NS	≤35	OK	No flag for MB < RL. Samples were analyzed at 10x and 20x dilutions and were therefore reported with elevated RLs, no flag.
		23 analysis		1.9-9.6 & 3.8-19 µg/L										
PCBs	EPA 8082A LL	50 extract	40	<0.005-0.010 µg/L	Surr 81-82	25-144 Surr 10-140	90-100	31-182	LCS<1, LCS1	≤30	NS	≤35	OK	None
		7 analysis		0.005-0.010 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 4/9/24 Page 1 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials SN – 4/9/24

Sample Date/Sample ID: 12/22/23 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2314429)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
TSS	SM 2540D	6	≤7	<5.0 mg/L 10 mg/L	NA	NA	97, 99	85-115	LCS 2	≤10	NS	≤35	NA	No flag for elevated RL.
TOC	EPA 415.1	18	≤28	<0.5 mg/L 2.0 mg/L	NA	83-117	96	83-117	NA	≤33	NS	≤40	NA	No flag for elevated RL.
Hardness	SM 2340C	13	≤180	<2.0 mg/L 2.0 mg/L	NA	90-110	96	90-110	NA	≤20	NS	≤20	NA	None
Total Metals	EPA 6020A	16	≤180	<0.02-2.0 0.02-2.0 µg/L	NA	75-125	95-99	80-120	NA	≤20	NS	≤35	NA	None
SVOCs - PAHs	EPA 8270D SIM	6 (extract), 7 (analysis)	40	0.0012-0.0048 0.03 µg/L	Surr 106-121	Surr 32-133	110-134, 122-133, 134-138	42-147	LCS 2-8	≤30	NS	≤35	OK	No flag for MB<RL. No flag for elevated RL. No flag for high LCS recovery, associated samples detected below RL. J flag chrysene and pyrene due to high LCS %R and samples detected above RL.



Data Quality Assurance Worksheet

Project Name/No./Client: ODOT Facility in Portland Harbor Project Area/ 10-04681-006

Date 4/9/24 Page 2 of 2

Laboratory/Parameters: ALS / TSS, TOC, hardness, metals (total), SVOCs, PCBs

Checked: initials SN – 4/9/24

Sample Date/Sample ID: 12/22/23 / WR306-IN, WR306-OUT (ALS Kelso Lab #K2314429)

Parameter	Methodology	Total Holding Times (Days)		Method Blanks Reporting Limit	Matrix Spikes Recovery (%)		Lab Control Samples Recovery (%)		Lab Duplicates RPD (%)		Field Duplicates RPD (%)		Instrument Calibration/ Performance	ACTION
		Reported	Goal		Reported	Goal	Reported	Goal	Reported	Goal ¹	Reported	Goal ¹		
SVOCs - Phthalates	EPA 8270D LL	6 (extract), 15 (analysis)	40	<0.2-1.0	Surr 75- 97	Surr 35-117	78-96	42- 147	LCS D=0.1, LCS <1-5	≤30	NS	≤35	OK	None
				0.2-1.0 µg/L										
PCBs	EPA 8082A LL	7 (extract), 10 (analysis)	40	<0.005-0.010 µg/L	Surr 66, 68	25-144 Surr 10-140	110-114	31- 182	LCS 2, 2	≤30	NS	≤35	OK	No flag for elevated RL.
				0.0075-0.015 µg/L										

¹ If the sample or duplicate value is less than five times the reporting limit, the difference is calculated rather than the relative percent difference (RPD). The QA goal is a difference <2 times the detection limit instead of the number indicated in the goal column.

D – difference

HT – holding time

NA – not applicable or not available

NC – not calculable due to one or more values below the detection limit

NS – field duplicate not sampled.

MS – matrix spike

MB – method blank

QAPP – Quality Assurance Project Plan

RL – reporting limit

Surr – surrogate standard

Appendix E

Monitoring Field Forms



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ODOT Monitoring Field Sheet

Field Staff: S Nilsson

Site: WR-510

Grab Sample Visit

Date/Time: _____
 Predicted Rainfall: _____
 Grab sample ID: _____
 Grab sample Date/Time: _____
 Weather: _____
 Observations: _____

Notes: _____

Pre-Storm Visit

Date/Time: 10/21/21 @ 1130
 Predicted Rainfall (in): 0.54
 Pacing (cf): 90
 Aliquot Volume (ml): 850 mL
 Flowmeter Battery Voltage: 13.0V
 Sampler Battery Voltage: 12.7 in 12.9 out
 Carboy ID: _____

Notes: 10.44 + 0.53 = 10.97
CDS sump
→ 1,100 mL In / 1300 Out

Post-Storm

Date/Time: 10/22/21 @ 1345
 # of Aliquots: 20/20 IN 15/16 OUT
 First Sample: 10/21 @ 1501
 Last Sample: 10/21 @ 1945
 Sample ID: WR510-IN

Errors? _____
 Sample Volume (gal): Full
 Data Downloaded?: yes
 Sample ID: WR510-OUT
 Sample Duplicated?: No

Notes:

Sediment = 10.42 + 0.53 = 10.95
little to no flow coming through influent pipe, but water level
at bypass level. Clogged CDS inlet?

In/out samples visually similar

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	<u>10/21/21 1557</u>	16		~~31~~	<u>10/21 1555</u>	~~46~~	<u>Boyle Full</u>
2		17		~~32~~		47	
3		18		~~33~~		48	
4		19		~~34~~		49	
5		20	<u>10/21 2041</u>	~~35~~		50	
6		21		~~36~~		51	
7		22		~~37~~		52	
8		23		~~38~~		53	
9		24		~~39~~		54	
10	<u>10/21 1927</u>	25		40		55	
11		26		41		56	
12		27		42		57	
13		28		43		58	
14		29		44		59	
15		30		~~45~~	<u>10/21 1954</u>	60	

Storm Summary

Rainfall Total (in): _____
 Storm Volume (cf): _____
 Antecedent Dry Period (hr): _____
 Sampling Duration (hr): _____

Volume Sampled (cf): _____
 % Storm Sampled: _____

ODOT Monitoring Field Sheet

Field Staff: SN/RG

Site: WR-510

Maintenance Grab Sample-Visit

Date/Time: 12/17/21 @ 1125
 Predicted Rainfall: _____
 Grab sample ID: _____
 Grab sample Data/Time: _____
 Weather: _____
 Observations: _____

Notes: CSE to adjust sample tubing at influent.

Pre-Storm Visit

Date/Time: 12/17/21 @ 1235
 Predicted Rainfall (in): 1.075"
 Pacing (cf): 150
 Aliquot Volume (ml): 250 mL
 Flowmeter Battery Voltage: 12.5V
 Sampler Battery Voltage: IN: 13.4 OUT: 12.8
 Carboy ID: _____

Notes: Depth: 10.94'
wood placed on bypass weir

Post-Storm

Date/Time: 12/20 @ 0900
 # of Aliquots: 20/20 IN & OUT
 First Sample: 12/17 @ 21:16
 Last Sample: 12/18 @ 1732
 Sample ID: WR 510-IN and -OUT

Errors? None
 Sample Volume (gal): Full for both
 Data Downloaded? Yes
 Sample ID: WR 510
 Sample Duplicated? No

Notes: Depth = 10.91'
Wood on bypass remaining, poor storm coverage

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		31		46	
2		17		32		47	
3		18		33		48	
4		19		34		49	
5		20		35		50	
6		21		36		51	
7		22		37		52	
8		23		38		53	
9		24		39		54	
10		25		40		55	
11		26		41		56	
12		27		42		57	
13		28		43		58	
14		29		44		59	
15		30		45		60	

Storm Summary

Rainfall Total (in): _____
 Storm Volume (cf): _____
 Antecedent Dry Period (hr): _____
 Sampling Duration (hr): _____

Volume Sampled (cf): _____
 % Storm Sampled: _____

ODOT Monitoring Field Sheet

Field Staff: S Nilsson

Site: WR516

Maintenance Visit

Date/Time: _____

Weather: _____

Notes: _____

Pre-Storm Visit

Date/Time: 2/18/22 @ 4:30

Sediment Depth: 10.9'

Predicted Rainfall (in) 0.25" @ 1800 on 2/19

Notes: Delayed 2/19 @ 1500

Pacing (cf) 24

Aliquot Volume (ml) 800 ml

Flowmeter Battery Voltage 10.9

Influent Sampler Battery V 13.1

Effluent Sampler Battery V 12.9

Post-Storm

Date/Time: 2/22/22

of Aliquots: 18/20 IN 18/20 OUT

First Sample: 2/19/22 22:31

Last Sample: 2/20/22 01:46

Sample ID WR516 IN/OUT

Sediment Depth: 10.9'

Errors? None

Sample Volume (gal) 80-90% both

Data Downloaded? yes

Sample ID _____

Sample Duplicated? No

Notes: _____

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____

Storm Volume (cf): _____

Antecedent Dry Period (hr): _____

Sampling Duration (hr): _____

Volume Sampled (cf) _____

% Storm Sampled: _____

ODOT Monitoring Field Sheet

Field Staff: S Nilsson

Site: WR 516

Maintenance Visit

Date/Time: _____

Weather: _____

Notes: _____

Pre-Storm Visit

Date/Time: 2/26 @ 0915
 Predicted Rainfall (in): 0.45
 Pacing (cf): 145
 Aliquot Volume (ml): 800 ml
 Flowmeter Battery Voltage: 11.7
 Influent Sampler Battery V: 12.8
 Effluent Sampler Battery V: 12.8

Sediment Depth: 10.90'
 Notes: No delay, rain expected shortly

Post-Storm

Date/Time: 2/27 @ 0915
 # of Aliquots: 20/20 both
 First Sample: _____
 Last Sample: 2/26, times see below
 Sample ID: WR 516-IN & OUT
 Sediment Depth: 10.90'
 IN: 2/26 @ 2314
 FSS: 2/26 @ 2301

Errors? None
 Sample Volume (gal): Full
 Data Downloaded? yes
 Sample ID: _____
 Sample Duplicated? None
 Notes: _____

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____
 Storm Volume (cf): _____
 Antecedent Dry Period (hr): _____
 Sampling Duration (hr): _____

Volume Sampled (cf): _____
 % Storm Sampled: _____

ODOT Monitoring Field Sheet

Field Staff: S. Nilsson

Site: WR-510

Maintenance Visit

Date/Time: _____

Weather: _____

Notes: _____

Pre-Storm Visit

Date/Time: 3/11/22 @ 1200

Sediment Depth: 10.78'

Predicted Rainfall (in) 0.50

Notes: Delayed start

Pacing (cf) 400

Aliquot Volume (ml) 500

Flowmeter Battery Voltage 11.0

Influent Sampler Battery V 13.1

Effluent Sampler Battery V 12.8

Post-Storm

Date/Time: 3/14/22 @ 0900

Errors? None

of Aliquots: 8/8

Sample Volume (gal) ~1/3 full

First Sample: 3/13/22 @ 1155

Data Downloaded? yes

Last Sample: 3/12/22 @ 1615

Sample ID No

Sample ID 10.78'

Sample Duplicated? No

Sediment Depth: 10.78'

Notes: less rain than forecast
~0.4" vs ~0.8" forecast

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____

Volume Sampled (cf) _____

Storm Volume (cf): _____

% Storm Sampled: _____

Antecedent Dry Period (hr) _____

Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: SN

Site: WR-510

Maintenance Visit

Date/Time: _____

Weather: _____

Notes: _____

Pre-Storm Visit

Date/Time: _____

3/18/22 @ 1030

Sediment Depth: _____

10.77

Predicted Rainfall (in) _____

0.30

Notes: _____

Pacing (cf) _____

138

Aliquot Volume (ml) _____

808

Flowmeter Battery Voltage _____

10.99 (OK to 9V)

Influent Sampler Battery V _____

12.8

Effluent Sampler Battery V _____

13.0

Post-Storm

Date/Time: _____

3/19/22 @ 1200

Errors? _____

No

of Aliquots: _____

12/12

Sample Volume (gal) _____

3.5

First Sample: _____

3/19/22 @ 0250

Data Downloaded? _____

yes

Last Sample: _____

3/19/22 @ 1130

Sample ID _____

Sample ID _____

WR510 in/out

Sample Duplicated? _____

No

Sediment Depth: _____

10.75

Notes: _____

huge downpour on arrival for 5-10 min. waited on site for slow to subside and observed 12th aliquot.

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____

Volume Sampled (cf) _____

Storm Volume (cf): _____

% Storm Sampled: _____

Antecedent Dry Period (hr) _____

Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: SN Site: WR-510

Maintenance Visit

Date/Time: _____ Weather: _____

Notes: _____

Pre-Storm Visit

Date/Time: 4/3/22 @ 1030 Sediment Depth: 10.73'
 Predicted Rainfall (in) 0.48 Notes: _____
 Pacing (cf) 500 _____
 Aliquot Volume (ml) 800 ml _____
 Flowmeter Battery Voltage 10.55 _____
 Influent Sampler Battery V 12.8 _____
 Effluent Sampler Battery V 12.7 _____

Post-Storm

Date/Time: 4/5/22 @ 0900 Errors? None
 # of Aliquots: 12/12 + 12/OUT Sample Volume (gal) 3.25 ish
 First Sample: 4/3/22 @ 2150 Data Downloaded? yes
 Last Sample: 4/4/22 @ 1525 Sample ID RT
 Sample ID WR510-IN/OUT Sample Duplicated? If enough volume
 Sediment Depth: 10.72' Notes: _____

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____ Volume Sampled (cf) _____
 Storm Volume (cf): _____ % Storm Sampled: _____
 Antecedent Dry Period (hr) _____
 Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: S. Nilsson

Site: WR-510

Maintenance Visit

Date/Time:

Weather:

Notes:

Pre-Storm Visit

Date/Time:

5/27/22 @ 1550

Sediment Depth:

10.31'

Predicted Rainfall (in)

0.7"

Notes:

re-zeroed level sensor

Pacing (cf)

275

Aliquot Volume (ml)

800

Flowmeter Battery Voltage

12.04

Influent Sampler Battery V

12.9

Effluent Sampler Battery V

13.0

Post-Storm

Date/Time:

5/30/22 @ 1026

Errors?

No

of Aliquots:

11/11

Sample Volume (gal)

~2.2 gal

First Sample:

5/28 @ 0654

Data Downloaded?

yes

Last Sample:

5/30 @ 0859

Sample ID

WR510-OUT

Sample ID

WR510-IN

Sample Duplicated?

No

Sediment Depth:

10.31'

Notes:

Still flowing from recent shower, but over 24 hrs have passed since first sample. samplers stopped & flow downloaded

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4		19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in):

Storm Volume (cf):

Antecedent Dry Period (hr)

Sampling Duration (hr):

Volume Sampled (cf)

% Storm Sampled:

ODOT Monitoring Field Sheet

Field Staff: SN/KS

Site: WR-306

Maintenance Visit

Date/Time: 6/9/22 @ 1115

Weather: Cloudy

Notes: Reset logger, reconfigured and tested connections

May need to restart logger frequently to avoid shutdowns in the future.

W underground = 1.23"

0.35" first pulse

GFS = 1.98"

0.45" first pulse

W x radar

0.23" first pulse

Pre-Storm Visit

Date/Time: 6/4/22 @ 1215

Sediment Depth: 16.15'

Predicted Rainfall (in) 24hr ~ 1.25"

1st wave: 0.30"

Pacing (cf) 24hr 4250

1st (975)

Aliquot Volume (ml) 680 ml (25 aliquots)

Flowmeter Battery Voltage 13.1

Influent Sampler Battery V 12.5

Effluent Sampler Battery V 12.5

Notes: Storm coming in two pulses, may end up being discrete events

Post-Storm

Date/Time: 6/10/22 @ 1200

Errors? Aliquot 4 in rinse error

of Aliquots: 10 in 11 out

Sample Volume (gal) ~ 1/2 full

First Sample: 6/9/22 @ 1933

Data Downloaded? yes

Last Sample: 6/10/22 @ 0507

Sample ID WR306-IN/OUT

Sample ID WR306-IN/OUT

Sample Duplicated? No

Sediment Depth: 16.12'

Notes: From first look in Stormchunker, pacing valve may be off.

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		1		16	
2		17		2		17	
3		18		3		18	
4	<u>IN error @ 6/23/19</u>	19		4		19	
5		20		5		20	
6		21		6		21	
7		22		7		22	
8		23		8		23	
9		24		9		24	
10		25		10		25	
11		26		11		26	
12		27		12		27	
13		28		13		28	
14		29		14		29	
15		30		15		30	

Storm Summary

Rainfall Total (in): _____

Storm Volume (cf): _____

Antecedent Dry Period (hr): _____

Sampling Duration (hr): _____

Volume Sampled (cf) _____

% Storm Sampled: _____

ODOT Monitoring Field Sheet

Field Staff: S. Nilsson

Site: WR-306

Grab Sample Visit

Date/Time:

Notes:

Predicted Rainfall:

Grab sample ID

Grab sample Data/Time

Weather:

Observations:

Pre-Storm Visit

Date/Time:

Predicted Rainfall (in)

Pacing (cf)

Aliquot Volume (ml)

Flowmeter Battery Voltage

Sampler Battery Voltage

Carboy ID Sediment:

Notes:

Connected w/ Device Config
 address 1 re-set up
 w/direct connect. Retrieved
 data. Flushed lines in reverse w/DT
 Thick layer of floating trash/
 debris in/on top of sump

Post-Storm

Date/Time:

of Aliquots:

First Sample:

Last Sample:

Sample ID

Notes:

Errors?

Sample Volume (gal)

Data Downloaded?

Sample ID

Sample Duplicated?

sediment depth: 14.55'

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1		16		31		46	
2		17		32		47	
3		18		33		48	
4		19		34		49	
5		20		35		50	
6		21		36		51	
7		22		37		52	
8		23		38		53	
9		24		39		54	
10		25		40		55	
11		26		41		56	
12		27		42		57	
13		28		43		58	
14		29		44		59	
15		30		45		60	

Storm Summary

Rainfall Total (in):

Storm Volume (cf):

Antecedent Dry Period (hr)

Sampling Duration (hr):

Volume Sampled (cf)

% Storm Sampled:

0.18"

~85%

ODOT Monitoring Field Sheet

Field Staff: SN/KS

Site: WR-306

Date/Time:

Grab Sample Visit

Predicted Rainfall:

11/21/22 @ 1050

Notes:

Maintenance
Comm issue identified

Grab sample ID

Grab sample Data/Time

Weather:

Observations:

CS I/O port not working
RS-232 w/ left USB port
Data downloaded

Pre-Storm Visit

Date/Time:

Predicted Rainfall (in)

Pacing (cf)

Aliquot Volume (ml)

Flowmeter Battery Voltage

Sampler Battery Voltage

Carboy ID

11/21/22 @ 1100

0.39" WW 0.45" LFS

SN 1500 1425

750

13.1

IN 12.5 OUT 13.0

Notes:

Sediment: 13.54 ft

Post-Storm

Date/Time:

of Aliquots:

First Sample:

Last Sample:

Sample ID

Notes:

11/22/22 @ 1600

SN 13-12

11/22 @ 0947

11/22 @ 1531

WR306-IN F-OUT

Errors?

Sample Volume (gal)

Data Downloaded?

Sample ID

Sample Duplicated?

No

~3 gallons

Yes

No

Sediment: 13.50'

need cleaning soon

Effluent sample looks darker than usual. May

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	<u>0947</u>	16		31		46	
2	<u>1216</u>	17		32		47	
3	<u>1225</u>	18		33		48	
4	<u>1233</u>	19		34		49	
5	<u>1243</u>	20		35		50	
6	<u>1252</u>	21		36		51	
7	<u>1301</u>	22		37		52	
8	<u>1309</u>	23		38		53	
9	<u>1318</u>	24		39		54	
10	<u>1327</u>	25		40		55	
11	<u>1347</u>	26		41		56	
12	<u>11/22 @ 1531</u>	27		42		57	
13		28		43		58	
14		29		44		59	
15		30		45		60	

Storm Summary

Rainfall Total (in):

Storm Volume (cf):

Antecedent Dry Period (hr)

Sampling Duration (hr):

Volume Sampled (cf)

% Storm Sampled:

ODOT Monitoring Field Sheet

Field Staff: SN

Site: WR-306

Grab Sample Visit

Date/Time: _____

Notes: _____

Predicted Rainfall: _____

Grab sample ID: _____

Grab sample Date/Time: _____

Weather: _____

Observations: _____

Pre-Storm Visit

Date/Time: 12/7/22 @ 1345

Notes: Sediment depth 16.25'

Predicted Rainfall (in): 0.41"

Pacing (cf): 1650

Aliquot Volume (ml): 750

Flowmeter Battery Voltage: 13.6

Sampler Battery Voltage: 12.5 / 13.0

Carboy ID: _____

Water in sump, no floating trash

Post-Storm

Date/Time: 12/8/22 @ 1345

Errors? None

of Aliquots: 21/21 in/out

Sample Volume (gal): ~4.0 in both

First Sample: 12/8 0343

Data Downloaded? yes

Last Sample: 12/8 1301

Sample ID: _____

Sample ID: WR306-IN or -OUT

Sample Duplicated? Yes

Notes: Sediment: 16.17'

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	12/8 0343	16	12/8 0941	31		46	
2	12/8 0433	17	1006	32		47	
3	12/8 0454	18	1028	33		48	
4	12/8 0513	19	1109	34		49	
5	12/8 0536	20	1203	35		50	
6	0557	21	1301	36		51	
7	0616	22		37		52	
8	0634	23		38		53	
9	0654	24		39		54	
10	0717	25		40		55	
11	0739	26		41		56	
12	0806	27		42		57	
13	0848	28		43		58	
14	0909	29		44		59	
15	0923	30		45		60	

Storm Summary

Rainfall Total (in): _____

Volume Sampled (cf): _____

Storm Volume (cf): _____

% Storm Sampled: _____

Antecedent Dry Period (hr): _____

Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: SN

Site: WR-306

Grab Sample Visit

Date/Time: _____

Notes: _____

Predicted Rainfall: _____

Grab sample ID: _____

Grab sample Date/Time: _____

Weather: _____

Observations: _____

Pre-Storm Visit

Date/Time: 12/19/22 @ 1530

Notes: Depth: 15.92

Predicted Rainfall (in): 0.27

Pacing (cf): 945

Aliquot Volume (ml): 750

Flowmeter Battery Voltage: 12.8 V

Sampler Battery Voltage: 12.6 / 13.0 V

Carboy ID: _____

- 56 ft bottom, difficult to determine

Post-Storm

Date/Time: 12/21/22 @ 0830

Errors? None

of Aliquots: 13/13 in & out

Sample Volume (gal): ~1.75

First Sample: 12/20 @ 1625

Data Downloaded? Yes

Last Sample: 12/20 @ 2044

Sample ID: WR306-OUT

Sample ID: WR306-IN

Sample Duplicated? No

Notes: _____

sed. Depth: 15.85, soft / difficult to measure

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	1628	16		31		46	
2	1725	17		32		47	
3	1731	18		33		48	
4	1738	19		34		49	
5	1744	20		35		50	
6	1752	21		36		51	
7	1804	22		37		52	
8	1822	23		38		53	
9	1830	24		39		54	
10	1851	25		40		55	
11	1907	26		41		56	
12	1934	27		42		57	
13	12/20 @ 2044	28		43		58	
14		29		44		59	
15		30		45		60	

Storm Summary

Rainfall Total (in): _____

Volume Sampled (cf): _____

Storm Volume (cf): _____

% Storm Sampled: _____

Antecedent Dry Period (hr): _____

Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: SNilsson

Site: WR-306

Grab Sample Visit

Date/Time: _____

Notes: _____

Predicted Rainfall: _____

Grab sample ID: _____

Grab sample Date/Time: _____

Weather: _____

Observations: _____

Pre-Storm Visit

Date/Time: 1/17/23 @ 1400

Notes: Sediment Depth: 13.05'

Predicted Rainfall (in): 0.44 @ 1/18 0400

Pacing (cf): 1570

Aliquot Volume (ml): 750

Flowmeter Battery Voltage: 13.6V

Sampler Battery Voltage: 13.0V / 13.1V

Carboy ID: _____

soft bottom sample
Increased aliquot # in flowmeter
pacing and delayed sampler
start to: 1/18/23 @ 0200

Post-Storm

Date/Time: 1/19/23 @ 0900

Errors? #1 IN - Rinse error

of Aliquots: 24 IN 25 OUT

Sample Volume (gal): FULL

First Sample: 1/18/23 @ 0412 / 0215 IN/OUT

Data Downloaded? yes

Last Sample: 1/18/23 @ 1121

Sample ID: WR306-OUT

Sample ID: WR306-IN

Sample Duplicated? No

Notes: Sediment depth: 13.05'

→ Influent rinse error on aliquot #1

IN				OUT			
Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	1/18 8:15	16	8:44	31		46	
2	0412	17	9:00	32		47	
3	0434	18	9:18	33		48	
4	0447	19	9:37	34		49	
5	4:58	20	9:57	35		50	
6	5:10	21	10:18	36		51	
7	5:26	22	10:33	37		52	
8	5:46	23	10:47	38		53	
9	6:15	24	11:03	39		54	
10	6:55	25	11:21	40		55	
11	7:23	26		41		56	
12	7:44	27		42		57	
13	8:01	28		43		58	
14	8:15	29		44		59	
15	8:29	30		45		60	

Storm Summary

Rainfall Total (in): _____

Volume Sampled (cf): _____

Storm Volume (cf): _____

% Storm Sampled: _____

Antecedent Dry Period (hr): _____

Sampling Duration (hr): _____

ODOT Monitoring Field Sheet

Field Staff: S. Nilsson

Site: WR-306

Grab Sample Visit

Date/Time: _____ Notes: _____
 Predicted Rainfall: _____
 Grab sample ID: _____
 Grab sample Date/Time: _____
 Weather: _____
 Observations: _____

Pre-Storm Visit

Date/Time: 12/21/23 @ 1445 Notes: Sediment depth: 11.95'
 Predicted Rainfall (in): 0.28
 Pacing (cf): 2400
 Aliquot Volume (ml): 750
 Flowmeter Battery Voltage: 13.2
 Sampler Battery Voltage: 12.7 IN / 12.8 OUT
 Carboy ID: _____

Post-Storm

Date/Time: 12/22/23 @ 1130 Errors? _____
 # of Aliquots: 25 Sample Volume (gal): Full carboy
 First Sample: 12/22 @ 0725 Data Downloaded? yes
 Last Sample: 12/22 @ 0944 Sample ID: WR306 IN / OUT
 Sample ID: WR306 IN / -OUT -20231222 Sample Duplicated? _____
 Notes: Sediment: 11.90'

1/29/24 - depth to sediment measurements seem to likely be obstructed by debris in the upper sump.

Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time	Aliquot #	Date/Time
1	12/22/23 0725	16	0835	31		46	
2	0728	17	0840	32		47	
3	0731	18	0845	33		48	
4	0734	19	0852	34		49	
5	0739	20	0900	35		50	
6	0745	21	0908	36		51	
7	0751	22	0917	37		52	
8	0756	23	0927	38		53	
9	0801	24	0938	39		54	
10	0806	25	0944	40		55	
11	0811	26	1003 - FAILED	41		56	
12	0817	27		42		57	
13	0821	28		43		58	
14	0826	29		44		59	
15	0830	30		45		60	

Storm Summary

Rainfall Total (in): _____ Volume Sampled (cf): _____
 Storm Volume (cf): _____ % Storm Sampled: _____
 Antecedent Dry Period (hr): _____
 Sampling Duration (hr): _____

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Appendix F

Laboratory Reports



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December 30, 2021

Service Request No:K2112456

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

Laboratory Results for: ODOT- Portland Harbor Perf. Monitoring

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory October 25, 2021
For your reference, these analyses have been assigned our service request number **K2112456**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2112456
Date Received: 10/25/2021

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 10/25/2021. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 11/18/2021: Bis(2-ethylhexyl) Phthalate was flagged as outside the control criterion for Continuing Calibration Verification (CCV). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Method 8270D, 11/18/2021: The spike recovery of one or more of the following in replicate Laboratory Control Sample (LCS/DLCS) were outside the lower control criterion: Di-n-butyl Phthalate, Dimethyl Phthalate. The analytes in question were detected in the associated field samples. The error associated with reduced recovery indicated a potential low bias. The data was flagged to indicate the problem.

Method 8270D, 11/18/2021: The internal standard recoveries and surrogates in sample WR510-IN were outside control criteria because of matrix interference. Insufficient sample holding time remained for additional analysis. The results quantified using this internal standard were flagged, as well as the surrogates, to indicate the problem.

Method 8270D, 11/18/2021: Samples required dilution due to the presence of elevated levels of target and non-target analytes. The reporting limits are adjusted to reflect the dilution.

Method 8270D, 10/29/2021: Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Method 8270D, 10/29/2021: The upper control criterion was exceeded for Anthracene in Laboratory Control Sample (LCS) KQ2121193-01. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Metals:

No significant anomalies were noted with this analysis.

Approved by 

Date 12/30/2021

General Chemistry:

No significant anomalies were noted with this analysis.

Subcontracted Analytical Parameters:

TOC 5310C Method 5310C

This analysis was performed at ALS Environmental in Holland, MI. The data for this analysis is included in the corresponding section of this report.

Approved by



Date

12/30/2021

SAMPLE DETECTION SUMMARY

CLIENT ID: WR510-IN			Lab ID: K2112456-001			

Analyte	Results	Flag	MDL	MRL	Units	Method
Hardness, Total as CaCO ₃	44.0			2.0	mg/L	SM 2340 C
Solids, Total Suspended (TSS)	101			2.0	mg/L	SM 2540 D
Arsenic	0.82		0.09	0.50	ug/L	6020A
Cadmium	0.212		0.008	0.020	ug/L	6020A
Copper	28.4		0.05	0.10	ug/L	6020A
Lead	14.7		0.006	0.020	ug/L	6020A
Nickel	4.17		0.04	0.20	ug/L	6020A
Zinc	278		0.5	2.0	ug/L	6020A
2-Methylnaphthalene	0.014	J	0.0013	0.020	ug/L	8270D
Acenaphthene	0.0045	J	0.0012	0.020	ug/L	8270D
Acenaphthylene	0.012	J	0.0011	0.020	ug/L	8270D
Anthracene	0.011	J	0.00082	0.020	ug/L	8270D
Benz(a)anthracene	0.022		0.00097	0.020	ug/L	8270D
Benzo(a)pyrene	0.037		0.0011	0.020	ug/L	8270D
Benzo(b)fluoranthene	0.033		0.00083	0.020	ug/L	8270D
Benzo(g,h,i)perylene	0.036		0.00086	0.020	ug/L	8270D
Benzo(k)fluoranthene	0.013	J	0.00094	0.020	ug/L	8270D
Chrysene	0.044		0.00076	0.020	ug/L	8270D
Bis(2-ethylhexyl) Phthalate	8.6		0.65	5.0	ug/L	8270D
Fluoranthene	0.090		0.00082	0.020	ug/L	8270D
Fluorene	0.011	J	0.0011	0.020	ug/L	8270D
Indeno(1,2,3-cd)pyrene	0.018	J	0.00089	0.020	ug/L	8270D
Butyl Benzyl Phthalate	0.65	J	0.11	1.0	ug/L	8270D
Naphthalene	0.025		0.0014	0.020	ug/L	8270D
Phenanthrene	0.084		0.0011	0.020	ug/L	8270D
Pyrene	0.14		0.0010	0.020	ug/L	8270D
Di-n-butyl Phthalate	0.77	J	0.12	1.0	ug/L	8270D
Di-n-octyl Phthalate	2.2		0.17	1.0	ug/L	8270D
Diethyl Phthalate	0.43	J	0.075	1.0	ug/L	8270D
Dimethyl Phthalate	0.58	J	0.11	1.0	ug/L	8270D
Aroclor 1242	0.030		0.0032	0.0050	ug/L	8082A

CLIENT ID: WR510-OUT			Lab ID: K2112456-002			

Analyte	Results	Flag	MDL	MRL	Units	Method
Hardness, Total as CaCO ₃	42.0			2.0	mg/L	SM 2340 C
Solids, Total Suspended (TSS)	106			3.2	mg/L	SM 2540 D
Arsenic	0.74		0.09	0.50	ug/L	6020A
Cadmium	0.223		0.008	0.020	ug/L	6020A
Copper	29.7		0.05	0.10	ug/L	6020A
Lead	14.9		0.006	0.020	ug/L	6020A
Nickel	3.97		0.04	0.20	ug/L	6020A
Zinc	289		0.5	2.0	ug/L	6020A

SAMPLE DETECTION SUMMARY

CLIENT ID: WR510-OUT		Lab ID: K2112456-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
2-Methylnaphthalene	0.015	J	0.0013	0.020	ug/L	8270D
Acenaphthene	0.0052	J	0.0012	0.020	ug/L	8270D
Acenaphthylene	0.015	J	0.0011	0.020	ug/L	8270D
Anthracene	0.014	J	0.00082	0.020	ug/L	8270D
Benz(a)anthracene	0.027		0.00097	0.020	ug/L	8270D
Benzo(a)pyrene	0.044		0.0011	0.020	ug/L	8270D
Benzo(b)fluoranthene	0.043		0.00083	0.020	ug/L	8270D
Benzo(g,h,i)perylene	0.042		0.00086	0.020	ug/L	8270D
Benzo(k)fluoranthene	0.012	J	0.00094	0.020	ug/L	8270D
Chrysene	0.054		0.00076	0.020	ug/L	8270D
Dibenz(a,h)anthracene	0.0044	J	0.0013	0.020	ug/L	8270D
Bis(2-ethylhexyl) Phthalate	3.6	J	0.65	5.0	ug/L	8270D
Fluoranthene	0.11		0.00082	0.020	ug/L	8270D
Fluorene	0.015	J	0.0011	0.020	ug/L	8270D
Indeno(1,2,3-cd)pyrene	0.026		0.00089	0.020	ug/L	8270D
Butyl Benzyl Phthalate	0.43	J	0.11	1.0	ug/L	8270D
Naphthalene	0.028		0.0014	0.020	ug/L	8270D
Phenanthrene	0.098		0.0011	0.020	ug/L	8270D
Pyrene	0.17		0.0010	0.020	ug/L	8270D
Di-n-butyl Phthalate	0.34	J	0.12	1.0	ug/L	8270D
Di-n-octyl Phthalate	1.1		0.17	1.0	ug/L	8270D
Diethyl Phthalate	0.26	J	0.075	1.0	ug/L	8270D
Dimethyl Phthalate	0.28	J	0.11	1.0	ug/L	8270D
Aroclor 1242	0.028		0.0032	0.0050	ug/L	8082A
Aroclor 1254	0.012	P	0.0032	0.0050	ug/L	8082A



Sample Receipt Information

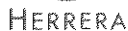
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Phone (360) 577-7222 Fax (360) 425-9096
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Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006

Service Request:K2112456

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2112456-001	WR510-IN	10/21/2021	2041
K2112456-002	WR510-OUT	10/21/2021	1954



Seattle, Washington 198121

K2112456

[illegible]

Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn

See attached table for methods and MQOs.

Relinquished by (Name/CO) S. Nikson / Herrera	Signature 	Date/Time 10/25 @ 0845	Received By (Name/CO) Mike Taylor / ALS	Signature 	Date/Time 10/25/21 846
Relinquished by (Name/CO) Mike Taylor / ALS	Signature 	Date/Time 10/25 10:42	Received By (Name/CO) Cody Graves / ALS	Signature 	Date/Time 10/25/21 1042

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)

Cooler Receipt and Preservation Form

Client Herrera Service Request K21 12456
 Received: 10/25/21 Opened: 10/25/21 By: CG Unloaded: 10/25/21 By: CG

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** **NA**
3. Were custody seals on coolers? **NA** **Y** **N** If yes, how many and where? _____
 If present, were custody seals intact? **Y** **N** If present, were they signed and dated? **Y** **N**
4. Was a Temperature Blank present in cooler? **NA** **Y** **N** If yes, note the temperature in the appropriate column below:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? **NA** **Y** **N**
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. **NA** **Y** **N**
- If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>/</u>	<u>2.1</u>	<u>IR02</u>	<u>WR510-IN</u>	<u>/</u>	<u>/</u>		
<u>/</u>	<u>2.4</u>	<u>T</u>	<u>WR510-OUT</u>	<u>/</u>	<u>/</u>		

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves** _____
7. Were custody papers properly filled out (ink, signed, etc.)? **NA** **Y** **N**
8. Were samples received in good condition (unbroken) **NA** **Y** **N**
9. Were all sample labels complete (ie, analysis, preservation, etc.)? **NA** **Y** **N**
10. Did all sample labels and tags agree with custody papers? **NA** **Y** **N**
11. Were appropriate bottles/containers and volumes received for the tests indicated? **NA** **Y** **N**
12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below **NA** **Y** **N**
13. Were VOA vials received without headspace? Indicate in the table below **NA** **Y** **N**
14. Was C12/Res negative? **NA** **Y** **N**

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



Miscellaneous Forms

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Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006

Service Request: K2112456

Sample Name: WR510-IN
Lab Code: K2112456-001
Sample Matrix: Storm Water

Date Collected: 10/21/21
Date Received: 10/25/21

Analysis Method	Extracted/Digested By	Analyzed By
6020A	ABOYER	KLINN
8082A	WSTRUBLE	SANDREWS
8270D	TANDREWS	EBRUNO
8270D	HKEIMIG	LMCKOWN
SM 2340 C	BNETLING	BNETLING
SM 2540 D		JSANCHEZ

Sample Name: WR510-OUT
Lab Code: K2112456-002
Sample Matrix: Storm Water

Date Collected: 10/21/21
Date Received: 10/25/21

Analysis Method	Extracted/Digested By	Analyzed By
6020A	ABOYER	KLINN
8082A	WSTRUBLE	SANDREWS
8270D	TANDREWS	EBRUNO
8270D	HKEIMIG	LMCKOWN
SM 2340 C	BNETLING	BNETLING
SM 2540 D		JSANCHEZ



Sample Results

ALS Environmental—Kelso Laboratory
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Semivolatile Organic Compounds by GC/MS

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2112456-001

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.014 J	0.020	0.0013	1	10/29/21 10:56	10/28/21	
Acenaphthene	0.0045 J	0.020	0.0012	1	10/29/21 10:56	10/28/21	
Acenaphthylene	0.012 J	0.020	0.0011	1	10/29/21 10:56	10/28/21	
Anthracene	0.011 J	0.020	0.00082	1	10/29/21 10:56	10/28/21	*
Benz(a)anthracene	0.022	0.020	0.00097	1	10/29/21 10:56	10/28/21	
Benzo(a)pyrene	0.037	0.020	0.0011	1	10/29/21 10:56	10/28/21	
Benzo(b)fluoranthene	0.033	0.020	0.00083	1	10/29/21 10:56	10/28/21	
Benzo(g,h,i)perylene	0.036	0.020	0.00086	1	10/29/21 10:56	10/28/21	
Benzo(k)fluoranthene	0.013 J	0.020	0.00094	1	10/29/21 10:56	10/28/21	
Chrysene	0.044	0.020	0.00076	1	10/29/21 10:56	10/28/21	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	10/29/21 10:56	10/28/21	
Fluoranthene	0.090	0.020	0.00082	1	10/29/21 10:56	10/28/21	
Fluorene	0.011 J	0.020	0.0011	1	10/29/21 10:56	10/28/21	
Indeno(1,2,3-cd)pyrene	0.018 J	0.020	0.00089	1	10/29/21 10:56	10/28/21	
Naphthalene	0.025	0.020	0.0014	1	10/29/21 10:56	10/28/21	
Phenanthrene	0.084	0.020	0.0011	1	10/29/21 10:56	10/28/21	
Pyrene	0.14	0.020	0.0010	1	10/29/21 10:56	10/28/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	85	42 - 133	10/29/21 10:56	
Fluorene-d10	97	42 - 131	10/29/21 10:56	
Terphenyl-d14	83	32 - 129	10/29/21 10:56	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.015 J	0.020	0.0013	1	10/29/21 11:22	10/28/21	
Acenaphthene	0.0052 J	0.020	0.0012	1	10/29/21 11:22	10/28/21	
Acenaphthylene	0.015 J	0.020	0.0011	1	10/29/21 11:22	10/28/21	
Anthracene	0.014 J	0.020	0.00082	1	10/29/21 11:22	10/28/21	*
Benz(a)anthracene	0.027	0.020	0.00097	1	10/29/21 11:22	10/28/21	
Benzo(a)pyrene	0.044	0.020	0.0011	1	10/29/21 11:22	10/28/21	
Benzo(b)fluoranthene	0.043	0.020	0.00083	1	10/29/21 11:22	10/28/21	
Benzo(g,h,i)perylene	0.042	0.020	0.00086	1	10/29/21 11:22	10/28/21	
Benzo(k)fluoranthene	0.012 J	0.020	0.00094	1	10/29/21 11:22	10/28/21	
Chrysene	0.054	0.020	0.00076	1	10/29/21 11:22	10/28/21	
Dibenz(a,h)anthracene	0.0044 J	0.020	0.0013	1	10/29/21 11:22	10/28/21	
Fluoranthene	0.11	0.020	0.00082	1	10/29/21 11:22	10/28/21	
Fluorene	0.015 J	0.020	0.0011	1	10/29/21 11:22	10/28/21	
Indeno(1,2,3-cd)pyrene	0.026	0.020	0.00089	1	10/29/21 11:22	10/28/21	
Naphthalene	0.028	0.020	0.0014	1	10/29/21 11:22	10/28/21	
Phenanthrene	0.098	0.020	0.0011	1	10/29/21 11:22	10/28/21	
Pyrene	0.17	0.020	0.0010	1	10/29/21 11:22	10/28/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	94	42 - 133	10/29/21 11:22	
Fluorene-d10	108	42 - 131	10/29/21 11:22	
Terphenyl-d14	90	32 - 129	10/29/21 11:22	

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dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2112456-001

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	8.6	5.0	0.65	5	11/18/21 02:04	10/26/21	*
Butyl Benzyl Phthalate	0.65 J	1.0	0.11	5	11/18/21 02:04	10/26/21	
Di-n-butyl Phthalate	0.77 J	1.0	0.12	5	11/18/21 02:04	10/26/21	*
Di-n-octyl Phthalate	2.2	1.0	0.17	5	11/18/21 02:04	10/26/21	
Diethyl Phthalate	0.43 J	1.0	0.075	5	11/18/21 02:04	10/26/21	*
Dimethyl Phthalate	0.58 J	1.0	0.11	5	11/18/21 02:04	10/26/21	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	140	35 - 105	11/18/21 02:04	*
Nitrobenzene-d5	144	40 - 117	11/18/21 02:04	*
p-Terphenyl-d14	139	48 - 109	11/18/21 02:04	*

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.6 J	5.0	0.65	5	11/18/21 02:32	10/26/21	*
Butyl Benzyl Phthalate	0.43 J	1.0	0.11	5	11/18/21 02:32	10/26/21	
Di-n-butyl Phthalate	0.34 J	1.0	0.12	5	11/18/21 02:32	10/26/21	*
Di-n-octyl Phthalate	1.1	1.0	0.17	5	11/18/21 02:32	10/26/21	
Diethyl Phthalate	0.26 J	1.0	0.075	5	11/18/21 02:32	10/26/21	
Dimethyl Phthalate	0.28 J	1.0	0.11	5	11/18/21 02:32	10/26/21	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	62	35 - 105	11/18/21 02:32	
Nitrobenzene-d5	70	40 - 117	11/18/21 02:32	
p-Terphenyl-d14	61	48 - 109	11/18/21 02:32	



Semivolatile Organic Compounds by GC

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42

Sample Name: WR510-IN
Lab Code: K2112456-001

Units: ug/L
Basis: NA

Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aroclor 1016	ND U	0.0050	0.0032	1	12/21/21 15:16	10/29/21	
Aroclor 1221	ND U	0.010	0.0032	1	12/21/21 15:16	10/29/21	
Aroclor 1232	ND U	0.0050	0.0032	1	12/21/21 15:16	10/29/21	
Aroclor 1242	0.030	0.0050	0.0032	1	12/21/21 15:16	10/29/21	
Aroclor 1248	ND U	0.0050	0.0032	1	12/21/21 15:16	10/29/21	
Aroclor 1254	ND Ui	0.015	0.015	1	12/21/21 15:16	10/29/21	
Aroclor 1260	ND Ui	0.013	0.013	1	12/21/21 15:16	10/29/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	69	10 - 140	12/21/21 15:16	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42

Units: ug/L
Basis: NA

Polychlorinated Biphenyls (PCBs)

Analysis Method: 8082A
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aroclor 1016	ND U	0.0050	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1221	ND U	0.010	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1232	ND U	0.0050	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1242	0.028	0.0050	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1248	ND U	0.0050	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1254	0.012 P	0.0050	0.0032	1	12/21/21 15:47	10/29/21	
Aroclor 1260	ND Ui	0.013	0.013	1	12/21/21 15:47	10/29/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	54	10 - 140	12/21/21 15:47	



