
JANUARY 2025 GROUNDWATER SAMPLING EVENT REPORT

At

**PORT OF PASCO BIG INDUSTRIAL PARK LAGOONS
SE Road 36/East Ainsworth Avenue
Pasco, Washington 99361
Cleanup Site ID: 15433
Fac. Site ID# 88749
VCP Project ID: EA0362**

February 21, 2025

Prepared for:

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And

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1.0 INTRODUCTION

This Groundwater Sampling Event (GWSE) report, prepared by Blue Mountain Environmental & Consulting Co., Inc. (BMEC) for Mr. Randy Hayden of the Port of Pasco (the Client), as well as the State of Washington Department of Ecology (Ecology), describes the field activities that BMEC performed on January 14, 2025, at the property located at the Port of Pasco Big Industrial Park Lagoons at SE Road 36/East Ainsworth Avenue in Pasco, Washington 99301 (Site). The field activities performed during this annual GWSE were consistent with details agreed upon between BMEC and Ecology via the following email from Ted Uecker, LHG (Ecology) dated July 30, 2024:

“Good morning Yancy,

Ecology is fine with annual sampling prior to quarterly sampling to demonstrate compliance. Regarding the costs per sampling event, to clarify we would only require additional groundwater sampling for arsenic, lead, and PFAS compounds.”

A Site Vicinity Map is included as **Figure 1**. A Site Location Map is included as **Figure 2**.

BMEC performed the following GWSE field activities on January 14, 2025:

- Collect depth-to-groundwater measurements from below top of casings (btoc) on the three monitoring wells (MW1 through MW3) to confirm the groundwater flow direction.
- Collect groundwater samples from monitoring wells MW1, MW2, and MW3. The groundwater samples collected from the three wells were analyzed for total lead and total arsenic via Environmental Protection Agency (EPA) Method 200.8, as well as various organic compounds via EPA Method PFC/537M.

Additionally, BMEC was asked by Ecology to document all field activities and sample results in a report, including the groundwater flow direction (**Figure 3**).

1.1 Site Information

The Site is located at the southeast intersection of East Ainsworth Street and SE Road 36 in Pasco, Washington 99301. The Site consists of two former wastewater treatment lagoons which no longer contain surface water, but have been backfilled, compacted and leveled, and are currently unused, but may be used for parking in the future. The north and south lagoons had an approximate sludge volume of 32,130 cubic feet and 62,400 cubic feet, respectively. Per measurements obtained from the three monitoring wells on January 14, 2025, depth to groundwater below the lagoons ranged from 9.59 feet btoc in well MW1 to 10.56 feet btoc in MW2 and groundwater flow direction was calculated to be to the south toward the Columbia River which is less than ¼-mile from the Site. **Table 1** lists the depth-to-groundwater data for all three monitoring wells, along with the groundwater surface elevations per well. Port of Pasco facility operations exist to the immediate northwest, west, southwest, and south. The Sacajawea State Park exists to the southeast and vacant land owned by the Port of Pasco exists to the northeast and north. The Site is located on Parcel 112420028, in the south half of Section 33, in Township 9 N., Range 30 E., W.M., and the northwest quarter of Section 3, in Township 8 N., and Range 30 E., W.M.

1.2 Site History

On January 12, 2021, BMEC personnel conducted sampling of biosolids in the two lagoons at the Site. Seven discrete sludge column samples were collected from each of the two lagoons and analyzed for fecal coliform. One composite sample was created from each lagoon and analyzed for organochlorine pesticides, Resource Conservation Recovery Act (RCRA) 8 metals, nitrates, nitrogen, ammonia, dioxins, furans, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and PBDEs. Cadmium in soil exceeded the Washington State Model Toxics Control Act (MTCA) Method A Cleanup Level (CUL) in the south lagoon sample, while the dioxin and furan toxicity equivalency (TEQ) exceeded the MTCA Method B soil CUL. The organochlorine DDE and PBDEs were detected in this same south lagoon sample below their respective soil CULs. There was no detection of any contaminants of concern (COCs) above CULs in the North Lagoon. Soil below the lagoon sludge column has not been characterized to date.

BMEC supervised a subsurface investigation (SI) at the Site from November 28 and 29, 2023, as well as December 4, 2023, and February 15, 2024. The three groundwater samples were analyzed for hydrocarbon identification (HCID), volatile organic hydrocarbons (VOCs), organic compounds, and RCRA 8 Metals (total). Petroleum hydrocarbons (i.e., gasoline, diesel, and heavy oil) and VOCs were not detected in the three groundwater samples.