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2112456-001

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.82	ug/L	0.50	0.09	1	11/02/21 11:08	10/29/21	
Cadmium	6020A	0.212	ug/L	0.020	0.008	1	11/02/21 11:08	10/29/21	
Copper	6020A	28.4	ug/L	0.10	0.05	1	11/02/21 11:08	10/29/21	
Lead	6020A	14.7	ug/L	0.020	0.006	1	11/02/21 11:08	10/29/21	
Nickel	6020A	4.17	ug/L	0.20	0.04	1	11/02/21 11:08	10/29/21	
Zinc	6020A	278	ug/L	2.0	0.5	1	11/02/21 11:08	10/29/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.74	ug/L	0.50	0.09	1	11/02/21 11:10	10/29/21	
Cadmium	6020A	0.223	ug/L	0.020	0.008	1	11/02/21 11:10	10/29/21	
Copper	6020A	29.7	ug/L	0.10	0.05	1	11/02/21 11:10	10/29/21	
Lead	6020A	14.9	ug/L	0.020	0.006	1	11/02/21 11:10	10/29/21	
Nickel	6020A	3.97	ug/L	0.20	0.04	1	11/02/21 11:10	10/29/21	
Zinc	6020A	289	ug/L	2.0	0.5	1	11/02/21 11:10	10/29/21	



General Chemistry

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2112456-001

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	44.0	mg/L	2.0	0.8	1	11/05/21 13:15	11/05/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2112456-001

Service Request: K2112456
Date Collected: 10/21/21 20:41
Date Received: 10/25/21 10:42
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Solids, Total Suspended (TSS)	SM 2540 D	101	mg/L	2.0	-	1	10/28/21 16:00	NA	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	42.0	mg/L	2.0	0.8	1	11/05/21 13:15	11/05/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2112456-002

Service Request: K2112456
Date Collected: 10/21/21 19:54
Date Received: 10/25/21 10:42
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Solids, Total Suspended (TSS)	SM 2540 D	106	mg/L	3.2	-	1	10/28/21 16:00	NA	



QC Summary Forms

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Semivolatile Organic Compounds by GC/MS

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QA/QC Report

Client: Herrera Environmental

Service Request: K2112456

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2112456-001	85	97	83
WR510-OUT	K2112456-002	94	108	90
Method Blank	KQ2121193-03	87	97	76
Lab Control Sample	KQ2121193-01	89	93	83
Duplicate Lab Control Sample	KQ2121193-02	88	93	79

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2121193-03

Service Request: K2112456
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0018 J	0.020	0.0013	1	10/29/21 09:36	10/28/21	
Acenaphthene	ND U	0.020	0.0012	1	10/29/21 09:36	10/28/21	
Acenaphthylene	ND U	0.020	0.0011	1	10/29/21 09:36	10/28/21	
Anthracene	ND U	0.020	0.00082	1	10/29/21 09:36	10/28/21	
Benz(a)anthracene	0.0020 J	0.020	0.00097	1	10/29/21 09:36	10/28/21	
Benzo(a)pyrene	ND U	0.020	0.0011	1	10/29/21 09:36	10/28/21	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	10/29/21 09:36	10/28/21	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	10/29/21 09:36	10/28/21	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	10/29/21 09:36	10/28/21	
Chrysene	ND U	0.020	0.00076	1	10/29/21 09:36	10/28/21	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	10/29/21 09:36	10/28/21	
Fluoranthene	ND U	0.020	0.00082	1	10/29/21 09:36	10/28/21	
Fluorene	ND U	0.020	0.0011	1	10/29/21 09:36	10/28/21	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	10/29/21 09:36	10/28/21	
Naphthalene	0.0028 J	0.020	0.0014	1	10/29/21 09:36	10/28/21	
Phenanthrene	0.0013 J	0.020	0.0011	1	10/29/21 09:36	10/28/21	
Pyrene	ND U	0.020	0.0010	1	10/29/21 09:36	10/28/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	87	42 - 133	10/29/21 09:36	
Fluorene-d10	97	42 - 131	10/29/21 09:36	
Terphenyl-d14	76	32 - 129	10/29/21 09:36	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2112456
Date Analyzed: 10/29/21
Date Extracted: 10/28/21

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 744302

Lab Control Sample
KQ2121193-01

Duplicate Lab Control Sample
KQ2121193-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.70	2.78	97	2.59	2.78	93	48-120	4	30
Acenaphthene	2.98	2.78	107	2.83	2.78	102	63-121	5	30
Acenaphthylene	2.98	2.78	107	2.84	2.78	102	58-124	5	30
Anthracene	3.55	2.78	128 *	3.39	2.78	122	68-127	5	30
Benz(a)anthracene	3.21	2.78	115	3.03	2.78	109	74-124	6	30
Benzo(a)pyrene	3.28	2.78	118	3.09	2.78	111	75-131	6	30
Benzo(b)fluoranthene	3.26	2.78	118	3.10	2.78	112	73-136	5	30
Benzo(g,h,i)perylene	3.08	2.78	111	2.93	2.78	105	63-127	5	30
Benzo(k)fluoranthene	3.21	2.78	116	3.03	2.78	109	74-134	6	30
Chrysene	3.23	2.78	116	3.05	2.78	110	74-132	6	30
Dibenz(a,h)anthracene	3.28	2.78	118	3.11	2.78	112	59-135	5	30
Fluoranthene	2.73	2.78	98	2.60	2.78	94	70-127	5	30
Fluorene	3.01	2.78	108	2.86	2.78	103	68-121	5	30
Indeno(1,2,3-cd)pyrene	3.40	2.78	122	3.21	2.78	116	63-136	6	30
Naphthalene	2.76	2.78	99	2.65	2.78	95	52-115	4	30
Phenanthrene	2.91	2.78	105	2.79	2.78	101	64-126	4	30
Pyrene	3.18	2.78	115	3.02	2.78	109	72-127	5	30

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QA/QC Report

Client: Herrera Environmental

Service Request: K2112456

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2112456-001	140*	144*	139*
WR510-OUT	K2112456-002	62	70	61
Method Blank	KQ2121079-03	67	71	72
Lab Control Sample	KQ2121079-01	62	70	75
Duplicate Lab Control Sample	KQ2121079-02	67	73	81

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2121079-03

Service Request: K2112456
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	1.0	0.13	1	11/17/21 22:20	10/26/21	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	11/17/21 22:20	10/26/21	
Di-n-butyl Phthalate	0.048 J	0.20	0.023	1	11/17/21 22:20	10/26/21	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	11/17/21 22:20	10/26/21	
Diethyl Phthalate	ND U	0.20	0.015	1	11/17/21 22:20	10/26/21	
Dimethyl Phthalate	ND U	0.20	0.021	1	11/17/21 22:20	10/26/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	67	35 - 105	11/17/21 22:20	
Nitrobenzene-d5	71	40 - 117	11/17/21 22:20	
p-Terphenyl-d14	72	48 - 109	11/17/21 22:20	

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QA/QC Report

Client:	Herrera Environmental	Service Request:	K2112456
Project:	ODOT- Portland Harbor Perf. Monitoring/10-04681-006	Date Analyzed:	11/17/21
Sample Matrix:	Storm Water	Date Extracted:	10/26/21

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	Units:	ug/L
Prep Method:	EPA 3520C	Basis:	NA
		Analysis Lot:	746675

Lab Control Sample
KQ2121079-01

Duplicate Lab Control Sample
KQ2121079-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	3.71	5.00	74	3.82	5.00	76	42-147	3	30
Butyl Benzyl Phthalate	3.54	5.00	71	3.80	5.00	76	59-119	7	30
Diethyl Phthalate	3.18	5.00	64	3.30	5.00	66	58-114	4	30
Dimethyl Phthalate	2.82	5.00	56 *	3.00	5.00	60	58-109	6	30
Di-n-butyl Phthalate	2.67	5.00	53 *	2.73	5.00	55 *	61-121	2	30
Di-n-octyl Phthalate	2.91	5.00	58	2.91	5.00	58	50-125	<1	30



Semivolatile Organic Compounds by GC

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Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2112456
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2102866-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1221	ND	U	0.010	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1232	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1242	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1248	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1254	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	
Aroclor 1260	ND	U	0.0050	0.0032	1	10/29/21	12/21/21	KWG2102866	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	10-140	12/21/21	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2112456

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2112456-001	69
WR510-OUT	K2112456-002	54
Method Blank	KWG2102866-3	81
Lab Control Sample	KWG2102866-1	94
Duplicate Lab Control Sample	KWG2102866-2	95

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl	10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2112456
Date Extracted: 10/29/2021
Date Analyzed: 12/21/2021

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2102866

Analyte Name	Lab Control Sample KWG2102866-1 Lab Control Spike			Duplicate Lab Control Sample KWG2102866-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.0939	0.125	75	0.0989	0.125	79	31-164	5	30
Aroclor 1260	0.114	0.125	91	0.117	0.125	93	34-182	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2121289-03

Service Request: K2112456
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	11/02/21 11:03	10/29/21	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	11/02/21 11:03	10/29/21	
Copper	6020A	ND U	ug/L	0.10	0.05	1	11/02/21 11:03	10/29/21	
Lead	6020A	ND U	ug/L	0.020	0.006	1	11/02/21 11:03	10/29/21	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	11/02/21 11:03	10/29/21	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	11/02/21 11:03	10/29/21	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2112456**Date Analyzed:** 11/02/21**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2121289-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	50.7	50.0	101	80-120
Cadmium	6020A	26.1	25.0	104	80-120
Copper	6020A	13.0	12.5	104	80-120
Lead	6020A	53.3	50.0	107	80-120
Nickel	6020A	25.8	25.0	103	80-120
Zinc	6020A	25.9	25.0	104	80-120



General Chemistry

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: K2112456-MB1

Service Request: K2112456
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Hardness, Total as CaCO3	SM 2340 C	ND U	mg/L	2.0	0.8	1	11/05/21 13:15	11/05/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: K2112456-MB1

Service Request: K2112456
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Solids, Total Suspended (TSS)	SM 2540 D	ND U	mg/L	1.0	-	1	10/28/21 16:00	NA	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: K2112456-MB2

Service Request: K2112456
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Solids, Total Suspended (TSS)	SM 2540 D	ND U	mg/L	1.0	-	1	10/28/21 16:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2112456
Date Analyzed: 10/28/21 - 11/05/21

Lab Control Sample Summary
General Chemistry Parameters

Units:mg/L**Basis:**NA**Lab Control Sample**

K2112456-LCS1

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	21.6	21.2	102	90-116
Solids, Total Suspended (TSS)	SM 2540 D	384	400	96	85-115

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2112456
Date Analyzed: 10/28/21
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 744240

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2112456-LCS2	370	400	93	85-115



Subcontracted Analytical Parameters

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



19-Nov-2021

Howard Holmes
ALS Environmental
1317 S. 13th Avenue
Kelso, WA 98626

Re: **K2112456**

Work Order: **21111584**

Dear Howard,

ALS Environmental received 2 samples on 12-Nov-2021 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink that reads "Jodi Blouw".

Electronically approved by: Jodi Blouw

Jodi Blouw

Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: ALS Environmental
Project: K2112456
Work Order: 21111584

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
21111584-01	WR510-IN	Water		10/21/2021 20:41	11/12/2021 09:00	☐
21111584-02	WR510-OUT	Water		10/21/2021 19:54	11/12/2021 09:00	☐

Client: ALS Environmental
Project: K2112456
WorkOrder: 21111584

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
mg/L	Milligrams per Liter

Client: ALS Environmental
Project: K2112456
Work Order: 21111584

Case Narrative

Samples for the above noted Work Order were received on 11/12/2021. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Wet Chemistry:

No deviations or anomalies were noted.

ALS Group, USA

Date: 19-Nov-2021

Client: ALS Environmental
Project: K2112456
Sample ID: WR510-IN
Collection Date: 10/21/2021 08:41 PM

Work Order: 21111584
Lab ID: 21111584-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC CARBON, TOTAL			E415.1			Analyst: JB
Organic Carbon, Total	4.0		0.50	mg/L	1	11/17/2021 09:08 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 19-Nov-2021

Client: ALS Environmental
Project: K2112456
Sample ID: WR510-OUT
Collection Date: 10/21/2021 07:54 PM

Work Order: 21111584
Lab ID: 21111584-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC CARBON, TOTAL			E415.1			Analyst: JB
Organic Carbon, Total	4.2		0.50	mg/L	1	11/17/2021 09:49 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: ALS Environmental
Work Order: 21111584
Project: K2112456

QC BATCH REPORT

Batch ID: **R332693a** Instrument ID **TOC3** Method: **E415.1**

MBLK		Sample ID: MB-R332693-R332693a				Units: mg/L		Analysis Date: 11/17/2021 05:36 PM		
Client ID:		Run ID: TOC3_211117A				SeqNo: 7954825		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	ND	0.50								

LCS		Sample ID: LCS-R332693-R332693a				Units: mg/L		Analysis Date: 11/17/2021 06:15 PM		
Client ID:		Run ID: TOC3_211117A				SeqNo: 7954826		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	5.151	0.50	5	0	103	80-120	0			

MS		Sample ID: 21111560-01A MS				Units: mg/L		Analysis Date: 11/17/2021 11:10 PM		
Client ID:		Run ID: TOC3_211117A				SeqNo: 7954828		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	7.077	0.50	5	1.663	108	70-130	0			

MSD		Sample ID: 21111560-01A MSD				Units: mg/L		Analysis Date: 11/17/2021 11:50 PM		
Client ID:		Run ID: TOC3_211117A				SeqNo: 7954829		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	7.025	0.50	5	1.663	107	70-130	7.077	0.737	20	

The following samples were analyzed in this batch:

21111584-01A	21111584-02A

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

2111584

Project Number: K2112456
Project Manager: Howard Holmes
QAP: LAB QAP

Misc Out 1
None

Lab Code	Sample ID	# of Cont.	Matrix	Sample		Lab ID	
				Date	Time		
K2112456-001	WR510-IN	2	Storm Water	10/21/21	2041	Holland ALS	X
K2112456-002	WR510-OUT	2	Storm Water	10/21/21	1954	Holland ALS	X

Test Comments

Misc Out 1 - None

K2112456-001,2

TOC by 415.1 to ALS Holland

Folder Comments:

Tier II with attached list

Churn Split Carboy water

Limited sample volume-Do Not use for QC

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address:
 ALKLS.Data@alsglobal.com.

Howard Holmes
EDD - Supplement or Basic

H - Test is On Hold

R - Test is Authorized for Prep Only

Turnaround Requirements

 RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

 STANDARD

Requested FAX Date: _____

Requested Report Date: 11/15/21

Report Requirements

 I. Results Only

☒ II. Results + QC Summaries

 III. Results + QC and Calibration Summaries

 IV. Data Validation Report with Raw Data

PQL/MDL/J

EDD

N

Y

Invoice Information

PO#

51K2112456

Bill to

Relinquished By: *[Signature]*

Received By: *[Signature]*

Airbill Number: 2111584

Sample Receipt Checklist

Client Name: ALS - KELSO

Date/Time Received: 12-Nov-21 09:00

Work Order: 21111584

Received by: RS

Checklist completed by Robert Smick
eSignature

16-Nov-21
Date

Reviewed by: Jodi Blum
eSignature

17-Nov-21
Date

Matrices: WATER

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☒	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☒
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☒
Chain of custody present?	Yes ☒	No ☐	
Chain of custody signed when relinquished and received?	Yes ☒	No ☐	
Chain of custody agrees with sample labels?	Yes ☒	No ☐	
Samples in proper container/bottle?	Yes ☒	No ☐	
Sample containers intact?	Yes ☒	No ☐	
Sufficient sample volume for indicated test?	Yes ☒	No ☐	
All samples received within holding time?	Yes ☒	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☒	No ☐	
Sample(s) received on ice?	Yes ☒	No ☐	
Temperature(s)/Thermometer(s):	<u>4.1</u> <u>IR1</u>		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	<u>11/16/21 3:35PM</u>		
Water - VOA vials have zero headspace?	Yes ☒	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☒	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☒	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
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www.alsglobal.com

January 27, 2022

Analytical Report for Service Request No: K2114781

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT - Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory December 21, 2021
For your reference, these analyses have been assigned our service request number **K2114781**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



ALS Environmental
ALS Group USA, Corp
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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2114781
Date Received: 12/21/2021

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 12/21/2021. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 01/06/2022: The upper control criterion was exceeded for Bis(2-ethylhexyl) Phthalate and Butyl Benzyl Phthalate in Continuing Calibration Verification (CCV). The apparent problem indicated a potential high bias, the data quality was not significantly affected. No further corrective action was taken due to insufficient holding time remaining.

Method 8270D, 12/28/2021: Anthracene was flagged as outside the control criterion for Continuing Calibration Verification (CCV). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Method 8270D, 12/28/2021: The control criterion was exceeded for one or more of the following in replicate Laboratory Control Sample (LCS/DLCS): Fluoranthene, Benzo(a)pyrene. The error associated with recovery indicated a potential slight low bias. The sample data was not significantly affected. No further corrective action was taken.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

Method 415.1, 01/12/2022: The Relative Percent Difference (RPD) for the replicate analysis of Total Organic Carbon in sample WR510-OUT was outside the normal ALS control limits. The associated QA/QC results (e.g. control sample, matrix spike, method blank, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

Approved by



Date

01/27/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

✓ 21478

[illegible]

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in CCC_P4Composite

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ODOT – Portland Harbor Performance Monitoring



Page 1 of 1.

Cooler Receipt and Preservation Form

PM HH

Client Herrera Service Request K21
Received: 12/21/21 Opened: 12/21/21 By: [Signature] Unloaded: 12/21/21 By: [Signature]

- Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 - Samples were received in: (circle) Cooler Box Envelope Other Carboy 4 NA
 - Were custody seals on coolers? NA Y N If yes, how many and where? NA
If present, were custody seals intact? Y N If present, were they signed and dated? Y N
 - Was a Temperature Blank present in cooler? NA Y N If yes, note the temperature in the appropriate column below:
If no, take the temperature of a representative sample bottle contained within the cooler; note in the column "Sample Temp":
 - Were samples received within the method specified temperature ranges? NA Y N
If no, were they received on ice and same day as collected? If not, note the cooler # below and notify the PM. NA Y N
- If applicable, tissue samples were received: Frozen Partially Thawed Thawed

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	-0.5	↓					
	-0.8	↓					
	1.6	↓					
	-0.7	↓					

- Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
- Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- Were samples received in good condition (unbroken) NA Y N
- Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
- Did all sample labels and tags agree with custody papers? NA Y N
- Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
- Were VOA vials received without headspace? Indicate in the table below NA Y N
- Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2114781
Date Collected: 12/18/21
Date Received: 12/21/21
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2114781-001	2.90	0.50	1	01/12/22 15:06	
WR510-OUT	K2114781-002	3.60	0.50	1	01/12/22 15:06	
Method Blank	K2114781-MB1	ND U	0.50	1	01/12/22 15:06	

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QA/QC Report

Client: Herrera Environmental
Project ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781**Date Collected:** 12/18/21**Date Received:** 12/21/21**Date Analyzed:** 01/12/22**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: WR510-OUT
Lab Code: K2114781-002

Units: mg/L**Basis:** NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K2114781- 002DUP	Average	RPD	RPD Limit
				Result			
Carbon, Total Organic	415.1	0.50	3.60	4.70	4.15	27 *	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Collected: 12/18/21
Date Received: 12/21/21
Date Analyzed: 01/12/22
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name: WR510-OUT
Lab Code: K2114781-002
Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2114781-002MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	3.60	28.6	25.0	100	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Analyzed: 01/12/22
Date Extracted: NA

Duplicate Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 751481

Lab Control Sample
K2114781-LCS1

Duplicate Lab Control Sample
K2114781-DLCS1

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Carbon, Total Organic	25.0	25.0	100	24.7	25.0	99	83-117	1	20

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2114781
Date Collected: 12/18/21
Date Received: 12/21/21
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2114781-001	62.8	2.0	1	12/30/21 14:40	12/30/21	
WR510-OUT	K2114781-002	42.0	2.0	1	12/30/21 14:40	12/30/21	
Method Blank	K2114781-MB1	ND U	2.0	1	12/30/21 14:40	12/30/21	

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QA/QC Report

Client: Herrera Environmental
Project ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Collected: 12/18/21
Date Received: 12/21/21
Date Analyzed: 12/30/21

Replicate Sample Summary
General Chemistry Parameters

Sample Name: WR510-OUT
Lab Code: K2114781-002

Units: mg/L
Basis: NA

				Duplicate Sample K2114781- 002DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Hardness, Total as CaCO3	SM 2340 C	2.0	42.0	42.0	42.0	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Analyzed: 12/30/21
Date Extracted: 12/30/21

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 750632

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2114781-LCS2	21.6	21.2	102	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2114781
Date Collected: 12/18/21
Date Received: 12/21/21
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2114781-001	173	5.0	-	1	12/23/21 15:06	
WR510-OUT	K2114781-002	156	5.0	-	1	12/23/21 15:06	
Method Blank	K2114781-MB1	ND U	5.0	-	1	12/23/21 15:06	
Method Blank	K2114781-MB2	ND U	5.0	-	1	12/23/21 15:06	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Analyzed: 12/23/21
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 750173

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2114781-LCS2	414	400	104	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2114781-001

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.00	ug/L	0.50	0.09	1	01/03/22 15:17	12/29/21	
Cadmium	6020A	0.328	ug/L	0.020	0.008	1	01/03/22 15:17	12/29/21	
Copper	6020A	106	ug/L	0.10	0.05	1	01/03/22 15:17	12/29/21	
Lead	6020A	20.4	ug/L	0.020	0.006	1	01/03/22 15:17	12/29/21	
Nickel	6020A	6.67	ug/L	0.20	0.04	1	01/03/22 15:17	12/29/21	
Zinc	6020A	420	ug/L	2.0	0.5	1	01/03/22 15:17	12/29/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2114781-002

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.84	ug/L	0.50	0.09	1	01/03/22 15:19	12/29/21	
Cadmium	6020A	0.259	ug/L	0.020	0.008	1	01/03/22 15:19	12/29/21	
Copper	6020A	31.5	ug/L	0.10	0.05	1	01/03/22 15:19	12/29/21	
Lead	6020A	20.8	ug/L	0.020	0.006	1	01/03/22 15:19	12/29/21	
Nickel	6020A	4.83	ug/L	0.20	0.04	1	01/03/22 15:19	12/29/21	
Zinc	6020A	377	ug/L	2.0	0.5	1	01/03/22 15:19	12/29/21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2124582-01

Service Request: K2114781
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	01/03/22 14:24	12/29/21	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	01/03/22 14:24	12/29/21	
Copper	6020A	ND U	ug/L	0.10	0.05	1	01/03/22 14:24	12/29/21	
Lead	6020A	ND U	ug/L	0.020	0.006	1	01/03/22 14:24	12/29/21	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	01/03/22 14:24	12/29/21	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	01/03/22 14:24	12/29/21	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781**Date Analyzed:** 01/03/22**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2124582-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	47.4	50.0	95	80-120
Cadmium	6020A	24.6	25.0	98	80-120
Copper	6020A	11.9	12.5	96	80-120
Lead	6020A	51.1	50.0	102	80-120
Nickel	6020A	23.7	25.0	95	80-120
Zinc	6020A	22.9	25.0	92	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2114781
Date Collected: 12/18/2021
Date Received: 12/21/2021

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2114781-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1221	ND	U	0.010	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1232	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1242	0.034		0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1248	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1254	0.026		0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1260	0.0068		0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	10-140	01/07/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2114781
Date Collected: 12/18/2021
Date Received: 12/21/2021

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2114781-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1221	ND	U	0.010	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1232	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1242	0.034	P	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1248	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1254	0.021		0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1260	0.0078		0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	75	10-140	01/07/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2114781
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200102-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1221	ND	U	0.010	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1232	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1242	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1248	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1254	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	
Aroclor 1260	ND	U	0.0050	0.0032	1	01/03/22	01/07/22	KWG2200102	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-140	01/07/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2114781

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2114781-001	68
WR510-OUT	K2114781-002	75
Method Blank	KWG2200102-3	88
Lab Control Sample	KWG2200102-1	93
Duplicate Lab Control Sample	KWG2200102-2	90

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl	10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2114781
Date Extracted: 01/03/2022
Date Analyzed: 01/07/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200102

Analyte Name	Lab Control Sample KWG2200102-1 Lab Control Spike			Duplicate Lab Control Sample KWG2200102-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.127	0.125	101	0.126	0.125	101	31-164	0	30
Aroclor 1260	0.130	0.125	104	0.136	0.125	109	34-182	4	30

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Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Sample Name: WR510-IN
Lab Code: K2114781-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.014 J	0.020	0.0013	1	12/28/21 14:43	12/23/21	
Acenaphthene	0.0051 J	0.020	0.0012	1	12/28/21 14:43	12/23/21	
Acenaphthylene	0.0048 J	0.020	0.0011	1	12/28/21 14:43	12/23/21	
Anthracene	ND U	0.020	0.00082	1	12/28/21 14:43	12/23/21	*
Benz(a)anthracene	0.026	0.020	0.00097	1	12/28/21 14:43	12/23/21	
Benzo(a)pyrene	0.033	0.020	0.0011	1	12/28/21 14:43	12/23/21	*
Benzo(b)fluoranthene	0.045	0.020	0.00083	1	12/28/21 14:43	12/23/21	
Benzo(g,h,i)perylene	0.054	0.020	0.00086	1	12/28/21 14:43	12/23/21	
Benzo(k)fluoranthene	0.015 J	0.020	0.00094	1	12/28/21 14:43	12/23/21	
Chrysene	0.054	0.020	0.00076	1	12/28/21 14:43	12/23/21	
Dibenz(a,h)anthracene	0.0062 J	0.020	0.0013	1	12/28/21 14:43	12/23/21	
Fluoranthene	0.098	0.020	0.00082	1	12/28/21 14:43	12/23/21	*
Fluorene	0.0072 J	0.020	0.0011	1	12/28/21 14:43	12/23/21	
Indeno(1,2,3-cd)pyrene	0.025	0.020	0.00089	1	12/28/21 14:43	12/23/21	
Naphthalene	0.019 J	0.020	0.0014	1	12/28/21 14:43	12/23/21	
Phenanthrene	0.078	0.020	0.0011	1	12/28/21 14:43	12/23/21	
Pyrene	0.17	0.020	0.0010	1	12/28/21 14:43	12/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	69	42 - 133	12/28/21 14:43	
Fluorene-d10	71	42 - 131	12/28/21 14:43	
Terphenyl-d14	58	32 - 129	12/28/21 14:43	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2114781-002

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.021	0.020	0.0013	1	12/28/21 15:10	12/23/21	
Acenaphthene	ND U	0.020	0.0012	1	12/28/21 15:10	12/23/21	
Acenaphthylene	0.0060 J	0.020	0.0011	1	12/28/21 15:10	12/23/21	
Anthracene	ND U	0.020	0.00082	1	12/28/21 15:10	12/23/21	*
Benz(a)anthracene	0.026	0.020	0.00097	1	12/28/21 15:10	12/23/21	
Benzo(a)pyrene	0.034	0.020	0.0011	1	12/28/21 15:10	12/23/21	*
Benzo(b)fluoranthene	0.043	0.020	0.00083	1	12/28/21 15:10	12/23/21	
Benzo(g,h,i)perylene	0.048	0.020	0.00086	1	12/28/21 15:10	12/23/21	
Benzo(k)fluoranthene	0.014 J	0.020	0.00094	1	12/28/21 15:10	12/23/21	
Chrysene	0.053	0.020	0.00076	1	12/28/21 15:10	12/23/21	
Dibenz(a,h)anthracene	0.0069 J	0.020	0.0013	1	12/28/21 15:10	12/23/21	
Fluoranthene	0.11	0.020	0.00082	1	12/28/21 15:10	12/23/21	*
Fluorene	0.0095 J	0.020	0.0011	1	12/28/21 15:10	12/23/21	
Indeno(1,2,3-cd)pyrene	0.025	0.020	0.00089	1	12/28/21 15:10	12/23/21	
Naphthalene	0.035	0.020	0.0014	1	12/28/21 15:10	12/23/21	
Phenanthrene	0.080	0.020	0.0011	1	12/28/21 15:10	12/23/21	
Pyrene	0.18	0.020	0.0010	1	12/28/21 15:10	12/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	69	42 - 133	12/28/21 15:10	
Fluorene-d10	71	42 - 131	12/28/21 15:10	
Terphenyl-d14	55	32 - 129	12/28/21 15:10	

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QA/QC Report

Client: Herrera Environmental

Service Request: K2114781

Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2114781-001	69	71	58
WR510-OUT	K2114781-002	69	71	55
Method Blank	KQ2124720-03	64	70	56
Lab Control Sample	KQ2124720-01	68	72	63
Duplicate Lab Control Sample	KQ2124720-02	65	68	59

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2124720-03

Service Request: K2114781
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	12/28/21 12:24	12/23/21	
Acenaphthene	ND U	0.020	0.0012	1	12/28/21 12:24	12/23/21	
Acenaphthylene	ND U	0.020	0.0011	1	12/28/21 12:24	12/23/21	
Anthracene	ND U	0.020	0.00082	1	12/28/21 12:24	12/23/21	
Benz(a)anthracene	0.0014 J	0.020	0.00097	1	12/28/21 12:24	12/23/21	
Benzo(a)pyrene	ND U	0.020	0.0011	1	12/28/21 12:24	12/23/21	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	12/28/21 12:24	12/23/21	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	12/28/21 12:24	12/23/21	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	12/28/21 12:24	12/23/21	
Chrysene	ND U	0.020	0.00076	1	12/28/21 12:24	12/23/21	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	12/28/21 12:24	12/23/21	
Fluoranthene	ND U	0.020	0.00082	1	12/28/21 12:24	12/23/21	
Fluorene	ND U	0.020	0.0011	1	12/28/21 12:24	12/23/21	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	12/28/21 12:24	12/23/21	
Naphthalene	0.0017 J	0.020	0.0014	1	12/28/21 12:24	12/23/21	
Phenanthrene	ND U	0.020	0.0011	1	12/28/21 12:24	12/23/21	
Pyrene	ND U	0.020	0.0010	1	12/28/21 12:24	12/23/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	64	42 - 133	12/28/21 12:24	
Fluorene-d10	70	42 - 131	12/28/21 12:24	
Terphenyl-d14	56	32 - 129	12/28/21 12:24	

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dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2114781
Date Analyzed: 12/28/21
Date Extracted: 12/23/21

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 750312

Lab Control Sample
KQ2124720-01

Duplicate Lab Control Sample
KQ2124720-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	1.88	2.78	68	1.79	2.78	64	48-120	5	30
Acenaphthene	2.15	2.78	77	2.02	2.78	73	63-121	6	30
Acenaphthylene	2.15	2.78	78	2.01	2.78	72	58-124	7	30
Anthracene	2.12	2.78	76	2.03	2.78	73	68-127	4	30
Benz(a)anthracene	2.16	2.78	78	2.05	2.78	74	74-124	5	30
Benzo(a)pyrene	2.16	2.78	78	2.05	2.78	74 *	75-131	5	30
Benzo(b)fluoranthene	2.28	2.78	82	2.17	2.78	78	73-136	5	30
Benzo(g,h,i)perylene	2.09	2.78	75	1.98	2.78	71	63-127	5	30
Benzo(k)fluoranthene	2.29	2.78	82	2.14	2.78	77	74-134	7	30
Chrysene	2.21	2.78	80	2.10	2.78	76	74-132	5	30
Dibenz(a,h)anthracene	2.28	2.78	82	2.18	2.78	79	59-135	4	30
Fluoranthene	1.93	2.78	69 *	1.86	2.78	67 *	70-127	3	30
Fluorene	2.12	2.78	76	2.01	2.78	73	68-121	5	30
Indeno(1,2,3-cd)pyrene	2.20	2.78	79	2.08	2.78	75	63-136	6	30
Naphthalene	2.08	2.78	75	1.97	2.78	71	52-115	6	30
Phenanthrene	2.07	2.78	75	2.00	2.78	72	64-126	4	30
Pyrene	2.38	2.78	86	2.24	2.78	81	72-127	6	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2114781-001

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.6	1.0	0.13	1	01/06/22 18:35	12/22/21	*
Butyl Benzyl Phthalate	0.15 J	0.20	0.021	1	01/06/22 18:35	12/22/21	*
Di-n-butyl Phthalate	0.14 J	0.20	0.023	1	01/06/22 18:35	12/22/21	
Di-n-octyl Phthalate	0.48	0.20	0.033	1	01/06/22 18:35	12/22/21	
Diethyl Phthalate	0.10 J	0.20	0.015	1	01/06/22 18:35	12/22/21	
Dimethyl Phthalate	0.19 J	0.20	0.021	1	01/06/22 18:35	12/22/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	66	35 - 105	01/06/22 18:35	
Nitrobenzene-d5	65	40 - 117	01/06/22 18:35	
p-Terphenyl-d14	81	48 - 109	01/06/22 18:35	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2114781-002

Service Request: K2114781
Date Collected: 12/18/21 17:32
Date Received: 12/21/21 11:00

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.0	1.0	0.14	1	01/06/22 19:03	12/22/21	*
Butyl Benzyl Phthalate	0.097 J	0.20	0.022	1	01/06/22 19:03	12/22/21	*
Di-n-butyl Phthalate	0.11 J	0.20	0.024	1	01/06/22 19:03	12/22/21	
Di-n-octyl Phthalate	0.46	0.20	0.034	1	01/06/22 19:03	12/22/21	
Diethyl Phthalate	0.082 J	0.20	0.016	1	01/06/22 19:03	12/22/21	
Dimethyl Phthalate	0.15 J	0.20	0.022	1	01/06/22 19:03	12/22/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	53	35 - 105	01/06/22 19:03	
Nitrobenzene-d5	52	40 - 117	01/06/22 19:03	
p-Terphenyl-d14	64	48 - 109	01/06/22 19:03	

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QA/QC Report

Client: Herrera Environmental

Service Request: K2114781

Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2114781-001	66	65	81
WR510-OUT	K2114781-002	53	52	64
Method Blank	KQ2124644-03	59	59	65
Lab Control Sample	KQ2124644-01	68	73	75
Duplicate Lab Control Sample	KQ2124644-02	63	68	74

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2124644-03

Service Request: K2114781
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	1.0	0.13	1	01/06/22 16:12	12/22/21	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	01/06/22 16:12	12/22/21	
Di-n-butyl Phthalate	0.050 J	0.20	0.023	1	01/06/22 16:12	12/22/21	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	01/06/22 16:12	12/22/21	
Diethyl Phthalate	ND U	0.20	0.015	1	01/06/22 16:12	12/22/21	
Dimethyl Phthalate	ND U	0.20	0.021	1	01/06/22 16:12	12/22/21	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	59	35 - 105	01/06/22 16:12	
Nitrobenzene-d5	59	40 - 117	01/06/22 16:12	
p-Terphenyl-d14	65	48 - 109	01/06/22 16:12	

ALS Group USA, Corp.
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QA/QC Report

Client:	Herrera Environmental	Service Request:	K2114781
Project:	ODOT - Portland Harbor Perf. Monitoring/10-04681-006	Date Analyzed:	01/06/22
Sample Matrix:	Storm Water	Date Extracted:	12/22/21

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method:	8270D	Units:	ug/L
Prep Method:	EPA 3520C	Basis:	NA
		Analysis Lot:	751144

Lab Control Sample
KQ2124644-01

Duplicate Lab Control Sample
KQ2124644-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	3.93	5.00	79	3.54	5.00	71	42-147	10	30
Butyl Benzyl Phthalate	4.13	5.00	83	3.62	5.00	72	59-119	13	30
Diethyl Phthalate	4.06	5.00	81	3.71	5.00	74	58-114	9	30
Dimethyl Phthalate	3.52	5.00	70	3.20	5.00	64	58-109	9	30
Di-n-butyl Phthalate	4.30	5.00	86	3.85	5.00	77	61-121	11	30
Di-n-octyl Phthalate	4.71	5.00	94	4.20	5.00	84	50-125	12	30



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March 16, 2022

Analytical Report for Service Request No: K2201904

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory February 23, 2022
For your reference, these analyses have been assigned our service request number **K2201904**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2201904
Date Received: 02/23/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 02/23/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 03/07/2022: The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS29\0307F007.D: Butyl Benzyl Phalate. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Method 8270D, 03/07/2022: The upper control criterion was exceeded for Butyl Benzyl Phthalate in Duplicate Laboratory Control Sample (DLCS) KQ2203028-02:. The analyte in question was not detected in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was appropriate.

Method 8270D, 03/07/2022: The control criteria were exceeded for p-Terphenyl-d14 in sample WR510-IN due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Method 8270D, 03/07/2022: The control criteria were exceeded for 2-Fluorobiphenyl and p-Terphenyl-d14 in sample WR510-OUT due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Method 8270D, 03/04/2022: The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS14\0303F002.D: Benzo(a)pyrene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Method 8270D, 03/04/2022: The control criteria were exceeded for Fluoranthene-d10 in sample WR510-IN due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: Three Aroclors were identified in sample name: Aroclor 1242, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult. A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder

Approved by



Date

03/16/2022

of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor 1242, Aroclor 1248, or Aroclor 1260.

When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1248, 1254, and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

03/16/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



2200 Sixth Avenue | Suite 1100
Seattle, Washington 98121
p 206 441 9080 | f 206 441 9208

Chain of Custody Record

K2201904

[illegible]

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)

PM H2

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 01904
 Received: 2/23/22 Opened: 2/23/22 By: NP Unloaded: 2/23/22 By: NP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number <u>NA</u>	Filed
	<u>0.1</u>	<u>1802</u>					
	<u>0.9</u>	<u>1802</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
 5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____
 : _____



General Chemistry

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2201904
Date Collected: 02/20/22
Date Received: 02/23/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2201904-001	64.0	2.0	4	03/07/22 14:48	
WR510-OUT	K2201904-002	39.8	0.50	1	03/07/22 14:48	
Method Blank	K2201904-MB1	ND U	0.50	1	03/07/22 14:48	
Method Blank	K2201904-MB2	ND U	0.50	1	03/07/22 14:48	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Analyzed: 03/07/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 756637

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2201904-LCS1	25.1	25.0	100	83-117
Lab Control Sample	K2201904-LCS2	24.7	25.0	99	83-117

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2201904
Date Collected: 02/20/22
Date Received: 02/23/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2201904-001	416	2.0	1	02/28/22 13:50	2/28/22	
WR510-OUT	K2201904-002	320	2.0	1	02/28/22 13:50	2/28/22	
Method Blank	K2201904-MB1	ND U	2.0	1	02/28/22 13:50	2/28/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Analyzed: 02/28/22
Date Extracted: 02/28/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 755912

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2201904-LCS1	21.6	21.2	102	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2201904
Date Collected: 02/20/22
Date Received: 02/23/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2201904-001	194	20	-	1	02/25/22 14:39	
WR510-OUT	K2201904-002	24	20	-	1	02/25/22 14:39	
Method Blank	K2201904-MB1	ND U	5.0	-	1	02/25/22 14:39	
Method Blank	K2201904-MB2	ND U	5.0	-	1	02/25/22 14:39	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Analyzed: 02/25/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 755740

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2201904-LCS1	382	400	96	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2201904-001

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	4.39	ug/L	0.50	0.09	1	03/04/22 13:01	03/01/22	
Cadmium	6020A	0.716	ug/L	0.020	0.008	1	03/04/22 13:01	03/01/22	
Copper	6020A	126	ug/L	0.10	0.05	1	03/04/22 13:01	03/01/22	
Lead	6020A	81.6	ug/L	0.020	0.006	1	03/04/22 13:01	03/01/22	
Nickel	6020A	25.8	ug/L	0.20	0.04	1	03/04/22 13:01	03/01/22	
Zinc	6020A	2130	ug/L	2.0	0.5	1	03/04/22 13:01	03/01/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2201904-002

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	2.36	ug/L	0.50	0.09	1	03/04/22 13:03	03/01/22	
Cadmium	6020A	0.183	ug/L	0.020	0.008	1	03/04/22 13:03	03/01/22	
Copper	6020A	32.5	ug/L	0.10	0.05	1	03/04/22 13:03	03/01/22	
Lead	6020A	7.51	ug/L	0.020	0.006	1	03/04/22 13:03	03/01/22	
Nickel	6020A	6.36	ug/L	0.20	0.04	1	03/04/22 13:03	03/01/22	
Zinc	6020A	813	ug/L	2.0	0.5	1	03/04/22 13:03	03/01/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2203225-01

Service Request: K2201904
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	03/04/22 12:58	03/01/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	03/04/22 12:58	03/01/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	03/04/22 12:58	03/01/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	03/04/22 12:58	03/01/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	03/04/22 12:58	03/01/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	03/04/22 12:58	03/01/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Analyzed: 03/04/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2203225-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	50.0	50.0	100	80-120
Cadmium	6020A	26.4	25.0	106	80-120
Copper	6020A	12.9	12.5	103	80-120
Lead	6020A	52.2	50.0	104	80-120
Nickel	6020A	25.0	25.0	100	80-120
Zinc	6020A	26.6	25.0	106	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2201904
Date Collected: 02/20/2022
Date Received: 02/23/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2201904-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.010	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	0.10		0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	0.045	P	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	0.021		0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	95	10-140	03/14/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2201904
Date Collected: 02/20/2022
Date Received: 02/23/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2201904-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.010	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	0.046		0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	0.016	P	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	0.0066	P	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	10-140	03/14/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2201904
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200525-4
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.010	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	128	10-140	03/14/22	Acceptable

Comments: _____

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2201904

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2201904-001	95
WR510-OUT	K2201904-002	83
Batch QC	K2202303-005	121
Method Blank	KWG2200525-4	128
Batch QCMS	KWG2200525-1	126
Batch QCDMS	KWG2200525-2	124
Lab Control Sample	KWG2200525-3	118

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2201904
Date Extracted: 03/10/2022
Date Analyzed: 03/14/2022

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K2202303-005
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200525

Analyte Name	Sample Result	Batch QCMS KWG2200525-1 Matrix Spike			Batch QCDMS KWG2200525-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	ND	0.126	0.125	101	0.125	0.125	100	33-178	1	30
Aroclor 1260	ND	0.160	0.125	128	0.154	0.125	123	55-146	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2201904
Date Extracted: 03/10/2022
Date Analyzed: 03/14/2022

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200525

Lab Control Sample KWG2200525-3 Lab Control Spike				
Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	0.129	0.125	103	31-164
Aroclor 1260	0.150	0.125	120	34-182

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Low Level Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Sample Name: WR510-IN
Lab Code: K2201904-001

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	11 J	20	2.6	20	03/07/22 17:36	2/24/22	
Butyl Benzyl Phthalate	ND U	3.9	0.42	20	03/07/22 17:36	2/24/22	*
Di-n-butyl Phthalate	0.57 J	3.9	0.46	20	03/07/22 17:36	2/24/22	
Di-n-octyl Phthalate	ND U	3.9	0.66	20	03/07/22 17:36	2/24/22	
Diethyl Phthalate	0.93 J	3.9	0.30	20	03/07/22 17:36	2/24/22	
Dimethyl Phthalate	1.2 J	3.9	0.42	20	03/07/22 17:36	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	75	35 - 105	03/07/22 17:36	
Nitrobenzene-d5	84	40 - 117	03/07/22 17:36	
p-Terphenyl-d14	41	48 - 109	03/07/22 17:36	*

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2201904-002

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	1.3	1.0	0.13	1	03/07/22 17:08	2/24/22	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	03/07/22 17:08	2/24/22	*
Di-n-butyl Phthalate	ND U	0.20	0.023	1	03/07/22 17:08	2/24/22	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	03/07/22 17:08	2/24/22	
Diethyl Phthalate	0.32	0.20	0.015	1	03/07/22 17:08	2/24/22	
Dimethyl Phthalate	0.22	0.20	0.021	1	03/07/22 17:08	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	32	35 - 105	03/07/22 17:08	*
Nitrobenzene-d5	48	40 - 117	03/07/22 17:08	
p-Terphenyl-d14	40	48 - 109	03/07/22 17:08	*

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2201904-001	75	84	41*
WR510-OUT	K2201904-002	32*	48	40*
Method Blank	KQ2203028-03	77	71	96
Lab Control Sample	KQ2203028-01	81	77	89
Duplicate Lab Control Sample	KQ2203028-02	88	85	106

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2203028-03

Service Request: K2201904
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.25 J	0.98	0.13	1	03/07/22 13:51	2/24/22	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	03/07/22 13:51	2/24/22	
Di-n-butyl Phthalate	ND U	0.20	0.023	1	03/07/22 13:51	2/24/22	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	03/07/22 13:51	2/24/22	
Diethyl Phthalate	0.032 J	0.20	0.015	1	03/07/22 13:51	2/24/22	
Dimethyl Phthalate	ND U	0.20	0.021	1	03/07/22 13:51	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	77	35 - 105	03/07/22 13:51	
Nitrobenzene-d5	71	40 - 117	03/07/22 13:51	
p-Terphenyl-d14	96	48 - 109	03/07/22 13:51	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2201904

Date Analyzed: 03/07/22

Date Extracted: 02/24/22

Duplicate Lab Control Sample Summary

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 756760

Lab Control Sample

KQ2203028-01

Duplicate Lab Control Sample

KQ2203028-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.31	5.00	86	5.17	5.00	103	42-147	18	30
Butyl Benzyl Phthalate	5.39	5.00	108	6.30	5.00	126 *	59-119	16	30
Diethyl Phthalate	4.92	5.00	98	5.30	5.00	106	58-114	7	30
Dimethyl Phthalate	4.34	5.00	87	4.69	5.00	94	58-109	8	30
Di-n-butyl Phthalate	5.03	5.00	101	5.37	5.00	107	61-121	7	30
Di-n-octyl Phthalate	5.11	5.00	102	5.32	5.00	106	50-125	4	30



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2201904-001

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.22	0.015	10	03/04/22 00:06	2/24/22	
Acenaphthene	ND U	0.22	0.014	10	03/04/22 00:06	2/24/22	
Acenaphthylene	1.9	0.22	0.013	10	03/04/22 00:06	2/24/22	
Anthracene	ND U	0.22	0.0091	10	03/04/22 00:06	2/24/22	
Benz(a)anthracene	0.23	0.22	0.011	10	03/04/22 00:06	2/24/22	
Benzo(a)pyrene	0.19 J	0.22	0.013	10	03/04/22 00:06	2/24/22	*
Benzo(b)fluoranthene	0.28	0.22	0.0092	10	03/04/22 00:06	2/24/22	
Benzo(g,h,i)perylene	0.31	0.22	0.0095	10	03/04/22 00:06	2/24/22	
Benzo(k)fluoranthene	0.11 J	0.22	0.011	10	03/04/22 00:06	2/24/22	
Chrysene	0.34	0.22	0.0084	10	03/04/22 00:06	2/24/22	
Dibenz(a,h)anthracene	0.094 J	0.22	0.015	10	03/04/22 00:06	2/24/22	
Fluoranthene	0.45	0.22	0.0091	10	03/04/22 00:06	2/24/22	
Fluorene	ND U	0.22	0.013	10	03/04/22 00:06	2/24/22	
Indeno(1,2,3-cd)pyrene	0.19 J	0.22	0.0099	10	03/04/22 00:06	2/24/22	
Naphthalene	ND U	0.22	0.016	10	03/04/22 00:06	2/24/22	
Phenanthrene	0.63	0.22	0.013	10	03/04/22 00:06	2/24/22	
Pyrene	0.60	0.22	0.012	10	03/04/22 00:06	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	41	42 - 133	03/04/22 00:06	*
Fluorene-d10	72	42 - 131	03/04/22 00:06	
Terphenyl-d14	43	32 - 129	03/04/22 00:06	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Collected: 02/20/22 01:46
Date Received: 02/23/22 12:05

Sample Name: WR510-OUT
Lab Code: K2201904-002

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.023	0.0015	1	03/04/22 00:34	2/24/22	
Acenaphthene	ND U	0.023	0.0014	1	03/04/22 00:34	2/24/22	
Acenaphthylene	0.37	0.023	0.0013	1	03/04/22 00:34	2/24/22	
Anthracene	ND U	0.023	0.00093	1	03/04/22 00:34	2/24/22	
Benz(a)anthracene	ND U	0.023	0.0011	1	03/04/22 00:34	2/24/22	
Benzo(a)pyrene	ND U	0.023	0.0013	1	03/04/22 00:34	2/24/22	*
Benzo(b)fluoranthene	ND U	0.023	0.00094	1	03/04/22 00:34	2/24/22	
Benzo(g,h,i)perylene	0.031	0.023	0.00097	1	03/04/22 00:34	2/24/22	
Benzo(k)fluoranthene	ND U	0.023	0.0011	1	03/04/22 00:34	2/24/22	
Chrysene	ND U	0.023	0.00086	1	03/04/22 00:34	2/24/22	
Dibenz(a,h)anthracene	ND U	0.023	0.0015	1	03/04/22 00:34	2/24/22	
Fluoranthene	0.035	0.023	0.00093	1	03/04/22 00:34	2/24/22	
Fluorene	ND U	0.023	0.0013	1	03/04/22 00:34	2/24/22	
Indeno(1,2,3-cd)pyrene	ND U	0.023	0.0011	1	03/04/22 00:34	2/24/22	
Naphthalene	0.057	0.023	0.0016	1	03/04/22 00:34	2/24/22	
Phenanthrene	0.068	0.023	0.0013	1	03/04/22 00:34	2/24/22	
Pyrene	0.10	0.023	0.0012	1	03/04/22 00:34	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	60	42 - 133	03/04/22 00:34	
Fluorene-d10	58	42 - 131	03/04/22 00:34	
Terphenyl-d14	58	32 - 129	03/04/22 00:34	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2201904-001	41*	72	43
WR510-OUT	K2201904-002	60	58	58
Method Blank	KQ2203039-03	91	89	92
Lab Control Sample	KQ2203039-01	87	81	97
Duplicate Lab Control Sample	KQ2203039-02	93	89	97

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Sample Name: Method Blank
Lab Code: KQ2203039-03

Service Request: K2201904
Date Collected: NA
Date Received: NA

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.022	0.0015	1	03/03/22 22:43	2/24/22	
Acenaphthene	ND U	0.022	0.0014	1	03/03/22 22:43	2/24/22	
Acenaphthylene	ND U	0.022	0.0013	1	03/03/22 22:43	2/24/22	
Anthracene	ND U	0.022	0.00091	1	03/03/22 22:43	2/24/22	
Benz(a)anthracene	0.0022 J	0.022	0.0011	1	03/03/22 22:43	2/24/22	
Benzo(a)pyrene	ND U	0.022	0.0013	1	03/03/22 22:43	2/24/22	
Benzo(b)fluoranthene	ND U	0.022	0.00092	1	03/03/22 22:43	2/24/22	
Benzo(g,h,i)perylene	ND U	0.022	0.00095	1	03/03/22 22:43	2/24/22	
Benzo(k)fluoranthene	ND U	0.022	0.0011	1	03/03/22 22:43	2/24/22	
Chrysene	ND U	0.022	0.00084	1	03/03/22 22:43	2/24/22	
Dibenz(a,h)anthracene	ND U	0.022	0.0015	1	03/03/22 22:43	2/24/22	
Fluoranthene	ND U	0.022	0.00091	1	03/03/22 22:43	2/24/22	
Fluorene	ND U	0.022	0.0013	1	03/03/22 22:43	2/24/22	
Indeno(1,2,3-cd)pyrene	ND U	0.022	0.00099	1	03/03/22 22:43	2/24/22	
Naphthalene	ND U	0.022	0.0016	1	03/03/22 22:43	2/24/22	
Phenanthrene	ND U	0.022	0.0013	1	03/03/22 22:43	2/24/22	
Pyrene	ND U	0.022	0.0012	1	03/03/22 22:43	2/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	91	42 - 133	03/03/22 22:43	
Fluorene-d10	89	42 - 131	03/03/22 22:43	
Terphenyl-d14	92	32 - 129	03/03/22 22:43	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2201904
Date Analyzed: 03/03/22
Date Extracted: 02/24/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Units: ug/L
Basis: NA
Analysis Lot: 756168

Lab Control Sample
KQ2203039-01

Duplicate Lab Control Sample
KQ2203039-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.10	2.50	84	2.33	2.50	93	48-120	10	30
Acenaphthene	2.32	2.50	93	2.63	2.50	105	63-121	12	30
Acenaphthylene	2.32	2.50	93	2.60	2.50	104	58-124	11	30
Anthracene	2.49	2.50	100	2.73	2.50	109	68-127	9	30
Benz(a)anthracene	2.45	2.50	98	2.73	2.50	109	74-124	11	30
Benzo(a)pyrene	2.77	2.50	111	2.98	2.50	119	75-131	8	30
Benzo(b)fluoranthene	2.41	2.50	96	2.77	2.50	111	73-136	14	30
Benzo(g,h,i)perylene	2.33	2.50	93	2.59	2.50	104	63-127	11	30
Benzo(k)fluoranthene	2.47	2.50	99	2.82	2.50	113	74-134	13	30
Chrysene	2.46	2.50	99	2.76	2.50	110	74-132	11	30
Dibenz(a,h)anthracene	2.25	2.50	90	2.53	2.50	101	59-135	12	30
Fluoranthene	2.27	2.50	91	2.55	2.50	102	70-127	12	30
Fluorene	2.23	2.50	89	2.49	2.50	100	68-121	11	30
Indeno(1,2,3-cd)pyrene	2.57	2.50	103	2.86	2.50	114	63-136	10	30
Naphthalene	2.26	2.50	91	2.54	2.50	102	52-115	12	30
Phenanthrene	2.23	2.50	89	2.49	2.50	100	64-126	11	30
Pyrene	2.42	2.50	97	2.68	2.50	107	72-127	10	30



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March 25, 2022

Analytical Report for Service Request No: K2202103

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT - Portland Harbor Perf. Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory March 01, 2022
For your reference, these analyses have been assigned our service request number **K2202103**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2202103
Date Received: 03/01/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 03/01/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 03/07/2022: Benzo(a)pyrene was flagged as outside the control criterion for Continuing Calibration Verification (CCV). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Semivolatile GC:

Method 8082A, : The detection limit for all analytes for all samples were elevated due to high levels of heavy sediment and viscous extracts. The final volumes were raised due to the matrix.

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: Three Aroclors were identified in all samples: Aroclor 1232, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1232, 1242 and Aroclor 1248 from each other can be difficult. A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1232 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor 1242, Aroclor 1248, or Aroclor 1260. When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1232, 1254, and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

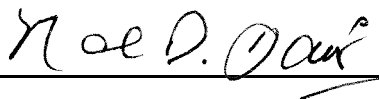
Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

03/25/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

✓2202103

[illegible]

Cooler Receipt and Preservation Form

PM 1/13/22

Client Herrera Service Request K22
Received: 3/1/22 Opened: 3/1/22 By: BK Unloaded: 3/1/22 By: BK

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>NA</u>	<u>-0.6</u>	<u>1201</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA Y N
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
13. Were VOA vials received without headspace? Indicate in the table below NA Y N
14. Was C12/Res negative? NA Y N
15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2202103
Date Collected: 02/26/22
Date Received: 03/1/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2202103-001	13.0	0.50	1	03/11/22 17:17	
WR510-OUT	K2202103-002	13.9	0.50	1	03/11/22 17:17	
Method Blank	K2202103-MB1	ND U	0.50	1	03/11/22 17:17	
Method Blank	K2202103-MB2	ND U	0.50	1	03/11/22 17:17	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Analyzed: 03/11/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 757205

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202103-LCS1	24.7	25.0	99	83-117
Lab Control Sample	K2202103-LCS2	24.8	25.0	99	83-117

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2202103
Date Collected: 02/26/22
Date Received: 03/1/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2202103-001	360	2.0	1	03/15/22 13:25	3/14/22	
WR510-OUT	K2202103-002	400	2.0	1	03/15/22 13:25	3/14/22	
Method Blank	K2202103-MB1	ND U	2.0	1	03/15/22 13:25	3/14/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Analyzed: 03/15/22
Date Extracted: 03/14/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 757526

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202103-LCS1	21.6	21.2	102	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2202103
Date Collected: 02/26/22
Date Received: 03/1/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2202103-001	206	20	-	1	03/02/22 16:18	
WR510-OUT	K2202103-002	144	20	-	1	03/02/22 16:18	
Method Blank	K2202103-MB1	ND U	5.0	-	1	03/02/22 16:18	
Method Blank	K2202103-MB2	ND U	5.0	-	1	03/02/22 16:18	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Analyzed: 03/02/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 756181

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202103-LCS1	358	400	90	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202103-001

Service Request: K2202103
Date Collected: 02/26/22 23:14
Date Received: 03/01/22 12:20

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	3.86	ug/L	0.50	0.09	1	03/10/22 15:11	03/07/22	
Cadmium	6020A	0.638	ug/L	0.020	0.008	1	03/10/22 15:11	03/07/22	
Copper	6020A	151	ug/L	0.10	0.05	1	03/10/22 15:11	03/07/22	
Lead	6020A	143	ug/L	0.020	0.006	1	03/10/22 15:11	03/07/22	
Nickel	6020A	10.7	ug/L	0.20	0.04	1	03/10/22 15:11	03/07/22	
Zinc	6020A	1250	ug/L	2.0	0.5	1	03/10/22 15:11	03/07/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202103-002

Service Request: K2202103
Date Collected: 02/26/22 23:01
Date Received: 03/01/22 12:20

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	3.81	ug/L	0.50	0.09	1	03/10/22 15:13	03/07/22	
Cadmium	6020A	0.403	ug/L	0.020	0.008	1	03/10/22 15:13	03/07/22	
Copper	6020A	51.9	ug/L	0.10	0.05	1	03/10/22 15:13	03/07/22	
Lead	6020A	20.5	ug/L	0.020	0.006	1	03/10/22 15:13	03/07/22	
Nickel	6020A	7.09	ug/L	0.20	0.04	1	03/10/22 15:13	03/07/22	
Zinc	6020A	784	ug/L	2.0	0.5	1	03/10/22 15:13	03/07/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2203338-01

Service Request: K2202103
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	03/10/22 15:08	03/07/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	03/10/22 15:08	03/07/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	03/10/22 15:08	03/07/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	03/10/22 15:08	03/07/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	03/10/22 15:08	03/07/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	03/10/22 15:08	03/07/22	

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QA/QC Report

Client: Herrera Environmental
Project ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103**Date Collected:** 02/26/22**Date Received:** 03/01/22**Date Analyzed:** 03/10/22**Replicate Sample Summary****Total Metals**

Sample Name: WR510-OUT
Lab Code: K2202103-002

Units: ug/L**Basis:** NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2203338-03	Average	RPD	RPD Limit
					Result			
Arsenic	6020A	0.50	0.09	3.81	3.81	3.81	<1	20
Cadmium	6020A	0.020	0.008	0.403	0.387	0.395	4	20
Copper	6020A	0.10	0.05	51.9	51.9	51.9	<1	20
Lead	6020A	0.020	0.006	20.5	20.3	20.4	<1	20
Nickel	6020A	0.20	0.04	7.09	7.08	7.09	<1	20
Zinc	6020A	2.0	0.5	784	782	783	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Collected: 02/26/22
Date Received: 03/01/22
Date Analyzed: 03/10/22
Date Extracted: 03/7/22

Matrix Spike Summary
Total Metals

Sample Name: WR510-OUT
Lab Code: K2202103-002
Analysis Method: 6020A
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2203338-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	3.81	54.1	50.0	100	75-125
Cadmium	0.403	26.7	25.0	105	75-125
Copper	51.9	64.8	12.5	103 #	75-125
Lead	20.5	71.8	50.0	103	75-125
Nickel	7.09	31.9	25.0	99	75-125
Zinc	784	804	25.0	80 #	75-125

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Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Analyzed: 03/10/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2203338-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	48.2	50.0	96	80-120
Cadmium	6020A	24.9	25.0	99	80-120
Copper	6020A	12.5	12.5	100	80-120
Lead	6020A	49.9	50.0	100	80-120
Nickel	6020A	24.1	25.0	96	80-120
Zinc	6020A	24.8	25.0	99	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202103
Date Collected: 02/26/2022
Date Received: 03/01/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2202103-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.020	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	0.17	P	0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	ND	U	0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	0.044	P	0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	0.040		0.010	0.0064	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	102	10-140	03/14/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202103
Date Collected: 02/26/2022
Date Received: 03/01/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2202103-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.015	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	0.11	P	0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	ND	U	0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	0.032	P	0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	0.023		0.0075	0.0048	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-140	03/14/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2202103
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200525-4
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1221	ND	U	0.010	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1242	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1254	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	
Aroclor 1260	ND	U	0.0050	0.0032	1	03/10/22	03/14/22	KWG2200525	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	128	10-140	03/14/22	Acceptable

Comments: _____

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202103

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2202103-001	102
WR510-OUT	K2202103-002	88
Batch QC	K2202303-005	121
Method Blank	KWG2200525-4	128
Batch QCMS	KWG2200525-1	126
Batch QCDMS	KWG2200525-2	124
Lab Control Sample	KWG2200525-3	118

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2202103
Date Extracted: 03/10/2022
Date Analyzed: 03/14/2022

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K2202303-005
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200525

Analyte Name	Sample Result	Batch QCMS KWG2200525-1 Matrix Spike			Batch QCDMS KWG2200525-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	ND	0.126	0.125	101	0.125	0.125	100	33-178	1	30
Aroclor 1260	ND	0.160	0.125	128	0.154	0.125	123	55-146	4	30

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2202103
Date Extracted: 03/10/2022
Date Analyzed: 03/14/2022

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200525

Lab Control Sample KWG2200525-3 Lab Control Spike				
Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	0.129	0.125	103	31-164
Aroclor 1260	0.150	0.125	120	34-182

Results flagged with an asterisk (*) indicate values outside control criteria.

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Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Sample Results

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Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Collected: 02/26/22 23:14
Date Received: 03/01/22 12:20

Sample Name: WR510-IN
Lab Code: K2202103-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.059	0.020	0.0013	1	03/07/22 11:14	3/4/22	
Acenaphthene	0.012 J	0.020	0.0012	1	03/07/22 11:14	3/4/22	
Acenaphthylene	0.013 J	0.020	0.0011	1	03/07/22 11:14	3/4/22	
Anthracene	ND U	0.020	0.00082	1	03/07/22 11:14	3/4/22	
Benz(a)anthracene	0.056	0.020	0.00097	1	03/07/22 11:14	3/4/22	
Benzo(a)pyrene	0.037	0.020	0.0011	1	03/07/22 11:14	3/4/22	*
Benzo(b)fluoranthene	0.064	0.020	0.00083	1	03/07/22 11:14	3/4/22	
Benzo(g,h,i)perylene	0.17	0.020	0.00086	1	03/07/22 11:14	3/4/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	03/07/22 11:14	3/4/22	
Chrysene	0.11	0.020	0.00076	1	03/07/22 11:14	3/4/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/07/22 11:14	3/4/22	
Fluoranthene	0.22	0.020	0.00082	1	03/07/22 11:14	3/4/22	
Fluorene	0.020 J	0.020	0.0011	1	03/07/22 11:14	3/4/22	
Indeno(1,2,3-cd)pyrene	0.059	0.020	0.00089	1	03/07/22 11:14	3/4/22	
Naphthalene	0.036	0.020	0.0014	1	03/07/22 11:14	3/4/22	
Phenanthrene	0.20	0.020	0.0011	1	03/07/22 11:14	3/4/22	
Pyrene	ND U	0.020	0.0010	1	03/07/22 11:14	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	90	42 - 133	03/07/22 11:14	
Fluorene-d10	96	42 - 131	03/07/22 11:14	
Terphenyl-d14	88	32 - 129	03/07/22 11:14	

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202103-002

Service Request: K2202103
Date Collected: 02/26/22 23:01
Date Received: 03/01/22 12:20

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.045	0.020	0.0013	1	03/07/22 11:42	3/4/22	
Acenaphthene	ND U	0.020	0.0012	1	03/07/22 11:42	3/4/22	
Acenaphthylene	0.012 J	0.020	0.0011	1	03/07/22 11:42	3/4/22	
Anthracene	ND U	0.020	0.00082	1	03/07/22 11:42	3/4/22	
Benz(a)anthracene	0.034	0.020	0.00097	1	03/07/22 11:42	3/4/22	
Benzo(a)pyrene	0.032	0.020	0.0011	1	03/07/22 11:42	3/4/22	*
Benzo(b)fluoranthene	0.055	0.020	0.00083	1	03/07/22 11:42	3/4/22	
Benzo(g,h,i)perylene	0.12	0.020	0.00086	1	03/07/22 11:42	3/4/22	
Benzo(k)fluoranthene	0.016 J	0.020	0.00094	1	03/07/22 11:42	3/4/22	
Chrysene	0.083	0.020	0.00076	1	03/07/22 11:42	3/4/22	
Dibenz(a,h)anthracene	0.0040 J	0.020	0.0013	1	03/07/22 11:42	3/4/22	
Fluoranthene	0.19	0.020	0.00082	1	03/07/22 11:42	3/4/22	
Fluorene	0.014 J	0.020	0.0011	1	03/07/22 11:42	3/4/22	
Indeno(1,2,3-cd)pyrene	0.045	0.020	0.00089	1	03/07/22 11:42	3/4/22	
Naphthalene	0.027	0.020	0.0014	1	03/07/22 11:42	3/4/22	
Phenanthrene	0.17	0.020	0.0011	1	03/07/22 11:42	3/4/22	
Pyrene	ND U	0.020	0.0010	1	03/07/22 11:42	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	81	42 - 133	03/07/22 11:42	
Fluorene-d10	86	42 - 131	03/07/22 11:42	
Terphenyl-d14	89	32 - 129	03/07/22 11:42	



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QA/QC Report

Client: Herrera Environmental

Service Request: K2202103

Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2202103-001	90	96	88
WR510-OUT	K2202103-002	81	86	89
Method Blank	KQ2203481-03	82	101	87
Lab Control Sample	KQ2203481-01	90	92	84
Duplicate Lab Control Sample	KQ2203481-02	88	90	86

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2203481-03

Service Request: K2202103
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	03/07/22 08:49	3/4/22	
Acenaphthene	ND U	0.020	0.0012	1	03/07/22 08:49	3/4/22	
Acenaphthylene	ND U	0.020	0.0011	1	03/07/22 08:49	3/4/22	
Anthracene	ND U	0.020	0.00082	1	03/07/22 08:49	3/4/22	
Benz(a)anthracene	ND U	0.020	0.00097	1	03/07/22 08:49	3/4/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	03/07/22 08:49	3/4/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	03/07/22 08:49	3/4/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	03/07/22 08:49	3/4/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	03/07/22 08:49	3/4/22	
Chrysene	ND U	0.020	0.00076	1	03/07/22 08:49	3/4/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/07/22 08:49	3/4/22	
Fluoranthene	ND U	0.020	0.00082	1	03/07/22 08:49	3/4/22	
Fluorene	ND U	0.020	0.0011	1	03/07/22 08:49	3/4/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	03/07/22 08:49	3/4/22	
Naphthalene	ND U	0.020	0.0014	1	03/07/22 08:49	3/4/22	
Phenanthrene	ND U	0.020	0.0011	1	03/07/22 08:49	3/4/22	
Pyrene	ND U	0.020	0.0010	1	03/07/22 08:49	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	82	42 - 133	03/07/22 08:49	
Fluorene-d10	101	42 - 131	03/07/22 08:49	
Terphenyl-d14	87	32 - 129	03/07/22 08:49	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202103
Date Analyzed: 03/07/22
Date Extracted: 03/04/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 757777

Lab Control Sample
KQ2203481-01

Duplicate Lab Control Sample
KQ2203481-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.80	2.78	101	2.75	2.78	99	48-120	2	30
Acenaphthene	3.08	2.78	111	3.10	2.78	112	63-121	<1	30
Acenaphthylene	3.01	2.78	108	3.08	2.78	111	58-124	2	30
Anthracene	3.31	2.78	119	3.38	2.78	122	68-127	2	30
Benz(a)anthracene	2.95	2.78	106	3.03	2.78	109	74-124	3	30
Benzo(a)pyrene	3.16	2.78	114	3.17	2.78	114	75-131	<1	30
Benzo(b)fluoranthene	3.10	2.78	112	3.07	2.78	110	73-136	1	30
Benzo(g,h,i)perylene	2.71	2.78	98	2.81	2.78	101	63-127	3	30
Benzo(k)fluoranthene	3.32	2.78	120	3.26	2.78	117	74-134	2	30
Chrysene	3.21	2.78	115	3.22	2.78	116	74-132	<1	30
Dibenz(a,h)anthracene	3.02	2.78	109	3.14	2.78	113	59-135	4	30
Fluoranthene	2.87	2.78	103	2.80	2.78	101	70-127	2	30
Fluorene	3.03	2.78	109	3.01	2.78	108	68-121	<1	30
Indeno(1,2,3-cd)pyrene	3.23	2.78	116	3.31	2.78	119	63-136	3	30
Naphthalene	2.86	2.78	103	2.86	2.78	103	52-115	<1	30
Phenanthrene	2.85	2.78	103	2.88	2.78	104	64-126	1	30
Pyrene	3.17	2.78	114	3.16	2.78	114	72-127	<1	30



Low Level Semivolatile Organic Compounds by GC/MS

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Sample Results

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202103-001

Service Request: K2202103
Date Collected: 02/26/22 23:14
Date Received: 03/01/22 12:20

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	36	4.8	0.65	5	03/22/22 01:46	3/4/22	
Butyl Benzyl Phthalate	0.42	0.19	0.021	1	03/18/22 03:26	3/4/22	
Di-n-butyl Phthalate	2.0	0.19	0.023	1	03/18/22 03:26	3/4/22	
Di-n-octyl Phthalate	9.0	0.19	0.033	1	03/18/22 03:26	3/4/22	
Diethyl Phthalate	0.24	0.19	0.015	1	03/18/22 03:26	3/4/22	
Dimethyl Phthalate	0.20	0.19	0.021	1	03/18/22 03:26	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	69	35 - 105	03/18/22 03:26	
Nitrobenzene-d5	80	40 - 117	03/18/22 03:26	
p-Terphenyl-d14	94	48 - 109	03/18/22 03:26	

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202103-002

Service Request: K2202103
Date Collected: 02/26/22 23:01
Date Received: 03/01/22 12:20

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	6.0	0.96	0.13	1	03/18/22 03:54	3/4/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	03/18/22 03:54	3/4/22	
Di-n-butyl Phthalate	0.35	0.19	0.023	1	03/18/22 03:54	3/4/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	03/18/22 03:54	3/4/22	
Diethyl Phthalate	0.21	0.19	0.015	1	03/18/22 03:54	3/4/22	
Dimethyl Phthalate	0.17 J	0.19	0.021	1	03/18/22 03:54	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	61	35 - 105	03/18/22 03:54	
Nitrobenzene-d5	79	40 - 117	03/18/22 03:54	
p-Terphenyl-d14	78	48 - 109	03/18/22 03:54	



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QA/QC Report

Client: Herrera Environmental

Service Request: K2202103

Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2202103-001	69	80	94
WR510-OUT	K2202103-002	61	79	78
Method Blank	KQ2203464-03	68	68	99
Lab Control Sample	KQ2203464-01	74	75	91
Duplicate Lab Control Sample	KQ2203464-02	65	76	89

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Analytical Report

Client: Herrera Environmental
Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2203464-03

Service Request: K2202103
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.96	0.13	1	03/16/22 11:29	3/4/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	03/16/22 11:29	3/4/22	
Di-n-butyl Phthalate	ND U	0.19	0.023	1	03/16/22 11:29	3/4/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	03/16/22 11:29	3/4/22	
Diethyl Phthalate	ND U	0.19	0.015	1	03/16/22 11:29	3/4/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	03/16/22 11:29	3/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	68	35 - 105	03/16/22 11:29	
Nitrobenzene-d5	68	40 - 117	03/16/22 11:29	
p-Terphenyl-d14	99	48 - 109	03/16/22 11:29	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT - Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2202103

Date Analyzed: 03/16/22

Date Extracted: 03/04/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 758428

Lab Control Sample
KQ2203464-01

Duplicate Lab Control Sample
KQ2203464-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.48	5.00	90	4.47	5.00	89	42-147	<1	30
Butyl Benzyl Phthalate	4.43	5.00	89	4.33	5.00	87	59-119	2	30
Diethyl Phthalate	4.36	5.00	87	4.27	5.00	85	58-114	2	30
Dimethyl Phthalate	4.31	5.00	86	4.12	5.00	82	58-109	4	30
Di-n-butyl Phthalate	4.19	5.00	84	4.15	5.00	83	61-121	1	30
Di-n-octyl Phthalate	4.24	5.00	85	4.13	5.00	83	50-125	3	30



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April 29, 2022

Analytical Report for Service Request No: K2202680

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT-Portland Harbor Perf.Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory March 15, 2022
For your reference, these analyses have been assigned our service request number **K2202680**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring
Sample Matrix: Storm Water

Service Request: K2202680
Date Received: 03/15/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 03/15/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 04/14/2022: The upper control criterion was exceeded for Bis(2-ethylhexyl) Phthalate, Butyl Benzyl Phthalate, and Di-n-octyl Phthalate in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analytes in question at concentrations > MRL.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: Three Aroclors were identified in samples K2202680-001a and K2202680-002: Aroclor 1242, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult. A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor 1242, Aroclor 1248, or Aroclor 1260. Then Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1248, 1254, and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Method 8082A, : Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date 04/29/2022



Chain of Custody

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Chain of Custody Record

42202680

[illegible]

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 62680
 Received: 3/15/22 Opened: 3/15/22 By: mm Unloaded: 3/15/22 By: mm

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / <u>NA</u>	Out of temp Indicate with 'X'	PM Notified If out of temp	Tracking Number <u>NA</u>	Filed
	<u>1.6</u>	<u>1202</u>					
	<u>0.1</u>						
	<u>1.3</u>						
	<u>-0.1</u>						
	<u>0.2</u>						

4. Was a Temperature Blank present in cooler? NA Y N If yes, note the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; note in the column "Sample Temp":
 5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, note the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2202680
Date Collected: 03/13/22
Date Received: 03/15/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2202680-001	13.0	0.50	1	03/29/22 20:23	
WR510-OUT	K2202680-002	15.6	0.50	1	03/29/22 20:23	
Method Blank	K2202680-MB1	ND U	0.50	1	03/29/22 20:23	
Method Blank	K2202680-MB2	ND U	0.50	1	03/29/22 20:23	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/29/22
Date Extracted: NA

Duplicate Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 759027

Lab Control Sample
K2202680-LCS1

Duplicate Lab Control Sample
K2202680-DLCS1

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Carbon, Total Organic	25.2	25.0	101	24.9	25.0	100	83-117	1	20

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/29/22
Date Extracted: NA

Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 759027

Lab Control Sample
K2202680-LCS2

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	24.3	25.0	97	83-117

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2202680
Date Collected: 03/13/22
Date Received: 03/15/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2202680-001	265	2.0	1	03/18/22 13:10	3/18/22	
WR510-OUT	K2202680-002	270	2.0	1	03/18/22 13:10	3/18/22	
Method Blank	K2202680-MB1	ND U	2.0	1	03/18/22 13:10	3/18/22	

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680**Date Collected:** 03/13/22**Date Received:** 03/15/22**Date Analyzed:** 03/18/22

Replicate Sample Summary
General Chemistry Parameters

Sample Name: WR510-OUT
Lab Code: K2202680-002

Units: mg/L**Basis:** NA

				Duplicate Sample K2202680- 002DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Hardness, Total as CaCO3	SM 2340 C	2.0	270	270	270	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/18/22
Date Extracted: 03/18/22

Lab Control Sample Summary
Hardness, Total as CaCO3

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 757962

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202680-LCS2	20.8	21.2	98	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2202680
Date Collected: 03/13/22
Date Received: 03/15/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2202680-001	155	10	-	1	03/16/22 14:04	
WR510-OUT	K2202680-002	67	10	-	1	03/16/22 14:04	
Method Blank	K2202680-MB1	ND U	1.0	-	1	03/16/22 14:04	
Method Blank	K2202680-MB2	ND U	1.0	-	1	03/16/22 14:04	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/16/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 757656

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202680-LCS2	372	400	93	85-115
Lab Control Sample	K2202680-LCS3	372	400	93	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202680-001

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	2.35	ug/L	0.50	0.09	1	03/18/22 17:21	03/16/22	
Cadmium	6020A	0.493	ug/L	0.020	0.008	1	03/18/22 17:21	03/16/22	
Copper	6020A	68.4	ug/L	0.10	0.05	1	03/18/22 17:21	03/16/22	
Lead	6020A	38.8	ug/L	0.020	0.006	1	03/18/22 17:21	03/16/22	
Nickel	6020A	15.1	ug/L	0.20	0.04	1	03/18/22 17:21	03/16/22	
Zinc	6020A	963	ug/L	2.0	0.5	1	03/18/22 17:21	03/16/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202680-002

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	2.31	ug/L	0.50	0.09	1	03/18/22 17:23	03/16/22	
Cadmium	6020A	0.214	ug/L	0.020	0.008	1	03/18/22 17:23	03/16/22	
Copper	6020A	25.0	ug/L	0.10	0.05	1	03/18/22 17:23	03/16/22	
Lead	6020A	8.17	ug/L	0.020	0.006	1	03/18/22 17:23	03/16/22	
Nickel	6020A	3.90	ug/L	0.20	0.04	1	03/18/22 17:23	03/16/22	
Zinc	6020A	524	ug/L	2.0	0.5	1	03/18/22 17:23	03/16/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2204275-01

Service Request: K2202680
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	03/18/22 17:18	03/16/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	03/18/22 17:18	03/16/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	03/18/22 17:18	03/16/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	03/18/22 17:18	03/16/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	03/18/22 17:18	03/16/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	03/18/22 17:18	03/16/22	

ALS Group USA, Corp.

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680**Date Collected:** 03/13/22**Date Received:** 03/15/22**Date Analyzed:** 03/18/22**Replicate Sample Summary****Total Metals**

Sample Name: WR510-OUT
Lab Code: K2202680-002

Units: ug/L**Basis:** NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2204275-03	Average	RPD	RPD Limit
					Result			
Arsenic	6020A	0.50	0.09	2.31	2.21	2.26	4	20
Cadmium	6020A	0.020	0.008	0.214	0.228	0.221	6	20
Copper	6020A	0.10	0.05	25.0	25.6	25.3	2	20
Lead	6020A	0.020	0.006	8.17	8.14	8.16	<1	20
Nickel	6020A	0.20	0.04	3.90	3.87	3.89	<1	20
Zinc	6020A	2.0	0.5	524	515	520	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Collected: 03/13/22
Date Received: 03/15/22
Date Analyzed: 03/18/22
Date Extracted: 03/16/22

Matrix Spike Summary
Total Metals

Sample Name: WR510-OUT
Lab Code: K2202680-002
Analysis Method: 6020A
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2204275-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	2.31	52.3	50.0	100	75-125
Cadmium	0.214	25.3	25.0	100	75-125
Copper	25.0	37.9	12.5	103	75-125
Lead	8.17	56.8	50.0	97	75-125
Nickel	3.90	28.2	25.0	97	75-125
Zinc	524	549	25.0	102 #	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/18/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2204275-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	48.5	50.0	97	80-120
Cadmium	6020A	25.0	25.0	100	80-120
Copper	6020A	12.2	12.5	98	80-120
Lead	6020A	49.8	50.0	100	80-120
Nickel	6020A	23.9	25.0	96	80-120
Zinc	6020A	24.2	25.0	97	80-120



Polychlorinated Biphenyls (PCBs)

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www.alsglobal.com

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202680
Date Collected: 03/13/2022
Date Received: 03/15/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2202680-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	0.54		0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	0.090	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	0.032		0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	66	10-140	03/28/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202680
Date Collected: 03/13/2022
Date Received: 03/15/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2202680-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	0.026		0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	0.014	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	0.0092	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	59	10-140	03/28/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202680
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200603-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	89	10-140	03/28/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202680

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2202680-001	66
WR510-OUT	K2202680-002	59
Method Blank	KWG2200603-3	89
Lab Control Sample	KWG2200603-1	81
Duplicate Lab Control Sample	KWG2200603-2	83

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202680
Date Extracted: 03/25/2022
Date Analyzed: 03/28/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200603

Analyte Name	Lab Control Sample KWG2200603-1 Lab Control Spike			Duplicate Lab Control Sample KWG2200603-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.105	0.125	84	0.106	0.125	84	31-164	1	30
Aroclor 1260	0.124	0.125	99	0.130	0.125	104	34-182	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Sample Results

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202680-001

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.035	0.020	0.0013	1	03/21/22 20:48	3/18/22	
Acenaphthene	0.0066 J	0.020	0.0012	1	03/21/22 20:48	3/18/22	
Acenaphthylene	0.010 J	0.020	0.0011	1	03/21/22 20:48	3/18/22	
Anthracene	0.021	0.020	0.00082	1	03/21/22 20:48	3/18/22	
Benz(a)anthracene	0.037	0.020	0.00097	1	03/21/22 20:48	3/18/22	
Benzo(a)pyrene	0.047	0.020	0.0011	1	03/21/22 20:48	3/18/22	
Benzo(b)fluoranthene	0.064	0.020	0.00083	1	03/21/22 20:48	3/18/22	
Benzo(g,h,i)perylene	0.10	0.020	0.00086	1	03/21/22 20:48	3/18/22	
Benzo(k)fluoranthene	0.017 J	0.020	0.00094	1	03/21/22 20:48	3/18/22	
Chrysene	0.11	0.020	0.00076	1	03/21/22 20:48	3/18/22	
Dibenz(a,h)anthracene	0.015 J	0.020	0.0013	1	03/21/22 20:48	3/18/22	
Fluoranthene	0.17	0.020	0.00082	1	03/21/22 20:48	3/18/22	
Fluorene	0.018 J	0.020	0.0011	1	03/21/22 20:48	3/18/22	
Indeno(1,2,3-cd)pyrene	0.039	0.020	0.00089	1	03/21/22 20:48	3/18/22	
Naphthalene	0.026	0.020	0.0014	1	03/21/22 20:48	3/18/22	
Phenanthrene	0.15	0.020	0.0011	1	03/21/22 20:48	3/18/22	
Pyrene	0.25	0.020	0.0010	1	03/21/22 20:48	3/18/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	86	42 - 133	03/21/22 20:48	
Fluorene-d10	88	42 - 131	03/21/22 20:48	
Terphenyl-d14	77	32 - 129	03/21/22 20:48	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202680-002

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.013 J	0.020	0.0013	1	03/21/22 21:11	3/18/22	
Acenaphthene	0.0036 J	0.020	0.0012	1	03/21/22 21:11	3/18/22	
Acenaphthylene	0.0061 J	0.020	0.0011	1	03/21/22 21:11	3/18/22	
Anthracene	0.012 J	0.020	0.00082	1	03/21/22 21:11	3/18/22	
Benz(a)anthracene	0.021	0.020	0.00097	1	03/21/22 21:11	3/18/22	
Benzo(a)pyrene	0.027	0.020	0.0011	1	03/21/22 21:11	3/18/22	
Benzo(b)fluoranthene	0.035	0.020	0.00083	1	03/21/22 21:11	3/18/22	
Benzo(g,h,i)perylene	0.060	0.020	0.00086	1	03/21/22 21:11	3/18/22	
Benzo(k)fluoranthene	0.0094 J	0.020	0.00094	1	03/21/22 21:11	3/18/22	
Chrysene	0.060	0.020	0.00076	1	03/21/22 21:11	3/18/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/21/22 21:11	3/18/22	
Fluoranthene	0.11	0.020	0.00082	1	03/21/22 21:11	3/18/22	
Fluorene	0.015 J	0.020	0.0011	1	03/21/22 21:11	3/18/22	
Indeno(1,2,3-cd)pyrene	0.021	0.020	0.00089	1	03/21/22 21:11	3/18/22	
Naphthalene	0.011 J	0.020	0.0014	1	03/21/22 21:11	3/18/22	
Phenanthrene	0.098	0.020	0.0011	1	03/21/22 21:11	3/18/22	
Pyrene	0.17	0.020	0.0010	1	03/21/22 21:11	3/18/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	84	42 - 133	03/21/22 21:11	
Fluorene-d10	86	42 - 131	03/21/22 21:11	
Terphenyl-d14	72	32 - 129	03/21/22 21:11	



QC Summary Forms

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2202680-001	86	88	77
WR510-OUT	K2202680-002	84	86	72
Method Blank	KQ2204459-03	79	81	69
Lab Control Sample	KQ2204459-01	86	83	80
Duplicate Lab Control Sample	KQ2204459-02	85	82	76

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2204459-03

Service Request: K2202680
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	03/21/22 19:39	3/18/22	
Acenaphthene	ND U	0.020	0.0012	1	03/21/22 19:39	3/18/22	
Acenaphthylene	ND U	0.020	0.0011	1	03/21/22 19:39	3/18/22	
Anthracene	ND U	0.020	0.00082	1	03/21/22 19:39	3/18/22	
Benz(a)anthracene	0.0018 J	0.020	0.00097	1	03/21/22 19:39	3/18/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	03/21/22 19:39	3/18/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	03/21/22 19:39	3/18/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	03/21/22 19:39	3/18/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	03/21/22 19:39	3/18/22	
Chrysene	ND U	0.020	0.00076	1	03/21/22 19:39	3/18/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/21/22 19:39	3/18/22	
Fluoranthene	ND U	0.020	0.00082	1	03/21/22 19:39	3/18/22	
Fluorene	ND U	0.020	0.0011	1	03/21/22 19:39	3/18/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	03/21/22 19:39	3/18/22	
Naphthalene	0.0017 J	0.020	0.0014	1	03/21/22 19:39	3/18/22	
Phenanthrene	0.0016 J	0.020	0.0011	1	03/21/22 19:39	3/18/22	
Pyrene	ND U	0.020	0.0010	1	03/21/22 19:39	3/18/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	79	42 - 133	03/21/22 19:39	
Fluorene-d10	81	42 - 131	03/21/22 19:39	
Terphenyl-d14	69	32 - 129	03/21/22 19:39	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680
Date Analyzed: 03/21/22
Date Extracted: 03/18/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 758267

Lab Control Sample
KQ2204459-01

Duplicate Lab Control Sample
KQ2204459-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.99	2.78	108	2.93	2.78	106	48-120	2	30
Acenaphthene	2.89	2.78	104	2.84	2.78	102	63-121	2	30
Acenaphthylene	2.89	2.78	104	2.84	2.78	102	58-124	2	30
Anthracene	2.99	2.78	108	2.94	2.78	106	68-127	2	30
Benz(a)anthracene	3.02	2.78	109	2.98	2.78	107	74-124	1	30
Benzo(a)pyrene	3.31	2.78	119	3.29	2.78	118	75-131	<1	30
Benzo(b)fluoranthene	3.15	2.78	113	3.12	2.78	112	73-136	<1	30
Benzo(g,h,i)perylene	2.95	2.78	106	2.96	2.78	106	63-127	<1	30
Benzo(k)fluoranthene	2.96	2.78	107	2.96	2.78	107	74-134	<1	30
Chrysene	3.03	2.78	109	2.99	2.78	108	74-132	1	30
Dibenz(a,h)anthracene	3.18	2.78	114	3.24	2.78	117	59-135	2	30
Fluoranthene	2.82	2.78	101	2.78	2.78	100	70-127	1	30
Fluorene	2.78	2.78	100	2.72	2.78	98	68-121	2	30
Indeno(1,2,3-cd)pyrene	3.48	2.78	125	3.52	2.78	127	63-136	1	30
Naphthalene	2.98	2.78	107	2.93	2.78	106	52-115	2	30
Phenanthrene	2.86	2.78	103	2.80	2.78	101	64-126	2	30
Pyrene	2.93	2.78	105	2.88	2.78	104	72-127	2	30



Low Level Semivolatile Organic Compounds by GC/MS

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Sample Results

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Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202680-001

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Units: ug/L

Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	16 J	19	2.6	20	04/26/22 17:37	3/17/22	
Butyl Benzyl Phthalate	ND U	3.8	0.42	20	04/26/22 17:37	3/17/22	
Di-n-butyl Phthalate	11	3.8	0.46	20	04/26/22 17:37	3/17/22	
Di-n-octyl Phthalate	ND U	3.8	0.66	20	04/26/22 17:37	3/17/22	
Diethyl Phthalate	0.30 J	3.8	0.30	20	04/26/22 17:37	3/17/22	
Dimethyl Phthalate	ND U	3.8	0.42	20	04/26/22 17:37	3/17/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	79	35 - 105	04/26/22 17:37	
Nitrobenzene-d5	91	40 - 117	04/26/22 17:37	
p-Terphenyl-d14	79	48 - 109	04/26/22 17:37	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202680-002

Service Request: K2202680
Date Collected: 03/13/22 11:55
Date Received: 03/15/22 08:55

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.0 J	4.8	0.65	5	04/14/22 23:18	3/17/22	*
Butyl Benzyl Phthalate	ND U	0.96	0.11	5	04/14/22 23:18	3/17/22	*
Di-n-butyl Phthalate	0.28 J	0.96	0.12	5	04/14/22 23:18	3/17/22	
Di-n-octyl Phthalate	0.39 J	0.96	0.17	5	04/14/22 23:18	3/17/22	*
Diethyl Phthalate	ND U	0.96	0.075	5	04/14/22 23:18	3/17/22	
Dimethyl Phthalate	ND U	0.96	0.11	5	04/14/22 23:18	3/17/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	35 - 105	04/14/22 23:18	
Nitrobenzene-d5	96	40 - 117	04/14/22 23:18	
p-Terphenyl-d14	75	48 - 109	04/14/22 23:18	



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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202680

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2202680-001	79	91	79
WR510-OUT	K2202680-002	82	96	75
Method Blank	KQ2204289-03	86	92	95
Lab Control Sample	KQ2204289-01	82	92	87
Duplicate Lab Control Sample	KQ2204289-02	85	100	87

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2204289-03

Service Request: K2202680
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.94	0.13	1	04/14/22 20:27	3/17/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	04/14/22 20:27	3/17/22	
Di-n-butyl Phthalate	ND U	0.19	0.023	1	04/14/22 20:27	3/17/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	04/14/22 20:27	3/17/22	
Diethyl Phthalate	ND U	0.19	0.015	1	04/14/22 20:27	3/17/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	04/14/22 20:27	3/17/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	86	35 - 105	04/14/22 20:27	
Nitrobenzene-d5	92	40 - 117	04/14/22 20:27	
p-Terphenyl-d14	95	48 - 109	04/14/22 20:27	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf.Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2202680

Date Analyzed: 04/14/22

Date Extracted: 03/17/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 760868

Lab Control Sample
KQ2204289-01

Duplicate Lab Control Sample
KQ2204289-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	5.70	5.00	114	5.88	5.00	118	42-147	3	30
Butyl Benzyl Phthalate	5.50	5.00	110	5.69	5.00	114	59-119	3	30
Diethyl Phthalate	4.18	5.00	84	4.27	5.00	85	58-114	2	30
Dimethyl Phthalate	3.71	5.00	74	3.82	5.00	76	58-109	3	30
Di-n-butyl Phthalate	4.66	5.00	93	4.74	5.00	95	61-121	2	30
Di-n-octyl Phthalate	5.24	5.00	105	5.34	5.00	107	50-125	2	30



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April 29, 2022

Analytical Report for Service Request No: K2202953

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT- Portland Harbor Perf Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory March 22, 2022
For your reference, these analyses have been assigned our service request number **K2202953**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Acronyms

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State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

General Chemistry

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Polychlorinated Biphenyls (PCBs)

Polycyclic Aromatic Hydrocarbons by GCMS SIM

Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring
Sample Matrix: Storm Water

Service Request: K2202953
Date Received: 03/22/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 03/22/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 04/14/2022: The upper control criterion was exceeded for Bis(2-ethylhexyl) Phthalate, Butyl Benzyl Phthalate, and Di-n-octyl Phthalate in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analytes in question at concentrations > MRL.