A total of 13 soil and/or sludge samples were collected and shipped to OnSite Environmental (OnSite) in Redmond, Washington for a combination of the following analyses:

- 5 soil samples - Dioxins and furans per EPA Method 1613
- *3 soil samples - PDBEs per EPA Method 1614
- 5 biosolids sludge samples – perfluoroalkyl sulfonic acids (PFAS) compounds per EPA Method 1633
- 3 groundwater, 8 soils, and 5 biosolids sludge samples - VOCs per EPA Method 8260D
- 3 groundwater, 8 soils, and 5 biosolids sludge samples for NWTPH-HCID
- 1 biosolids sludge sample for TPH-D and TPH-O per Northwest Method NWTPH-Dx
- 3 groundwater and 8 soils samples for RCRA 8 total metals per EPA Method 6010D/7471B

A total of 13 sludge and/or soil samples were collected and analyzed for HCID: Five sludge and eight soil samples in total. TPH-G and THP-D were not identified above the laboratory practical quantitation limit (PQL) in any of the 13 samples. TPH-O was identified in only one sample (NL-B3-SL-20') and quantified at 140 mg/Kg TPH-O via Northwest Method NWTPH-Dx.

A total of four sludge samples were collected and analyzed for VOCs via EPA Method 8260. Benzene, toluene, ethylbenzene, and xylenes (BTEX); 1,2,4-trimethylbenzene (124-TMB); 1,3,5-trimethylbenzene (135-TMB); methyl-tert butyl ether (MTBE); trichloroethene (TCE); and tetrachloroethene (PCE) were not detected in any of the four sludge samples at concentrations above the laboratory PQLs. Various VOCs (i.e., acetone, carbon disulfide, 2-butanone, and

naphthalene) were detected above the laboratory PQLs, but not at concentrations exceeding applicable screening levels.

A total of eight soil samples were collected and analyzed for total metals via EPA Method 6010D/7471B. Arsenic, cadmium, mercury, lead, selenium, and silver were not detected in any of the eight soil samples at concentrations above the laboratory PQLs. Barium was detected in all eight soil samples at concentrations ranging from 30 mg/Kg in sample SL-B8-SO-20' to 57 mg/Kg in sample NL-B1-SO-25'. An applicable MTCA Method A CUL does not currently exist for barium. Chromium was detected in all eight soil samples at concentrations ranging from 2.6 mg/Kg in sample SL-B5-SO-20' to 16 mg/Kg in sample SL-B6-SO-20'. None of the eight chromium detections exceeded the MTCA Method A CUL for chromium of 19 mg/Kg.

A total of eight soil samples were collected and analyzed for dioxins and furans via EPA Method 1613B. Six different analytes were detected in the eight soil samples, in particular, OCDD which was detected in all eight soil samples at concentrations ranging from 1.22 picograms per gram (pg/g) in sample NL-B1-SO-25' to 149 pg/g in sample SL-B6-SO-20. None of the analyte concentrations in any of the eight soil samples exceeded applicable screening levels.

A total of five sludge samples were collected and analyzed for the following organic compounds: perfluoroalkyl sulfonic acids (PFSAs); perfluoroalkyl carboxylic acids (PFCAs); perfluoroalkyl sulfonamido substances; fluortelomer sulfonic acids (FTSAs); and perfluoroalkyl ether carbonic acids (PFECAs). PFSAs were detected above the laboratory PQLs in three of the five sludge samples, but not at concentrations exceeding applicable screening levels. Similarly, perfluoroalkyl sulfonamido substances were detected above the laboratory PQLs in three of the five sludge samples, but not at concentrations exceeding applicable screening levels.

A total of three soil samples were collected and analyzed for PBDEs per EPA Method 1614. Various PBDEs were detected in all three soil samples, but none at concentrations exceeding applicable screening levels.

A total of three groundwater samples were collected on December 4, 2023, and submitted to OnSite for laboratory analysis of organic compounds per EPA Method PFC/537M. One groundwater sample was collected from each of the newly installed and developed monitoring wells, MW1 through MW3. PFECAs were not detected in groundwater samples collected from any of the three monitoring wells. PFSAs, PFCAs, perfluoroalkyl sulfonamido substances, and FTSAs were detected in all three of the groundwater samples; however, at concentrations that do not exceed any applicable screening levels.

A total of three groundwater samples were collected on February 15, 2024 and submitted to the laboratory for total metals per EPA Method 200.8/7470A. One groundwater sample was collected from each of the newly installed and developed monitoring wells, MW1 through MW3. Cadmium, mercury, selenium, and silver were not detected above the laboratory PQLs in any of the three groundwater samples. Barium was detected in all three groundwater samples at concentrations ranging from 110 micrograms per liter (µg/L) in well MW3 to 490 µg/L in well MW1. Currently, no MTCA Method A CUL exists for barium. Chromium was detected in all three groundwater samples at concentrations ranging from 7.2 µg/L in well MW3 to 36 µg/L in well MW1. None of the three results for chromium exceed the MTCA Method A CUL of 50 µg/L. Lead was detected

in all three groundwater samples at concentrations ranging from 2.6 µg/L in well MW3 to 55 µg/L in well MW1. The concentration of 55 µg/L was the only one of the three results to exceed the MTCA Method A CUL of 15 µg/L for lead in groundwater. Arsenic was detected in all three groundwater samples at concentrations of 3.4 µg/L in well MW3; 6.2 µg/L in well MW2; and 19 µg/L in well MW1. The concentrations of 6.2 µg/L and 19 µg/L exceed the MTCA Method A CUL of 5 µg/L for arsenic in groundwater.

Petroleum hydrocarbons (i.e., gasoline, diesel, and heavy oil) and VOCs were not detected in the three groundwater samples obtained from monitoring wells MW1, MW2, and MW3.

For a detailed description of past environmental activities and various field activities conducted at the Site, please refer to the following documents:

- Blue Mountain Environmental and Consulting Co., Inc., AMENDED SUBSURFACE INVESTIGATION REPORT At PORT OF PASCO BIG INDUSTRIAL PARK LAGOONS, SE Road 36/East Ainsworth Avenue, Pasco, Washington 99361, Cleanup Site ID: 15433, Fac. Site ID# 88749, VCP Project ID: EA0362, Amended May 30, 2024.
- Ecology, Environmental Covenant 1966700, September 26, 2022.
- Blue Mountain Environmental and Consulting Co., Inc., CSID No. 15433 Big Pasco. Industrial Park Lagoons, Operation and Maintenance Plan, March 15, 2022.
- Coho Environmental, Terrestrial Ecological Evaluation, Port of Pasco, Big Pasco Industrial Center Lagoons, Pasco, WA, June 28, 2021.
- Blue Mountain Environmental and Consulting Co., Inc., Biosolids Sample Analysis Report at Big Pasco Industrial Center, Pasco, Washington, February 25, 2021.
- Blue Mountain Environmental and Consulting Co., Inc., Port of Pasco Big Industrial Park Lagoons, Sampling and Analysis Plan, December 11, 2020.
- GN Northern, Inc., Geotechnical Site Investigation Report, GNN Project No. 219-1119, May 20, 2020.

These documents are accessible in electronic form from the Site webpage. The complete records are stored in the Central Files of the Eastern Regional Office of Ecology (ERO) for review by appointment only.

2.0 FIELD METHODOLOGIES

On January 14, 2025, BMEC mobilized to the Site to perform the following field activities:

- Collect depth-to-groundwater measurements from btoc on the three monitoring wells (MW1 – MW3) to confirm the groundwater flow direction.
- Collect groundwater samples from monitoring wells MW1, MW2, and MW3. The groundwater samples collected from the three wells were analyzed for total lead and total arsenic via EPA Method 200.8, as well as PFAS via EPA Method PFC/537M.

Each monitoring well was purged and sampled via peristaltic pump and dedicated tubing. Groundwater parameters (pH, temperature, conductivity, turbidity, and dissolved oxygen) were measured and recorded on groundwater sample field data sheets (**Appendix A**). Approximately three well volumes were purged from each of the three monitoring wells, prior to collection of groundwater samples. Each of the three groundwater samples were submitted to OnSite via overnight shipment for the afore-mentioned analytes.

3.0 LABORATORY ANALYTICAL RESULTS

A total of three groundwater samples were collected on January 14, 2025, and submitted to OnSite for laboratory analysis of total lead and total arsenic via EPA Method 200.8, as well as various organic compounds per EPA Method PFC/537M. The various organic compounds consisted of the following analytes:

- PFAS
- PFCAs
- Perfluoralkyl Sulfonamido Substances
- FTSAs
- PFECAs

Estimated concentrations of PFAS were detected below the calibrated range in groundwater samples collected from all three monitoring wells at levels ranging from 1.2J nanograms per liter (ng/L) in well MW3 to 1.3J ng/L in wells MW2 and MW1. None of the three estimated concentrations exceed the screening level of 15 ng/L for PFAS in groundwater.