Method 8270D, 04/26/2022: The detection limits were elevated for all samples. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored, which indicated the need to perform a dilution prior to injection into the instrument.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: Three Aroclors were identified in samples K2202953-001 and -002: Aroclor 1242, Aroclor 1254, and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification and quantitative analysis of the individual Aroclors can be subjective. In particular, when mixtures are present, differentiating Aroclor 1242 from Aroclor 1248 can be difficult. A review of the sample chromatograms indicated the presence of PCB patterns that spanned the entire elution range from Aroclor 1242 through the end of Aroclor 1260. Based on individual PCB peaks in the early portion of the chromatogram, Aroclor 1242 was identified and quantitated. Aroclor 1260 was identified based on the presence of PCB peaks eluting late in the chromatogram. The remainder of the PCB pattern was identified as Aroclor 1254 because PCB peak height in the middle of the chromatogram was larger than could be attributed to either Aroclor 1242, Aroclor 1248, or Aroclor 1260. When Aroclor mixtures are present in a sample, care is taken to minimize the possibility of double-counting PCBs. Analytical peaks are selected based on the best resolution possible for that particular sample. However, when a mixture of Aroclors 1242, 1248, 1254, and 1260 are present in a sample, the potential exists for a high bias from contribution of one Aroclor to another due to common peaks or peaks that cannot be completely resolved.

Method 8082A, : Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

04/29/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
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2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

42208953

Project Name:		Project Number:		Client:													
ODOT – Portland Harbor Perf. Monitoring		10-04681-001		OR Department of Transportation													
Report To:				Copy To:													
Jess Brown, JBrown@herrerainc.com				SNilsson@herrerainc.com													
Sampled By:				Delivery Method:													
S Nilsson																	
Laboratory:		Requested Completion Date:		Total No. of Containers:													
ALS																	
Lab Use:																	
Sample ID		Date	Time	Sample Type (see codes)	Preservative? (Y/N)	Matrix (see codes)	Number of Containers	Analyses Requested									Lab ID No.
WR510-IN		3/17/22	1130	C	N	W		TSS – SM 2540D	TOC – EPA 415.1	Hardness – SM 2340C	Total Metals – EPA 6020A	PCBs – EPA 8082A	PAHs – EPA 8270 SIM	Phthalates – EPA 8270D_LL			
WR510-OUT		3/19/22	1130	C	N	W		X	X	X	X	X	X	X			
Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn																	
Relinquished by (Name/CO/)		Signature		Date/Time		Received By (Name/CO/)		Signature		Date/Time							
S Nilsson / Herrera				3/22/22 0700		M Mueggen				3/22/22 0700							
Relinquished by (Name/CO/)		Signature		Date/Time		Received By (Name/CO/)		Signature		Date/Time							
ALS				3/22/22 1030		M Mueggen				3/22/22 1030							
Sample Type: G=Grab C=Composite Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)																	

PM H2

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 02953
 Received: 3/22/22 Opened: 3/22/22 By: MP Unloaded: 3/22/22 By: MP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number	NA	Filed
—	0.0	1201						
—	0.0	1201						

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____
 : _____



General Chemistry

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1317 South 13th Avenue, Kelso, WA 98626
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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2202953
Date Collected: 03/19/22
Date Received: 03/22/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2202953-001	9.70	0.50	1	03/29/22 20:23	
WR510-OUT	K2202953-002	11.4	0.50	1	03/29/22 20:23	
Method Blank	K2202953-MB1	ND U	0.50	1	03/29/22 20:23	
Method Blank	K2202953-MB2	ND U	0.50	1	03/29/22 20:23	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Analyzed: 03/29/22
Date Extracted: NA

Duplicate Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 759027

Lab Control Sample
K2202953-LCS1

Duplicate Lab Control Sample
K2202953-DLCS1

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Carbon, Total Organic	25.2	25.0	101	24.9	25.0	100	83-117	1	20

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Analyzed: 03/29/22
Date Extracted: NA

Lab Control Sample Summary
General Chemistry Parameters

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 759027

Lab Control Sample
K2202953-LCS2

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	24.3	25.0	97	83-117

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2202953
Date Collected: 03/19/22
Date Received: 03/22/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2202953-001	100	2.0	1	03/24/22 15:40	3/24/22	
WR510-OUT	K2202953-002	84.0	2.0	1	03/24/22 15:40	3/24/22	
Method Blank	K2202953-MB1	ND U	2.0	1	03/24/22 15:40	3/24/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Analyzed: 03/24/22
Date Extracted: 03/24/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 758596

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202953-LCS2	22.0	21.2	104	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2202953
Date Collected: 03/19/22
Date Received: 03/22/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2202953-001	235	5.0	-	1	03/24/22 11:01	
WR510-OUT	K2202953-002	86.5	5.0	-	1	03/24/22 11:01	
Method Blank	K2202953-MB1	ND U	5.0	-	1	03/24/22 11:01	
Method Blank	K2202953-MB2	ND U	5.0	-	1	03/24/22 11:01	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Analyzed: 03/24/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 758523

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2202953-LCS2	380	400	95	85-115



Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2202953-001

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.19	ug/L	0.50	0.09	1	03/24/22 15:37	03/24/22	
Cadmium	6020A	0.464	ug/L	0.020	0.008	1	03/24/22 15:37	03/24/22	
Copper	6020A	84.3	ug/L	0.10	0.05	1	03/24/22 15:37	03/24/22	
Lead	6020A	37.2	ug/L	0.020	0.006	1	03/24/22 15:37	03/24/22	
Nickel	6020A	9.82	ug/L	0.20	0.04	1	03/24/22 15:37	03/24/22	
Zinc	6020A	1040	ug/L	2.0	0.5	1	03/24/22 15:37	03/24/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202953-002

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.92	ug/L	0.50	0.09	1	03/24/22 15:39	03/24/22	
Cadmium	6020A	0.275	ug/L	0.020	0.008	1	03/24/22 15:39	03/24/22	
Copper	6020A	23.4	ug/L	0.10	0.05	1	03/24/22 15:39	03/24/22	
Lead	6020A	12.1	ug/L	0.020	0.006	1	03/24/22 15:39	03/24/22	
Nickel	6020A	3.46	ug/L	0.20	0.04	1	03/24/22 15:39	03/24/22	
Zinc	6020A	449	ug/L	2.0	0.5	1	03/24/22 15:39	03/24/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2204672-01

Service Request: K2202953
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	03/24/22 15:34	03/24/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	03/24/22 15:34	03/24/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	03/24/22 15:34	03/24/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	03/24/22 15:34	03/24/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	03/24/22 15:34	03/24/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	03/24/22 15:34	03/24/22	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953**Date Collected:** 03/19/22**Date Received:** 03/22/22**Date Analyzed:** 03/24/22**Replicate Sample Summary****Total Metals**

Sample Name: WR510-OUT
Lab Code: K2202953-002

Units: ug/L**Basis:** NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
					KQ2204672-03 Result			
Arsenic	6020A	0.50	0.09	0.92	0.93	0.93	1	20
Cadmium	6020A	0.020	0.008	0.275	0.275	0.275	<1	20
Copper	6020A	0.10	0.05	23.4	23.9	23.7	2	20
Lead	6020A	0.020	0.006	12.1	12.3	12.2	2	20
Nickel	6020A	0.20	0.04	3.46	3.78	3.62	9	20
Zinc	6020A	2.0	0.5	449	462	456	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Collected: 03/19/22
Date Received: 03/22/22
Date Analyzed: 03/24/22
Date Extracted: 03/24/22

Matrix Spike Summary
Total Metals

Sample Name: WR510-OUT
Lab Code: K2202953-002
Analysis Method: 6020A
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2204672-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	0.92	48.6	50.0	95	75-125
Cadmium	0.275	24.2	25.0	96	75-125
Copper	23.4	35.9	12.5	100	75-125
Lead	12.1	60.0	50.0	96	75-125
Nickel	3.46	27.1	25.0	95	75-125
Zinc	449	474	25.0	100 #	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953**Date Analyzed:** 03/24/22**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2204672-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	49.3	50.0	99	80-120
Cadmium	6020A	24.9	25.0	100	80-120
Copper	6020A	12.3	12.5	98	80-120
Lead	6020A	50.2	50.0	100	80-120
Nickel	6020A	24.8	25.0	99	80-120
Zinc	6020A	25.7	25.0	103	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202953
Date Collected: 03/19/2022
Date Received: 03/22/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2202953-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	0.16		0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	0.035	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	ND	Ui	0.028	0.028	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	77	10-140	03/28/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202953
Date Collected: 03/19/2022
Date Received: 03/22/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2202953-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	0.066		0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	0.020	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	0.013	P	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	61	10-140	03/28/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202953
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200603-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1221	ND	U	0.010	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1242	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1254	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	
Aroclor 1260	ND	U	0.0050	0.0032	1	03/25/22	03/28/22	KWG2200603	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	89	10-140	03/28/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202953

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2202953-001	77
WR510-OUT	K2202953-002	61
Method Blank	KWG2200603-3	89
Lab Control Sample	KWG2200603-1	81
Duplicate Lab Control Sample	KWG2200603-2	83

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl	10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2202953
Date Extracted: 03/25/2022
Date Analyzed: 03/28/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200603

Analyte Name	Lab Control Sample KWG2200603-1 Lab Control Spike			Duplicate Lab Control Sample KWG2200603-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.105	0.125	84	0.106	0.125	84	31-164	1	30
Aroclor 1260	0.124	0.125	99	0.130	0.125	104	34-182	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Sample Name: WR510-IN
Lab Code: K2202953-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.026	0.020	0.0013	1	03/30/22 09:57	3/25/22	
Acenaphthene	0.011 J	0.020	0.0012	1	03/30/22 09:57	3/25/22	
Acenaphthylene	0.0079 J	0.020	0.0011	1	03/30/22 09:57	3/25/22	
Anthracene	0.026	0.020	0.00082	1	03/30/22 09:57	3/25/22	
Benz(a)anthracene	0.054	0.020	0.00097	1	03/30/22 09:57	3/25/22	
Benzo(a)pyrene	0.063	0.020	0.0011	1	03/30/22 09:57	3/25/22	
Benzo(b)fluoranthene	0.087	0.020	0.00083	1	03/30/22 09:57	3/25/22	
Benzo(g,h,i)perylene	0.11	0.020	0.00086	1	03/30/22 09:57	3/25/22	
Benzo(k)fluoranthene	0.024	0.020	0.00094	1	03/30/22 09:57	3/25/22	
Chrysene	0.14	0.020	0.00076	1	03/30/22 09:57	3/25/22	
Dibenz(a,h)anthracene	0.021	0.020	0.0013	1	03/30/22 09:57	3/25/22	
Fluoranthene	0.19	0.020	0.00082	1	03/30/22 09:57	3/25/22	
Fluorene	0.026	0.020	0.0011	1	03/30/22 09:57	3/25/22	
Indeno(1,2,3-cd)pyrene	0.054	0.020	0.00089	1	03/30/22 09:57	3/25/22	
Naphthalene	0.020	0.020	0.0014	1	03/30/22 09:57	3/25/22	
Phenanthrene	0.16	0.020	0.0011	1	03/30/22 09:57	3/25/22	
Pyrene	0.25	0.020	0.0010	1	03/30/22 09:57	3/25/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	89	42 - 133	03/30/22 09:57	
Fluorene-d10	86	42 - 131	03/30/22 09:57	
Terphenyl-d14	82	32 - 129	03/30/22 09:57	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202953-002

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.011 J	0.020	0.0013	1	03/30/22 10:22	3/25/22	
Acenaphthene	ND U	0.020	0.0012	1	03/30/22 10:22	3/25/22	
Acenaphthylene	0.0041 J	0.020	0.0011	1	03/30/22 10:22	3/25/22	
Anthracene	0.0080 J	0.020	0.00082	1	03/30/22 10:22	3/25/22	
Benz(a)anthracene	0.017 J	0.020	0.00097	1	03/30/22 10:22	3/25/22	
Benzo(a)pyrene	0.023	0.020	0.0011	1	03/30/22 10:22	3/25/22	
Benzo(b)fluoranthene	0.030	0.020	0.00083	1	03/30/22 10:22	3/25/22	
Benzo(g,h,i)perylene	0.039	0.020	0.00086	1	03/30/22 10:22	3/25/22	
Benzo(k)fluoranthene	0.0087 J	0.020	0.00094	1	03/30/22 10:22	3/25/22	
Chrysene	0.042	0.020	0.00076	1	03/30/22 10:22	3/25/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/30/22 10:22	3/25/22	
Fluoranthene	0.088	0.020	0.00082	1	03/30/22 10:22	3/25/22	
Fluorene	0.011 J	0.020	0.0011	1	03/30/22 10:22	3/25/22	
Indeno(1,2,3-cd)pyrene	0.020	0.020	0.00089	1	03/30/22 10:22	3/25/22	
Naphthalene	0.011 J	0.020	0.0014	1	03/30/22 10:22	3/25/22	
Phenanthrene	0.080	0.020	0.0011	1	03/30/22 10:22	3/25/22	
Pyrene	0.13	0.020	0.0010	1	03/30/22 10:22	3/25/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	72	42 - 133	03/30/22 10:22	
Fluorene-d10	72	42 - 131	03/30/22 10:22	
Terphenyl-d14	66	32 - 129	03/30/22 10:22	



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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2202953-001	89	86	82
WR510-OUT	K2202953-002	72	72	66
Method Blank	KQ2204811-03	76	76	59
Lab Control Sample	KQ2204811-01	86	81	65
Duplicate Lab Control Sample	KQ2204811-02	89	82	70

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Sample Name: Method Blank
Lab Code: KQ2204811-03

Service Request: K2202953
Date Collected: NA
Date Received: NA

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0016 J	0.020	0.0013	1	03/30/22 08:43	3/25/22	
Acenaphthene	ND U	0.020	0.0012	1	03/30/22 08:43	3/25/22	
Acenaphthylene	ND U	0.020	0.0011	1	03/30/22 08:43	3/25/22	
Anthracene	ND U	0.020	0.00082	1	03/30/22 08:43	3/25/22	
Benz(a)anthracene	0.0020 J	0.020	0.00097	1	03/30/22 08:43	3/25/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	03/30/22 08:43	3/25/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	03/30/22 08:43	3/25/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	03/30/22 08:43	3/25/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	03/30/22 08:43	3/25/22	
Chrysene	ND U	0.020	0.00076	1	03/30/22 08:43	3/25/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	03/30/22 08:43	3/25/22	
Fluoranthene	ND U	0.020	0.00082	1	03/30/22 08:43	3/25/22	
Fluorene	ND U	0.020	0.0011	1	03/30/22 08:43	3/25/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	03/30/22 08:43	3/25/22	
Naphthalene	0.0033 J	0.020	0.0014	1	03/30/22 08:43	3/25/22	
Phenanthrene	0.0020 J	0.020	0.0011	1	03/30/22 08:43	3/25/22	
Pyrene	ND U	0.020	0.0010	1	03/30/22 08:43	3/25/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	76	42 - 133	03/30/22 08:43	
Fluorene-d10	76	42 - 131	03/30/22 08:43	
Terphenyl-d14	59	32 - 129	03/30/22 08:43	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Analyzed: 03/30/22
Date Extracted: 03/25/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 759196

Lab Control Sample
KQ2204811-01

Duplicate Lab Control Sample
KQ2204811-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.85	2.78	103	3.00	2.78	108	48-120	5	30
Acenaphthene	2.71	2.78	98	2.83	2.78	102	63-121	4	30
Acenaphthylene	2.73	2.78	98	2.83	2.78	102	58-124	3	30
Anthracene	2.82	2.78	101	2.95	2.78	106	68-127	5	30
Benz(a)anthracene	2.85	2.78	103	2.97	2.78	107	74-124	4	30
Benzo(a)pyrene	3.26	2.78	118	3.52	2.78	127	75-131	7	30
Benzo(b)fluoranthene	3.02	2.78	109	3.12	2.78	112	73-136	3	30
Benzo(g,h,i)perylene	2.56	2.78	92	2.78	2.78	100	63-127	8	30
Benzo(k)fluoranthene	2.83	2.78	102	2.91	2.78	105	74-134	3	30
Chrysene	2.86	2.78	103	2.99	2.78	108	74-132	5	30
Dibenz(a,h)anthracene	2.81	2.78	101	3.04	2.78	109	59-135	8	30
Fluoranthene	2.64	2.78	95	2.74	2.78	98	70-127	4	30
Fluorene	2.58	2.78	93	2.68	2.78	97	68-121	4	30
Indeno(1,2,3-cd)pyrene	3.16	2.78	114	3.41	2.78	123	63-136	8	30
Naphthalene	2.75	2.78	99	2.89	2.78	104	52-115	5	30
Phenanthrene	2.71	2.78	97	2.82	2.78	101	64-126	4	30
Pyrene	2.66	2.78	96	2.86	2.78	103	72-127	7	30



Low Level Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Sample Name: WR510-IN
Lab Code: K2202953-001

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	63	20	2.6	20	04/26/22 17:08	3/24/22	
Butyl Benzyl Phthalate	2.4 J	3.9	0.42	20	04/26/22 17:08	3/24/22	
Di-n-butyl Phthalate	5.7	3.9	0.46	20	04/26/22 17:08	3/24/22	
Di-n-octyl Phthalate	ND U	3.9	0.66	20	04/26/22 17:08	3/24/22	
Diethyl Phthalate	0.32 J	3.9	0.30	20	04/26/22 17:08	3/24/22	
Dimethyl Phthalate	1.8 J	3.9	0.42	20	04/26/22 17:08	3/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	72	35 - 105	04/26/22 17:08	
Nitrobenzene-d5	90	40 - 117	04/26/22 17:08	
p-Terphenyl-d14	82	48 - 109	04/26/22 17:08	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2202953-002

Service Request: K2202953
Date Collected: 03/19/22 11:30
Date Received: 03/22/22 10:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.7 J	4.7	0.65	5	04/14/22 23:46	3/24/22	*
Butyl Benzyl Phthalate	ND U	0.94	0.11	5	04/14/22 23:46	3/24/22	*
Di-n-butyl Phthalate	0.25 J	0.94	0.12	5	04/14/22 23:46	3/24/22	
Di-n-octyl Phthalate	ND U	0.94	0.17	5	04/14/22 23:46	3/24/22	*
Diethyl Phthalate	ND U	0.94	0.075	5	04/14/22 23:46	3/24/22	
Dimethyl Phthalate	ND U	0.94	0.11	5	04/14/22 23:46	3/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	35 - 105	04/14/22 23:46	
Nitrobenzene-d5	100	40 - 117	04/14/22 23:46	
p-Terphenyl-d14	68	48 - 109	04/14/22 23:46	



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Semivolatile Organic Compounds by GC/MS

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2202953

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2202953-001	72	90	82
WR510-OUT	K2202953-002	82	100	68
Method Blank	KQ2204718-03	89	100	95
Lab Control Sample	KQ2204718-01	82	94	83
Duplicate Lab Control Sample	KQ2204718-02	87	101	93

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2204718-03

Service Request: K2202953
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.94	0.13	1	04/14/22 17:51	3/24/22	
Butyl Benzyl Phthalate	0.030 J	0.19	0.021	1	04/14/22 17:51	3/24/22	
Di-n-butyl Phthalate	ND U	0.19	0.023	1	04/14/22 17:51	3/24/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	04/14/22 17:51	3/24/22	
Diethyl Phthalate	ND U	0.19	0.015	1	04/14/22 17:51	3/24/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	04/14/22 17:51	3/24/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	89	35 - 105	04/14/22 17:51	
Nitrobenzene-d5	100	40 - 117	04/14/22 17:51	
p-Terphenyl-d14	95	48 - 109	04/14/22 17:51	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT- Portland Harbor Perf Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2202953

Date Analyzed: 04/14/22

Date Extracted: 03/24/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 760868

Lab Control Sample
KQ2204718-01

Duplicate Lab Control Sample
KQ2204718-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	5.98	5.00	120	5.98	5.00	120	42-147	<1	30
Butyl Benzyl Phthalate	5.68	5.00	114	5.82	5.00	116	59-119	2	30
Diethyl Phthalate	4.24	5.00	85	4.41	5.00	88	58-114	4	30
Dimethyl Phthalate	3.76	5.00	75	3.93	5.00	79	58-109	4	30
Di-n-butyl Phthalate	4.83	5.00	97	5.02	5.00	100	61-121	4	30
Di-n-octyl Phthalate	5.32	5.00	106	5.39	5.00	108	50-125	1	30



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April 29, 2022

Analytical Report for Service Request No: K2203582

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory April 06, 2022
For your reference, these analyses have been assigned our service request number **K2203582**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2203582
Date Received: 04/06/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three storm water samples were received for analysis at ALS Environmental on 04/06/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 04/26/2022: The detection limits were elevated for sample K2203582-001 (WR510-IN). The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored, which indicated the need to perform a dilution prior to injection into the instrument.

EPA Method 8270D: All samples were extracted outside holding time due to a delay caused by the weather.

Semivolatile GC:

Method 8082A: The upper control criterion was exceeded for Decachlorobiphenyl, Aroclor 1016 and 1260 in some Continuing Calibration Verifications (CCVs). The field samples analyzed in this sequence did not contain the target analyte or were reran with passing CCV. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

Method SM 2540 D, 04/12/2022: The samples in this delivery group were initially performed past the recommended holding time. There was a power outage on 4/11/22. The samples were analyzed as soon as power was restored on 4/12/22. The data was flagged to indicate the holding time violation.

Approved by



Date

04/29/2022



Chain of Custody

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Chain of Custody Record

Y2203582

[illegible]

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 03582
 Received: 4/6/22 Opened: 4/6/22 By: fr Unloaded: 4/6/22 By: pl

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
 2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** Carboys (2) **NA**
 3. Were custody seals on coolers? **NA** **Y** **N** If yes, how many and where? _____
 If present, were custody seals intact? **Y** **N** If present, were they signed and dated? **Y** **N**

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	0.5	IR02					
	0.3	11					

4. Was a Temperature Blank present in cooler? **NA** **Y** **N** If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
 5. Were samples received within the method specified temperature ranges? **NA** **Y** **N**
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. **NA** **Y** **N**

If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves** _____
 7. Were custody papers properly filled out (ink, signed, etc.)? **NA** **Y** **N**
 8. Were samples received in good condition (unbroken) **NA** **Y** **N**
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? **NA** **Y** **N**
 10. Did all sample labels and tags agree with custody papers? **NA** **Y** **N**
 11. Were appropriate bottles/containers and volumes received for the tests indicated? **NA** **Y** **N**
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below **NA** **Y** **N**
 13. Were VOA vials received without headspace? Indicate in the table below **NA** **Y** **N**
 14. Was C12/Res negative? **NA** **Y** **N**
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? **NA** **Y** **N** Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2203582
Date Collected: 04/4/22
Date Received: 04/6/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2203582-001	8.50	0.50	1	04/21/22 17:21	
WR510-OUT	K2203582-002	5.90	0.50	1	04/21/22 17:21	
DUPE	K2203582-003	6.00	0.50	1	04/21/22 17:21	
Method Blank	K2203582-MB1	ND U	0.50	1	04/21/22 17:21	
Method Blank	K2203582-MB2	ND U	0.50	1	04/21/22 17:21	
Method Blank	K2203582-MB3	ND U	0.50	1	04/21/22 17:21	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Analyzed: 04/21/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 761514

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2203582-LCS1	24.4	25.0	98	83-117
Lab Control Sample	K2203582-LCS2	24.5	25.0	98	83-117
Lab Control Sample	K2203582-LCS3	25.1	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2203582
Date Collected: 04/4/22
Date Received: 04/6/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2203582-001	275	2.0	1	04/07/22 10:15	4/7/22	
WR510-OUT	K2203582-002	38.0	2.0	1	04/07/22 10:15	4/7/22	
DUPE	K2203582-003	42.0	2.0	1	04/07/22 10:15	4/7/22	
Method Blank	K2203582-MB1	ND U	2.0	1	04/07/22 10:15	4/7/22	

ALS Group USA, Corp.

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582**Date Collected:** 04/04/22**Date Received:** 04/06/22**Date Analyzed:** 04/07/22**Replicate Sample Summary
General Chemistry Parameters****Sample Name:** DUPE**Units:** mg/L**Lab Code:** K2203582-003**Basis:** NA

				Duplicate Sample K2203582- 003DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Hardness, Total as CaCO ₃	SM 2340 C	2.0	42.0	39.2	40.6	7	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Analyzed: 04/07/22
Date Extracted: 04/07/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 759901

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2203582-LCS1	21.6	21.2	102	90-116

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2203582
Date Collected: 04/4/22
Date Received: 04/6/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2203582-001	348	10	-	1	04/12/22 13:25	*
WR510-OUT	K2203582-002	94	10	-	1	04/12/22 13:25	*
DUPE	K2203582-003	92	10	-	1	04/12/22 13:25	*
Method Blank	K2203582-MB1	ND U	5.0	-	1	04/12/22 13:25	
Method Blank	K2203582-MB2	ND U	5.0	-	1	04/12/22 13:25	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Analyzed: 04/12/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 760269

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2203582-LCS1	376	400	94	85-115



Metals

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2203582-001

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	5.02	ug/L	0.50	0.09	1	04/19/22 13:29	04/14/22	
Cadmium	6020A	3.55	ug/L	0.020	0.008	1	04/19/22 13:29	04/14/22	
Copper	6020A	650	ug/L	0.10	0.05	1	04/19/22 13:29	04/14/22	
Lead	6020A	201	ug/L	0.020	0.006	1	04/19/22 13:29	04/14/22	
Nickel	6020A	78.8	ug/L	0.20	0.04	1	04/19/22 13:29	04/14/22	
Zinc	6020A	8590	ug/L	40	10	20	04/19/22 14:01	04/14/22	

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2203582-002

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.69	ug/L	0.50	0.09	1	04/19/22 13:32	04/14/22	
Cadmium	6020A	0.177	ug/L	0.020	0.008	1	04/19/22 13:32	04/14/22	
Copper	6020A	20.3	ug/L	0.10	0.05	1	04/19/22 13:32	04/14/22	
Lead	6020A	10.9	ug/L	0.020	0.006	1	04/19/22 13:32	04/14/22	
Nickel	6020A	3.29	ug/L	0.20	0.04	1	04/19/22 13:32	04/14/22	
Zinc	6020A	307	ug/L	2.0	0.5	1	04/19/22 13:32	04/14/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: DUPE
Lab Code: K2203582-003

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.71	ug/L	0.50	0.09	1	04/19/22 13:34	04/14/22	
Cadmium	6020A	0.173	ug/L	0.020	0.008	1	04/19/22 13:34	04/14/22	
Copper	6020A	22.3	ug/L	0.10	0.05	1	04/19/22 13:34	04/14/22	
Lead	6020A	11.5	ug/L	0.020	0.006	1	04/19/22 13:34	04/14/22	
Nickel	6020A	3.26	ug/L	0.20	0.04	1	04/19/22 13:34	04/14/22	
Zinc	6020A	408	ug/L	2.0	0.5	1	04/19/22 13:34	04/14/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2205594-01

Service Request: K2203582
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	04/19/22 12:57	04/14/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	04/19/22 12:57	04/14/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	04/19/22 12:57	04/14/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	04/19/22 12:57	04/14/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	04/19/22 12:57	04/14/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	04/19/22 12:57	04/14/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582**Date Analyzed:** 04/19/22**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2205594-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	49.7	50.0	99	80-120
Cadmium	6020A	25.5	25.0	102	80-120
Copper	6020A	12.6	12.5	101	80-120
Lead	6020A	52.0	50.0	104	80-120
Nickel	6020A	25.7	25.0	103	80-120
Zinc	6020A	25.1	25.0	100	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2203582
Date Collected: 04/04/2022
Date Received: 04/06/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2203582-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1221	ND	U	0.010	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1232	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1242	0.37	P	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1248	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1254	0.12	P	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1260	0.065		0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	101	10-140	04/19/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2203582
Date Collected: 04/04/2022
Date Received: 04/06/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2203582-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1221	ND	U	0.010	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1232	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1242	0.024		0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1248	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1254	0.010	P	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1260	0.0061		0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	61	10-140	04/19/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2203582
Date Collected: 04/04/2022
Date Received: 04/06/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: DUPE
Lab Code: K2203582-003
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1221	ND	U	0.010	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1232	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1242	0.022	P	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1248	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1254	0.010	P	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1260	0.0083		0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	65	10-140	04/19/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2203582
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2200706-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1221	ND	U	0.010	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1232	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1242	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1248	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1254	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	
Aroclor 1260	ND	U	0.0050	0.0032	1	04/14/22	04/19/22	KWG2200706	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	10-140	04/19/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2203582

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2203582-001	101
WR510-OUT	K2203582-002	61
DUPE	K2203582-003	65
Method Blank	KWG2200706-3	83
Lab Control Sample	KWG2200706-1	86
Duplicate Lab Control Sample	KWG2200706-2	83

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2203582
Date Extracted: 04/14/2022
Date Analyzed: 04/19/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2200706

Analyte Name	Lab Control Sample KWG2200706-1 Lab Control Spike			Duplicate Lab Control Sample KWG2200706-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.117	0.125	94	0.116	0.125	93	31-164	1	30
Aroclor 1260	0.124	0.125	99	0.119	0.125	95	34-182	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Sample Name: WR510-IN
Lab Code: K2203582-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.049	0.020	0.0013	1	04/20/22 16:44	4/8/22	
Acenaphthene	0.020	0.020	0.0012	1	04/20/22 16:44	4/8/22	
Acenaphthylene	0.011 J	0.020	0.0011	1	04/20/22 16:44	4/8/22	
Anthracene	0.031	0.020	0.00082	1	04/20/22 16:44	4/8/22	
Benz(a)anthracene	0.062	0.020	0.00097	1	04/20/22 16:44	4/8/22	
Benzo(a)pyrene	0.11	0.020	0.0011	1	04/20/22 16:44	4/8/22	
Benzo(b)fluoranthene	0.15	0.020	0.00083	1	04/20/22 16:44	4/8/22	
Benzo(g,h,i)perylene	0.21	0.020	0.00086	1	04/20/22 16:44	4/8/22	
Benzo(k)fluoranthene	0.035	0.020	0.00094	1	04/20/22 16:44	4/8/22	
Chrysene	0.25	0.020	0.00076	1	04/20/22 16:44	4/8/22	
Dibenz(a,h)anthracene	0.033	0.020	0.0013	1	04/20/22 16:44	4/8/22	
Fluoranthene	0.29	0.020	0.00082	1	04/20/22 16:44	4/8/22	
Fluorene	0.034	0.020	0.0011	1	04/20/22 16:44	4/8/22	
Indeno(1,2,3-cd)pyrene	0.11	0.020	0.00089	1	04/20/22 16:44	4/8/22	
Naphthalene	0.052	0.020	0.0014	1	04/20/22 16:44	4/8/22	
Phenanthrene	0.27	0.020	0.0011	1	04/20/22 16:44	4/8/22	
Pyrene	0.41	0.020	0.0010	1	04/20/22 16:44	4/8/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	74	42 - 133	04/20/22 16:44	
Fluorene-d10	78	42 - 131	04/20/22 16:44	
Terphenyl-d14	63	32 - 129	04/20/22 16:44	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Sample Name: WR510-OUT
Lab Code: K2203582-002

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0071 J	0.020	0.0013	1	04/20/22 17:09	4/8/22	
Acenaphthene	0.0024 J	0.020	0.0012	1	04/20/22 17:09	4/8/22	
Acenaphthylene	0.0030 J	0.020	0.0011	1	04/20/22 17:09	4/8/22	
Anthracene	0.0050 J	0.020	0.00082	1	04/20/22 17:09	4/8/22	
Benz(a)anthracene	0.010 J	0.020	0.00097	1	04/20/22 17:09	4/8/22	
Benzo(a)pyrene	0.022	0.020	0.0011	1	04/20/22 17:09	4/8/22	
Benzo(b)fluoranthene	0.018 J	0.020	0.00083	1	04/20/22 17:09	4/8/22	
Benzo(g,h,i)perylene	0.029	0.020	0.00086	1	04/20/22 17:09	4/8/22	
Benzo(k)fluoranthene	0.0050 J	0.020	0.00094	1	04/20/22 17:09	4/8/22	
Chrysene	0.030	0.020	0.00076	1	04/20/22 17:09	4/8/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	04/20/22 17:09	4/8/22	
Fluoranthene	0.055	0.020	0.00082	1	04/20/22 17:09	4/8/22	
Fluorene	0.0062 J	0.020	0.0011	1	04/20/22 17:09	4/8/22	
Indeno(1,2,3-cd)pyrene	0.018 J	0.020	0.00089	1	04/20/22 17:09	4/8/22	
Naphthalene	0.0093 J	0.020	0.0014	1	04/20/22 17:09	4/8/22	
Phenanthrene	0.055	0.020	0.0011	1	04/20/22 17:09	4/8/22	
Pyrene	0.084	0.020	0.0010	1	04/20/22 17:09	4/8/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	78	42 - 133	04/20/22 17:09	
Fluorene-d10	86	42 - 131	04/20/22 17:09	
Terphenyl-d14	69	32 - 129	04/20/22 17:09	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Sample Name: DUPE
Lab Code: K2203582-003

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0077 J	0.020	0.0013	1	04/20/22 17:35	4/8/22	
Acenaphthene	0.0026 J	0.020	0.0012	1	04/20/22 17:35	4/8/22	
Acenaphthylene	0.0030 J	0.020	0.0011	1	04/20/22 17:35	4/8/22	
Anthracene	0.0058 J	0.020	0.00082	1	04/20/22 17:35	4/8/22	
Benz(a)anthracene	0.011 J	0.020	0.00097	1	04/20/22 17:35	4/8/22	
Benzo(a)pyrene	0.024	0.020	0.0011	1	04/20/22 17:35	4/8/22	
Benzo(b)fluoranthene	0.023	0.020	0.00083	1	04/20/22 17:35	4/8/22	
Benzo(g,h,i)perylene	0.030	0.020	0.00086	1	04/20/22 17:35	4/8/22	
Benzo(k)fluoranthene	0.0057 J	0.020	0.00094	1	04/20/22 17:35	4/8/22	
Chrysene	0.031	0.020	0.00076	1	04/20/22 17:35	4/8/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	04/20/22 17:35	4/8/22	
Fluoranthene	0.056	0.020	0.00082	1	04/20/22 17:35	4/8/22	
Fluorene	0.0064 J	0.020	0.0011	1	04/20/22 17:35	4/8/22	
Indeno(1,2,3-cd)pyrene	0.015 J	0.020	0.00089	1	04/20/22 17:35	4/8/22	
Naphthalene	0.0090 J	0.020	0.0014	1	04/20/22 17:35	4/8/22	
Phenanthrene	0.056	0.020	0.0011	1	04/20/22 17:35	4/8/22	
Pyrene	0.091	0.020	0.0010	1	04/20/22 17:35	4/8/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	69	42 - 133	04/20/22 17:35	
Fluorene-d10	79	42 - 131	04/20/22 17:35	
Terphenyl-d14	64	32 - 129	04/20/22 17:35	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2203582-001	74	78	63
WR510-OUT	K2203582-002	78	86	69
DUPE	K2203582-003	69	79	64
Method Blank	KQ2205543-03	77	72	67
Lab Control Sample	KQ2205543-01	86	80	74
Duplicate Lab Control Sample	KQ2205543-02	88	82	70

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2205543-03

Service Request: K2203582
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0027 J	0.020	0.0013	1	04/20/22 15:03	4/8/22	
Acenaphthene	ND U	0.020	0.0012	1	04/20/22 15:03	4/8/22	
Acenaphthylene	ND U	0.020	0.0011	1	04/20/22 15:03	4/8/22	
Anthracene	0.0010 J	0.020	0.00082	1	04/20/22 15:03	4/8/22	
Benz(a)anthracene	0.0017 J	0.020	0.00097	1	04/20/22 15:03	4/8/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	04/20/22 15:03	4/8/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	04/20/22 15:03	4/8/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	04/20/22 15:03	4/8/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	04/20/22 15:03	4/8/22	
Chrysene	ND U	0.020	0.00076	1	04/20/22 15:03	4/8/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	04/20/22 15:03	4/8/22	
Fluoranthene	ND U	0.020	0.00082	1	04/20/22 15:03	4/8/22	
Fluorene	0.0011 J	0.020	0.0011	1	04/20/22 15:03	4/8/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	04/20/22 15:03	4/8/22	
Naphthalene	0.0072 J	0.020	0.0014	1	04/20/22 15:03	4/8/22	
Phenanthrene	0.0036 J	0.020	0.0011	1	04/20/22 15:03	4/8/22	
Pyrene	0.0012 J	0.020	0.0010	1	04/20/22 15:03	4/8/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	77	42 - 133	04/20/22 15:03	
Fluorene-d10	72	42 - 131	04/20/22 15:03	
Terphenyl-d14	67	32 - 129	04/20/22 15:03	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Analyzed: 04/20/22
Date Extracted: 04/08/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 761389

Lab Control Sample
KQ2205543-01

Duplicate Lab Control Sample
KQ2205543-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.81	2.78	101	2.89	2.78	104	48-120	3	30
Acenaphthene	2.93	2.78	105	3.18	2.78	115	63-121	8	30
Acenaphthylene	3.02	2.78	109	3.13	2.78	113	58-124	3	30
Anthracene	3.01	2.78	108	3.15	2.78	113	68-127	5	30
Benz(a)anthracene	2.92	2.78	105	3.04	2.78	109	74-124	4	30
Benzo(a)pyrene	3.22	2.78	116	3.37	2.78	121	75-131	4	30
Benzo(b)fluoranthene	3.11	2.78	112	3.23	2.78	116	73-136	4	30
Benzo(g,h,i)perylene	2.89	2.78	104	3.04	2.78	109	63-127	5	30
Benzo(k)fluoranthene	2.91	2.78	105	3.07	2.78	110	74-134	5	30
Chrysene	2.95	2.78	106	3.09	2.78	111	74-132	5	30
Dibenz(a,h)anthracene	3.19	2.78	115	3.34	2.78	120	59-135	5	30
Fluoranthene	2.83	2.78	102	2.99	2.78	108	70-127	5	30
Fluorene	2.80	2.78	101	2.93	2.78	105	68-121	4	30
Indeno(1,2,3-cd)pyrene	3.44	2.78	124	3.58	2.78	129	63-136	4	30
Naphthalene	2.88	2.78	104	2.95	2.78	106	52-115	3	30
Phenanthrene	2.89	2.78	104	3.03	2.78	109	64-126	5	30
Pyrene	2.80	2.78	101	2.91	2.78	105	72-127	4	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Sample Name: WR510-IN
Lab Code: K2203582-001

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	97	19	2.6	20	04/26/22 19:03	4/12/22	*
Butyl Benzyl Phthalate	3.0 J	3.8	0.42	20	04/26/22 19:03	4/12/22	*
Di-n-butyl Phthalate	1.5 J	3.8	0.46	20	04/26/22 19:03	4/12/22	*
Di-n-octyl Phthalate	ND U	3.8	0.66	20	04/26/22 19:03	4/12/22	*
Diethyl Phthalate	ND U	3.8	0.30	20	04/26/22 19:03	4/12/22	*
Dimethyl Phthalate	4.0	3.8	0.42	20	04/26/22 19:03	4/12/22	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	69	35 - 105	04/26/22 19:03	
Nitrobenzene-d5	90	40 - 117	04/26/22 19:03	
p-Terphenyl-d14	79	48 - 109	04/26/22 19:03	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2203582-002

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.9 B	0.94	0.13	1	04/26/22 16:11	4/12/22	*
Butyl Benzyl Phthalate	0.18 J	0.19	0.021	1	04/26/22 16:11	4/12/22	*
Di-n-butyl Phthalate	0.21	0.19	0.023	1	04/26/22 16:11	4/12/22	*
Di-n-octyl Phthalate	ND U	0.19	0.033	1	04/26/22 16:11	4/12/22	*
Diethyl Phthalate	0.094 J	0.19	0.015	1	04/26/22 16:11	4/12/22	*
Dimethyl Phthalate	0.053 J	0.19	0.021	1	04/26/22 16:11	4/12/22	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	78	35 - 105	04/26/22 16:11	
Nitrobenzene-d5	82	40 - 117	04/26/22 16:11	
p-Terphenyl-d14	85	48 - 109	04/26/22 16:11	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582
Date Collected: 04/04/22 15:25
Date Received: 04/06/22 12:00

Sample Name: DUPE
Lab Code: K2203582-003

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.0 B	0.96	0.13	1	04/26/22 16:40	4/12/22	*
Butyl Benzyl Phthalate	0.19	0.19	0.021	1	04/26/22 16:40	4/12/22	*
Di-n-butyl Phthalate	0.16 J	0.19	0.023	1	04/26/22 16:40	4/12/22	*
Di-n-octyl Phthalate	ND U	0.19	0.033	1	04/26/22 16:40	4/12/22	*
Diethyl Phthalate	0.083 J	0.19	0.015	1	04/26/22 16:40	4/12/22	*
Dimethyl Phthalate	0.061 J	0.19	0.021	1	04/26/22 16:40	4/12/22	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	84	35 - 105	04/26/22 16:40	
Nitrobenzene-d5	95	40 - 117	04/26/22 16:40	
p-Terphenyl-d14	91	48 - 109	04/26/22 16:40	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2203582

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2203582-001	69	90	79
WR510-OUT	K2203582-002	78	82	85
DUPE	K2203582-003	84	95	91
Method Blank	KQ2205588-03	76	74	95
Lab Control Sample	KQ2205588-01	84	85	89
Duplicate Lab Control Sample	KQ2205588-02	92	96	99

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Sample Name: Method Blank
Lab Code: KQ2205588-03

Service Request: K2203582
Date Collected: NA
Date Received: NA

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.3	0.94	0.13	1	04/26/22 11:24	4/12/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	04/26/22 11:24	4/12/22	
Di-n-butyl Phthalate	0.036 J	0.19	0.023	1	04/26/22 11:24	4/12/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	04/26/22 11:24	4/12/22	
Diethyl Phthalate	ND U	0.19	0.015	1	04/26/22 11:24	4/12/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	04/26/22 11:24	4/12/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	76	35 - 105	04/26/22 11:24	
Nitrobenzene-d5	74	40 - 117	04/26/22 11:24	
p-Terphenyl-d14	95	48 - 109	04/26/22 11:24	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2203582

Date Analyzed: 04/26/22

Date Extracted: 04/12/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 762058

Lab Control Sample
KQ2205588-01

Duplicate Lab Control Sample
KQ2205588-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	7.08	5.00	142	5.69	5.00	114	42-147	22	30
Butyl Benzyl Phthalate	5.36	5.00	107	5.40	5.00	108	59-119	<1	30
Diethyl Phthalate	4.75	5.00	95	4.59	5.00	92	58-114	4	30
Dimethyl Phthalate	4.54	5.00	91	4.48	5.00	90	58-109	1	30
Di-n-butyl Phthalate	4.52	5.00	90	4.41	5.00	88	61-121	3	30
Di-n-octyl Phthalate	4.54	5.00	91	4.53	5.00	91	50-125	<1	30



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June 20, 2022

Analytical Report for Service Request No: K2205877

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT- Portland Harbor Perf. Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory May 31, 2022
For your reference, these analyses have been assigned our service request number **K2205877**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2205877
Date Received: 05/31/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 05/31/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

No significant anomalies were noted with this analysis.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl, Aroclor 1016 and 1260. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

06/20/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

142205877

[illegible]

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)

PM HH

Cooler Receipt and Preservation Form

 Client Herrera Service Request K22 05877
 Received: 5/31/22 Opened: 5/31/22 By: dr Unloaded: 5/31/22 By: dr

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** **NA**
3. Were custody seals on coolers? **NA** Y N If yes, how many and where? _____
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID/NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	-0.9	TRO1					
	-0.7						

4. Was a Temperature Blank present in cooler? NA Y **N** If yes, notate the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA **Y** N

If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. **NA** Y N

If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves** _____

7. Were custody papers properly filled out (ink, signed, etc.)? NA **Y** N

8. Were samples received in good condition (unbroken) NA **Y** N

9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA **Y** N

10. Did all sample labels and tags agree with custody papers? NA **Y** N

11. Were appropriate bottles/containers and volumes received for the tests indicated? **NA** **Y** N

12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below **NA** Y N

13. Were VOA vials received without headspace? Indicate in the table below **NA** Y N

14. Was C12/Res negative? **NA** Y N

15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? **NA** Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: 2 orange Carboys