Estimated concentrations of PFCAs were detected below the calibrated range in groundwater samples collected from all three monitoring wells at levels ranging from 1.1J ng/L in well MW1 to 1.82J ng/L in wells MW2. None of the three estimated concentrations exceed the screening level of 10 ng/L for PFCAs in groundwater.

Perfluoralkyl Sulfonamido Substances, FTSAs, and PFECAs were not detected above the laboratory PQLs in any of the three groundwater samples. **Table 2** summarizes the laboratory results for the various organic compounds in groundwater.

Lead was not detected in any of the three groundwater samples above the laboratory PQL which was 1.0 µg/L in all three samples. The MTCA Method A CUL for total lead in groundwater is 15 µg/L. Arsenic was detected in all three samples at concentrations of 3.9 µg/L in well MW3; 4.2 µg/L in well MW2; and 5.3 µg/L in well MW1. The detection of 5.3 µg/L exceeds the CUL of 5 µg/L for arsenic in groundwater. The RCRA 8 Metals (total) results for the three groundwater samples are summarized in **Table 3**.

A copy of the laboratory analytical report and accompanying chain-of-custody documentation for all three groundwater samples collected on January 14, 2025, is included in **Appendix B**.

4.0 GEOLOGY AND HYDROGEOLOGY

Per the drilling activities conducted on November 28 and 29, 2023, a sludge layer beneath the Site was encountered at the following locations:

Boring B1 (SW corner of north lagoon):	18 – 22.5' = black silty sludge, sewer odor, moist to wet
Boring B4 (south lagoon):	14 – 15' = black silty sludge, sewer odor, wet
Boring B6 (south lagoon):	14 – 15' = brown sludge transitioning to black sludge, very wet
Boring B7 (south lagoon):	13.5 – 15' = black silty sludge, trace gravel, very wet
Boring B8 (south lagoon):	13.5 – 15' = black silty sludge, trace gravel, very wet

Aside from the sludge layer (where encountered), soil lithology consisted of brown SAND above the sludge, coarsening to dark grey medium SAND (SW)/SAND & GRAVEL (SW/GW) below the sludge.

On November 29, 2023, depth-to-groundwater measurements in monitoring wells MW1 through MW3 were as follows:

- MW1: 9.82 feet below top of casing (btoc)
- MW2: 10.93 feet btoc
- MW3: 11.20 feet btoc

On December 4, 2023, depth-to-groundwater measurements in monitoring wells MW1 through MW3 were as follows:

- MW1: 9.81 feet btoc
- MW2: 10.79 feet btoc
- MW3: 10.54 feet btoc

On January 14, 2025, depth-to-groundwater measurements in monitoring wells MW1 through MW3 were as follows:

- MW1: 9.59 feet btoc
- MW2: 10.56 feet btoc
- MW3: 10.27 feet btoc

Per the field data collected on January 14, 2025, the groundwater flow direction was to the south with an approximate hydraulic gradient of 0.002 feet per foot. **Table 1** summarizes the hydrogeological field data collected on January 14, 2025, and **Figure 3** illustrates the groundwater flow direction toward the Columbia River to the south-southeast and groundwater surface contours of the shallow aquifer beneath the Site on the same date.

5.0 INVESTIGATION-DERIVED WASTE DISPOSAL

All investigation-derived waste (IDW) was containerized in 55-gallon drums. The various IDW waste streams were purged groundwater and decontamination water. The 55-gallon drums were properly staged on-site at a location preferred by the property owner. All standard waste (i.e., nitrile gloves, paper towels, and peristaltic pump tubing) were placed in plastic trash bags and hauled offsite.

6.0 MONITORING WELL SURVEY

On February 12, 2024, a Professional Licensed Surveyor (PLS) was hired to survey the polyvinyl chloride (PVC) top of casing for all of the newly installed monitoring wells (MW1 through MW3). The monitoring wells were surveyed per North American vertical datum 1988 (NAVD88), in addition to northing and easting data.