General Chemistry

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2205877
Date Collected: 05/30/22
Date Received: 05/31/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-IN	K2205877-001	7.00	0.50	1	06/09/22 14:47	
WR510-OUT	K2205877-002	5.80	0.50	1	06/09/22 14:47	
Method Blank	K2205877-MB1	ND U	0.50	1	06/09/22 14:47	
Method Blank	K2205877-MB2	ND U	0.50	1	06/09/22 14:47	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877**Date Collected:** 05/30/22**Date Received:** 05/31/22**Date Analyzed:** 06/09/22

Replicate Sample Summary
General Chemistry Parameters

Sample Name: WR510-IN
Lab Code: K2205877-001

Units: mg/L**Basis:** NA

				Duplicate Sample K2205877- 001DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic	415.1	0.50	7.00	7.20	7.10	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Collected: 05/30/22
Date Received: 05/31/22
Date Analyzed: 06/9/22
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name: WR510-IN
Lab Code: K2205877-001
Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2205877-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	7.00	32.5	25.0	102	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Analyzed: 06/09/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 766998

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2205877-LCS1	24.7	25.0	99	83-117
Lab Control Sample	K2205877-LCS2	24.8	25.0	99	83-117

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2205877
Date Collected: 05/30/22
Date Received: 05/31/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-IN	K2205877-001	73.2	2.0	1	06/09/22 10:26	6/9/22	
WR510-OUT	K2205877-002	95.6	2.0	1	06/09/22 10:26	6/9/22	
Method Blank	K2205877-MB1	ND U	2.0	1	06/09/22 10:26	NA	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Analyzed: 06/09/22
Date Extracted: NA

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 766963

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2205877-LCS1	24.4	21.2	115	90-116
Lab Control Sample	K2205877-LCS2	24.0	21.2	113	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2205877
Date Collected: 05/30/22
Date Received: 05/31/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR510-IN	K2205877-001	62.0	5.0	-	1	06/02/22 15:47	
WR510-OUT	K2205877-002	58.5	5.0	-	1	06/02/22 15:47	
Method Blank	K2205877-MB1	ND U	5.0	-	1	06/02/22 15:47	
Method Blank	K2205877-MB2	ND U	5.0	-	1	06/02/22 15:47	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Analyzed: 06/02/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 766226

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2205877-LCS1	378	400	95	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2205877-001

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.57	ug/L	0.50	0.09	1	06/02/22 12:27	06/01/22	
Cadmium	6020A	0.125	ug/L	0.020	0.008	1	06/02/22 12:27	06/01/22	
Copper	6020A	19.9	ug/L	0.10	0.05	1	06/02/22 12:27	06/01/22	
Lead	6020A	7.86	ug/L	0.020	0.006	1	06/02/22 12:27	06/01/22	
Nickel	6020A	2.85	ug/L	0.20	0.04	1	06/02/22 12:27	06/01/22	
Zinc	6020A	318	ug/L	2.0	0.5	1	06/02/22 12:27	06/01/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2205877-002

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.51	ug/L	0.50	0.09	1	06/02/22 12:34	06/01/22	
Cadmium	6020A	0.110	ug/L	0.020	0.008	1	06/02/22 12:34	06/01/22	
Copper	6020A	17.0	ug/L	0.10	0.05	1	06/02/22 12:34	06/01/22	
Lead	6020A	6.85	ug/L	0.020	0.006	1	06/02/22 12:34	06/01/22	
Nickel	6020A	2.28	ug/L	0.20	0.04	1	06/02/22 12:34	06/01/22	
Zinc	6020A	271	ug/L	2.0	0.5	1	06/02/22 12:34	06/01/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2209010-01

Service Request: K2205877
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	06/02/22 12:10	06/01/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	06/02/22 12:10	06/01/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	06/02/22 12:10	06/01/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	06/02/22 12:10	06/01/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	06/02/22 12:10	06/01/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	06/02/22 12:10	06/01/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Analyzed: 06/02/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2209010-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	49.1	50.0	98	80-120
Cadmium	6020A	24.9	25.0	100	80-120
Copper	6020A	12.3	12.5	98	80-120
Lead	6020A	49.4	50.0	99	80-120
Nickel	6020A	24.2	25.0	97	80-120
Zinc	6020A	25.8	25.0	103	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2205877
Date Collected: 05/30/2022
Date Received: 05/31/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-IN
Lab Code: K2205877-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1221	ND	U	0.020	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1232	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1242	0.015	P	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1248	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1254	0.012	P	0.010	0.0064	1	06/02/22	06/08/22	KWG2201034	
Aroclor 1260	0.0066	JP	0.010	0.0064	1	06/02/22	06/08/22	KWG2201034	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	69	10-140	06/04/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2205877
Date Collected: 05/30/2022
Date Received: 05/31/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-OUT
Lab Code: K2205877-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1221	ND	U	0.020	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1232	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1242	0.012	P	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1248	ND	U	0.010	0.0064	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1254	ND	Ui	0.011	0.011	1	06/02/22	06/08/22	KWG2201034	
Aroclor 1260	0.0094	J	0.010	0.0064	1	06/02/22	06/08/22	KWG2201034	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	73	10-140	06/04/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2205877
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2201034-3
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1221	ND	U	0.010	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1232	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1242	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1248	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1254	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	
Aroclor 1260	ND	U	0.0050	0.0032	1	06/02/22	06/04/22	KWG2201034	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	96	10-140	06/04/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2205877

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR510-IN	K2205877-001	69
WR510-OUT	K2205877-002	73
Method Blank	KWG2201034-3	96
Lab Control Sample	KWG2201034-1	100
Duplicate Lab Control Sample	KWG2201034-2	100

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2205877
Date Extracted: 06/02/2022
Date Analyzed: 06/04/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2201034

Analyte Name	Lab Control Sample KWG2201034-1 Lab Control Spike			Duplicate Lab Control Sample KWG2201034-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.134	0.125	108	0.130	0.125	104	31-164	3	30
Aroclor 1260	0.164	0.125	131	0.159	0.125	127	34-182	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Sample Name: WR510-IN
Lab Code: K2205877-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0091 J	0.040	0.0026	1	06/06/22 23:15	6/2/22	
Acenaphthene	ND U	0.040	0.0024	1	06/06/22 23:15	6/2/22	
Acenaphthylene	ND U	0.040	0.0022	1	06/06/22 23:15	6/2/22	
Anthracene	ND U	0.040	0.0017	1	06/06/22 23:15	6/2/22	
Benz(a)anthracene	0.018 J	0.040	0.0020	1	06/06/22 23:15	6/2/22	
Benzo(a)pyrene	ND U	0.040	0.0022	1	06/06/22 23:15	6/2/22	
Benzo(b)fluoranthene	ND U	0.040	0.0017	1	06/06/22 23:15	6/2/22	
Benzo(g,h,i)perylene	0.041	0.040	0.0018	1	06/06/22 23:15	6/2/22	
Benzo(k)fluoranthene	ND U	0.040	0.0019	1	06/06/22 23:15	6/2/22	
Chrysene	0.034 J	0.040	0.0016	1	06/06/22 23:15	6/2/22	
Dibenz(a,h)anthracene	ND U	0.040	0.0026	1	06/06/22 23:15	6/2/22	
Fluoranthene	0.070	0.040	0.0017	1	06/06/22 23:15	6/2/22	
Fluorene	0.0073 J	0.040	0.0022	1	06/06/22 23:15	6/2/22	
Indeno(1,2,3-cd)pyrene	ND U	0.040	0.0018	1	06/06/22 23:15	6/2/22	
Naphthalene	0.011 J	0.040	0.0028	1	06/06/22 23:15	6/2/22	
Phenanthrene	0.047	0.040	0.0022	1	06/06/22 23:15	6/2/22	
Pyrene	0.12	0.040	0.0020	1	06/06/22 23:15	6/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	98	42 - 133	06/06/22 23:15	
Fluorene-d10	98	42 - 131	06/06/22 23:15	
Terphenyl-d14	92	32 - 129	06/06/22 23:15	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Sample Name: WR510-OUT
Lab Code: K2205877-002

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0099 J	0.040	0.0026	1	06/06/22 23:52	6/2/22	
Acenaphthene	ND U	0.040	0.0024	1	06/06/22 23:52	6/2/22	
Acenaphthylene	0.0034 J	0.040	0.0022	1	06/06/22 23:52	6/2/22	
Anthracene	ND U	0.040	0.0017	1	06/06/22 23:52	6/2/22	
Benz(a)anthracene	0.013 J	0.040	0.0020	1	06/06/22 23:52	6/2/22	
Benzo(a)pyrene	ND U	0.040	0.0022	1	06/06/22 23:52	6/2/22	
Benzo(b)fluoranthene	0.017 J	0.040	0.0017	1	06/06/22 23:52	6/2/22	
Benzo(g,h,i)perylene	0.029 J	0.040	0.0018	1	06/06/22 23:52	6/2/22	
Benzo(k)fluoranthene	ND U	0.040	0.0019	1	06/06/22 23:52	6/2/22	
Chrysene	0.028 J	0.040	0.0016	1	06/06/22 23:52	6/2/22	
Dibenz(a,h)anthracene	ND U	0.040	0.0026	1	06/06/22 23:52	6/2/22	
Fluoranthene	0.060	0.040	0.0017	1	06/06/22 23:52	6/2/22	
Fluorene	0.0061 J	0.040	0.0022	1	06/06/22 23:52	6/2/22	
Indeno(1,2,3-cd)pyrene	ND U	0.040	0.0018	1	06/06/22 23:52	6/2/22	
Naphthalene	0.013 J	0.040	0.0028	1	06/06/22 23:52	6/2/22	
Phenanthrene	0.044	0.040	0.0022	1	06/06/22 23:52	6/2/22	
Pyrene	0.096	0.040	0.0020	1	06/06/22 23:52	6/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	97	42 - 133	06/06/22 23:52	
Fluorene-d10	95	42 - 131	06/06/22 23:52	
Terphenyl-d14	89	32 - 129	06/06/22 23:52	

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QA/QC Report

Client: Herrera Environmental

Service Request: K2205877

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR510-IN	K2205877-001	98	98	92
WR510-OUT	K2205877-002	97	95	89
Method Blank	KQ2209084-03	111	104	83
Lab Control Sample	KQ2209084-01	102	95	74
Duplicate Lab Control Sample	KQ2209084-02	104	95	81

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2209084-03

Service Request: K2205877
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	06/06/22 21:23	6/2/22	
Acenaphthene	ND U	0.020	0.0012	1	06/06/22 21:23	6/2/22	
Acenaphthylene	ND U	0.020	0.0011	1	06/06/22 21:23	6/2/22	
Anthracene	ND U	0.020	0.00082	1	06/06/22 21:23	6/2/22	
Benz(a)anthracene	ND U	0.020	0.00097	1	06/06/22 21:23	6/2/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	06/06/22 21:23	6/2/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	06/06/22 21:23	6/2/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	06/06/22 21:23	6/2/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	06/06/22 21:23	6/2/22	
Chrysene	ND U	0.020	0.00076	1	06/06/22 21:23	6/2/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	06/06/22 21:23	6/2/22	
Fluoranthene	ND U	0.020	0.00082	1	06/06/22 21:23	6/2/22	
Fluorene	ND U	0.020	0.0011	1	06/06/22 21:23	6/2/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	06/06/22 21:23	6/2/22	
Naphthalene	0.0038 J	0.020	0.0014	1	06/06/22 21:23	6/2/22	
Phenanthrene	ND U	0.020	0.0011	1	06/06/22 21:23	6/2/22	
Pyrene	ND U	0.020	0.0010	1	06/06/22 21:23	6/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	111	42 - 133	06/06/22 21:23	
Fluorene-d10	104	42 - 131	06/06/22 21:23	
Terphenyl-d14	83	32 - 129	06/06/22 21:23	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877
Date Analyzed: 06/06/22
Date Extracted: 06/02/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 766660

Lab Control Sample
KQ2209084-01

Duplicate Lab Control Sample
KQ2209084-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.99	2.78	108	3.04	2.78	109	48-120	1	30
Acenaphthene	2.99	2.78	108	2.99	2.78	108	63-121	<1	30
Acenaphthylene	2.91	2.78	105	2.91	2.78	105	58-124	<1	30
Anthracene	2.96	2.78	107	2.99	2.78	107	68-127	<1	30
Benz(a)anthracene	3.08	2.78	111	3.04	2.78	109	74-124	1	30
Benzo(a)pyrene	2.87	2.78	103	2.82	2.78	101	75-131	2	30
Benzo(b)fluoranthene	2.87	2.78	103	2.85	2.78	103	73-136	<1	30
Benzo(g,h,i)perylene	3.19	2.78	115	3.14	2.78	113	63-127	2	30
Benzo(k)fluoranthene	2.75	2.78	99	2.69	2.78	97	74-134	2	30
Chrysene	2.89	2.78	104	2.86	2.78	103	74-132	1	30
Dibenz(a,h)anthracene	2.93	2.78	106	2.88	2.78	104	59-135	2	30
Fluoranthene	3.05	2.78	110	3.08	2.78	111	70-127	1	30
Fluorene	2.91	2.78	105	2.92	2.78	105	68-121	<1	30
Indeno(1,2,3-cd)pyrene	3.05	2.78	110	2.99	2.78	108	63-136	2	30
Naphthalene	2.64	2.78	95	2.67	2.78	96	52-115	1	30
Phenanthrene	2.76	2.78	100	2.83	2.78	102	64-126	2	30
Pyrene	3.00	2.78	108	2.97	2.78	107	72-127	1	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-IN
Lab Code: K2205877-001

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.3	0.96	0.13	1	06/10/22 23:20	6/6/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	06/10/22 23:20	6/6/22	
Di-n-butyl Phthalate	0.16 J	0.19	0.023	1	06/10/22 23:20	6/6/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	06/10/22 23:20	6/6/22	
Diethyl Phthalate	0.13 J	0.19	0.015	1	06/10/22 23:20	6/6/22	
Dimethyl Phthalate	0.16 J	0.19	0.021	1	06/10/22 23:20	6/6/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	35 - 105	06/10/22 23:20	
Nitrobenzene-d5	97	40 - 117	06/10/22 23:20	
p-Terphenyl-d14	85	48 - 109	06/10/22 23:20	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR510-OUT
Lab Code: K2205877-002

Service Request: K2205877
Date Collected: 05/30/22 08:59
Date Received: 05/31/22 12:45

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.4	0.94	0.13	1	06/10/22 23:48	6/6/22	
Butyl Benzyl Phthalate	0.18 J	0.19	0.021	1	06/10/22 23:48	6/6/22	
Di-n-butyl Phthalate	0.17 J	0.19	0.023	1	06/10/22 23:48	6/6/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	06/10/22 23:48	6/6/22	
Diethyl Phthalate	0.11 J	0.19	0.015	1	06/10/22 23:48	6/6/22	
Dimethyl Phthalate	0.13 J	0.19	0.021	1	06/10/22 23:48	6/6/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	82	35 - 105	06/10/22 23:48	
Nitrobenzene-d5	98	40 - 117	06/10/22 23:48	
p-Terphenyl-d14	90	48 - 109	06/10/22 23:48	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2205877

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR510-IN	K2205877-001	82	97	85
WR510-OUT	K2205877-002	82	98	90
Method Blank	KQ2209263-03	73	82	82
Lab Control Sample	KQ2209263-01	71	78	82
Duplicate Lab Control Sample	KQ2209263-02	73	81	88

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2209263-03

Service Request: K2205877
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.25 J	0.94	0.13	1	06/10/22 13:18	6/6/22	
Butyl Benzyl Phthalate	0.061 J	0.19	0.021	1	06/10/22 13:18	6/6/22	
Di-n-butyl Phthalate	0.053 J	0.19	0.023	1	06/10/22 13:18	6/6/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	06/10/22 13:18	6/6/22	
Diethyl Phthalate	ND U	0.19	0.015	1	06/10/22 13:18	6/6/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	06/10/22 13:18	6/6/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	73	35 - 105	06/10/22 13:18	
Nitrobenzene-d5	82	40 - 117	06/10/22 13:18	
p-Terphenyl-d14	82	48 - 109	06/10/22 13:18	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2205877

Date Analyzed: 06/10/22

Date Extracted: 06/06/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 767726

Lab Control Sample
KQ2209263-01

Duplicate Lab Control Sample
KQ2209263-02

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.57	5.00	91	4.91	5.00	98	42-147	7	30
Butyl Benzyl Phthalate	4.57	5.00	91	5.04	5.00	101	59-119	10	30
Diethyl Phthalate	3.67	5.00	73	3.60	5.00	72	58-114	2	30
Dimethyl Phthalate	3.67	5.00	73	3.70	5.00	74	58-109	<1	30
Di-n-butyl Phthalate	3.58	5.00	72	3.64	5.00	73	61-121	2	30
Di-n-octyl Phthalate	4.02	5.00	80	3.75	5.00	75	50-125	7	30



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August 31, 2022

Analytical Report for Service Request No: K2208383

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT- Portland Harbor Perf. Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory July 25, 2022
For your reference, these analyses have been assigned our service request number **K2208383**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,


ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring
Sample Matrix: Sediment

Service Request: K2208383
Date Received: 07/25/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

One sediment sample was received for analysis at ALS Environmental on 07/25/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 08/27/2022: Sample required dilution due to the presence of elevated levels of target analyte. The reporting limits are adjusted to reflect the dilution.

Method 8270D, 08/27/2022: The control criteria were exceeded for some surrogates in the sample due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Semivolatile GC:

Method 8082A: The control criteria were exceeded for Decachlorobiphenyl in sample WR510-SUMP due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. No further corrective action was appropriate.

Metals:

Method 6020A, 08/03/2022: The Relative Percent Difference (RPD) for the replicate analysis of Cadmium, Copper, Lead, Nickel and Zinc in sample WR510-SUMP was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

08/31/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

142208383

Project Name: ODOT – Portland Harbor Perf. Monitoring		Project Number: 10-04681-001		Client: OR Department of Transportation		Number of Containers	Analyses Requested										Lab ID No.
Report To: Jess Brown, JBrown@herrerainc.com				Copy To: SNilsson@herrerainc.com			Total Solids (%) – EPA 160.3	Grain size distribution – PSEP	Bulk Density – ASTM D854	TOC (%) – ASTM D4129-05	Total Metals – EPA 6020A	PCBs – EPA 8082A	PAHs – EPA 8270D SIM	Phthalates – EPA 8270D_LL			
Sampled By: S Nilsson				Delivery Method:													
Laboratory: ALS		Requested Completion Date:		Total No. of Containers: 2													
Lab Use:				Sample Type (see codes)	Preservative? (Y/N)										Matrix (see codes)		
Sample ID		Date	Time														
WR510-SUMP		7/22/22	1015	C	N	SE	2	X	X	X	X	X	X	X	X		
Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn																	
Relinquished by (Name/CO/)		Signature		Date/Time	Received By (Name/CO)		Signature		Date/Time								
Conga Witzel		Conga Witzel		7/25/22	S Nilsson		S Nilsson		7/25/22								
Relinquished by (Name/CO/)		Signature		Date/Time	Received By (Name/CO)		Signature		Date/Time								
S Nilsson		S Nilsson		7/25/22	S Nilsson		S Nilsson		7/25/22								
Sample Type: G=Grab C=Composite Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)																	

PM HH

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 08383
Received: 7/25/22 Opened: 7/25/22 By: [Signature] Unloaded: 7/25/22 By: [Signature]

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
- If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID <u>(NA)</u>	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number <u>NA</u>	Filed
<u>7.1</u>	<u>5.8</u>	<u>IR02</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA Y N
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
8. Were samples received in good condition (unbroken) NA Y N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
10. Did all sample labels and tags agree with custody papers? NA Y N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
14. Was C12/Res negative? NA Y N
15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: There was plenty of ice in the cooler;
Sample temp is the ambient temperature

1/13/22



Total Solids

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Units: Percent
Basis: As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-SUMP	K2208383-001	39.8	-	1	07/28/22 12:34	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383**Date Collected:** 07/22/22**Date Received:** 07/25/22**Date Analyzed:** 07/28/22**Replicate Sample Summary****Inorganic Parameters****Sample Name:** WR510-SUMP**Units:** Percent**Lab Code:** K2208383-001**Basis:** As Received

				Duplicate Sample K2208383- 001DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	39.8	36.2	38.0	9	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Analysis Method: ASTM D4129-05 Modified
Prep Method: ALS SOP

Service Request: K2208383

Date Collected: 07/22/22

Date Received: 07/25/22

Units: Percent

Basis: Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR510-SUMP	K2208383-001	6.70	0.050	1	08/03/22 17:00	8/3/22	
Method Blank	K2208383-MB	ND U	0.050	1	08/03/22 17:00	8/3/22	

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QA/QC Report

Client: Herrera Environmental
Project ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383**Date Collected:** 07/22/22**Date Received:** 07/25/22**Date Analyzed:** 08/03/22

Replicate Sample Summary
General Chemistry Parameters

Sample Name: WR510-SUMP**Units:** Percent**Lab Code:** K2208383-001**Basis:** Dry, per Method

				Duplicate Sample K2208383- 001DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-05 Modified	0.050	6.70	6.71	6.71	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Analyzed: 08/03/22
Date Extracted: 08/03/22

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: ASTM D4129-05 Modified
Prep Method: ALS SOP

Units: Percent
Basis: Dry, per Method
Analysis Lot: 773070

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2208383-LCS	4.34	4.40	99	72-122

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Analysis Method: ASTM E1109-86
Prep Method: None

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Units: g/cm3
Basis: As Received

Bulk Density

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR510-SUMP	K2208383-001	3.07	-	1	NA	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Date Analyzed: 08/12/22

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WR510-SUMP
Lab Code: K2208383-001

Sand Fraction: Dry Weight (Grams) 14.5067
Sand Fraction: Weight Recovered (Grams) 14.4161
Sand Fraction: Percent Recovery 99.38

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	2.4800	13.10
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.3574	7.17
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.1326	16.55
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	3.7794	19.97
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	2.3464	12.40
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.2358	6.53
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	2.9300	15.48
Clay (< 0.0039 mm)	> 8 Ø	0.3650	1.93
Total		17.6266	93.13

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Date Analyzed: 08/12/22

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WR510-SUMP
Lab Code: K2208383-001DUP

Sand Fraction: Dry Weight (Grams) 13.7347
Sand Fraction: Weight Recovered (Grams) 13.6723
Sand Fraction: Percent Recovery 99.55

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	1.3460	7.29
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.3743	7.44
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.2072	17.36
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	3.7429	20.26
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	2.6812	14.51
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.2522	6.78
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	3.0550	16.54
Clay (< 0.0039 mm)	> 8 Ø	0.4400	2.38
Total		17.0988	92.56

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Date Analyzed: 08/12/22

Particle Size Determination
Puget Sound Estuary Program Protocol

Sample Name: WR510-SUMP
Lab Code: K2208383-001TRP

Sand Fraction: Dry Weight (Grams) 14.0277
Sand Fraction: Weight Recovered (Grams) 13.9583
Sand Fraction: Percent Recovery 99.51

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered
Gravel (>2.00 mm)	<-1 Ø	1.6921	9.12
Sand, Very Coarse (1.00 mm to 2.00 mm)	-1 to 0 Ø	1.4644	7.90
Sand, Coarse (0.500 mm to 1.00 mm)	0 to 1 Ø	3.2149	17.33
Sand, Medium (0.250 mm to 0.500 mm)	1 to 2 Ø	3.7707	20.33
Sand, Fine (0.125 mm to 0.250 mm)	2 to 3 Ø	2.4591	13.26
Sand, Very Fine (0.0625 mm to 0.125 mm)	3 to 4 Ø	1.2714	6.85
Silt (0.0039 mm to 0.0625 mm)	4 to 8 Ø	3.3550	18.09
Clay (< 0.0039 mm)	> 8 Ø	0.1750	0.94
Total		17.4026	93.82



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Sample Name: WR510-SUMP
Lab Code: K2208383-001

Service Request: K2208383
Date Collected: 07/22/22 10:15
Date Received: 07/25/22 11:40

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	2.15	mg/Kg	0.85	5	08/03/22 11:29	08/02/22	
Cadmium	6020A	1.66	mg/Kg	0.034	5	08/03/22 11:29	08/02/22	
Copper	6020A	61.0	mg/Kg	0.17	5	08/03/22 11:29	08/02/22	
Lead	6020A	43.2	mg/Kg	0.085	5	08/03/22 11:29	08/02/22	
Nickel	6020A	23.2	mg/Kg	0.34	5	08/03/22 11:29	08/02/22	
Zinc	6020A	781	mg/Kg	0.85	5	08/03/22 11:29	08/02/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Sample Name: Method Blank
Lab Code: KQ2212393-03

Service Request: K2208383
Date Collected: NA
Date Received: NA
Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	mg/Kg	0.5	5	08/03/22 11:25	08/02/22	
Cadmium	6020A	ND U	mg/Kg	0.020	5	08/03/22 11:25	08/02/22	
Copper	6020A	ND U	mg/Kg	0.10	5	08/03/22 11:25	08/02/22	
Lead	6020A	ND U	mg/Kg	0.05	5	08/03/22 11:25	08/02/22	
Nickel	6020A	ND U	mg/Kg	0.20	5	08/03/22 11:25	08/02/22	
Zinc	6020A	ND U	mg/Kg	0.5	5	08/03/22 11:25	08/02/22	

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QA/QC Report

Client: Herrera Environmental
Project ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383**Date Collected:** 07/22/22**Date Received:** 07/25/22**Date Analyzed:** 08/03/22**Replicate Sample Summary****Total Metals****Sample Name:** WR510-SUMP**Units:** mg/Kg**Lab Code:** K2208383-001**Basis:** Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
				KQ2212393-01 Result			
Arsenic	6020A	1.2	2.2	3.3	2.8	41 #	20
Cadmium	6020A	0.048	1.66	0.658	1.16	86 *	20
Copper	6020A	0.24	61.0	112	86.5	59 *	20
Lead	6020A	0.12	43.2	59.4	51.3	31 *	20
Nickel	6020A	0.48	23.2	36.5	29.9	44 *	20
Zinc	6020A	1.2	781	1150	966	39 *	20

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Analyzed: 08/03/22

Duplicate Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis:Dry

Lab Control Sample					Duplicate Lab Control Sample					
KQ2212393-04					KQ2212393-05					
Analyte Name	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Arsenic	6020A	98.6	100	99	96.7	100	97	80-120	2	20
Cadmium	6020A	10.9	10.0	109	10.9	10.0	109	80-120	<1	20
Copper	6020A	49.8	50.0	100	49.8	50.0	100	80-120	<1	20
Lead	6020A	108	100	108	107	100	107	80-120	<1	20
Nickel	6020A	100	100	100	99.0	100	99	80-120	1	20
Zinc	6020A	99.4	100	99	100	100	100	80-120	<1	20



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: 07/22/2022
Date Received: 07/25/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR510-SUMP
Lab Code: K2208383-001
Extraction Method: EPA 3546
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1221	ND	U	4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1232	ND	U	4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1242	160		4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1248	ND	U	4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1254	47		4.7	1	08/04/22	08/06/22	KWG2201513	
Aroclor 1260	32	P	4.7	1	08/04/22	08/06/22	KWG2201513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	17808	20-155	08/06/22	Outside Control Limits

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2201513-4
Extraction Method: EPA 3546
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1221	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1232	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1242	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1248	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1254	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	
Aroclor 1260	ND	U	1.8	1	08/04/22	08/05/22	KWG2201513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	86	20-155	08/05/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3546
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
Batch QC	K2208213-001	88
WR510-SUMP	K2208383-001	17808 *
Method Blank	KWG2201513-4	86
Batch QCMS	KWG2201513-1	88
Batch QCDMS	KWG2201513-2	88
Lab Control Sample	KWG2201513-3	95

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 20-155

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Extracted: 08/04/2022
Date Analyzed: 08/06/2022

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name: Batch QC
Lab Code: K2208213-001
Extraction Method: EPA 3546
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG2201513

Analyte Name	Sample Result	Batch QCMS KWG2201513-1 Matrix Spike			Batch QCDMS KWG2201513-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	ND	39.4	34.8	113	33.6	34.1	99	44-119	16	40
Aroclor 1260	60	94.2	34.8	99	91.6	34.1	93	56-130	3	40

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Extracted: 08/04/2022
Date Analyzed: 08/05/2022

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3546
Analysis Method: 8082A

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG2201513

Lab Control Sample KWG2201513-3 Lab Control Spike				
Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	20.4	20.0	102	44-119
Aroclor 1260	22.6	20.0	113	56-130

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Sample Name: WR510-SUMP
Lab Code: K2208383-001

Service Request: K2208383
Date Collected: 07/22/22 10:15
Date Received: 07/25/22 11:40

Units: ug/Kg
Basis: Dry

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	37	12	1	08/04/22 12:12	8/2/22	
Acenaphthene	33	12	1	08/04/22 12:12	8/2/22	
Acenaphthylene	13	12	1	08/04/22 12:12	8/2/22	
Anthracene	75	12	1	08/04/22 12:12	8/2/22	
Benz(a)anthracene	330	12	1	08/04/22 12:12	8/2/22	
Benzo(a)pyrene	250	12	1	08/04/22 12:12	8/2/22	
Benzo(b)fluoranthene	370	12	1	08/04/22 12:12	8/2/22	
Benzo(g,h,i)perylene	210	12	1	08/04/22 12:12	8/2/22	
Benzo(k)fluoranthene	120	12	1	08/04/22 12:12	8/2/22	
Chrysene	460	12	1	08/04/22 12:12	8/2/22	
Dibenz(a,h)anthracene	26	12	1	08/04/22 12:12	8/2/22	
Fluoranthene	1100	12	1	08/04/22 12:12	8/2/22	
Fluorene	85	12	1	08/04/22 12:12	8/2/22	
Indeno(1,2,3-cd)pyrene	130	12	1	08/04/22 12:12	8/2/22	
Naphthalene	34	12	1	08/04/22 12:12	8/2/22	
Phenanthrene	880	12	1	08/04/22 12:12	8/2/22	
Pyrene	1000	12	1	08/04/22 12:12	8/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	87	28 - 112	08/04/22 12:12	
Fluorene-d10	94	34 - 106	08/04/22 12:12	
Terphenyl-d14	95	32 - 122	08/04/22 12:12	

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QA/QC Report

Client: Herrera Environmental

Service Request: K2208383

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D

Extraction Method: EPA 3546

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		28-112	34-106	32-122
WR510-SUMP	K2208383-001	87	94	95
Method Blank	KQ2212303-04	87	89	91
Lab Control Sample	KQ2212303-03	94	83	96

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Sample Name: Method Blank
Lab Code: KQ2212303-04

Service Request: K2208383
Date Collected: NA
Date Received: NA

Units: ug/Kg
Basis: Dry

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3546

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Acenaphthene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Acenaphthylene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Anthracene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Benz(a)anthracene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Benzo(a)pyrene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Benzo(b)fluoranthene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Benzo(g,h,i)perylene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Benzo(k)fluoranthene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Chrysene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Dibenz(a,h)anthracene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Fluoranthene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Fluorene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Indeno(1,2,3-cd)pyrene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Naphthalene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Phenanthrene	ND U	4.6	1	08/03/22 21:40	8/2/22	
Pyrene	ND U	4.6	1	08/03/22 21:40	8/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	87	28 - 112	08/03/22 21:40	
Fluorene-d10	89	34 - 106	08/03/22 21:40	
Terphenyl-d14	91	32 - 122	08/03/22 21:40	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Analyzed: 08/03/22
Date Extracted: 08/02/22

Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3546

Units: ug/Kg
Basis: Dry
Analysis Lot: 772841

Lab Control Sample
KQ2212303-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2-Methylnaphthalene	374	500	75	43-92
Acenaphthene	411	500	82	44-95
Acenaphthylene	409	500	82	44-93
Anthracene	457	500	91	46-100
Benz(a)anthracene	473	500	95	52-105
Benzo(a)pyrene	494	500	99	52-111
Benzo(b)fluoranthene	467	500	93	52-114
Benzo(g,h,i)perylene	427	500	85	45-107
Benzo(k)fluoranthene	479	500	96	52-112
Chrysene	491	500	98	51-110
Dibenz(a,h)anthracene	452	500	90	44-110
Fluoranthene	473	500	95	49-102
Fluorene	425	500	85	45-98
Indeno(1,2,3-cd)pyrene	446	500	89	44-117
Naphthalene	399	500	80	42-88
Phenanthrene	448	500	90	41-99
Pyrene	477	500	95	48-104



Low Level Semivolatile Organic Compounds by GC/MS

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Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Sample Name: WR510-SUMP
Lab Code: K2208383-001

Service Request: K2208383
Date Collected: 07/22/22 10:15
Date Received: 07/25/22 11:40

Units: ug/Kg
Basis: Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3300	2500	10	08/30/22 18:08	8/4/22	
Butyl Benzyl Phthalate	170	25	1	08/27/22 00:51	8/4/22	
Di-n-butyl Phthalate	69	50	1	08/27/22 00:51	8/4/22	
Di-n-octyl Phthalate	ND U	25	1	08/27/22 00:51	8/4/22	
Diethyl Phthalate	ND U	25	1	08/27/22 00:51	8/4/22	
Dimethyl Phthalate	46	25	1	08/27/22 00:51	8/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	23	35 - 105	08/27/22 00:51	*
Nitrobenzene-d5	19	10 - 84	08/27/22 00:51	
p-Terphenyl-d14	29	30 - 102	08/27/22 00:51	*

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental

Service Request: K2208383

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3541

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	10-84	30-102
WR510-SUMP	K2208383-001	23*	19	29*
Method Blank	KQ2212399-04	41	39	46
Lab Control Sample	KQ2212399-03	48	47	50
WR510-SUMP	KQ2212399-01	26*	24	31
WR510-SUMP	KQ2212399-02	33*	29	39

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QA/QC Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment

Service Request: K2208383
Date Collected: 07/22/22
Date Received: 07/25/22
Date Analyzed: 08/26/22
Date Extracted: 08/4/22

Duplicate Matrix Spike Summary
Low Level Semivolatile Organic Compounds by GC/MS

Sample Name: WR510-SUMP **Units:** ug/Kg
Lab Code: K2208383-001 **Basis:** Dry
Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Matrix Spike KQ2212399-01				Duplicate Matrix Spike KQ2212399-02					
	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	3300	14400 E	617	1793 #	4570 E	624	204 #	23-123	104*	40
Butyl Benzyl Phthalate	170	329	617	25	355	624	29	18-123	8	40
Di-n-butyl Phthalate	69	406	617	55	577	624	81	16-130	35	40
Di-n-octyl Phthalate	ND U	6320 E	617	1023 *	711	624	114	25-120	160*	40
Diethyl Phthalate	ND U	199	617	32	230	624	37	20-108	14	40
Dimethyl Phthalate	46	319	617	44	319	624	44	11-109	<1	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001
Sample Matrix: Sediment
Sample Name: Method Blank
Lab Code: KQ2212399-04

Service Request: K2208383
Date Collected: NA
Date Received: NA
Units: ug/Kg
Basis: Dry

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3541

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	98	1	08/26/22 19:08	8/4/22	
Butyl Benzyl Phthalate	ND U	9.8	1	08/26/22 19:08	8/4/22	
Di-n-butyl Phthalate	ND U	20	1	08/26/22 19:08	8/4/22	
Di-n-octyl Phthalate	ND U	9.8	1	08/26/22 19:08	8/4/22	
Diethyl Phthalate	ND U	9.8	1	08/26/22 19:08	8/4/22	
Dimethyl Phthalate	ND U	9.8	1	08/26/22 19:08	8/4/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	41	35 - 105	08/26/22 19:08	
Nitrobenzene-d5	39	10 - 84	08/26/22 19:08	
p-Terphenyl-d14	46	30 - 102	08/26/22 19:08	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT- Portland Harbor Perf. Monitoring/10-04681-001

Sample Matrix: Sediment

Service Request: K2208383

Date Analyzed: 08/26/22

Date Extracted: 08/04/22

Lab Control Sample Summary

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3541

Units: ug/Kg

Basis: Dry

Analysis Lot: 775651

Lab Control Sample

KQ2212399-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Bis(2-ethylhexyl) Phthalate	149	250	59	39-113
Butyl Benzyl Phthalate	132	250	53	43-103
Diethyl Phthalate	139	250	56	35-95
Dimethyl Phthalate	133	250	53	36-85
Di-n-butyl Phthalate	150	250	60	30-120
Di-n-octyl Phthalate	132	250	53	41-105



ALS Environmental
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June 27, 2022

Analytical Report for Service Request No: K2206479

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT_Portland Harbor Perf.Monitoring / 10-04681-001

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory June 13, 2022
For your reference, these analyses have been assigned our service request number **K2206479**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring
Sample Matrix: Storm Water

Service Request: K2206479
Date Received: 06/13/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 06/13/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 06/20/2022: The upper control criterion was exceeded for Di-n-butyl Phthalate and Di-n-octyl Phthalate in Continuing Calibration Verification (CCV) KQ2210124-04. The field samples analyzed in this sequence did not contain the analytes in question at a concentration above the MRL. Since the apparent problem indicated a potential high bias, the data quality was not affected. No further corrective action was required.

Method 8270D, 06/20/2022: The upper control criterion was exceeded for the surrogate, p-Terphenyl-d14 in Laboratory Control Sample (LCS) KQ2209812-02 and Method Blank (MB) KQ2209812-01. No target analytes were detected in the Method Blank at a concentration > MRL. All spike recoveries were acceptable for the LCS. The error associated with an elevated recovery equated to a high bias. The quality of the sample data was not significantly affected. No further corrective action was taken.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. For the Initial Calibration Verification (ICV) at least one of the analytical systems in a dual column or dual detector system must meet the criteria. This criteria was met on one column for Aroclor 1260. The data quality was not affected. No further corrective action was necessary.

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl and Aroclor 1016. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



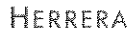
Date

06/27/2022



Chain of Custody

ALS Environmental—Kelso Laboratory
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2200 Sixth Avenue | Suite 1100
Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

KZ2062179

[illegible]

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface Water W=Water (blanks) M=Material O=Other (specify)

PM H2

Cooler Receipt and Preservation Form

Client HERRERA Service Request K22 06479
 Received: 6/13/22 Opened: 6/13/22 By: JH Unloaded: 6/13/22 By: JH

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
 2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** Orange Carboys **NA**
 3. Were custody seals on coolers? **NA** **Y** **N** If yes, how many and where? _____
 If present, were custody seals intact? **Y** **N** If present, were they signed and dated? **Y** **N**

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>PM 0.6</u>	<u>0.6</u>	<u>IR02</u>					
	<u>0.4</u>	<u>"</u>					

4. Was a Temperature Blank present in cooler? **NA** **Y** **N** If yes, notate the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges?

NA **Y** **N**
NA **Y** **N**

If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM.