7.0 CONCLUSIONS

Via the annual GWSE field activities requested by Ecology and as implemented and supervised by BMEC on January 14, 2025, the following organic compound and RCRA metals in groundwater results were summarized:

- Estimated concentrations of PFAS were detected below the calibrated range in groundwater samples collected from all three monitoring wells at levels ranging from 1.2J ng/L in well MW3 to 1.3J ng/L in wells MW2 and MW1. None of the three estimated concentrations exceed the screening level of 15 ng/L for PFAS in groundwater.
- Estimated concentrations of PFCAs were detected below the calibrated range in groundwater samples collected from all three monitoring wells at levels ranging from 1.1J ng/L in well MW1 to 1.82J ng/L in wells MW2. None of the three estimated concentrations exceed the screening level of 10 ng/L for PFCAs in groundwater.
- Perfluoralkyl Sulfonamido Substances, FTSAs, and PFECAs were not detected above the laboratory PQLs in any of the three groundwater samples.
- Lead was not detected in any of the three groundwater samples above the laboratory PQL which was 1.0 µg/L in all three samples. The MTCA Method A CUL for total lead in groundwater is 15 µg/L.
- Arsenic was detected in all three samples at concentrations of 3.9 µg/L in well MW3; 4.2 µg/L in well MW2; and 5.3 µg/L in well MW1. The detection of 5.3 µg/L exceeds the CUL of 5 µg/L for arsenic in groundwater.

On January 14, 2025, depth-to-groundwater measurements in monitoring wells MW1 through MW3 were as follows:

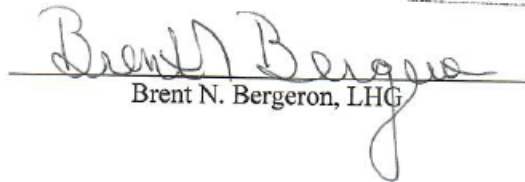
- MW1: 9.59 feet btoc
- MW2: 10.56 feet btoc
- MW3: 10.27 feet btoc

Per the field data collected on January 14, 2025, the groundwater flow direction was to the south with an approximate hydraulic gradient of 0.002 feet per foot.

8.0 RECOMMENDATIONS

Per email communication from Ted Uecker (Ecology) on July 30, 2024, additional groundwater sampling of the three existing monitoring wells (MW1, MW2, and MW3) shall be required moving forward. The three groundwater samples shall be collected and analyzed for total arsenic and PFAS. The annual groundwater sampling schedule shall become quarterly, once arsenic concentrations for all three monitoring wells are below 5 µg/L. Determination of groundwater flow direction per GWSE shall be determined and included in each accompanying GWSE report.

If you have any questions regarding the content of this GWSE Report, please feel free to contact me at (503) 913-7870 or Mr. Yancy Meyer at (509) 520-4416.


Brent N. Bergeron

Brent N. Bergeron, LHG
Expires 1/3/26

9.0 REFERENCES

Blue Mountain Environmental and Consulting Co., Inc., AMENDED SUBSURFACE INVESTIGATION REPORT At PORT OF PASCO BIG INDUSTRIAL PARK LAGOONS, SE Road 36/East Ainsworth Avenue, Pasco, Washington 99361, Cleanup Site ID: 15433, Fac. Site ID# 88749, VCP Project ID: EA0362, Amended May 30, 2024.

Blue Mountain Environmental Consulting & Company Inc., SUBSURFACE INVESTIGATION At PORT OF PASCO BIG INDUSTRIAL PARK LAGOONS, SE Road 36/East Ainsworth Avenue, Pasco, Washington 99361, Cleanup Site ID: 15433, Fac. Site ID# 88749, VCP Project ID: EA0362, March 5, 2024.

Blue Mountain Environmental Consulting & Company Inc., SCOPE OF WORK FOR SUBSURFACE INVESTIGATION At PORT OF PASCO BIG INDUSTRIAL PARK LAGOONS SE Road 36/East Ainsworth Avenue, Pasco, Washington 99361, Cleanup Site ID: 15433, Fac. Site ID# 88749, VCP Project ID: EA0362, April 24, 2023.

Blue Mountain Environmental Consulting & Company Inc., BIOSOLIDS SAMPLE ANALYSIS REPORT at Big Pasco Industrial Center Pasco, Washington, February 25, 2021.

Google Maps, 2025.

Washington State Department of Ecology, email, July 30, 2024.