If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves** _____

7. Were custody papers properly filled out (ink, signed, etc.)?

NA **Y** **N**

8. Were samples received in good condition (unbroken)?

NA **Y** **N**

9. Were all sample labels complete (ie, analysis, preservation, etc.)?

NA **Y** **N**

10. Did all sample labels and tags agree with custody papers?

NA **Y** **N**

11. Were appropriate bottles/containers and volumes received for the tests indicated?

NA **Y** **N**

12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below

NA **Y** **N**

13. Were VOA vials received without headspace? Indicate in the table below.

NA **Y** **N**

14. Was C12/Res negative?

NA **Y** **N**

15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? **NA** **Y** **N** Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: 415.1
Prep Method: None

Service Request: K2206479
Date Collected: 06/10/22
Date Received: 06/13/22
Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2206479-001	4.60	0.50	1	06/23/22 12:11	
WR306-OUT	K2206479-002	4.90	0.50	1	06/23/22 12:11	
Method Blank	K2206479-MB1	ND U	0.50	1	06/23/22 12:11	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479**Date Collected:** 06/10/22**Date Received:** 06/13/22**Date Analyzed:** 06/23/22**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: WR306-OUT
Lab Code: K2206479-002

Units: mg/L**Basis:** NA

				Duplicate Sample K2206479- 002DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic	415.1	0.50	4.90	5.10	5.00	4	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Collected: 06/10/22
Date Received: 06/13/22
Date Analyzed: 06/23/22
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name: WR306-OUT
Lab Code: K2206479-002
Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2206479-002MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	4.90	30.1	25.0	101	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Analyzed: 06/23/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method: 415.1
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 768433

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2206479-LCS1	24.4	25.0	98	83-117

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2206479
Date Collected: 06/10/22
Date Received: 06/13/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2206479-001	153	50	1	06/20/22 15:26	6/20/22	
WR306-OUT	K2206479-002	254	50	1	06/20/22 15:26	6/20/22	
Method Blank	K2206479-MB1	ND U	2.0	1	06/20/22 15:26	NA	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Analyzed: 06/20/22
Date Extracted: NA

Lab Control Sample Summary
Hardness, Total as CaCO3

Analysis Method: SM 2340 C
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 768274

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2206479-LCS1	22.4	21.2	106	90-116

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2206479
Date Collected: 06/10/22
Date Received: 06/13/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2206479-001	113	5.0	-	1	06/14/22 15:50	
WR306-OUT	K2206479-002	75.0	5.0	-	1	06/14/22 15:50	
Method Blank	K2206479-MB1	ND U	5.0	-	1	06/14/22 15:50	
Method Blank	K2206479-MB2	ND U	5.0	-	1	06/14/22 15:50	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Analyzed: 06/14/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 767446

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2206479-LCS1	394	400	99	85-115
Lab Control Sample	K2206479-LCS2	392	400	98	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2206479-001

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.88	ug/L	0.50	0.09	1	06/23/22 12:49	06/23/22	
Cadmium	6020A	0.377	ug/L	0.020	0.008	1	06/23/22 12:49	06/23/22	
Copper	6020A	39.8	ug/L	0.10	0.05	1	06/23/22 12:49	06/23/22	
Lead	6020A	8.84	ug/L	0.020	0.006	1	06/23/22 12:49	06/23/22	
Nickel	6020A	4.14	ug/L	0.20	0.04	1	06/23/22 12:49	06/23/22	
Zinc	6020A	267	ug/L	2.0	0.5	1	06/23/22 12:49	06/23/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2206479-002

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.68	ug/L	0.50	0.09	1	06/23/22 12:51	06/23/22	
Cadmium	6020A	0.217	ug/L	0.020	0.008	1	06/23/22 12:51	06/23/22	
Copper	6020A	27.2	ug/L	0.10	0.05	1	06/23/22 12:51	06/23/22	
Lead	6020A	5.74	ug/L	0.020	0.006	1	06/23/22 12:51	06/23/22	
Nickel	6020A	2.67	ug/L	0.20	0.04	1	06/23/22 12:51	06/23/22	
Zinc	6020A	167	ug/L	2.0	0.5	1	06/23/22 12:51	06/23/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2209735-01

Service Request: K2206479
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	06/23/22 12:45	06/23/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	06/23/22 12:45	06/23/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	06/23/22 12:45	06/23/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	06/23/22 12:45	06/23/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	06/23/22 12:45	06/23/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	06/23/22 12:45	06/23/22	

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QA/QC Report

Client: Herrera Environmental
Project ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479**Date Collected:** 06/10/22**Date Received:** 06/13/22**Date Analyzed:** 06/23/22**Replicate Sample Summary****Total Metals**

Sample Name: WR306-OUT
Lab Code: K2206479-002

Units: ug/L**Basis:** NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample KQ2209735-03	Average	RPD	RPD Limit
					Result			
Arsenic	6020A	0.50	0.09	0.68	0.69	0.69	1	20
Cadmium	6020A	0.020	0.008	0.217	0.224	0.221	3	20
Copper	6020A	0.10	0.05	27.2	28.2	27.7	4	20
Lead	6020A	0.020	0.006	5.74	5.82	5.78	1	20
Nickel	6020A	0.20	0.04	2.67	2.88	2.78	8	20
Zinc	6020A	2.0	0.5	167	167	167	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Collected: 06/10/22
Date Received: 06/13/22
Date Analyzed: 06/23/22
Date Extracted: 06/23/22

Matrix Spike Summary
Total Metals

Sample Name: WR306-OUT
Lab Code: K2206479-002
Analysis Method: 6020A
Prep Method: EPA CLP ILM04.0

Units: ug/L
Basis: NA

Matrix Spike
KQ2209735-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	0.68	49.4	50.0	97	75-125
Cadmium	0.217	25.6	25.0	102	75-125
Copper	27.2	40.2	12.5	104	75-125
Lead	5.74	57.9	50.0	104	75-125
Nickel	2.67	28.0	25.0	101	75-125
Zinc	167	191	25.0	96 #	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479**Date Analyzed:** 06/23/22**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2209735-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	49.5	50.0	99	80-120
Cadmium	6020A	25.0	25.0	100	80-120
Copper	6020A	12.2	12.5	98	80-120
Lead	6020A	51.3	50.0	103	80-120
Nickel	6020A	24.7	25.0	99	80-120
Zinc	6020A	25.4	25.0	102	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2206479
Date Collected: 06/10/2022
Date Received: 06/13/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2206479-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1221	ND	U	0.020	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1232	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1242	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1248	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1254	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1260	ND	U	0.010	0.0064	1	06/17/22	06/18/22	KWG2201158	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	78	10-140	06/18/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2206479
Date Collected: 06/10/2022
Date Received: 06/13/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2206479-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1221	ND	U	0.010	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1232	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1242	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1248	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1254	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1260	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	72	10-140	06/18/22	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2206479
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2201158-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1221	ND	U	0.010	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1232	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1242	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1248	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1254	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	
Aroclor 1260	ND	U	0.0050	0.0032	1	06/17/22	06/18/22	KWG2201158	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	90	10-140	06/18/22	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm water

Service Request: K2206479

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2206479-001	78
WR306-OUT	K2206479-002	72
Method Blank	KWG2201158-1	90
Lab Control Sample	KWG2201158-2	94
Duplicate Lab Control Sample	KWG2201158-3	96

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Water

Service Request: K2206479
Date Extracted: 06/17/2022
Date Analyzed: 06/18/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2201158

Analyte Name	Lab Control Sample KWG2201158-2 Lab Control Spike			Duplicate Lab Control Sample KWG2201158-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.117	0.125	94	0.118	0.125	94	31-164	0	30
Aroclor 1260	0.146	0.125	117	0.149	0.125	119	34-182	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Sample Name: WR306-IN
Lab Code: K2206479-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.040	0.0026	1	06/16/22 17:37	6/14/22	
Acenaphthene	ND U	0.040	0.0024	1	06/16/22 17:37	6/14/22	
Acenaphthylene	ND U	0.040	0.0022	1	06/16/22 17:37	6/14/22	
Anthracene	ND U	0.040	0.0017	1	06/16/22 17:37	6/14/22	
Benz(a)anthracene	0.010 J	0.040	0.0020	1	06/16/22 17:37	6/14/22	
Benzo(a)pyrene	ND U	0.040	0.0022	1	06/16/22 17:37	6/14/22	
Benzo(b)fluoranthene	0.025 J	0.040	0.0017	1	06/16/22 17:37	6/14/22	
Benzo(g,h,i)perylene	0.042	0.040	0.0018	1	06/16/22 17:37	6/14/22	
Benzo(k)fluoranthene	ND U	0.040	0.0019	1	06/16/22 17:37	6/14/22	
Chrysene	0.045	0.040	0.0016	1	06/16/22 17:37	6/14/22	
Dibenz(a,h)anthracene	ND U	0.040	0.0026	1	06/16/22 17:37	6/14/22	
Fluoranthene	0.056	0.040	0.0017	1	06/16/22 17:37	6/14/22	
Fluorene	0.0031 J	0.040	0.0022	1	06/16/22 17:37	6/14/22	
Indeno(1,2,3-cd)pyrene	0.013 J	0.040	0.0018	1	06/16/22 17:37	6/14/22	
Naphthalene	0.0031 J	0.040	0.0028	1	06/16/22 17:37	6/14/22	
Phenanthrene	0.030 J	0.040	0.0022	1	06/16/22 17:37	6/14/22	
Pyrene	0.12	0.040	0.0020	1	06/16/22 17:37	6/14/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	81	42 - 133	06/16/22 17:37	
Fluorene-d10	93	42 - 131	06/16/22 17:37	
Terphenyl-d14	83	32 - 129	06/16/22 17:37	

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Sample Name: WR306-OUT
Lab Code: K2206479-002

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.035	0.020	0.0013	1	06/16/22 18:02	6/14/22	
Acenaphthene	0.011 J	0.020	0.0012	1	06/16/22 18:02	6/14/22	
Acenaphthylene	0.0025 J	0.020	0.0011	1	06/16/22 18:02	6/14/22	
Anthracene	0.0088 J	0.020	0.00082	1	06/16/22 18:02	6/14/22	
Benz(a)anthracene	0.0081 J	0.020	0.00097	1	06/16/22 18:02	6/14/22	
Benzo(a)pyrene	0.0092 J	0.020	0.0011	1	06/16/22 18:02	6/14/22	
Benzo(b)fluoranthene	0.014 J	0.020	0.00083	1	06/16/22 18:02	6/14/22	
Benzo(g,h,i)perylene	0.020 J	0.020	0.00086	1	06/16/22 18:02	6/14/22	
Benzo(k)fluoranthene	0.0045 J	0.020	0.00094	1	06/16/22 18:02	6/14/22	
Chrysene	0.022	0.020	0.00076	1	06/16/22 18:02	6/14/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	06/16/22 18:02	6/14/22	
Fluoranthene	0.041	0.020	0.00082	1	06/16/22 18:02	6/14/22	
Fluorene	0.021	0.020	0.0011	1	06/16/22 18:02	6/14/22	
Indeno(1,2,3-cd)pyrene	0.0074 J	0.020	0.00089	1	06/16/22 18:02	6/14/22	
Naphthalene	0.026	0.020	0.0014	1	06/16/22 18:02	6/14/22	
Phenanthrene	0.041	0.020	0.0011	1	06/16/22 18:02	6/14/22	
Pyrene	0.081	0.020	0.0010	1	06/16/22 18:02	6/14/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	80	42 - 133	06/16/22 18:02	
Fluorene-d10	90	42 - 131	06/16/22 18:02	
Terphenyl-d14	81	32 - 129	06/16/22 18:02	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2206479-001	81	93	83
WR306-OUT	K2206479-002	80	90	81
Method Blank	KQ2209751-01	78	86	64
Lab Control Sample	KQ2209751-02	82	86	70
Duplicate Lab Control Sample	KQ2209751-03	75	78	66

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Sample Name: Method Blank
Lab Code: KQ2209751-01

Service Request: K2206479
Date Collected: NA
Date Received: NA

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	06/16/22 16:20	6/14/22	
Acenaphthene	ND U	0.020	0.0012	1	06/16/22 16:20	6/14/22	
Acenaphthylene	ND U	0.020	0.0011	1	06/16/22 16:20	6/14/22	
Anthracene	ND U	0.020	0.00082	1	06/16/22 16:20	6/14/22	
Benz(a)anthracene	0.0016 J	0.020	0.00097	1	06/16/22 16:20	6/14/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	06/16/22 16:20	6/14/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	06/16/22 16:20	6/14/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	06/16/22 16:20	6/14/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	06/16/22 16:20	6/14/22	
Chrysene	ND U	0.020	0.00076	1	06/16/22 16:20	6/14/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	06/16/22 16:20	6/14/22	
Fluoranthene	ND U	0.020	0.00082	1	06/16/22 16:20	6/14/22	
Fluorene	ND U	0.020	0.0011	1	06/16/22 16:20	6/14/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	06/16/22 16:20	6/14/22	
Naphthalene	0.0025 J	0.020	0.0014	1	06/16/22 16:20	6/14/22	
Phenanthrene	0.0024 J	0.020	0.0011	1	06/16/22 16:20	6/14/22	
Pyrene	ND U	0.020	0.0010	1	06/16/22 16:20	6/14/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	78	42 - 133	06/16/22 16:20	
Fluorene-d10	86	42 - 131	06/16/22 16:20	
Terphenyl-d14	64	32 - 129	06/16/22 16:20	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479
Date Analyzed: 06/16/22
Date Extracted: 06/14/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 767781

Lab Control Sample
KQ2209751-02

Duplicate Lab Control Sample
KQ2209751-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.48	2.78	89	2.28	2.78	82	48-120	8	30
Acenaphthene	2.59	2.78	93	2.35	2.78	85	63-121	10	30
Acenaphthylene	2.60	2.78	93	2.38	2.78	86	58-124	9	30
Anthracene	2.66	2.78	96	2.41	2.78	87	68-127	10	30
Benz(a)anthracene	2.66	2.78	96	2.44	2.78	88	74-124	9	30
Benzo(a)pyrene	2.70	2.78	97	2.48	2.78	89	75-131	8	30
Benzo(b)fluoranthene	2.71	2.78	98	2.48	2.78	89	73-136	9	30
Benzo(g,h,i)perylene	2.55	2.78	92	2.36	2.78	85	63-127	8	30
Benzo(k)fluoranthene	2.58	2.78	93	2.40	2.78	86	74-134	7	30
Chrysene	2.65	2.78	95	2.45	2.78	88	74-132	8	30
Dibenz(a,h)anthracene	2.73	2.78	98	2.53	2.78	91	59-135	8	30
Fluoranthene	2.43	2.78	87	2.21	2.78	80	70-127	9	30
Fluorene	2.60	2.78	94	2.39	2.78	86	68-121	8	30
Indeno(1,2,3-cd)pyrene	2.81	2.78	101	2.59	2.78	93	63-136	8	30
Naphthalene	2.58	2.78	93	2.37	2.78	85	52-115	8	30
Phenanthrene	2.62	2.78	94	2.38	2.78	86	64-126	10	30
Pyrene	2.83	2.78	102	2.54	2.78	92	72-127	11	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2206479-001

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	6.3	0.98	0.13	1	06/20/22 18:50	6/15/22	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	06/20/22 18:50	6/15/22	
Di-n-butyl Phthalate	0.18 J	0.20	0.023	1	06/20/22 18:50	6/15/22	*
Di-n-octyl Phthalate	ND U	0.20	0.033	1	06/20/22 18:50	6/15/22	*
Diethyl Phthalate	0.14 J	0.20	0.015	1	06/20/22 18:50	6/15/22	
Dimethyl Phthalate	0.47	0.20	0.021	1	06/20/22 18:50	6/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	80	35 - 105	06/20/22 18:50	
Nitrobenzene-d5	107	40 - 117	06/20/22 18:50	
p-Terphenyl-d14	92	48 - 109	06/20/22 18:50	

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2206479-002

Service Request: K2206479
Date Collected: 06/10/22 05:07
Date Received: 06/13/22 11:05

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	5.2	0.98	0.13	1	06/20/22 19:19	6/15/22	
Butyl Benzyl Phthalate	ND U	0.20	0.021	1	06/20/22 19:19	6/15/22	
Di-n-butyl Phthalate	0.14 J	0.20	0.023	1	06/20/22 19:19	6/15/22	*
Di-n-octyl Phthalate	ND U	0.20	0.033	1	06/20/22 19:19	6/15/22	*
Diethyl Phthalate	0.24	0.20	0.015	1	06/20/22 19:19	6/15/22	
Dimethyl Phthalate	0.40	0.20	0.021	1	06/20/22 19:19	6/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	80	35 - 105	06/20/22 19:19	
Nitrobenzene-d5	103	40 - 117	06/20/22 19:19	
p-Terphenyl-d14	102	48 - 109	06/20/22 19:19	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water

Service Request: K2206479

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2206479-001	80	107	92
WR306-OUT	K2206479-002	80	103	102
Method Blank	KQ2209812-01	96	98	126*
Lab Control Sample	KQ2209812-02	96	102	110*
Duplicate Lab Control Sample	KQ2209812-03	98	105	106

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Analytical Report

Client: Herrera Environmental
Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2209812-01

Service Request: K2206479
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.33 J	0.98	0.13	1	06/20/22 17:25	6/15/22	
Butyl Benzyl Phthalate	0.19 J	0.20	0.021	1	06/20/22 17:25	6/15/22	
Di-n-butyl Phthalate	ND U	0.20	0.023	1	06/20/22 17:25	6/15/22	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	06/20/22 17:25	6/15/22	
Diethyl Phthalate	ND U	0.20	0.015	1	06/20/22 17:25	6/15/22	
Dimethyl Phthalate	ND U	0.20	0.021	1	06/20/22 17:25	6/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	96	35 - 105	06/20/22 17:25	
Nitrobenzene-d5	98	40 - 117	06/20/22 17:25	
p-Terphenyl-d14	126	48 - 109	06/20/22 17:25	*

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT_Portland Harbor Perf.Monitoring/10-04681-001

Sample Matrix: Storm Water

Service Request: K2206479

Date Analyzed: 06/20/22

Date Extracted: 06/15/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 768130

Lab Control Sample
KQ2209812-02

Duplicate Lab Control Sample
KQ2209812-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	5.49	5.00	110	6.09	5.00	122	42-147	10	30
Butyl Benzyl Phthalate	5.36	5.00	107	5.59	5.00	112	59-119	4	30
Diethyl Phthalate	5.09	5.00	102	5.21	5.00	104	58-114	2	30
Dimethyl Phthalate	4.82	5.00	96	4.97	5.00	99	58-109	3	30
Di-n-butyl Phthalate	5.47	5.00	109	5.56	5.00	111	61-121	2	30
Di-n-octyl Phthalate	5.20	5.00	104	5.33	5.00	107	50-125	2	30



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November 29, 2022

Analytical Report for Service Request No: K2212509

Jess Brown
Herrera Environmental
1001 SE Water Ave - Suite 290
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory October 25, 2022
For your reference, these analyses have been assigned our service request number **K2212509**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2212509
Date Received: 10/25/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three storm water samples were received for analysis at ALS Environmental on 10/25/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 11/02/2022: The Method Blank KQ2219074-01 contained low levels of Bis(2-ethylhexyl) Phthalate above the Method Reporting Limit (MRL). All sample results for this analyte were flagged B.

Method 8270D, 11/08/2022: Benzo(g,h,i)perylene was flagged as outside the control criterion for Continuing Calibration Verification (CCV). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Method 8270D, 11/08/2022: The internal standard recovery of Acenaphthene-d10 in sample WR306-OUT was outside control criteria because of matrix interference. Sample was ran at a dilution and the IS came into control, the results quantified using this internal standard were reported from the dilution.

Semivolatile GC:

No significant anomalies were noted with this analysis.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

11/29/2022



Chain of Custody

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Seattle, Washington | 98121
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Chain of Custody Record

K22 12509

Project Name: ODOT – Portland Harbor Perf. Monitoring		Project Number: 10-04681-006		Client: OR Department of Transportation		Number of Containers	Analyses Requested										Lab ID No.
Report To: Jess Brown, JBrown@herrerainc.com		Copy To: SNilsson@herrerainc.com		Delivery Method: Courier			TSS – SM 2540D	TOC – EPA 415.1	Hardness – SM 2340C	Total Metals – EPA 6020A	PCBs – EPA 8082A	PAHs – EPA 8270 SIM	Phthalates – EPA 8270D_LL				
Sampled By: S Nilsson		Requested Completion Date:		Total No. of Containers: 2													
Laboratory: ALS																	
Lab Use:																	
Sample ID	Date	Time	Sample Type (see codes)	Preservative? (Y/N)	Matrix (see codes)												
WR306-IN	10/24/22	1133	C	N	SW	1	X	X	X	X	X	X	X				
WR306-OUT	10/24/22	1133	C	N	SW	1	X	X	X	X	X	X	X				
Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn																	
Relinquished by (Name/CO/) S. Nilsson / Herrera		Signature 		Date/Time 10/25/22 0935		Received By (Name/CO/) ALS		Signature 		Date/Time 10/25/22 0935							
Relinquished by (Name/CO/) ALS		Signature 		Date/Time 10/25/22 1230		Received By (Name/CO/) ALS		Signature 		Date/Time 10/25/22 1230							

Sample Type: G=Grab C=Composite

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface/Storm Water W=Water (blanks) M=Material O=Other (specify)

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 12509
 Received: 10/25/22 Opened: 10/25/22 By: AP Unloaded: 10/25/22 By: AP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other Carton NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number <u>NA</u>	Filed
	<u>1.2</u>	<u>1602</u>					
	<u>0.1</u>	<u>✓</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

ALS Environmental—Kelso Laboratory
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dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2212509
Date Collected: 10/24/22
Date Received: 10/25/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2212509-001	27.3	2.0	1	11/14/22 17:18	11/14/22	
WR306-OUT	K2212509-002	27.3	2.0	1	11/14/22 17:18	11/14/22	
Method Blank	K2212509-MB1	ND U	2.0	1	11/14/22 17:18	11/14/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509
Date Analyzed: 11/14/22
Date Extracted: 11/14/22

Lab Control Sample Summary
Hardness, Total as CaCO3

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 785197

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2212509-LCS	66.4	69.4	96	90-116

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2212509
Date Collected: 10/24/22
Date Received: 10/25/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2212509-001	68.5	5.0	-	1	10/29/22 11:41	
WR306-OUT	K2212509-002	62.0	5.0	-	1	10/29/22 11:41	
Method Blank	K2212509-MB1	ND U	5.0	-	1	10/29/22 11:41	
Method Blank	K2212509-MB2	ND U	5.0	-	1	10/29/22 11:41	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509
Date Analyzed: 10/29/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 783247

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2212509-LCS	392	400	98	85-115

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2212509
Date Collected: 10/24/22
Date Received: 10/25/22
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2212509-001	27.0	5.0	10	11/01/22 14:43	
WR306-OUT	K2212509-002	24.0	5.0	10	11/01/22 14:43	
Method Blank	K2212509-MB1	ND U	0.50	1	11/01/22 14:43	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509
Date Analyzed: 11/01/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 783540

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2212509-LCS	25.3	25.0	101	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2212509-001

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.91	ug/L	0.50	0.09	1	10/27/22 18:14	10/26/22	
Cadmium	6020A	0.288	ug/L	0.020	0.008	1	10/27/22 18:14	10/26/22	
Copper	6020A	48.2	ug/L	0.10	0.05	1	10/27/22 18:14	10/26/22	
Lead	6020A	7.57	ug/L	0.020	0.006	1	10/27/22 18:14	10/26/22	
Nickel	6020A	5.31	ug/L	0.20	0.04	1	10/27/22 18:14	10/26/22	
Zinc	6020A	260	ug/L	2.0	0.5	1	10/27/22 18:14	10/26/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2212509-002

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.94	ug/L	0.50	0.09	1	10/27/22 18:16	10/26/22	
Cadmium	6020A	0.288	ug/L	0.020	0.008	1	10/27/22 18:16	10/26/22	
Copper	6020A	46.5	ug/L	0.10	0.05	1	10/27/22 18:16	10/26/22	
Lead	6020A	7.30	ug/L	0.020	0.006	1	10/27/22 18:16	10/26/22	
Nickel	6020A	5.15	ug/L	0.20	0.04	1	10/27/22 18:16	10/26/22	
Zinc	6020A	244	ug/L	2.0	0.5	1	10/27/22 18:16	10/26/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2218477-01

Service Request: K2212509
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	10/27/22 16:53	10/26/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	10/27/22 16:53	10/26/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	10/27/22 16:53	10/26/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	10/27/22 16:53	10/26/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	10/27/22 16:53	10/26/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	10/27/22 16:53	10/26/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509
Date Analyzed: 10/27/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2218477-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	50.6	50.0	101	80-120
Cadmium	6020A	26.6	25.0	106	80-120
Copper	6020A	13.3	12.5	106	80-120
Lead	6020A	51.4	50.0	103	80-120
Nickel	6020A	25.3	25.0	101	80-120
Zinc	6020A	25.9	25.0	103	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2212509
Date Collected: 10/24/2022
Date Received: 10/25/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2212509-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1221	ND	U	0.010	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1232	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1242	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1248	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1254	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1260	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	54	10-140	11/15/22	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2212509
Date Collected: 10/24/2022
Date Received: 10/25/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2212509-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1221	ND	U	0.010	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1232	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1242	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1248	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1254	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	
Aroclor 1260	ND	U	0.0050	0.0032	1	11/10/22	11/15/22	KWG2202226	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	57	10-140	11/15/22	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2212509
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2202226-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1221	ND	U	0.010	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1232	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1242	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1248	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1254	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	
Aroclor 1260	ND	U	0.0050	0.0032	1	11/10/22	11/14/22	KWG2202226	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	85	10-140	11/14/22	Acceptable

Comments: _____

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2212509

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2212509-001	54
WR306-OUT	K2212509-002	57
Method Blank	KWG2202226-1	85
Lab Control Sample	KWG2202226-2	77
Duplicate Lab Control Sample	KWG2202226-3	75

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2212509
Date Extracted: 11/10/2022
Date Analyzed: 11/14/2022

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2202226

Analyte Name	Lab Control Sample KWG2202226-2 Lab Control Spike			Duplicate Lab Control Sample KWG2202226-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.0975	0.125	78	0.0982	0.125	79	31-164	1	30
Aroclor 1260	0.116	0.125	92	0.116	0.125	93	34-182	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2212509-001

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.021 J	0.021	0.0014	1	11/08/22 00:41	10/31/22	
Acenaphthene	ND U	0.021	0.0013	1	11/08/22 00:41	10/31/22	
Acenaphthylene	0.097	0.021	0.0012	1	11/08/22 00:41	10/31/22	
Anthracene	ND U	0.021	0.00088	1	11/08/22 00:41	10/31/22	
Benz(a)anthracene	0.019 J	0.021	0.0011	1	11/08/22 00:41	10/31/22	
Benzo(a)pyrene	ND U	0.021	0.0012	1	11/08/22 00:41	10/31/22	
Benzo(b)fluoranthene	0.034	0.021	0.00089	1	11/08/22 00:41	10/31/22	
Benzo(g,h,i)perylene	0.053	0.021	0.00092	1	11/08/22 00:41	10/31/22	*
Benzo(k)fluoranthene	0.013 J	0.021	0.0010	1	11/08/22 00:41	10/31/22	
Chrysene	0.051	0.021	0.00081	1	11/08/22 00:41	10/31/22	
Dibenz(a,h)anthracene	ND U	0.021	0.0014	1	11/08/22 00:41	10/31/22	
Fluoranthene	0.13	0.021	0.00088	1	11/08/22 00:41	10/31/22	
Fluorene	ND U	0.021	0.0012	1	11/08/22 00:41	10/31/22	
Indeno(1,2,3-cd)pyrene	0.020 J	0.021	0.00095	1	11/08/22 00:41	10/31/22	
Naphthalene	0.033	0.021	0.0015	1	11/08/22 00:41	10/31/22	
Phenanthrene	0.095	0.021	0.0012	1	11/08/22 00:41	10/31/22	
Pyrene	0.22	0.021	0.0011	1	11/08/22 00:41	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	64	42 - 133	11/08/22 00:41	
Fluorene-d10	80	42 - 131	11/08/22 00:41	
Terphenyl-d14	59	32 - 129	11/08/22 00:41	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2212509-002

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.022 J	0.023	0.0015	1	11/08/22 01:06	10/31/22	
Acenaphthene	ND U	0.11	0.0068	5	11/03/22 14:20	10/31/22	
Acenaphthylene	ND U	0.11	0.0062	5	11/03/22 14:20	10/31/22	
Anthracene	ND U	0.023	0.00093	1	11/08/22 01:06	10/31/22	
Benz(a)anthracene	0.024	0.023	0.0011	1	11/08/22 01:06	10/31/22	
Benzo(a)pyrene	ND U	0.023	0.0013	1	11/08/22 01:06	10/31/22	
Benzo(b)fluoranthene	0.040	0.023	0.00094	1	11/08/22 01:06	10/31/22	
Benzo(g,h,i)perylene	0.056	0.023	0.00097	1	11/08/22 01:06	10/31/22	*
Benzo(k)fluoranthene	0.015 J	0.023	0.0011	1	11/08/22 01:06	10/31/22	
Chrysene	0.055	0.023	0.00086	1	11/08/22 01:06	10/31/22	
Dibenz(a,h)anthracene	ND U	0.023	0.0015	1	11/08/22 01:06	10/31/22	
Fluoranthene	0.14	0.023	0.00093	1	11/08/22 01:06	10/31/22	
Fluorene	ND U	0.11	0.0062	5	11/03/22 14:20	10/31/22	
Indeno(1,2,3-cd)pyrene	0.024	0.023	0.0011	1	11/08/22 01:06	10/31/22	
Naphthalene	0.036	0.023	0.0016	1	11/08/22 01:06	10/31/22	
Phenanthrene	0.097	0.023	0.0013	1	11/08/22 01:06	10/31/22	
Pyrene	0.23	0.023	0.0012	1	11/08/22 01:06	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	66	42 - 133	11/08/22 01:06	
Fluorene-d10	75	42 - 131	11/03/22 14:20	
Terphenyl-d14	65	32 - 129	11/08/22 01:06	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2212509-001	64	80	59
WR306-OUT	K2212509-002	66	75	65
Method Blank	KQ2219110-01	69	71	72
Lab Control Sample	KQ2219110-02	85	84	87
Duplicate Lab Control Sample	KQ2219110-03	90	86	86

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2219110-01

Service Request: K2212509
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.021	0.0014	1	11/03/22 11:53	10/31/22	
Acenaphthene	ND U	0.021	0.0013	1	11/03/22 11:53	10/31/22	
Acenaphthylene	ND U	0.021	0.0012	1	11/03/22 11:53	10/31/22	
Anthracene	ND U	0.021	0.00088	1	11/03/22 11:53	10/31/22	
Benz(a)anthracene	ND U	0.021	0.0011	1	11/03/22 11:53	10/31/22	
Benzo(a)pyrene	ND U	0.021	0.0012	1	11/03/22 11:53	10/31/22	
Benzo(b)fluoranthene	ND U	0.021	0.00089	1	11/03/22 11:53	10/31/22	
Benzo(g,h,i)perylene	ND U	0.021	0.00092	1	11/03/22 11:53	10/31/22	
Benzo(k)fluoranthene	ND U	0.021	0.0010	1	11/03/22 11:53	10/31/22	
Chrysene	ND U	0.021	0.00081	1	11/03/22 11:53	10/31/22	
Dibenz(a,h)anthracene	ND U	0.021	0.0014	1	11/03/22 11:53	10/31/22	
Fluoranthene	ND U	0.021	0.00088	1	11/03/22 11:53	10/31/22	
Fluorene	ND U	0.021	0.0012	1	11/03/22 11:53	10/31/22	
Indeno(1,2,3-cd)pyrene	ND U	0.021	0.00095	1	11/03/22 11:53	10/31/22	
Naphthalene	ND U	0.021	0.0015	1	11/03/22 11:53	10/31/22	
Phenanthrene	ND U	0.021	0.0012	1	11/03/22 11:53	10/31/22	
Pyrene	ND U	0.021	0.0011	1	11/03/22 11:53	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	69	42 - 133	11/03/22 11:53	
Fluorene-d10	71	42 - 131	11/03/22 11:53	
Terphenyl-d14	72	32 - 129	11/03/22 11:53	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509
Date Analyzed: 11/03/22
Date Extracted: 10/31/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3520C

Units: ug/L
Basis: NA
Analysis Lot: 783836

Lab Control Sample
KQ2219110-02

Duplicate Lab Control Sample
KQ2219110-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.64	2.50	105	2.90	2.50	116	48-120	9	30
Acenaphthene	2.75	2.50	110	2.83	2.50	113	63-121	3	30
Acenaphthylene	2.63	2.50	105	2.71	2.50	108	58-124	3	30
Anthracene	2.41	2.50	96	2.58	2.50	103	68-127	7	30
Benz(a)anthracene	2.59	2.50	103	2.63	2.50	105	74-124	2	30
Benzo(a)pyrene	2.52	2.50	101	2.63	2.50	105	75-131	4	30
Benzo(b)fluoranthene	2.54	2.50	102	2.67	2.50	107	73-136	5	30
Benzo(g,h,i)perylene	2.88	2.50	115	3.00	2.50	120	63-127	4	30
Benzo(k)fluoranthene	2.73	2.50	109	2.86	2.50	114	74-134	5	30
Chrysene	3.11	2.50	125	3.13	2.50	125	74-132	<1	30
Dibenz(a,h)anthracene	2.61	2.50	104	2.70	2.50	108	59-135	3	30
Fluoranthene	2.69	2.50	108	2.80	2.50	112	70-127	4	30
Fluorene	2.55	2.50	102	2.63	2.50	105	68-121	3	30
Indeno(1,2,3-cd)pyrene	2.69	2.50	108	2.76	2.50	110	63-136	3	30
Naphthalene	2.47	2.50	99	2.79	2.50	111	52-115	12	30
Phenanthrene	2.56	2.50	102	2.66	2.50	106	64-126	4	30
Pyrene	2.94	2.50	118	2.98	2.50	119	72-127	1	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2212509-001

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	7.3 B	0.95	0.13	1	11/01/22 23:48	10/31/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	11/01/22 23:48	10/31/22	
Di-n-butyl Phthalate	0.38	0.19	0.023	1	11/01/22 23:48	10/31/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	11/01/22 23:48	10/31/22	
Diethyl Phthalate	0.16 J	0.19	0.015	1	11/01/22 23:48	10/31/22	
Dimethyl Phthalate	0.45	0.19	0.021	1	11/01/22 23:48	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	37	35 - 105	11/01/22 23:48	
Nitrobenzene-d5	78	40 - 117	11/01/22 23:48	
p-Terphenyl-d14	78	48 - 109	11/01/22 23:48	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2212509-002

Service Request: K2212509
Date Collected: 10/24/22 11:33
Date Received: 10/25/22 12:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	6.9 B	0.94	0.13	1	11/02/22 00:17	10/31/22	
Butyl Benzyl Phthalate	0.61 B	0.19	0.021	1	11/02/22 00:17	10/31/22	
Di-n-butyl Phthalate	0.37	0.19	0.023	1	11/02/22 00:17	10/31/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	11/02/22 00:17	10/31/22	
Diethyl Phthalate	0.16 J	0.19	0.015	1	11/02/22 00:17	10/31/22	
Dimethyl Phthalate	0.47	0.19	0.021	1	11/02/22 00:17	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	36	35 - 105	11/02/22 00:17	
Nitrobenzene-d5	81	40 - 117	11/02/22 00:17	
p-Terphenyl-d14	74	48 - 109	11/02/22 00:17	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2212509

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2212509-001	37	78	78
WR306-OUT	K2212509-002	36	81	74
Method Blank	KQ2219074-01	70	72	81
Lab Control Sample	KQ2219074-02	71	72	69
Duplicate Lab Control Sample	KQ2219074-03	79	83	78

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2219074-01

Service Request: K2212509
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	2.0	0.94	0.13	1	11/01/22 18:34	10/31/22	
Butyl Benzyl Phthalate	0.26	0.19	0.021	1	11/01/22 18:34	10/31/22	
Di-n-butyl Phthalate	0.16 J	0.19	0.023	1	11/01/22 18:34	10/31/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	11/01/22 18:34	10/31/22	
Diethyl Phthalate	ND U	0.19	0.015	1	11/01/22 18:34	10/31/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	11/01/22 18:34	10/31/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	70	35 - 105	11/01/22 18:34	
Nitrobenzene-d5	72	40 - 117	11/01/22 18:34	
p-Terphenyl-d14	81	48 - 109	11/01/22 18:34	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2212509

Date Analyzed: 11/01/22

Date Extracted: 10/31/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 783730

Lab Control Sample
KQ2219074-02

Duplicate Lab Control Sample
KQ2219074-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	5.93	5.00	119	6.62	5.00	132	42-147	11	30
Butyl Benzyl Phthalate	4.10	5.00	82	4.56	5.00	91	59-119	11	30
Diethyl Phthalate	3.92	5.00	78	4.41	5.00	88	58-114	12	30
Dimethyl Phthalate	3.62	5.00	72	4.10	5.00	82	58-109	13	30
Di-n-butyl Phthalate	3.77	5.00	75	4.12	5.00	82	61-121	9	30
Di-n-octyl Phthalate	4.19	5.00	84	4.63	5.00	93	50-125	10	30



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January 25, 2023

Analytical Report for Service Request No: K2213918

Jess Brown
Herrera Environmental
107 SE Washington St Suite 140
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory November 23, 2022
For your reference, these analyses have been assigned our service request number **K2213918**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2213918
Date Received: 11/23/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 11/23/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 01/07/2023: Bis(2-ethylhexyl) Phthalate was flagged as outside the control criterion for Continuing Calibration Verification (CCV). In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Method 8270D: The Method Blank KQ2220948-01 contained low levels of Butyl Benzyl Phthalate above the Method Reporting Limit (MRL). This analyte was not detected in the associated samples.

Semivolatile GC:

Method 8082A: The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for DCB. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

01/25/2023



Chain of Custody

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Seattle, Washington | 98121
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Chain of Custody Record

K2213918

Project Name: ODOT – Portland Harbor Perf. Monitoring		Project Number: 10-04681-006		Client: OR Department of Transportation		Number of Containers	Analyses Requested										Lab ID No.
Report To: Jess Brown, JBrown@herrerainc.com		Copy To: SNilsson@herrerainc.com		Delivery Method: Courier			TSS – SM 2540D	TOC – EPA 415.1	Hardness – SM 2340C	Total Metals – EPA 6020A	PCBs – EPA 8082A	PAHs – EPA 8270 SIM	Phthalates – EPA 8270D_LL				
Sampled By: S Nilsson		Requested Completion Date:		Total No. of Containers: 2													
Laboratory: ALS																	
Lab Use:																	
Sample ID	Date	Time	Sample Type (see codes)	Preservative? (Y/N)	Matrix (see codes)												
WR306-IN	11/22/22	1531	C	N	SW	1	X	X	X	X	X	X	X				
WR306-OUT	11/22/22	1531	C	N	SW	1	X	X	X	X	X	X	X				
Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn																	
Relinquished by (Name/CO/) S Nilsson / Herrera		Signature 		Date/Time 11/23/22 @ 1020		Received By (Name/CO) Greg Rich		Signature 		Date/Time 11/23/22 1020							
Relinquished by (Name/CO/) Greg Rich		Signature 		Date/Time 11/23/22 1250		Received By (Name/CO) Wadehyn Miteric		Signature 		Date/Time 11/23/22 1250							
Sample Type: G=Grab C=Composite Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface/Storm Water W=Water (blanks) M=Material O=Other (specify)																	

Cooler Receipt and Preservation Form

PM 11/13/22

Client Hecceca Service Request K22 13918
 Received: 11/23/22 Opened: 11/23/22 By: VM Unloaded: 11/23/22 By: VM

- Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
- Samples were received in: (circle) Cooler Box Envelope Other NA
- Were custody seals on coolers? NA Y N If yes, how many and where? NA
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
<u>0.2m</u>	<u>0.2</u>	<u>IR02</u>	<u>Cooler 1</u>				
<u>0.5m</u>	<u>0.5</u>	<u>IR02</u>	<u>Cooler 2</u>				

- Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

- Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

- Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
- Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- Were samples received in good condition (unbroken) NA Y N
- Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
- Did all sample labels and tags agree with custody papers? NA Y N
- Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
- Were VOA vials received without headspace? Indicate in the table below NA Y N
- Was C12/Res negative? NA Y N
- Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

1/13/22



General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2213918
Date Collected: 11/22/22
Date Received: 11/23/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2213918-001	153	10	1	12/02/22 15:52	12/2/22	
WR306-OUT	K2213918-002	81	10	1	12/02/22 15:52	12/2/22	
Method Blank	K2213918-MB1	ND U	2.0	1	12/02/22 15:52	12/2/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Analyzed: 12/02/22
Date Extracted: 12/02/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 787218

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2213918-LCS	62.2	69.4	90	90-116

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2213918
Date Collected: 11/22/22
Date Received: 11/23/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2213918-001	161	6.7	-	1	11/29/22 09:49	
WR306-OUT	K2213918-002	157	6.7	-	1	11/29/22 09:49	
Method Blank	K2213918-MB1	ND U	5.0	-	1	11/29/22 09:49	
Method Blank	K2213918-MB2	ND U	5.0	-	1	11/29/22 09:49	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Analyzed: 11/29/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 786632

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2213918-LCS	400	400	100	85-115

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2213918
Date Collected: 11/22/22
Date Received: 11/23/22
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2213918-001	27.6	2.0	4	12/12/22 15:14	
WR306-OUT	K2213918-002	30.8	2.0	4	12/12/22 15:14	
Method Blank	K2213918-MB1	ND U	0.50	1	12/12/22 15:14	

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918**Date Collected:** 11/22/22**Date Received:** 11/23/22**Date Analyzed:** 12/12/22**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: WR306-OUT
Lab Code: K2213918-002

Units: mg/L**Basis:** NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
				K2213918-002DUP Result			
Carbon, Total Organic (TOC)	SM 5310 B	2.0	30.8	31.2	31.0	1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Collected: 11/22/22
Date Received: 11/23/22
Date Analyzed: 12/12/22
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name: WR306-OUT
Lab Code: K2213918-002
Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2213918-002MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	30.8	133	100	102	85-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Analyzed: 12/12/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 788187

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2213918-LCS	25.1	25.0	100	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2213918-001

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.35	ug/L	0.50	0.09	1	11/30/22 19:11	11/29/22	
Cadmium	6020A	0.542	ug/L	0.020	0.008	1	11/30/22 19:11	11/29/22	
Copper	6020A	61.6	ug/L	0.10	0.05	1	11/30/22 19:11	11/29/22	
Lead	6020A	13.0	ug/L	0.020	0.006	1	11/30/22 19:11	11/29/22	
Nickel	6020A	6.70	ug/L	0.20	0.04	1	12/06/22 11:22	12/02/22	
Zinc	6020A	427	ug/L	2.0	0.5	1	11/30/22 19:11	11/29/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2213918-002

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.31	ug/L	0.50	0.09	1	12/01/22 13:49	11/29/22	
Cadmium	6020A	0.570	ug/L	0.020	0.008	1	12/01/22 13:49	11/29/22	
Copper	6020A	61.6	ug/L	0.10	0.05	1	12/01/22 13:49	11/29/22	
Lead	6020A	12.4	ug/L	0.020	0.006	1	12/01/22 13:49	11/29/22	
Nickel	6020A	7.64	ug/L	0.20	0.04	1	12/06/22 11:23	12/02/22	
Zinc	6020A	443	ug/L	2.0	0.5	1	12/01/22 13:49	11/29/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2221025-01

Service Request: K2213918
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	11/30/22 18:30	11/29/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	11/30/22 18:30	11/29/22	
Copper	6020A	0.07 J	ug/L	0.10	0.05	1	11/30/22 18:30	11/29/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	11/30/22 18:30	11/29/22	
Zinc	6020A	1.3 J	ug/L	2.0	0.5	1	11/30/22 18:30	11/29/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2221268-01

Service Request: K2213918
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Nickel	6020A	ND U	ug/L	0.20	0.04	1	12/06/22 11:18	12/02/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918**Date Analyzed:** 11/30/22**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2221025-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	51.3	50.0	103	80-120
Cadmium	6020A	27.1	25.0	109	80-120
Copper	6020A	13.3	12.5	107	80-120
Lead	6020A	52.8	50.0	106	80-120
Zinc	6020A	26.8	25.0	107	80-120

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918**Date Analyzed:** 12/06/22**Duplicate Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2221268-02

Duplicate Lab Control Sample

KQ2221268-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Nickel	6020A	24.9	25.0	100	24.9	25.0	100	80-120	<1	20



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2213918
Date Collected: 11/22/2022
Date Received: 11/23/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2213918-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1221	ND	U	0.010	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1232	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1242	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1248	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1254	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1260	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	32	10-140	01/07/23	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2213918
Date Collected: 11/22/2022
Date Received: 11/23/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2213918-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1221	ND	U	0.010	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1232	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1242	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1248	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1254	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	
Aroclor 1260	ND	U	0.0050	0.0032	1	12/22/22	01/07/23	KWG2300127	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	32	10-140	01/07/23	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2213918
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2300127-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1221	ND	U	0.010	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1232	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1242	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1248	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1254	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	
Aroclor 1260	ND	U	0.0050	0.0032	1	12/22/22	01/06/23	KWG2300127	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-140	01/06/23	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2213918

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2213918-001	32
WR306-OUT	K2213918-002	32
Method Blank	KWG2300127-1	88
Lab Control Sample	KWG2300127-2	91

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2213918
Date Extracted: 12/22/2022
Date Analyzed: 01/06/2023

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2300127

Lab Control Sample
KWG2300127-2
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	0.124	0.125	99	31-164
Aroclor 1260	0.149	0.125	119	34-182

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Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2213918-001

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.021	0.020	0.0013	1	11/30/22 12:21	11/29/22	
Acenaphthene	0.0095 J	0.020	0.0012	1	11/30/22 12:21	11/29/22	
Acenaphthylene	0.0089 J	0.020	0.0011	1	11/30/22 12:21	11/29/22	
Anthracene	0.011 J	0.020	0.00082	1	11/30/22 12:21	11/29/22	
Benz(a)anthracene	0.018 J	0.020	0.00097	1	11/30/22 12:21	11/29/22	
Benzo(a)pyrene	0.057	0.020	0.0011	1	11/30/22 12:21	11/29/22	
Benzo(b)fluoranthene	0.025	0.020	0.00083	1	11/30/22 12:21	11/29/22	
Benzo(g,h,i)perylene	0.028	0.020	0.00086	1	11/30/22 12:21	11/29/22	
Benzo(k)fluoranthene	0.0049 J	0.020	0.00094	1	11/30/22 12:21	11/29/22	
Chrysene	0.045	0.020	0.00076	1	11/30/22 12:21	11/29/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	11/30/22 12:21	11/29/22	
Fluoranthene	0.12	0.020	0.00082	1	11/30/22 12:21	11/29/22	
Fluorene	0.015 J	0.020	0.0011	1	11/30/22 12:21	11/29/22	
Indeno(1,2,3-cd)pyrene	0.014 J	0.020	0.00089	1	11/30/22 12:21	11/29/22	
Naphthalene	0.029	0.020	0.0014	1	11/30/22 12:21	11/29/22	
Phenanthrene	0.13	0.020	0.0011	1	11/30/22 12:21	11/29/22	
Pyrene	0.23	0.020	0.0010	1	11/30/22 12:21	11/29/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	77	42 - 133	11/30/22 12:21	
Fluorene-d10	86	42 - 131	11/30/22 12:21	
Terphenyl-d14	70	32 - 129	11/30/22 12:21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2213918-002

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.024	0.020	0.0013	1	11/30/22 12:47	11/29/22	
Acenaphthene	0.0098 J	0.020	0.0012	1	11/30/22 12:47	11/29/22	
Acenaphthylene	0.011 J	0.020	0.0011	1	11/30/22 12:47	11/29/22	
Anthracene	0.012 J	0.020	0.00082	1	11/30/22 12:47	11/29/22	
Benz(a)anthracene	0.023	0.020	0.00097	1	11/30/22 12:47	11/29/22	
Benzo(a)pyrene	0.065	0.020	0.0011	1	11/30/22 12:47	11/29/22	
Benzo(b)fluoranthene	0.031	0.020	0.00083	1	11/30/22 12:47	11/29/22	
Benzo(g,h,i)perylene	0.035	0.020	0.00086	1	11/30/22 12:47	11/29/22	
Benzo(k)fluoranthene	0.0056 J	0.020	0.00094	1	11/30/22 12:47	11/29/22	
Chrysene	0.058	0.020	0.00076	1	11/30/22 12:47	11/29/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	11/30/22 12:47	11/29/22	
Fluoranthene	0.14	0.020	0.00082	1	11/30/22 12:47	11/29/22	
Fluorene	0.019 J	0.020	0.0011	1	11/30/22 12:47	11/29/22	
Indeno(1,2,3-cd)pyrene	0.016 J	0.020	0.00089	1	11/30/22 12:47	11/29/22	
Naphthalene	0.031	0.020	0.0014	1	11/30/22 12:47	11/29/22	
Phenanthrene	0.15	0.020	0.0011	1	11/30/22 12:47	11/29/22	
Pyrene	0.27	0.020	0.0010	1	11/30/22 12:47	11/29/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	83	42 - 133	11/30/22 12:47	
Fluorene-d10	97	42 - 131	11/30/22 12:47	
Terphenyl-d14	74	32 - 129	11/30/22 12:47	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2213918-001	77	86	70
WR306-OUT	K2213918-002	83	97	74
Method Blank	KQ2221047-01	86	84	82
Lab Control Sample	KQ2221047-02	94	86	70
Duplicate Lab Control Sample	KQ2221047-03	95	90	56

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2221047-01

Service Request: K2213918
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	11/30/22 11:03	11/29/22	
Acenaphthene	ND U	0.020	0.0012	1	11/30/22 11:03	11/29/22	
Acenaphthylene	ND U	0.020	0.0011	1	11/30/22 11:03	11/29/22	
Anthracene	ND U	0.020	0.00082	1	11/30/22 11:03	11/29/22	
Benz(a)anthracene	0.0020 J	0.020	0.00097	1	11/30/22 11:03	11/29/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	11/30/22 11:03	11/29/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	11/30/22 11:03	11/29/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	11/30/22 11:03	11/29/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	11/30/22 11:03	11/29/22	
Chrysene	ND U	0.020	0.00076	1	11/30/22 11:03	11/29/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	11/30/22 11:03	11/29/22	
Fluoranthene	ND U	0.020	0.00082	1	11/30/22 11:03	11/29/22	
Fluorene	ND U	0.020	0.0011	1	11/30/22 11:03	11/29/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	11/30/22 11:03	11/29/22	
Naphthalene	0.0019 J	0.020	0.0014	1	11/30/22 11:03	11/29/22	
Phenanthrene	0.0017 J	0.020	0.0011	1	11/30/22 11:03	11/29/22	
Pyrene	ND U	0.020	0.0010	1	11/30/22 11:03	11/29/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	86	42 - 133	11/30/22 11:03	
Fluorene-d10	84	42 - 131	11/30/22 11:03	
Terphenyl-d14	82	32 - 129	11/30/22 11:03	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Analyzed: 11/30/22
Date Extracted: 11/29/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 786851

Lab Control Sample
KQ2221047-02

Duplicate Lab Control Sample
KQ2221047-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.05	2.78	74	2.13	2.78	77	48-120	4	30
Acenaphthene	2.46	2.78	89	2.51	2.78	90	63-121	2	30
Acenaphthylene	2.89	2.78	104	2.93	2.78	105	58-124	2	30
Anthracene	2.78	2.78	100	2.78	2.78	100	68-127	<1	30
Benz(a)anthracene	2.71	2.78	98	2.75	2.78	99	74-124	2	30
Benzo(a)pyrene	2.89	2.78	104	2.92	2.78	105	75-131	1	30
Benzo(b)fluoranthene	2.85	2.78	102	2.88	2.78	104	73-136	1	30
Benzo(g,h,i)perylene	2.23	2.78	80	2.26	2.78	81	63-127	1	30
Benzo(k)fluoranthene	2.89	2.78	104	2.93	2.78	105	74-134	1	30
Chrysene	2.62	2.78	94	2.67	2.78	96	74-132	2	30
Dibenz(a,h)anthracene	2.56	2.78	92	2.59	2.78	93	59-135	1	30
Fluoranthene	2.55	2.78	92	2.57	2.78	92	70-127	<1	30
Fluorene	2.50	2.78	90	2.54	2.78	91	68-121	2	30
Indeno(1,2,3-cd)pyrene	2.79	2.78	100	2.92	2.78	105	63-136	5	30
Naphthalene	2.49	2.78	90	2.59	2.78	93	52-115	4	30
Phenanthrene	2.53	2.78	91	2.52	2.78	91	64-126	<1	30
Pyrene	2.85	2.78	103	2.88	2.78	104	72-127	1	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Sample Name: WR306-IN
Lab Code: K2213918-001

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.4	0.50	0.13	1	01/07/23 00:00	11/28/22	*
Butyl Benzyl Phthalate	ND U	0.10	0.021	1	01/07/23 00:00	11/28/22	
Di-n-butyl Phthalate	0.18	0.10	0.023	1	01/07/23 00:00	11/28/22	
Di-n-octyl Phthalate	ND U	0.10	0.033	1	01/07/23 00:00	11/28/22	
Diethyl Phthalate	0.17	0.10	0.015	1	01/07/23 00:00	11/28/22	
Dimethyl Phthalate	0.53	0.10	0.021	1	01/07/23 00:00	11/28/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	53	35 - 105	01/07/23 00:00	
Nitrobenzene-d5	74	40 - 117	01/07/23 00:00	
p-Terphenyl-d14	59	48 - 109	01/07/23 00:00	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2213918-002

Service Request: K2213918
Date Collected: 11/22/22 15:31
Date Received: 11/23/22 12:50

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.4	0.48	0.13	1	01/07/23 00:27	11/28/22	*
Butyl Benzyl Phthalate	ND U	0.096	0.021	1	01/07/23 00:27	11/28/22	
Di-n-butyl Phthalate	0.18	0.096	0.023	1	01/07/23 00:27	11/28/22	
Di-n-octyl Phthalate	ND U	0.096	0.033	1	01/07/23 00:27	11/28/22	
Diethyl Phthalate	0.23	0.096	0.015	1	01/07/23 00:27	11/28/22	
Dimethyl Phthalate	0.61	0.096	0.021	1	01/07/23 00:27	11/28/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	60	35 - 105	01/07/23 00:27	
Nitrobenzene-d5	75	40 - 117	01/07/23 00:27	
p-Terphenyl-d14	56	48 - 109	01/07/23 00:27	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2213918

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2213918-001	53	74	59
WR306-OUT	K2213918-002	60	75	56
Method Blank	KQ2220948-01	67	73	73
Lab Control Sample	KQ2220948-02	63	72	67
Duplicate Lab Control Sample	KQ2220948-03	70	78	74

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2220948-01

Service Request: K2213918
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.14 J	0.47	0.13	1	01/06/23 16:38	11/28/22	
Butyl Benzyl Phthalate	0.11	0.094	0.021	1	01/06/23 16:38	11/28/22	
Di-n-butyl Phthalate	0.074 J	0.094	0.023	1	01/06/23 16:38	11/28/22	
Di-n-octyl Phthalate	ND U	0.094	0.033	1	01/06/23 16:38	11/28/22	
Diethyl Phthalate	ND U	0.094	0.015	1	01/06/23 16:38	11/28/22	
Dimethyl Phthalate	ND U	0.094	0.021	1	01/06/23 16:38	11/28/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	67	35 - 105	01/06/23 16:38	
Nitrobenzene-d5	73	40 - 117	01/06/23 16:38	
p-Terphenyl-d14	73	48 - 109	01/06/23 16:38	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2213918

Date Analyzed: 01/06/23

Date Extracted: 11/28/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 792004

Lab Control Sample
KQ2220948-02

Duplicate Lab Control Sample
KQ2220948-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	3.17	5.00	63	3.47	5.00	69	42-147	9	30
Butyl Benzyl Phthalate	3.23	5.00	65	3.55	5.00	71	59-119	10	30
Diethyl Phthalate	3.36	5.00	67	3.71	5.00	74	58-114	10	30
Dimethyl Phthalate	3.19	5.00	64	3.47	5.00	69	58-109	9	30
Di-n-butyl Phthalate	3.12	5.00	62	3.44	5.00	69	61-121	10	30
Di-n-octyl Phthalate	2.76	5.00	55	2.97	5.00	59	50-125	7	30



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January 19, 2023

Analytical Report for Service Request No: K2214619

Jess Brown
Herrera Environmental
107 SE Washington St Suite 140
Portland, OR 97214

RE: ODOT Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory December 09, 2022
For your reference, these analyses have been assigned our service request number **K2214619**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2214619
Date Received: 12/09/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Three storm water samples were received for analysis at ALS Environmental on 12/09/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Method 8270D, 01/17/2023: The analysis of samples was initially performed past the recommended holding time. Efforts were made to analyze the samples as soon as the error was identified. The data was flagged to indicate the holding time violation.

Semivolatile GC:

Method 8082A: The analysis of PCB Aroclors by EPA 8082A requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for DCB. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Method 8082A: The spike recovery of 1016/1260 along with TCMX/DCB for Duplicate Laboratory Control Sample (DLCS) KQ2222428-03 was not detected. Additional analysis of the associated field samples were not performed as the LCS was in control. The data was only reported with the LCS, no further corrective action was taken.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date 01/19/2023



Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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Seattle, Washington | 98121
p 206 441 9080 | f 206 441 9108

Chain of Custody Record

1622 14619

Project Name: ODOT – Portland Harbor Perf. Monitoring		Project Number: 10-04681-006		Client: OR Department of Transportation												
Report To: Jess Brown, JBrown@herrerainc.com				Copy To: SNilsson@herrerainc.com												
Sampled By: S Nilsson				Delivery Method: <i>Courier</i>												
Laboratory: ALS		Requested Completion Date:		Total No. of Containers: 2												
Lab Use:				Sample Type (see codes)	Preservative? (Y/N)	Matrix (see codes)	Number of Containers	TSS – SM 2540D	TOC – EPA 415.1	Hardness – SM 2340C	Total Metals – EPA 6020A	PCBs – EPA 8082A	PAHs – EPA 8270 SIM	Phthalates – EPA 8270D_LL	Lab ID No.	
Sample ID		Date	Time													
WR306-IN		12/8/22	1301	C	N	SW		1	X	X	X	X	X	X		
WR306-OUT		12/8/22	1301	C	N	SW		1	X	X	X	X	X	X		
WR306-DUPE		-	-	C	N	SW		0	X	X	X	X	X	X		
Comments/Special Instructions: Metals: As, Cd, Cu, Pb, Ni, Zn <i>Split volume from WR306-OUT for WR306-DUPE</i>																
Relinquished by (Name/CO/ S Nilsson/Herrera		Signature <i>[Signature]</i>		Date/Time 12/9/22 1025		Received By (Name/CO) Greg Rich ALS		Signature <i>[Signature]</i>		Date/Time 12-22-1025						
Relinquished by (Name/CO/ Greg Rich		Signature <i>[Signature]</i>		Date/Time 12-22-1230		Received By (Name/CO) M Pedersen ALS		Signature <i>[Signature]</i>		Date/Time 12/22/22 1230						
Sample Type: G=Grab C=Composite Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface/Storm Water W=Water (blanks) M=Material O=Other (specify)																

PM 11/11

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 14619
 Received: 12/9/22 Opened: 12/9/22 By: MP Unloaded: 12/9/22 By: MP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other Carboys NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with 'X'	PM Notified if out of temp	Tracking Number NA	Filed
	<u>0.8</u>	<u>1001</u>					
	<u>1.0</u>	<u>✓</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
 If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges? NA Y N
 If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves
 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 8. Were samples received in good condition (unbroken) NA Y N
 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
 10. Did all sample labels and tags agree with custody papers? NA Y N
 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 14. Was C12/Res negative? NA Y N
 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____

1/13/22

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General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2214619
Date Collected: 12/8/22
Date Received: 12/9/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2214619-001	39.1	2.0	1	12/12/22 17:32	12/12/22	
WR306-OUT	K2214619-002	44.0	2.0	1	12/12/22 17:32	12/12/22	
WR306-DUPE	K2214619-003	42.7	2.0	1	12/12/22 17:32	12/12/22	
Method Blank	K2214619-MB1	ND U	2.0	1	12/12/22 17:32	12/12/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Analyzed: 12/12/22
Date Extracted: 12/12/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 788225

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2214619-LCS	66.9	69.4	96	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2214619
Date Collected: 12/8/22
Date Received: 12/9/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2214619-001	102	5.0	-	1	12/13/22 10:10	
WR306-OUT	K2214619-002	102	5.0	-	1	12/13/22 10:10	
WR306-DUPE	K2214619-003	99.0	5.0	-	1	12/13/22 10:10	
Method Blank	K2214619-MB1	ND U	5.0	-	1	12/13/22 10:10	
Method Blank	K2214619-MB2	ND U	5.0	-	1	12/13/22 10:10	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Analyzed: 12/13/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 788292

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2214619-LCS	384	400	96	85-115

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2214619
Date Collected: 12/8/22
Date Received: 12/9/22
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2214619-001	12.4	2.0	4	12/12/22 15:14	
WR306-OUT	K2214619-002	9.2	2.0	4	12/12/22 15:14	
WR306-DUPE	K2214619-003	10.8	2.0	4	12/12/22 15:14	
Method Blank	K2214619-MB1	ND U	0.50	1	12/12/22 15:14	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Analyzed: 12/12/22
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 788187

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2214619-LCS	25.1	25.0	100	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2214619-001

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.98	ug/L	0.50	0.09	1	12/15/22 16:51	12/14/22	
Cadmium	6020A	0.471	ug/L	0.020	0.008	1	12/15/22 16:51	12/14/22	
Copper	6020A	38.7	ug/L	0.10	0.05	1	12/15/22 16:51	12/14/22	
Lead	6020A	9.55	ug/L	0.020	0.006	1	12/15/22 16:51	12/14/22	
Nickel	6020A	4.96	ug/L	0.20	0.04	1	12/15/22 16:51	12/14/22	
Zinc	6020A	284	ug/L	2.0	0.5	1	12/15/22 16:51	12/14/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2214619-002

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.94	ug/L	0.50	0.09	1	12/15/22 16:53	12/14/22	
Cadmium	6020A	0.453	ug/L	0.020	0.008	1	12/15/22 16:53	12/14/22	
Copper	6020A	39.3	ug/L	0.10	0.05	1	12/15/22 16:53	12/14/22	
Lead	6020A	9.32	ug/L	0.020	0.006	1	12/15/22 16:53	12/14/22	
Nickel	6020A	5.14	ug/L	0.20	0.04	1	12/15/22 16:53	12/14/22	
Zinc	6020A	285	ug/L	2.0	0.5	1	12/15/22 16:53	12/14/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-DUPE
Lab Code: K2214619-003

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.00	ug/L	0.50	0.09	1	12/15/22 16:55	12/14/22	
Cadmium	6020A	0.481	ug/L	0.020	0.008	1	12/15/22 16:55	12/14/22	
Copper	6020A	39.6	ug/L	0.10	0.05	1	12/15/22 16:55	12/14/22	
Lead	6020A	9.37	ug/L	0.020	0.006	1	12/15/22 16:55	12/14/22	
Nickel	6020A	5.36	ug/L	0.20	0.04	1	12/15/22 16:55	12/14/22	
Zinc	6020A	284	ug/L	2.0	0.5	1	12/15/22 16:55	12/14/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2222028-01

Service Request: K2214619
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	12/15/22 16:40	12/14/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	12/15/22 16:40	12/14/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	12/15/22 16:40	12/14/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	12/15/22 16:40	12/14/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	12/15/22 16:40	12/14/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	12/15/22 16:40	12/14/22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Analyzed: 12/15/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2222028-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	48.4	50.0	97	80-120
Cadmium	6020A	26.1	25.0	104	80-120
Copper	6020A	12.6	12.5	101	80-120
Lead	6020A	52.5	50.0	105	80-120
Nickel	6020A	24.9	25.0	99	80-120
Zinc	6020A	24.9	25.0	100	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2214619
Date Collected: 12/08/2022
Date Received: 12/09/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2214619-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1221	ND	U	0.020	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1232	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1242	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1248	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1254	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1260	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	10-140	01/07/23	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2214619
Date Collected: 12/08/2022
Date Received: 12/09/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2214619-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1221	ND	U	0.020	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1232	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1242	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1248	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1254	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1260	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	76	10-140	01/07/23	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2214619
Date Collected: 12/08/2022
Date Received: 12/09/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-DUPE
Lab Code: K2214619-003
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1221	ND	U	0.020	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1232	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1242	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1248	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1254	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1260	ND	U	0.010	0.0064	1	12/20/22	01/07/23	KWG2300126	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	77	10-140	01/07/23	Acceptable

Comments: _____

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Analytical Results

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2214619
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2300126-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1221	ND	U	0.010	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1232	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1242	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1248	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1254	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	
Aroclor 1260	ND	U	0.0050	0.0032	1	12/20/22	01/07/23	KWG2300126	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-140	01/07/23	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2214619

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2214619-001	83
WR306-OUT	K2214619-002	76
WR306-DUPE	K2214619-003	77
Method Blank	KWG2300126-1	88
Lab Control Sample	KWG2300126-2	88

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2214619
Date Extracted: 12/20/2022
Date Analyzed: 01/07/2023

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2300126

Lab Control Sample
KWG2300126-2
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Aroclor 1016	0.119	0.125	95	31-164
Aroclor 1260	0.139	0.125	111	34-182

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Sample Name: WR306-IN
Lab Code: K2214619-001

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0052 J	0.020	0.0013	1	01/17/23 05:55	1/9/23	*
Acenaphthene	0.0052 J	0.020	0.0012	1	01/17/23 05:55	1/9/23	*
Acenaphthylene	0.0054 J	0.020	0.0011	1	01/17/23 05:55	1/9/23	*
Anthracene	0.0092 J	0.020	0.00082	1	01/17/23 05:55	1/9/23	*
Benz(a)anthracene	0.028	0.020	0.00097	1	01/17/23 05:55	1/9/23	*
Benzo(a)pyrene	0.082	0.020	0.0011	1	01/17/23 05:55	1/9/23	*
Benzo(b)fluoranthene	0.048	0.020	0.00083	1	01/17/23 05:55	1/9/23	*
Benzo(g,h,i)perylene	0.049	0.020	0.00086	1	01/17/23 05:55	1/9/23	*
Benzo(k)fluoranthene	0.015 J	0.020	0.00094	1	01/17/23 05:55	1/9/23	*
Chrysene	0.068	0.020	0.00076	1	01/17/23 05:55	1/9/23	*
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/17/23 05:55	1/9/23	*
Fluoranthene	0.15	0.020	0.00082	1	01/17/23 05:55	1/9/23	*
Fluorene	0.0083 J	0.020	0.0011	1	01/17/23 05:55	1/9/23	*
Indeno(1,2,3-cd)pyrene	0.032	0.020	0.00089	1	01/17/23 05:55	1/9/23	*
Naphthalene	0.0070 J	0.020	0.0014	1	01/17/23 05:55	1/9/23	*
Phenanthrene	0.075	0.020	0.0011	1	01/17/23 05:55	1/9/23	*
Pyrene	0.30	0.020	0.0010	1	01/17/23 05:55	1/9/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	90	42 - 133	01/17/23 05:55	
Fluorene-d10	88	42 - 131	01/17/23 05:55	
Terphenyl-d14	83	32 - 129	01/17/23 05:55	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2214619-002

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0082 J	0.020	0.0013	1	01/17/23 06:21	1/9/23	*
Acenaphthene	0.0031 J	0.020	0.0012	1	01/17/23 06:21	1/9/23	*
Acenaphthylene	0.0052 J	0.020	0.0011	1	01/17/23 06:21	1/9/23	*
Anthracene	ND U	0.020	0.00082	1	01/17/23 06:21	1/9/23	*
Benz(a)anthracene	0.024	0.020	0.00097	1	01/17/23 06:21	1/9/23	*
Benzo(a)pyrene	0.061	0.020	0.0011	1	01/17/23 06:21	1/9/23	*
Benzo(b)fluoranthene	0.041	0.020	0.00083	1	01/17/23 06:21	1/9/23	*
Benzo(g,h,i)perylene	0.043	0.020	0.00086	1	01/17/23 06:21	1/9/23	*
Benzo(k)fluoranthene	0.014 J	0.020	0.00094	1	01/17/23 06:21	1/9/23	*
Chrysene	0.058	0.020	0.00076	1	01/17/23 06:21	1/9/23	*
Dibenz(a,h)anthracene	0.0043 J	0.020	0.0013	1	01/17/23 06:21	1/9/23	*
Fluoranthene	0.13	0.020	0.00082	1	01/17/23 06:21	1/9/23	*
Fluorene	0.0064 J	0.020	0.0011	1	01/17/23 06:21	1/9/23	*
Indeno(1,2,3-cd)pyrene	0.025	0.020	0.00089	1	01/17/23 06:21	1/9/23	*
Naphthalene	0.0064 J	0.020	0.0014	1	01/17/23 06:21	1/9/23	*
Phenanthrene	0.063	0.020	0.0011	1	01/17/23 06:21	1/9/23	*
Pyrene	0.26	0.020	0.0010	1	01/17/23 06:21	1/9/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	80	42 - 133	01/17/23 06:21	
Fluorene-d10	86	42 - 131	01/17/23 06:21	
Terphenyl-d14	74	32 - 129	01/17/23 06:21	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Sample Name: WR306-DUPE
Lab Code: K2214619-003

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0075 J	0.020	0.0013	1	01/17/23 06:47	1/9/23	*
Acenaphthene	0.0031 J	0.020	0.0012	1	01/17/23 06:47	1/9/23	*
Acenaphthylene	0.0066 J	0.020	0.0011	1	01/17/23 06:47	1/9/23	*
Anthracene	0.010 J	0.020	0.00082	1	01/17/23 06:47	1/9/23	*
Benz(a)anthracene	0.036	0.020	0.00097	1	01/17/23 06:47	1/9/23	*
Benzo(a)pyrene	0.080	0.020	0.0011	1	01/17/23 06:47	1/9/23	*
Benzo(b)fluoranthene	0.061	0.020	0.00083	1	01/17/23 06:47	1/9/23	*
Benzo(g,h,i)perylene	0.062	0.020	0.00086	1	01/17/23 06:47	1/9/23	*
Benzo(k)fluoranthene	0.019 J	0.020	0.00094	1	01/17/23 06:47	1/9/23	*
Chrysene	0.086	0.020	0.00076	1	01/17/23 06:47	1/9/23	*
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/17/23 06:47	1/9/23	*
Fluoranthene	0.17	0.020	0.00082	1	01/17/23 06:47	1/9/23	*
Fluorene	0.010 J	0.020	0.0011	1	01/17/23 06:47	1/9/23	*
Indeno(1,2,3-cd)pyrene	0.040	0.020	0.00089	1	01/17/23 06:47	1/9/23	*
Naphthalene	0.0094 J	0.020	0.0014	1	01/17/23 06:47	1/9/23	*
Phenanthrene	0.097	0.020	0.0011	1	01/17/23 06:47	1/9/23	*
Pyrene	0.34	0.020	0.0010	1	01/17/23 06:47	1/9/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	100	42 - 133	01/17/23 06:47	
Fluorene-d10	110	42 - 131	01/17/23 06:47	
Terphenyl-d14	100	32 - 129	01/17/23 06:47	

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dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2214619-001	90	88	83
WR306-OUT	K2214619-002	80	86	74
WR306-DUPE	K2214619-003	100	110	100
Method Blank	KQ2300331-01	89	83	84
Lab Control Sample	KQ2300331-02	88	77	81
Duplicate Lab Control Sample	KQ2300331-03	119	108	83

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2300331-01

Service Request: K2214619
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	ND U	0.020	0.0013	1	01/17/23 04:37	1/9/23	
Acenaphthene	ND U	0.020	0.0012	1	01/17/23 04:37	1/9/23	
Acenaphthylene	ND U	0.020	0.0011	1	01/17/23 04:37	1/9/23	
Anthracene	ND U	0.020	0.00082	1	01/17/23 04:37	1/9/23	
Benz(a)anthracene	0.0019 J	0.020	0.00097	1	01/17/23 04:37	1/9/23	
Benzo(a)pyrene	ND U	0.020	0.0011	1	01/17/23 04:37	1/9/23	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	01/17/23 04:37	1/9/23	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	01/17/23 04:37	1/9/23	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	01/17/23 04:37	1/9/23	
Chrysene	ND U	0.020	0.00076	1	01/17/23 04:37	1/9/23	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/17/23 04:37	1/9/23	
Fluoranthene	ND U	0.020	0.00082	1	01/17/23 04:37	1/9/23	
Fluorene	ND U	0.020	0.0011	1	01/17/23 04:37	1/9/23	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	01/17/23 04:37	1/9/23	
Naphthalene	0.0018 J	0.020	0.0014	1	01/17/23 04:37	1/9/23	
Phenanthrene	ND U	0.020	0.0011	1	01/17/23 04:37	1/9/23	
Pyrene	ND U	0.020	0.0010	1	01/17/23 04:37	1/9/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	89	42 - 133	01/17/23 04:37	
Fluorene-d10	83	42 - 131	01/17/23 04:37	
Terphenyl-d14	84	32 - 129	01/17/23 04:37	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619
Date Analyzed: 01/17/23
Date Extracted: 01/09/23

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 791648

Lab Control Sample
KQ2300331-02

Duplicate Lab Control Sample
KQ2300331-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	1.73	2.78	62	1.99	2.78	72	48-120	14	30
Acenaphthene	2.18	2.78	78	2.51	2.78	90	63-121	14	30
Acenaphthylene	2.56	2.78	92	2.92	2.78	105	58-124	13	30
Anthracene	2.45	2.78	88	2.81	2.78	101	68-127	14	30
Benz(a)anthracene	2.47	2.78	89	2.84	2.78	102	74-124	14	30
Benzo(a)pyrene	2.65	2.78	95	3.04	2.78	109	75-131	14	30
Benzo(b)fluoranthene	2.57	2.78	92	2.94	2.78	106	73-136	13	30
Benzo(g,h,i)perylene	1.99	2.78	72	2.30	2.78	83	63-127	14	30
Benzo(k)fluoranthene	2.57	2.78	92	2.98	2.78	107	74-134	15	30
Chrysene	2.38	2.78	86	2.74	2.78	99	74-132	14	30
Dibenz(a,h)anthracene	2.30	2.78	83	2.65	2.78	96	59-135	14	30
Fluoranthene	2.28	2.78	82	2.62	2.78	94	70-127	14	30
Fluorene	2.23	2.78	80	2.56	2.78	92	68-121	14	30
Indeno(1,2,3-cd)pyrene	2.54	2.78	92	2.94	2.78	106	63-136	15	30
Naphthalene	2.13	2.78	77	2.46	2.78	88	52-115	14	30
Phenanthrene	2.24	2.78	81	2.58	2.78	93	64-126	14	30
Pyrene	2.60	2.78	94	2.94	2.78	106	72-127	12	30



Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2214619-001

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	4.0	0.98	0.13	1	01/03/23 23:06	12/15/22	
Butyl Benzyl Phthalate	0.26	0.20	0.021	1	01/03/23 23:06	12/15/22	
Di-n-butyl Phthalate	0.34	0.20	0.023	1	01/03/23 23:06	12/15/22	
Di-n-octyl Phthalate	ND U	0.20	0.033	1	01/03/23 23:06	12/15/22	
Diethyl Phthalate	0.14 J	0.20	0.015	1	01/03/23 23:06	12/15/22	
Dimethyl Phthalate	0.33	0.20	0.021	1	01/03/23 23:06	12/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	56	35 - 105	01/03/23 23:06	
Nitrobenzene-d5	85	40 - 117	01/03/23 23:06	
p-Terphenyl-d14	77	48 - 109	01/03/23 23:06	

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2214619-002

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	4.0	0.94	0.13	1	01/03/23 23:38	12/15/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/03/23 23:38	12/15/22	
Di-n-butyl Phthalate	0.34	0.19	0.023	1	01/03/23 23:38	12/15/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/03/23 23:38	12/15/22	
Diethyl Phthalate	0.15 J	0.19	0.015	1	01/03/23 23:38	12/15/22	
Dimethyl Phthalate	0.31	0.19	0.021	1	01/03/23 23:38	12/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	54	35 - 105	01/03/23 23:38	
Nitrobenzene-d5	82	40 - 117	01/03/23 23:38	
p-Terphenyl-d14	80	48 - 109	01/03/23 23:38	

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dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-DUPE
Lab Code: K2214619-003

Service Request: K2214619
Date Collected: 12/08/22 13:01
Date Received: 12/09/22 12:30

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	4.0	0.94	0.13	1	01/04/23 00:11	12/15/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/04/23 00:11	12/15/22	
Di-n-butyl Phthalate	0.34	0.19	0.023	1	01/04/23 00:11	12/15/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/04/23 00:11	12/15/22	
Diethyl Phthalate	0.15 J	0.19	0.015	1	01/04/23 00:11	12/15/22	
Dimethyl Phthalate	0.33	0.19	0.021	1	01/04/23 00:11	12/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	58	35 - 105	01/04/23 00:11	
Nitrobenzene-d5	87	40 - 117	01/04/23 00:11	
p-Terphenyl-d14	82	48 - 109	01/04/23 00:11	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2214619

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2214619-001	56	85	77
WR306-OUT	K2214619-002	54	82	80
WR306-DUPE	K2214619-003	58	87	82
Method Blank	KQ2222050-01	69	69	90
Lab Control Sample	KQ2222050-02	77	79	88
Duplicate Lab Control Sample	KQ2222050-03	75	76	86

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Analytical Report

Client: Herrera Environmental
Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2222050-01

Service Request: K2214619
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.33 J	0.94	0.13	1	01/03/23 17:38	12/15/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/03/23 17:38	12/15/22	
Di-n-butyl Phthalate	0.13 J	0.19	0.023	1	01/03/23 17:38	12/15/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/03/23 17:38	12/15/22	
Diethyl Phthalate	ND U	0.19	0.015	1	01/03/23 17:38	12/15/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	01/03/23 17:38	12/15/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	69	35 - 105	01/03/23 17:38	
Nitrobenzene-d5	69	40 - 117	01/03/23 17:38	
p-Terphenyl-d14	90	48 - 109	01/03/23 17:38	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2214619

Date Analyzed: 01/03/23

Date Extracted: 12/15/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 791517

Lab Control Sample
KQ2222050-02

Duplicate Lab Control Sample
KQ2222050-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.07	5.00	81	4.13	5.00	83	42-147	2	30
Butyl Benzyl Phthalate	3.94	5.00	79	4.02	5.00	80	59-119	2	30
Diethyl Phthalate	3.95	5.00	79	3.88	5.00	78	58-114	2	30
Dimethyl Phthalate	3.72	5.00	74	3.67	5.00	73	58-109	1	30
Di-n-butyl Phthalate	3.90	5.00	78	3.95	5.00	79	61-121	1	30
Di-n-octyl Phthalate	3.89	5.00	78	3.99	5.00	80	50-125	3	30



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February 17, 2023

Analytical Report for Service Request No: K2215101

Jess Brown
Herrera Environmental
107 SE Washington St Suite 140
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory December 21, 2022
For your reference, these analyses have been assigned our service request number **K2215101**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Howard Holmes
Project Manager



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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2215101
Date Received: 12/21/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 12/21/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Semivolatile GC:

Method 8082A: The analysis of 8082A requires the use of dual column confirmation. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Method 8082A: The spike recovery of analytes and surrogates for Duplicate Laboratory Control Sample (DLCS) were on the lower control criterion side causing RPD failure. Additional analysis of the associated field samples was not performed because the issue was isolated to the DLCS and the LCS was in control. The data was flagged to indicate the problem.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

02/17/2023



Chain of Custody

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Chain of Custody Record

42215101

Comments/Special Instructions:	Metals: As, Cd, Cu, Pb, Ni, Zn

Relinquished by (Name/CO/ Sam Nilsson/Hernandez	Signature 	Date/Time 12/21/22 09:56	Received By (Name/CO) Greg Rich - ALS	Signature 	Date/Time 12-21-22 0956
Relinquished by (Name/CO/ Greg Rich - ALS	Signature 	Date/Time 12-21-22 1140	Received By (Name/CO) Naomi Redden ALS	Signature 	Date/Time 12/21/22 1140

0=Other (specify)

PM 12

Cooler Receipt and Preservation Form

Client Herrera Service Request K22 15101
 Received: 12/21/22 Opened: 12/21/22 By: MP Unloaded: 12/21/22 By: MP

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
 2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** Cenboys **NA**
 3. Were custody seals on coolers? **NA** **Y** **N** If yes, how many and where? _____
 If present, were custody seals intact? **Y** **N** If present, were they signed and dated? **Y** **N**

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number	NA	Filed
-0.8	—	1207						
-1.1	—	1202						

4. Was a Temperature Blank present in cooler? **NA** **Y** **N** If yes, note the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges?

NA **Y** **N**

If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM.

NA **Y** **N**

If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**

6. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves**

7. Were custody papers properly filled out (ink, signed, etc.)?

NA **Y** **N**

8. Were samples received in good condition (unbroken)

NA **Y** **N**

9. Were all sample labels complete (ie, analysis, preservation, etc.)?

NA **Y** **N**

10. Did all sample labels and tags agree with custody papers?

NA **Y** **N**

11. Were appropriate bottles/containers and volumes received for the tests indicated?

NA **Y** **N**

12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below

NA **Y** **N**

13. Were VOA vials received without headspace? Indicate in the table below.

NA **Y** **N**

14. Was C12/Res negative?

NA **Y** **N**

15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM

NA **Y** **N**

16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? **NA** **Y** **N**

Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

ALS Environmental—Kelso Laboratory

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: None

Service Request: K2215101
Date Collected: 12/20/22
Date Received: 12/21/22
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2215101-001	126	2.0	1	12/27/22 12:55	12/27/22	
WR306-OUT	K2215101-002	147	2.0	1	12/27/22 12:55	12/27/22	
Method Blank	K2215101-MB1	ND U	2.0	1	12/27/22 12:55	12/27/22	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Analyzed: 12/27/22
Date Extracted: 12/27/22

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 789723

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2215101-LCS	64.4	69.4	93	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2215101
Date Collected: 12/20/22
Date Received: 12/21/22
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2215101-001	263	10	-	1	12/23/22 11:28	
WR306-OUT	K2215101-002	237	13	-	1	12/23/22 11:28	
Method Blank	K2215101-MB1	ND U	5.0	-	1	12/23/22 11:28	
Method Blank	K2215101-MB2	ND U	5.0	-	1	12/23/22 11:28	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Analyzed: 12/23/22
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 789585

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2215101-LCS	396	400	99	85-115

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2215101
Date Collected: 12/20/22
Date Received: 12/21/22
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2215101-001	24.4	2.0	4	01/03/23 13:29	
WR306-OUT	K2215101-002	25.2	2.0	4	01/03/23 13:29	
Method Blank	K2215101-MB1	ND U	0.50	1	01/03/23 13:29	

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Collected: 12/20/22
Date Received: 12/21/22
Date Analyzed: 01/03/23

Replicate Sample Summary
General Chemistry Parameters

Sample Name: WR306-OUT
Lab Code: K2215101-002

Units: mg/L
Basis: NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K2215101-002DUP	Average	RPD	RPD Limit
				Result			
Carbon, Total Organic (TOC)	SM 5310 B	2.0	25.2	25.2	25.2	<1	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Collected: 12/20/22
Date Received: 12/21/22
Date Analyzed: 01/3/23
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name: WR306-OUT
Lab Code: K2215101-002
Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2215101-002MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	25.2	125	100	100	85-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Analyzed: 01/03/23
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 790276

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2215101-LCS	24.8	25.0	99	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2215101-001

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.97	ug/L	0.50	0.09	1	01/05/23 13:26	12/22/22	
Cadmium	6020A	0.717	ug/L	0.020	0.008	1	01/05/23 13:26	12/22/22	
Copper	6020A	63.3	ug/L	0.10	0.05	1	01/05/23 13:26	12/22/22	
Lead	6020A	16.2	ug/L	0.020	0.006	1	01/05/23 13:26	12/22/22	
Nickel	6020A	11.8	ug/L	0.20	0.04	1	01/05/23 13:26	12/22/22	
Zinc	6020A	607	ug/L	2.0	0.5	1	01/05/23 13:26	12/22/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2215101-002

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	2.16	ug/L	0.50	0.09	1	01/05/23 13:29	12/22/22	
Cadmium	6020A	0.717	ug/L	0.020	0.008	1	01/05/23 13:29	12/22/22	
Copper	6020A	63.7	ug/L	0.10	0.05	1	01/05/23 13:29	12/22/22	
Lead	6020A	15.8	ug/L	0.020	0.006	1	01/05/23 13:29	12/22/22	
Nickel	6020A	9.33	ug/L	0.20	0.04	1	01/05/23 13:29	12/22/22	
Zinc	6020A	589	ug/L	2.0	0.5	1	01/05/23 13:29	12/22/22	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2222639-01

Service Request: K2215101
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	01/05/23 12:54	12/22/22	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	01/05/23 12:54	12/22/22	
Copper	6020A	ND U	ug/L	0.10	0.05	1	01/05/23 12:54	12/22/22	
Lead	6020A	ND U	ug/L	0.020	0.006	1	01/05/23 12:54	12/22/22	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	01/05/23 12:54	12/22/22	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	01/05/23 12:54	12/22/22	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101**Date Analyzed:** 01/05/23**Lab Control Sample Summary****Total Metals****Units:**ug/L**Basis:**NA**Lab Control Sample**

KQ2222639-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	50.3	50.0	101	80-120
Cadmium	6020A	25.1	25.0	101	80-120
Copper	6020A	12.7	12.5	102	80-120
Lead	6020A	50.9	50.0	102	80-120
Nickel	6020A	25.9	25.0	103	80-120
Zinc	6020A	25.1	25.0	100	80-120



Polychlorinated Biphenyls (PCBs)

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ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2215101
Date Collected: 12/20/2022
Date Received: 12/21/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2215101-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1221	ND	U	0.020	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1232	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1242	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1248	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1254	0.025	P	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1260	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	71	10-140	02/13/23	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2215101
Date Collected: 12/20/2022
Date Received: 12/21/2022

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2215101-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1221	ND	U	0.020	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1232	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1242	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1248	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1254	ND	Ui	0.013	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1260	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	70	10-140	02/13/23	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2215101
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2300319-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1221	ND	U	0.010	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1232	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1242	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1248	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1254	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	
Aroclor 1260	ND	U	0.0050	1	02/06/23	02/13/23	KWG2300319	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	100	10-140	02/13/23	Acceptable

Comments: _____

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2215101

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2215101-001	71
WR306-OUT	K2215101-002	70
Method Blank	KWG2300319-1	100
Lab Control Sample	KWG2300319-2	96
Duplicate Lab Control Sample	KWG2300319-3	50

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.
 Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2215101
Date Extracted: 02/06/2023
Date Analyzed: 02/13/2023

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2300319

Analyte Name	Lab Control Sample KWG2300319-2 Lab Control Spike			Duplicate Lab Control Sample KWG2300319-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.126	0.125	101	0.0620	0.125	50	31-164	68 *	30
Aroclor 1260	0.132	0.125	105	0.0662	0.125	53	34-182	66 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2215101-001

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.018 J	0.020	0.0013	1	01/03/23 14:27	12/27/22	
Acenaphthene	0.0059 J	0.020	0.0012	1	01/03/23 14:27	12/27/22	
Acenaphthylene	0.0072 J	0.020	0.0011	1	01/03/23 14:27	12/27/22	
Anthracene	0.0050 J	0.020	0.00082	1	01/03/23 14:27	12/27/22	
Benz(a)anthracene	0.0069 J	0.020	0.00097	1	01/03/23 14:27	12/27/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	01/03/23 14:27	12/27/22	
Benzo(b)fluoranthene	0.013 J	0.020	0.00083	1	01/03/23 14:27	12/27/22	
Benzo(g,h,i)perylene	0.016 J	0.020	0.00086	1	01/03/23 14:27	12/27/22	
Benzo(k)fluoranthene	0.0029 J	0.020	0.00094	1	01/03/23 14:27	12/27/22	
Chrysene	0.017 J	0.020	0.00076	1	01/03/23 14:27	12/27/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/03/23 14:27	12/27/22	
Fluoranthene	0.048	0.020	0.00082	1	01/03/23 14:27	12/27/22	
Fluorene	0.0085 J	0.020	0.0011	1	01/03/23 14:27	12/27/22	
Indeno(1,2,3-cd)pyrene	0.0082 J	0.020	0.00089	1	01/03/23 14:27	12/27/22	
Naphthalene	0.025	0.020	0.0014	1	01/03/23 14:27	12/27/22	
Phenanthrene	0.060	0.020	0.0011	1	01/03/23 14:27	12/27/22	
Pyrene	0.091	0.020	0.0010	1	01/03/23 14:27	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	107	42 - 133	01/03/23 14:27	
Fluorene-d10	104	42 - 131	01/03/23 14:27	
Terphenyl-d14	98	32 - 129	01/03/23 14:27	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2215101-002

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.018 J	0.020	0.0013	1	01/03/23 14:53	12/27/22	
Acenaphthene	0.0070 J	0.020	0.0012	1	01/03/23 14:53	12/27/22	
Acenaphthylene	0.0096 J	0.020	0.0011	1	01/03/23 14:53	12/27/22	
Anthracene	0.0068 J	0.020	0.00082	1	01/03/23 14:53	12/27/22	
Benz(a)anthracene	0.0089 J	0.020	0.00097	1	01/03/23 14:53	12/27/22	
Benzo(a)pyrene	0.025	0.020	0.0011	1	01/03/23 14:53	12/27/22	
Benzo(b)fluoranthene	0.016 J	0.020	0.00083	1	01/03/23 14:53	12/27/22	
Benzo(g,h,i)perylene	0.021	0.020	0.00086	1	01/03/23 14:53	12/27/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	01/03/23 14:53	12/27/22	
Chrysene	0.022	0.020	0.00076	1	01/03/23 14:53	12/27/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/03/23 14:53	12/27/22	
Fluoranthene	0.066	0.020	0.00082	1	01/03/23 14:53	12/27/22	
Fluorene	0.0092 J	0.020	0.0011	1	01/03/23 14:53	12/27/22	
Indeno(1,2,3-cd)pyrene	0.0090 J	0.020	0.00089	1	01/03/23 14:53	12/27/22	
Naphthalene	0.028	0.020	0.0014	1	01/03/23 14:53	12/27/22	
Phenanthrene	0.072	0.020	0.0011	1	01/03/23 14:53	12/27/22	
Pyrene	0.14	0.020	0.0010	1	01/03/23 14:53	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	115	42 - 133	01/03/23 14:53	
Fluorene-d10	110	42 - 131	01/03/23 14:53	
Terphenyl-d14	102	32 - 129	01/03/23 14:53	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2215101-001	107	104	98
WR306-OUT	K2215101-002	115	110	102
Method Blank	KQ2222778-01	132	127	122
Lab Control Sample	KQ2222778-02	111	100	92
Duplicate Lab Control Sample	KQ2222778-03	113	102	94

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2222778-01

Service Request: K2215101
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0016 J	0.020	0.0013	1	01/03/23 13:08	12/27/22	
Acenaphthene	ND U	0.020	0.0012	1	01/03/23 13:08	12/27/22	
Acenaphthylene	ND U	0.020	0.0011	1	01/03/23 13:08	12/27/22	
Anthracene	ND U	0.020	0.00082	1	01/03/23 13:08	12/27/22	
Benz(a)anthracene	0.0022 J	0.020	0.00097	1	01/03/23 13:08	12/27/22	
Benzo(a)pyrene	ND U	0.020	0.0011	1	01/03/23 13:08	12/27/22	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	01/03/23 13:08	12/27/22	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	01/03/23 13:08	12/27/22	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	01/03/23 13:08	12/27/22	
Chrysene	ND U	0.020	0.00076	1	01/03/23 13:08	12/27/22	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	01/03/23 13:08	12/27/22	
Fluoranthene	ND U	0.020	0.00082	1	01/03/23 13:08	12/27/22	
Fluorene	ND U	0.020	0.0011	1	01/03/23 13:08	12/27/22	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	01/03/23 13:08	12/27/22	
Naphthalene	0.0030 J	0.020	0.0014	1	01/03/23 13:08	12/27/22	
Phenanthrene	ND U	0.020	0.0011	1	01/03/23 13:08	12/27/22	
Pyrene	ND U	0.020	0.0010	1	01/03/23 13:08	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	132	42 - 133	01/03/23 13:08	
Fluorene-d10	127	42 - 131	01/03/23 13:08	
Terphenyl-d14	122	32 - 129	01/03/23 13:08	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2215101
Date Analyzed: 01/03/23
Date Extracted: 12/27/22

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 790798

Lab Control Sample
KQ2222778-02

Duplicate Lab Control Sample
KQ2222778-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.16	2.78	78	2.19	2.78	79	48-120	1	30
Acenaphthene	2.63	2.78	95	2.71	2.78	97	63-121	3	30
Acenaphthylene	3.08	2.78	111	3.12	2.78	112	58-124	2	30
Anthracene	2.95	2.78	106	3.03	2.78	109	68-127	3	30
Benz(a)anthracene	2.96	2.78	106	3.07	2.78	110	74-124	4	30
Benzo(a)pyrene	3.14	2.78	113	3.28	2.78	118	75-131	4	30
Benzo(b)fluoranthene	3.11	2.78	112	3.22	2.78	116	73-136	3	30
Benzo(g,h,i)perylene	2.44	2.78	88	2.56	2.78	92	63-127	5	30
Benzo(k)fluoranthene	3.20	2.78	115	3.36	2.78	121	74-134	5	30
Chrysene	2.86	2.78	103	2.98	2.78	107	74-132	4	30
Dibenz(a,h)anthracene	2.83	2.78	102	2.94	2.78	106	59-135	4	30
Fluoranthene	2.77	2.78	100	2.85	2.78	103	70-127	3	30
Fluorene	2.69	2.78	97	2.77	2.78	100	68-121	3	30
Indeno(1,2,3-cd)pyrene	3.16	2.78	114	3.28	2.78	118	63-136	4	30
Naphthalene	2.63	2.78	95	2.65	2.78	96	52-115	<1	30
Phenanthrene	2.70	2.78	97	2.75	2.78	99	64-126	2	30
Pyrene	3.04	2.78	109	3.13	2.78	113	72-127	3	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2215101-001

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	4.5	0.94	0.13	1	01/04/23 00:44	12/27/22	
Butyl Benzyl Phthalate	0.27	0.19	0.021	1	01/04/23 00:44	12/27/22	
Di-n-butyl Phthalate	0.28	0.19	0.023	1	01/04/23 00:44	12/27/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/04/23 00:44	12/27/22	
Diethyl Phthalate	0.13 J	0.19	0.015	1	01/04/23 00:44	12/27/22	
Dimethyl Phthalate	0.84	0.19	0.021	1	01/04/23 00:44	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	40	35 - 105	01/04/23 00:44	
Nitrobenzene-d5	74	40 - 117	01/04/23 00:44	
p-Terphenyl-d14	55	48 - 109	01/04/23 00:44	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2215101-002

Service Request: K2215101
Date Collected: 12/20/22 20:44
Date Received: 12/21/22 10:40
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	5.5	1.0	0.14	1	01/04/23 01:16	12/27/22	
Butyl Benzyl Phthalate	0.49	0.20	0.022	1	01/04/23 01:16	12/27/22	
Di-n-butyl Phthalate	0.33	0.20	0.024	1	01/04/23 01:16	12/27/22	
Di-n-octyl Phthalate	ND U	0.20	0.034	1	01/04/23 01:16	12/27/22	
Diethyl Phthalate	0.14 J	0.20	0.016	1	01/04/23 01:16	12/27/22	
Dimethyl Phthalate	0.85	0.20	0.022	1	01/04/23 01:16	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	44	35 - 105	01/04/23 01:16	
Nitrobenzene-d5	82	40 - 117	01/04/23 01:16	
p-Terphenyl-d14	72	48 - 109	01/04/23 01:16	

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QA/QC Report

Client: Herrera Environmental

Service Request: K2215101

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2215101-001	40	74	55
WR306-OUT	K2215101-002	44	82	72
Method Blank	KQ2222743-01	69	69	90
Lab Control Sample	KQ2222743-02	66	67	73
Duplicate Lab Control Sample	KQ2222743-03	68	71	75

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2222743-01

Service Request: K2215101
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	0.21 J	0.94	0.13	1	01/03/23 18:11	12/27/22	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/03/23 18:11	12/27/22	
Di-n-butyl Phthalate	0.12 J	0.19	0.023	1	01/03/23 18:11	12/27/22	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/03/23 18:11	12/27/22	
Diethyl Phthalate	ND U	0.19	0.015	1	01/03/23 18:11	12/27/22	
Dimethyl Phthalate	ND U	0.19	0.021	1	01/03/23 18:11	12/27/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	69	35 - 105	01/03/23 18:11	
Nitrobenzene-d5	69	40 - 117	01/03/23 18:11	
p-Terphenyl-d14	90	48 - 109	01/03/23 18:11	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2215101

Date Analyzed: 01/03/23

Date Extracted: 12/27/22

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 791517

Lab Control Sample
KQ2222743-02

Duplicate Lab Control Sample
KQ2222743-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	3.27	5.00	65	3.79	5.00	76	42-147	15	30
Butyl Benzyl Phthalate	3.20	5.00	64	3.32	5.00	66	59-119	4	30
Diethyl Phthalate	3.45	5.00	69	3.56	5.00	71	58-114	3	30
Dimethyl Phthalate	3.28	5.00	66	3.38	5.00	68	58-109	3	30
Di-n-butyl Phthalate	3.38	5.00	68	3.50	5.00	70	61-121	4	30
Di-n-octyl Phthalate	3.21	5.00	64	3.23	5.00	65	50-125	<1	30



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March 20, 2023

Analytical Report for Service Request No: K2300870

Jess Brown
Herrera Environmental
107 SE Washington St Suite 140
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory January 20, 2023
For your reference, these analyses have been assigned our service request number **K2300870**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2300870
Date Received: 01/20/2023

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 01/20/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 02/07/2023: The upper control criterion was exceeded for Acenaphthylene, Anthracene, Benz(a)anthracene, Benzo(a)pyrene and Pyrene in replicate Laboratory Control Sample (LCS/DLCS) KQ2301282-02/-03. Some of the analytes in question were detected in the associated field samples. The error associated with elevated recovery indicated a potential high bias. The sample data was not significantly affected. No further corrective action was taken.

Semivolatile GC:

No significant anomalies were noted with this analysis.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

Method SM 5310 B, 01/31/2023: The matrix spike recovery of Total Organic Carbon (TOC) for sample WR306-IN was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

Approved by



Date

03/20/2023



Chain of Custody

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Chain of Custody Record

K2300870

[illegible]

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface/Storm Water W=Water (blanks) M=Material O=Other (specify)

Cooler Receipt and Preservation Form

PM 11/11

Client Herrera Service Request K23 00870
 Received: 1/20/23 Opened: 1/20/23 By: AP Unloaded: 1/20/23 By: AP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other Carboys NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number <u>NA</u>	Filed
<u>0.5</u>		<u>1207</u>					
<u>2.8</u>		<u>↓</u>					

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges?

NA Y N
NA Y N

If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM.

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves

7. Were custody papers properly filled out (ink, signed, etc.)?

NA Y N

8. Were samples received in good condition (unbroken)

NA Y N

9. Were all sample labels complete (ie, analysis, preservation, etc.)?

NA Y N

10. Did all sample labels and tags agree with custody papers?

NA Y N

11. Were appropriate bottles/containers and volumes received for the tests indicated?

NA Y N

12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below

NA Y N

13. Were VOA vials received without headspace? Indicate in the table below.

NA Y N

14. Was C12/Res negative?

NA Y N

15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM

NA Y N

16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2300870
Date Collected: 01/18/23
Date Received: 01/20/23
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN	K2300870-001	42.4	2.0	1	01/26/23 13:50	1/26/23	
WR306-OUT	K2300870-002	42.4	2.0	1	01/26/23 13:50	1/26/23	
Method Blank	K2300870-MB1	ND U	2.0	1	01/26/23 13:50	1/26/23	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870
Date Analyzed: 01/26/23
Date Extracted: 01/26/23

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 792906

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2300870-LCS	66.4	69.4	96	90-116

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2300870
Date Collected: 01/18/23
Date Received: 01/20/23
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN	K2300870-001	144	6.7	-	1	01/24/23 10:19	
WR306-OUT	K2300870-002	116	6.7	-	1	01/24/23 10:19	
Method Blank	K2300870-MB1	ND U	5.0	-	1	01/24/23 10:19	
Method Blank	K2300870-MB2	ND U	5.0	-	1	01/24/23 10:19	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870
Date Analyzed: 01/24/23
Date Extracted: NA

Lab Control Sample Summary
Solids, Total Suspended (TSS)

Analysis Method: SM 2540 D
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 792422

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2300870-LCS	392	400	98	85-115

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2300870
Date Collected: 01/18/23
Date Received: 01/20/23
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
WR306-IN	K2300870-001	4.70	0.50	1	01/31/23 16:35	
WR306-OUT	K2300870-002	4.80	0.50	1	01/31/23 16:35	
Method Blank	K2300870-MB1	ND U	0.50	1	01/31/23 16:35	

ALS Group USA, Corp.

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QA/QC Report

Client: Herrera Environmental
Project ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870**Date Collected:** 01/18/23**Date Received:** 01/20/23**Date Analyzed:** 01/31/23**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: WR306-IN
Lab Code: K2300870-001

Units: mg/L**Basis:** NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample	Average	RPD	RPD Limit
				K2300870-001DUP Result			
Carbon, Total Organic (TOC)	SM 5310 B	0.50	4.70	5.00	4.85	6	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870
Date Collected: 01/18/23
Date Received: 01/20/23
Date Analyzed: 01/31/23
Date Extracted: NA

Matrix Spike Summary
Carbon, Total Organic (TOC)

Sample Name: WR306-IN
Lab Code: K2300870-001
Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA

Matrix Spike
K2300870-001MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	4.70	33.6	25.0	116 *	85-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870
Date Analyzed: 01/31/23
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 793206

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2300870-LCS	25.1	25.0	100	85-115



Metals

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2300870-001

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.40	ug/L	0.50	0.09	1	01/25/23 15:54	01/24/23	
Cadmium	6020A	0.359	ug/L	0.020	0.008	1	01/25/23 15:54	01/24/23	
Copper	6020A	39.3	ug/L	0.10	0.05	1	01/25/23 15:54	01/24/23	
Lead	6020A	11.0	ug/L	0.040	0.006	1	01/25/23 15:54	01/24/23	
Nickel	6020A	5.52	ug/L	0.20	0.04	1	01/25/23 15:54	01/24/23	
Zinc	6020A	300	ug/L	2.0	0.5	1	01/25/23 15:54	01/24/23	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2300870-002

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.23	ug/L	0.50	0.09	1	01/25/23 15:56	01/24/23	
Cadmium	6020A	0.289	ug/L	0.020	0.008	1	01/25/23 15:56	01/24/23	
Copper	6020A	33.2	ug/L	0.10	0.05	1	01/25/23 15:56	01/24/23	
Lead	6020A	8.57	ug/L	0.040	0.006	1	01/25/23 15:56	01/24/23	
Nickel	6020A	4.86	ug/L	0.20	0.04	1	01/25/23 15:56	01/24/23	
Zinc	6020A	253	ug/L	2.0	0.5	1	01/25/23 15:56	01/24/23	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2301162-05

Service Request: K2300870
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	01/25/23 14:12	01/24/23	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	01/25/23 14:12	01/24/23	
Copper	6020A	ND U	ug/L	0.10	0.05	1	01/25/23 14:12	01/24/23	
Lead	6020A	ND U	ug/L	0.020	0.006	1	01/25/23 14:12	01/24/23	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	01/25/23 14:12	01/24/23	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	01/25/23 14:12	01/24/23	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870

Date Analyzed: 01/25/23

Lab Control Sample Summary
Total Metals

Units:ug/L

Basis:NA

Lab Control Sample
KQ2301162-06

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	48.4	50.0	97	80-120
Cadmium	6020A	24.8	25.0	99	80-120
Copper	6020A	12.4	12.5	99	80-120
Lead	6020A	49.4	50.0	99	80-120
Nickel	6020A	24.9	25.0	100	80-120
Zinc	6020A	24.7	25.0	99	80-120



Polychlorinated Biphenyls (PCBs)

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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2300870
Date Collected: 01/18/2023
Date Received: 01/20/2023

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN
Lab Code: K2300870-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1221	ND	U	0.020	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1232	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1242	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1248	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1254	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1260	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	81	10-140	03/16/23	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2300870
Date Collected: 01/18/2023
Date Received: 01/20/2023

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT
Lab Code: K2300870-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1221	ND	U	0.020	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1232	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1242	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1248	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1254	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	
Aroclor 1260	ND	U	0.010	0.0064	1	03/09/23	03/16/23	KWG2300453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	82	10-140	03/16/23	Acceptable

Comments: _____

ALS Group USA, Corp. dba ALS Environmental

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2300870
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2300453-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1221	ND	U	0.010	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1232	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1242	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1248	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1254	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	
Aroclor 1260	ND	U	0.0050	0.0032	1	03/09/23	03/15/23	KWG2300453	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	83	10-140	03/15/23	Acceptable

Comments: _____

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2300870

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN	K2300870-001	81
WR306-OUT	K2300870-002	82
Method Blank	KWG2300453-1	83
Lab Control Sample	KWG2300453-2	101
Duplicate Lab Control Sample	KWG2300453-3	88

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2300870
Date Extracted: 03/09/2023
Date Analyzed: 03/15/2023

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2300453

Analyte Name	Lab Control Sample KWG2300453-2 Lab Control Spike			Duplicate Lab Control Sample KWG2300453-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.112	0.125	90	0.113	0.125	90	31-164	0	30
Aroclor 1260	0.124	0.125	99	0.125	0.125	100	34-182	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2300870-001

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0085 J	0.020	0.0013	1	02/07/23 18:52	1/24/23	
Acenaphthene	0.0057 J	0.020	0.0012	1	02/07/23 18:52	1/24/23	
Acenaphthylene	0.0066 J	0.020	0.0011	1	02/07/23 18:52	1/24/23	*
Anthracene	ND U	0.020	0.00082	1	02/07/23 18:52	1/24/23	*
Benz(a)anthracene	0.024	0.020	0.00097	1	02/07/23 18:52	1/24/23	*
Benzo(a)pyrene	0.043	0.020	0.0011	1	02/07/23 18:52	1/24/23	*
Benzo(b)fluoranthene	0.043	0.020	0.00083	1	02/07/23 18:52	1/24/23	
Benzo(g,h,i)perylene	0.058	0.020	0.00086	1	02/07/23 18:52	1/24/23	
Benzo(k)fluoranthene	0.011 J	0.020	0.00094	1	02/07/23 18:52	1/24/23	
Chrysene	0.058	0.020	0.00076	1	02/07/23 18:52	1/24/23	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	02/07/23 18:52	1/24/23	
Fluoranthene	0.11	0.020	0.00082	1	02/07/23 18:52	1/24/23	
Fluorene	0.012 J	0.020	0.0011	1	02/07/23 18:52	1/24/23	
Indeno(1,2,3-cd)pyrene	0.025	0.020	0.00089	1	02/07/23 18:52	1/24/23	
Naphthalene	0.011 J	0.020	0.0014	1	02/07/23 18:52	1/24/23	
Phenanthrene	0.090	0.020	0.0011	1	02/07/23 18:52	1/24/23	
Pyrene	0.29	0.020	0.0010	1	02/07/23 18:52	1/24/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	63	42 - 133	02/07/23 18:52	
Fluorene-d10	70	42 - 131	02/07/23 18:52	
Terphenyl-d14	62	32 - 129	02/07/23 18:52	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2300870-002

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0068 J	0.020	0.0013	1	02/07/23 19:18	1/24/23	
Acenaphthene	0.0038 J	0.020	0.0012	1	02/07/23 19:18	1/24/23	
Acenaphthylene	0.0048 J	0.020	0.0011	1	02/07/23 19:18	1/24/23	*
Anthracene	ND U	0.020	0.00082	1	02/07/23 19:18	1/24/23	*
Benz(a)anthracene	0.014 J	0.020	0.00097	1	02/07/23 19:18	1/24/23	*
Benzo(a)pyrene	0.032	0.020	0.0011	1	02/07/23 19:18	1/24/23	*
Benzo(b)fluoranthene	0.029	0.020	0.00083	1	02/07/23 19:18	1/24/23	
Benzo(g,h,i)perylene	0.042	0.020	0.00086	1	02/07/23 19:18	1/24/23	
Benzo(k)fluoranthene	0.0077 J	0.020	0.00094	1	02/07/23 19:18	1/24/23	
Chrysene	0.041	0.020	0.00076	1	02/07/23 19:18	1/24/23	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	02/07/23 19:18	1/24/23	
Fluoranthene	0.073	0.020	0.00082	1	02/07/23 19:18	1/24/23	
Fluorene	0.0082 J	0.020	0.0011	1	02/07/23 19:18	1/24/23	
Indeno(1,2,3-cd)pyrene	0.017 J	0.020	0.00089	1	02/07/23 19:18	1/24/23	
Naphthalene	0.0067 J	0.020	0.0014	1	02/07/23 19:18	1/24/23	
Phenanthrene	0.064	0.020	0.0011	1	02/07/23 19:18	1/24/23	
Pyrene	0.19	0.020	0.0010	1	02/07/23 19:18	1/24/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	48	42 - 133	02/07/23 19:18	
Fluorene-d10	53	42 - 131	02/07/23 19:18	
Terphenyl-d14	53	32 - 129	02/07/23 19:18	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42-133	42-131	32-129
WR306-IN	K2300870-001	63	70	62
WR306-OUT	K2300870-002	48	53	53
Method Blank	KQ2301282-01	96	91	92
Lab Control Sample	KQ2301282-02	113	103	72
Duplicate Lab Control Sample	KQ2301282-03	133	119	107

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2301282-01

Service Request: K2300870
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0022 J	0.020	0.0013	1	02/07/23 15:24	1/24/23	
Acenaphthene	0.0023 J	0.020	0.0012	1	02/07/23 15:24	1/24/23	
Acenaphthylene	0.0032 J	0.020	0.0011	1	02/07/23 15:24	1/24/23	
Anthracene	0.0022 J	0.020	0.00082	1	02/07/23 15:24	1/24/23	
Benz(a)anthracene	0.0047 J	0.020	0.00097	1	02/07/23 15:24	1/24/23	
Benzo(a)pyrene	0.011 J	0.020	0.0011	1	02/07/23 15:24	1/24/23	
Benzo(b)fluoranthene	0.0038 J	0.020	0.00083	1	02/07/23 15:24	1/24/23	
Benzo(g,h,i)perylene	0.0028 J	0.020	0.00086	1	02/07/23 15:24	1/24/23	
Benzo(k)fluoranthene	0.0030 J	0.020	0.00094	1	02/07/23 15:24	1/24/23	
Chrysene	0.0023 J	0.020	0.00076	1	02/07/23 15:24	1/24/23	
Dibenz(a,h)anthracene	0.0024 J	0.020	0.0013	1	02/07/23 15:24	1/24/23	
Fluoranthene	0.0038 J	0.020	0.00082	1	02/07/23 15:24	1/24/23	
Fluorene	0.0029 J	0.020	0.0011	1	02/07/23 15:24	1/24/23	
Indeno(1,2,3-cd)pyrene	0.0033 J	0.020	0.00089	1	02/07/23 15:24	1/24/23	
Naphthalene	0.0039 J	0.020	0.0014	1	02/07/23 15:24	1/24/23	
Phenanthrene	0.0047 J	0.020	0.0011	1	02/07/23 15:24	1/24/23	
Pyrene	0.0045 J	0.020	0.0010	1	02/07/23 15:24	1/24/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	96	42 - 133	02/07/23 15:24	
Fluorene-d10	91	42 - 131	02/07/23 15:24	
Terphenyl-d14	92	32 - 129	02/07/23 15:24	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870
Date Analyzed: 02/07/23
Date Extracted: 01/24/23

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 795272

Lab Control Sample
KQ2301282-02

Duplicate Lab Control Sample
KQ2301282-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	2.91	2.78	105	2.93	2.78	106	48-120	<1	30
Acenaphthene	3.30	2.78	119	3.29	2.78	118	63-121	<1	30
Acenaphthylene	3.58	2.78	129 *	3.61	2.78	130 *	58-124	<1	30
Anthracene	3.71	2.78	133 *	3.71	2.78	134 *	68-127	<1	30
Benz(a)anthracene	3.71	2.78	134 *	3.78	2.78	136 *	74-124	2	30
Benzo(a)pyrene	3.72	2.78	134 *	3.80	2.78	137 *	75-131	2	30
Benzo(b)fluoranthene	3.71	2.78	134	3.76	2.78	136	73-136	1	30
Benzo(g,h,i)perylene	3.02	2.78	109	3.10	2.78	112	63-127	2	30
Benzo(k)fluoranthene	3.62	2.78	130	3.72	2.78	134	74-134	3	30
Chrysene	3.33	2.78	120	3.39	2.78	122	74-132	2	30
Dibenz(a,h)anthracene	3.23	2.78	116	3.30	2.78	119	59-135	2	30
Fluoranthene	3.37	2.78	121	3.41	2.78	123	70-127	1	30
Fluorene	3.29	2.78	118	3.31	2.78	119	68-121	<1	30
Indeno(1,2,3-cd)pyrene	3.74	2.78	135	3.79	2.78	136	63-136	1	30
Naphthalene	3.10	2.78	112	3.13	2.78	113	52-115	<1	30
Phenanthrene	3.32	2.78	120	3.34	2.78	120	64-126	<1	30
Pyrene	3.66	2.78	132 *	3.66	2.78	132 *	72-127	<1	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN
Lab Code: K2300870-001

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	7.9 J	19	2.6	20	02/17/23 06:27	1/25/23	
Butyl Benzyl Phthalate	ND U	3.8	0.42	20	02/17/23 06:27	1/25/23	
Di-n-butyl Phthalate	ND U	3.8	0.46	20	02/17/23 06:27	1/25/23	
Di-n-octyl Phthalate	ND U	7.7	0.66	20	02/17/23 06:27	1/25/23	
Diethyl Phthalate	ND U	3.8	0.30	20	02/17/23 06:27	1/25/23	
Dimethyl Phthalate	ND U	3.8	0.42	20	02/17/23 06:27	1/25/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	76	35 - 105	02/17/23 06:27	
Nitrobenzene-d5	81	40 - 117	02/17/23 06:27	
p-Terphenyl-d14	85	48 - 109	02/17/23 06:27	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT
Lab Code: K2300870-002

Service Request: K2300870
Date Collected: 01/18/23 11:21
Date Received: 01/20/23 11:50

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	5.1 J	9.6	1.3	10	02/17/23 05:59	1/25/23	
Butyl Benzyl Phthalate	ND U	1.9	0.21	10	02/17/23 05:59	1/25/23	
Di-n-butyl Phthalate	1.3 J	1.9	0.23	10	02/17/23 05:59	1/25/23	
Di-n-octyl Phthalate	ND U	3.8	0.33	10	02/17/23 05:59	1/25/23	
Diethyl Phthalate	ND U	1.9	0.15	10	02/17/23 05:59	1/25/23	
Dimethyl Phthalate	0.43 J	1.9	0.21	10	02/17/23 05:59	1/25/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	71	35 - 105	02/17/23 05:59	
Nitrobenzene-d5	70	40 - 117	02/17/23 05:59	
p-Terphenyl-d14	70	48 - 109	02/17/23 05:59	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2300870

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35-105	40-117	48-109
WR306-IN	K2300870-001	76	81	85
WR306-OUT	K2300870-002	71	70	70
Method Blank	KQ2301291-01	68	68	81
Lab Control Sample	KQ2301291-02	70	74	70
Duplicate Lab Control Sample	KQ2301291-03	73	78	73

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2301291-01

Service Request: K2300870
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.94	0.13	1	02/16/23 20:20	1/25/23	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	02/16/23 20:20	1/25/23	
Di-n-butyl Phthalate	0.15 J	0.19	0.023	1	02/16/23 20:20	1/25/23	
Di-n-octyl Phthalate	ND U	0.38	0.033	1	02/16/23 20:20	1/25/23	
Diethyl Phthalate	ND U	0.19	0.015	1	02/16/23 20:20	1/25/23	
Dimethyl Phthalate	ND U	0.19	0.021	1	02/16/23 20:20	1/25/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	68	35 - 105	02/16/23 20:20	
Nitrobenzene-d5	68	40 - 117	02/16/23 20:20	
p-Terphenyl-d14	81	48 - 109	02/16/23 20:20	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2300870

Date Analyzed: 02/16/23

Date Extracted: 01/25/23

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 796034

Lab Control Sample
KQ2301291-02

Duplicate Lab Control Sample
KQ2301291-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.53	5.00	91	4.68	5.00	94	42-147	3	30
Butyl Benzyl Phthalate	4.75	5.00	95	5.05	5.00	101	59-119	6	30
Diethyl Phthalate	4.90	5.00	98	5.38	5.00	108	58-114	9	30
Dimethyl Phthalate	4.52	5.00	90	4.87	5.00	97	58-109	8	30
Di-n-butyl Phthalate	4.93	5.00	99	5.30	5.00	106	61-121	7	30
Di-n-octyl Phthalate	5.13	5.00	103	5.27	5.00	105	50-125	3	30



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January 23, 2024

Analytical Report for Service Request No: K2314429

Jess Brown
Herrera Environmental
107 SE Washington St Suite 140
Portland, OR 97214

RE: ODOT-Portland Harbor Perf. Monitoring / 10-04681-006

Dear Jess,

Enclosed are the results of the sample(s) submitted to our laboratory December 26, 2023
For your reference, these analyses have been assigned our service request number **K2314429**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



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Low Level Semivolatile Organic Compounds by GCMS

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring
Sample Matrix: Storm Water

Service Request: K2314429
Date Received: 12/26/2023

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two storm water samples were received for analysis at ALS Environmental on 12/26/2023. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivolatiles by GC/MS:

Method 8270D, 12/29/2023: The upper control criterion was exceeded for Acenaphthene, Acenaphthylene, Benz(a)anthracene, and Fluorene in Laboratory Control Sample (LCS) KQ2322599-02 and/or Duplicate Laboratory Control Sample (DLCS) KQ2322599-03. The analytes in question were not detected above the MRL in the associated field samples. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was taken.

Method 8270D, 12/29/2023: The upper control criterion was exceeded for Pyrene in Laboratory Control Sample (LCS) KQ2322599-02 and Duplicate Laboratory Control Sample (DLCS) KQ2322599-03. The error associated with elevated recovery indicated a potential slight high bias. The sample data was not significantly affected. No further corrective action was taken.

Method 8270D, 12/29/2023: The upper control criterion was exceeded for Chrysene in Duplicate Laboratory Control Sample (LCS) KQ2322599-03. The recovery for this analyte was acceptable for the Laboratory Control Sample (LCS) KQ2322599-02. The error associated with elevated recovery indicated a potential slight high bias. The sample data was not significantly affected. No further corrective action was taken.

Method 8270D, 12/29/2023: The upper control criterion was exceeded for Terphenyl-d14 in Laboratory Control Sample (LCS) KQ2322599-02 and Duplicate Laboratory Control Sample (DLCS) KQ2322599-03. The recovery for this surrogate was acceptable for the associated field samples and Method Blank (MB) KQ2322599-01. The error associated with elevated recovery indicated a high bias. The sample data was not significantly affected. No further corrective action was taken.

Semivolatile GC:

No significant anomalies were noted with this analysis.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by



Date

01/23/2024



Chain of Custody

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



Chain of Custody Record

K2314429

[illegible]

Matrix Codes: A=Air GW=Groundwater SE=Sediment SO=Soil SW=Surface/Storm Water W=Water (blanks) M=Material O=Other (specify)

PM HH

Cooler Receipt and Preservation Form

Client Herrera Service Request K23 14429
 Received: 12/26/23 Opened: 12/26/23 By: NP Unloaded: 12/26/23 By: NP

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified If out of temp	Tracking Number	NA	Filed
	0.4	1800						
	1.3	1800						

4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:

If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":

5. Were samples received within the method specified temperature ranges?

NA Y N

If no, were they received on ice and same day as collected? If not, notate the cooler # above and notify the PM.

NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

6. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves

7. Were custody papers properly filled out (ink, signed, etc.)?

NA Y N

8. Were samples received in good condition (unbroken)

NA Y N

9. Were all sample labels complete (ie, analysis, preservation, etc.)?

NA Y N

10. Did all sample labels and tags agree with custody papers?

NA Y N

11. Were appropriate bottles/containers and volumes received for the tests indicated?

NA Y N

12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below

NA Y N

13. Were VOA vials received without headspace? Indicate in the table below.

NA Y N

14. Was C12/Res negative?

NA Y N

15. Were samples received within the method specified time limit? If not, notate the error below and notify the PM

NA Y N

16. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N

Underfilled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: _____



General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2340 C
Prep Method: Method

Service Request: K2314429
Date Collected: 12/22/23
Date Received: 12/26/23
Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
WR306-IN-20231222	K2314429-001	29.7	2.0	0.8	1	01/04/24 10:45	1/4/24	
WR306-OUT-20231222	K2314429-002	29.7	2.0	0.8	1	01/04/24 10:45	1/4/24	
Method Blank	K2314429-MB	ND U	2.0	0.8	1	01/04/24 10:45	1/4/24	

ALS Group USA, Corp.
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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429
Date Analyzed: 01/04/24
Date Extracted: 01/04/24

Lab Control Sample Summary
Hardness, Total as CaCO₃

Analysis Method: SM 2340 C
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 828892

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2314429-LCS2	66.8	69.4	96	90-116

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 2540 D
Prep Method: None

Service Request: K2314429
Date Collected: 12/22/23
Date Received: 12/26/23
Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN-20231222	K2314429-001	153	10	-	1	12/28/23 15:18	
WR306-OUT-20231222	K2314429-002	144	10	-	1	12/28/23 15:18	
Method Blank	K2314429-MB	ND U	1.0	-	1	12/28/23 15:18	

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QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2314429

Date Analyzed: 12/28/23

Date Extracted: NA

Duplicate Lab Control Sample Summary

General Chemistry Parameters

Analysis Method: SM 2540 D

Prep Method: None

Units: mg/L

Basis: NA

Analysis Lot: 828379

Lab Control Sample

K2314429-LCS1

Duplicate Lab Control Sample

K2314429-DLCS1

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Solids, Total Suspended (TSS)	378	390	97	386	390	99	85-115	2	5

ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Analysis Method: SM 5310 B
Prep Method: None

Service Request: K2314429
Date Collected: 12/22/23
Date Received: 12/26/23
Units: mg/L
Basis: NA

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
WR306-IN-20231222	K2314429-001	5.2	2.0	0.4	4	01/09/24 16:42	
WR306-OUT-20231222	K2314429-002	16.4	2.0	0.4	4	01/09/24 16:42	
Method Blank	K2314429-MB	ND U	0.50	0.10	1	01/09/24 16:42	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429
Date Analyzed: 01/09/24
Date Extracted: NA

Lab Control Sample Summary
Carbon, Total Organic (TOC)

Analysis Method: SM 5310 B
Prep Method: None

Units: mg/L
Basis: NA
Analysis Lot: 829278

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2314429-LCS2	24.1	25.0	96	85-115



Metals

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ALS Group USA, Corp.
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN-20231222
Lab Code: K2314429-001

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	1.05	ug/L	0.50	0.09	1	01/05/24 12:19	01/04/24	
Cadmium	6020A	0.372	ug/L	0.020	0.008	1	01/05/24 12:19	01/04/24	
Copper	6020A	42.2	ug/L	0.10	0.05	1	01/05/24 12:19	01/04/24	
Lead	6020A	47.7	ug/L	0.020	0.006	1	01/05/24 12:19	01/04/24	
Nickel	6020A	5.66	ug/L	0.20	0.04	1	01/05/24 12:19	01/04/24	
Zinc	6020A	329	ug/L	2.0	0.5	1	01/05/24 12:19	01/04/24	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT-20231222
Lab Code: K2314429-002

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	0.97	ug/L	0.50	0.09	1	01/05/24 12:21	01/04/24	
Cadmium	6020A	0.309	ug/L	0.020	0.008	1	01/05/24 12:21	01/04/24	
Copper	6020A	39.8	ug/L	0.10	0.05	1	01/05/24 12:21	01/04/24	
Lead	6020A	40.6	ug/L	0.020	0.006	1	01/05/24 12:21	01/04/24	
Nickel	6020A	5.13	ug/L	0.20	0.04	1	01/05/24 12:21	01/04/24	
Zinc	6020A	291	ug/L	2.0	0.5	1	01/05/24 12:21	01/04/24	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2322173-01

Service Request: K2314429
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	ug/L	0.50	0.09	1	01/05/24 11:44	01/04/24	
Cadmium	6020A	ND U	ug/L	0.020	0.008	1	01/05/24 11:44	01/04/24	
Copper	6020A	ND U	ug/L	0.10	0.05	1	01/05/24 11:44	01/04/24	
Lead	6020A	ND U	ug/L	0.020	0.006	1	01/05/24 11:44	01/04/24	
Nickel	6020A	ND U	ug/L	0.20	0.04	1	01/05/24 11:44	01/04/24	
Zinc	6020A	ND U	ug/L	2.0	0.5	1	01/05/24 11:44	01/04/24	

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dba ALS Environmental

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429
Date Analyzed: 01/05/24

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2322173-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	47.6	50.0	95	80-120
Cadmium	6020A	24.5	25.0	98	80-120
Copper	6020A	12.3	12.5	99	80-120
Lead	6020A	48.5	50.0	97	80-120
Nickel	6020A	24.8	25.0	99	80-120
Zinc	6020A	24.3	25.0	97	80-120



Polychlorinated Biphenyls (PCBs)

ALS Environmental—Kelso Laboratory
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Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2314429
Date Collected: 12/22/2023
Date Received: 12/26/2023

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-IN-20231222
Lab Code: K2314429-001
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1221	ND	U	0.015	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1232	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1242	0.021		0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1248	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1254	0.0097		0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1260	0.011	P	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	66	10-140	01/02/24	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2314429
Date Collected: 12/22/2023
Date Received: 12/26/2023

Polychlorinated Biphenyls (PCBs)

Sample Name: WR306-OUT-20231222
Lab Code: K2314429-002
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1221	ND	U	0.015	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1232	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1242	0.012	P	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1248	ND	U	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1254	0.018	P	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1260	0.010	P	0.0075	0.0048	1	12/29/23	01/02/24	KWG2400108	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	68	10-140	01/02/24	Acceptable

Comments: _____

Analytical Results

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2314429
Date Collected: NA
Date Received: NA

Polychlorinated Biphenyls (PCBs)

Sample Name: Method Blank
Lab Code: KWG2400108-1
Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1221	ND	U	0.010	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1232	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1242	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1248	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1254	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	
Aroclor 1260	ND	U	0.0050	0.0032	1	12/29/23	01/02/24	KWG2400108	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	88	10-140	01/02/24	Acceptable

Comments: _____

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm water

Service Request: K2314429

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: Percent
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>
WR306-IN-20231222	K2314429-001	66
WR306-OUT-20231222	K2314429-002	68
Method Blank	KWG2400108-1	88
Lab Control Sample	KWG2400108-2	90
Duplicate Lab Control Sample	KWG2400108-3	86

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 10-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Water

Service Request: K2314429
Date Extracted: 12/29/2023
Date Analyzed: 01/02/2024

Lab Control Spike/Duplicate Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3511
Analysis Method: 8082A

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG2400108

Analyte Name	Lab Control Sample KWG2400108-2 Lab Control Spike			Duplicate Lab Control Sample KWG2400108-3 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Spike Amount	%Rec	Result	Spike Amount	%Rec			
Aroclor 1016	0.143	0.125	114	0.140	0.125	112	31-164	2	30
Aroclor 1260	0.141	0.125	113	0.138	0.125	110	34-182	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



Polycyclic Aromatic Hydrocarbons by GC/MS SIM

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Sample Name: WR306-IN-20231222
Lab Code: K2314429-001

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.020 J	0.030	0.0020	1	12/29/23 14:41	12/28/23	
Acenaphthene	0.012 J	0.030	0.0018	1	12/29/23 14:41	12/28/23	*
Acenaphthylene	0.017 J	0.030	0.0017	1	12/29/23 14:41	12/28/23	*
Anthracene	0.016 J	0.030	0.0013	1	12/29/23 14:41	12/28/23	
Benz(a)anthracene	0.024 J	0.030	0.0015	1	12/29/23 14:41	12/28/23	*
Benzo(a)pyrene	0.026 J	0.030	0.0017	1	12/29/23 14:41	12/28/23	
Benzo(b)fluoranthene	0.044	0.030	0.0013	1	12/29/23 14:41	12/28/23	
Benzo(g,h,i)perylene	0.066	0.030	0.0013	1	12/29/23 14:41	12/28/23	
Benzo(k)fluoranthene	0.016 J	0.030	0.0015	1	12/29/23 14:41	12/28/23	
Chrysene	0.066	0.030	0.0012	1	12/29/23 14:41	12/28/23	*
Dibenz(a,h)anthracene	ND U	0.030	0.0020	1	12/29/23 14:41	12/28/23	
Fluoranthene	0.15	0.030	0.0013	1	12/29/23 14:41	12/28/23	
Fluorene	0.020 J	0.030	0.0017	1	12/29/23 14:41	12/28/23	*
Indeno(1,2,3-cd)pyrene	0.026 J	0.030	0.0014	1	12/29/23 14:41	12/28/23	
Naphthalene	0.033	0.030	0.0021	1	12/29/23 14:41	12/28/23	
Phenanthrene	0.13	0.030	0.0017	1	12/29/23 14:41	12/28/23	
Pyrene	0.30	0.030	0.0015	1	12/29/23 14:41	12/28/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	110	42 - 133	12/29/23 14:41	
Fluorene-d10	121	42 - 131	12/29/23 14:41	
Terphenyl-d14	109	32 - 129	12/29/23 14:41	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT-20231222
Lab Code: K2314429-002

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06

Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.020 J	0.030	0.0020	1	12/29/23 15:06	12/28/23	
Acenaphthene	0.012 J	0.030	0.0018	1	12/29/23 15:06	12/28/23	*
Acenaphthylene	0.015 J	0.030	0.0017	1	12/29/23 15:06	12/28/23	*
Anthracene	0.014 J	0.030	0.0013	1	12/29/23 15:06	12/28/23	
Benz(a)anthracene	0.022 J	0.030	0.0015	1	12/29/23 15:06	12/28/23	*
Benzo(a)pyrene	0.024 J	0.030	0.0017	1	12/29/23 15:06	12/28/23	
Benzo(b)fluoranthene	0.039	0.030	0.0013	1	12/29/23 15:06	12/28/23	
Benzo(g,h,i)perylene	0.058	0.030	0.0013	1	12/29/23 15:06	12/28/23	
Benzo(k)fluoranthene	0.013 J	0.030	0.0015	1	12/29/23 15:06	12/28/23	
Chrysene	0.057	0.030	0.0012	1	12/29/23 15:06	12/28/23	*
Dibenz(a,h)anthracene	ND U	0.030	0.0020	1	12/29/23 15:06	12/28/23	
Fluoranthene	0.13	0.030	0.0013	1	12/29/23 15:06	12/28/23	
Fluorene	0.018 J	0.030	0.0017	1	12/29/23 15:06	12/28/23	*
Indeno(1,2,3-cd)pyrene	0.022 J	0.030	0.0014	1	12/29/23 15:06	12/28/23	
Naphthalene	0.031	0.030	0.0021	1	12/29/23 15:06	12/28/23	
Phenanthrene	0.12	0.030	0.0017	1	12/29/23 15:06	12/28/23	
Pyrene	0.28	0.030	0.0015	1	12/29/23 15:06	12/28/23	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	106	42 - 133	12/29/23 15:06	
Fluorene-d10	119	42 - 131	12/29/23 15:06	
Terphenyl-d14	105	32 - 129	12/29/23 15:06	

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429

SURROGATE RECOVERY SUMMARY
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Extraction Method: EPA 3511

Sample Name	Lab Code	Fluoranthene-d10	Fluorene-d10	Terphenyl-d14
		42 - 133	42 - 131	32 - 129
WR306-IN-20231222	K2314429-001	110	121	109
WR306-OUT-20231222	K2314429-002	106	119	105
Method Blank	KQ2322599-01	110	114	120
Lab Control Sample	KQ2322599-02	117	119	130 *
Duplicate Lab Control Sample	KQ2322599-03	118	121	131 *

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2322599-01

Service Request: K2314429
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2-Methylnaphthalene	0.0024 J	0.020	0.0013	1	12/29/23 13:22	12/28/23	
Acenaphthene	ND U	0.020	0.0012	1	12/29/23 13:22	12/28/23	
Acenaphthylene	ND U	0.020	0.0011	1	12/29/23 13:22	12/28/23	
Anthracene	ND U	0.020	0.00082	1	12/29/23 13:22	12/28/23	
Benz(a)anthracene	0.0020 J	0.020	0.00097	1	12/29/23 13:22	12/28/23	
Benzo(a)pyrene	ND U	0.020	0.0011	1	12/29/23 13:22	12/28/23	
Benzo(b)fluoranthene	ND U	0.020	0.00083	1	12/29/23 13:22	12/28/23	
Benzo(g,h,i)perylene	ND U	0.020	0.00086	1	12/29/23 13:22	12/28/23	
Benzo(k)fluoranthene	ND U	0.020	0.00094	1	12/29/23 13:22	12/28/23	
Chrysene	ND U	0.020	0.00076	1	12/29/23 13:22	12/28/23	
Dibenz(a,h)anthracene	ND U	0.020	0.0013	1	12/29/23 13:22	12/28/23	
Fluoranthene	ND U	0.020	0.00082	1	12/29/23 13:22	12/28/23	
Fluorene	0.0012 J	0.020	0.0011	1	12/29/23 13:22	12/28/23	
Indeno(1,2,3-cd)pyrene	ND U	0.020	0.00089	1	12/29/23 13:22	12/28/23	
Naphthalene	0.0044 J	0.020	0.0014	1	12/29/23 13:22	12/28/23	
Phenanthrene	0.0048 J	0.020	0.0011	1	12/29/23 13:22	12/28/23	
Pyrene	0.0014 J	0.020	0.0010	1	12/29/23 13:22	12/28/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Fluoranthene-d10	110	42 - 133	12/29/23 13:22	
Fluorene-d10	114	42 - 131	12/29/23 13:22	
Terphenyl-d14	120	32 - 129	12/29/23 13:22	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429
Date Analyzed: 12/29/23
Date Extracted: 12/28/23

Duplicate Lab Control Sample Summary
Polycyclic Aromatic Hydrocarbons by GC/MS SIM

Analysis Method: 8270D
Prep Method: EPA 3511

Units: ug/L
Basis: NA
Analysis Lot: 828743

Lab Control Sample
KQ2322599-02

Duplicate Lab Control Sample
KQ2322599-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
2-Methylnaphthalene	3.06	2.78	110	3.24	2.78	117	48-120	6	30
Acenaphthene	3.40	2.78	122 *	3.68	2.78	133 *	63-121	8	30
Acenaphthylene	3.39	2.78	122	3.50	2.78	126 *	58-124	3	30
Anthracene	3.36	2.78	121	3.47	2.78	125	68-127	3	30
Benz(a)anthracene	3.47	2.78	125 *	3.58	2.78	129 *	74-124	3	30
Benzo(a)pyrene	3.48	2.78	125	3.59	2.78	129	75-131	3	30
Benzo(b)fluoranthene	3.62	2.78	130	3.72	2.78	134	73-136	3	30
Benzo(g,h,i)perylene	3.16	2.78	114	3.26	2.78	117	63-127	3	30
Benzo(k)fluoranthene	3.56	2.78	128	3.71	2.78	134	74-134	4	30
Chrysene	3.58	2.78	129	3.71	2.78	134 *	74-132	4	30
Dibenz(a,h)anthracene	3.29	2.78	118	3.36	2.78	121	59-135	2	30
Fluoranthene	3.15	2.78	113	3.23	2.78	116	70-127	2	30
Fluorene	3.39	2.78	122 *	3.52	2.78	127 *	68-121	4	30
Indeno(1,2,3-cd)pyrene	3.23	2.78	116	3.34	2.78	120	63-136	3	30
Naphthalene	3.12	2.78	112	3.19	2.78	115	52-115	2	30
Phenanthrene	3.33	2.78	120	3.44	2.78	124	64-126	3	30
Pyrene	3.71	2.78	134 *	3.84	2.78	138 *	72-127	3	30



Low Level Semivolatile Organic Compounds by GC/MS

ALS Environmental—Kelso Laboratory
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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-IN-20231222
Lab Code: K2314429-001

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06

Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.1	0.97	0.13	1	01/06/24 02:04	12/28/23	
Butyl Benzyl Phthalate	0.16 J	0.19	0.021	1	01/06/24 02:04	12/28/23	
Di-n-butyl Phthalate	0.14 J	0.19	0.023	1	01/06/24 02:04	12/28/23	
Di-n-octyl Phthalate	0.42	0.19	0.033	1	01/06/24 02:04	12/28/23	
Diethyl Phthalate	0.16 J	0.19	0.015	1	01/06/24 02:04	12/28/23	
Dimethyl Phthalate	0.61	0.19	0.021	1	01/06/24 02:04	12/28/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	83	35 - 105	01/06/24 02:04	
Nitrobenzene-d5	83	40 - 117	01/06/24 02:04	
p-Terphenyl-d14	75	48 - 109	01/06/24 02:04	

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: WR306-OUT-20231222
Lab Code: K2314429-002

Service Request: K2314429
Date Collected: 12/22/23 09:49
Date Received: 12/26/23 10:06
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	3.0	0.94	0.13	1	01/06/24 02:25	12/28/23	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/06/24 02:25	12/28/23	
Di-n-butyl Phthalate	0.13 J	0.19	0.023	1	01/06/24 02:25	12/28/23	
Di-n-octyl Phthalate	0.56	0.19	0.033	1	01/06/24 02:25	12/28/23	
Diethyl Phthalate	0.19 J	0.19	0.015	1	01/06/24 02:25	12/28/23	
Dimethyl Phthalate	0.69	0.19	0.021	1	01/06/24 02:25	12/28/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	90	35 - 105	01/06/24 02:25	
Nitrobenzene-d5	97	40 - 117	01/06/24 02:25	
p-Terphenyl-d14	84	48 - 109	01/06/24 02:25	

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QA/QC Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water

Service Request: K2314429

SURROGATE RECOVERY SUMMARY
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Extraction Method: EPA 3520C

Sample Name	Lab Code	2-Fluorobiphenyl	Nitrobenzene-d5	p-Terphenyl-d14
		35 - 105	40 - 117	48 - 109
WR306-IN-20231222	K2314429-001	83	83	75
WR306-OUT-20231222	K2314429-002	90	97	84
Method Blank	KQ2322563-01	97	96	96
Lab Control Sample	KQ2322563-02	93	91	85
Duplicate Lab Control Sample	KQ2322563-03	97	93	91

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Analytical Report

Client: Herrera Environmental
Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006
Sample Matrix: Storm Water
Sample Name: Method Blank
Lab Code: KQ2322563-01

Service Request: K2314429
Date Collected: NA
Date Received: NA
Units: ug/L
Basis: NA

Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D
Prep Method: EPA 3520C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Bis(2-ethylhexyl) Phthalate	ND U	0.94	0.13	1	01/05/24 18:01	12/28/23	
Butyl Benzyl Phthalate	ND U	0.19	0.021	1	01/05/24 18:01	12/28/23	
Di-n-butyl Phthalate	ND U	0.19	0.023	1	01/05/24 18:01	12/28/23	
Di-n-octyl Phthalate	ND U	0.19	0.033	1	01/05/24 18:01	12/28/23	
Diethyl Phthalate	ND U	0.19	0.015	1	01/05/24 18:01	12/28/23	
Dimethyl Phthalate	ND U	0.19	0.021	1	01/05/24 18:01	12/28/23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2-Fluorobiphenyl	97	35 - 105	01/05/24 18:01	
Nitrobenzene-d5	96	40 - 117	01/05/24 18:01	
p-Terphenyl-d14	96	48 - 109	01/05/24 18:01	

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dba ALS Environmental

QA/QC Report

Client: Herrera Environmental

Project: ODOT-Portland Harbor Perf. Monitoring/10-04681-006

Sample Matrix: Storm Water

Service Request: K2314429

Date Analyzed: 01/05/24

Date Extracted: 12/28/23

Duplicate Lab Control Sample Summary
Low Level Semivolatile Organic Compounds by GC/MS

Analysis Method: 8270D

Prep Method: EPA 3520C

Units: ug/L

Basis: NA

Analysis Lot: 829210

Lab Control Sample
KQ2322563-02

Duplicate Lab Control Sample
KQ2322563-03

Analyte Name	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Bis(2-ethylhexyl) Phthalate	4.58	5.00	92	4.48	5.00	90	42-147	2	30
Butyl Benzyl Phthalate	4.78	5.00	96	4.75	5.00	95	59-119	<1	30
Diethyl Phthalate	4.34	5.00	87	4.47	5.00	89	58-114	3	30
Dimethyl Phthalate	4.34	5.00	87	4.56	5.00	91	58-109	5	30
Di-n-butyl Phthalate	3.90	5.00	78	4.05	5.00	81	61-121	4	30
Di-n-octyl Phthalate	4.19	5.00	84	4.16	5.00	83	50-125	<1	30