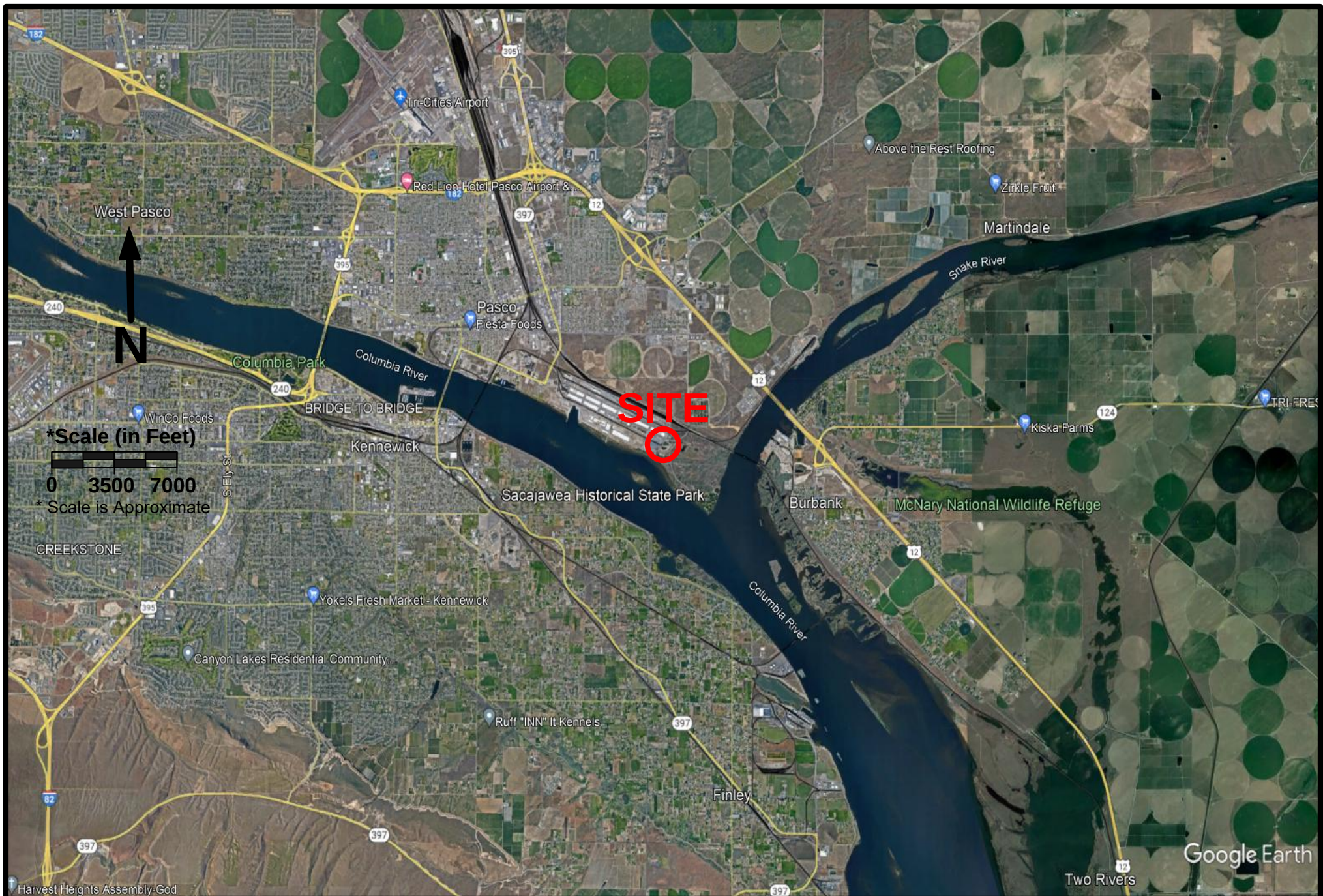
Washington State Department of Ecology, email, May 29, 2024.

Washington State Department of Ecology, Modified Further Action Letter, August 10, 2023.

Washington State Department of Ecology, Modified Further Action Letter, May 31, 2023.

Washington State Department of Ecology, Further Action Letter, January 6, 2023.

Washington State Department of Ecology, Model Toxics Control Act Statute and Regulation, November 2007.



Cleanup Site ID: 15433
 Facility/Site ID: 88749
 VCP Project ID: EA0362

FIGURE 1 – SITE VICINITY MAP

Port of Pasco
Big Industrial Park Lagoons
SE Road 36/East Ainsworth Avenue
Pasco, Washington 99301



Cleanup Site ID: 15433
 Facility/Site ID: 88749
 VCP Project ID: EA0362

FIGURE 2 – SITE LOCATION MAP

Port of Pasco
 Big Industrial Park Lagoons
 SE Road 36/East Ainsworth Avenue
 Pasco, Washington 99301

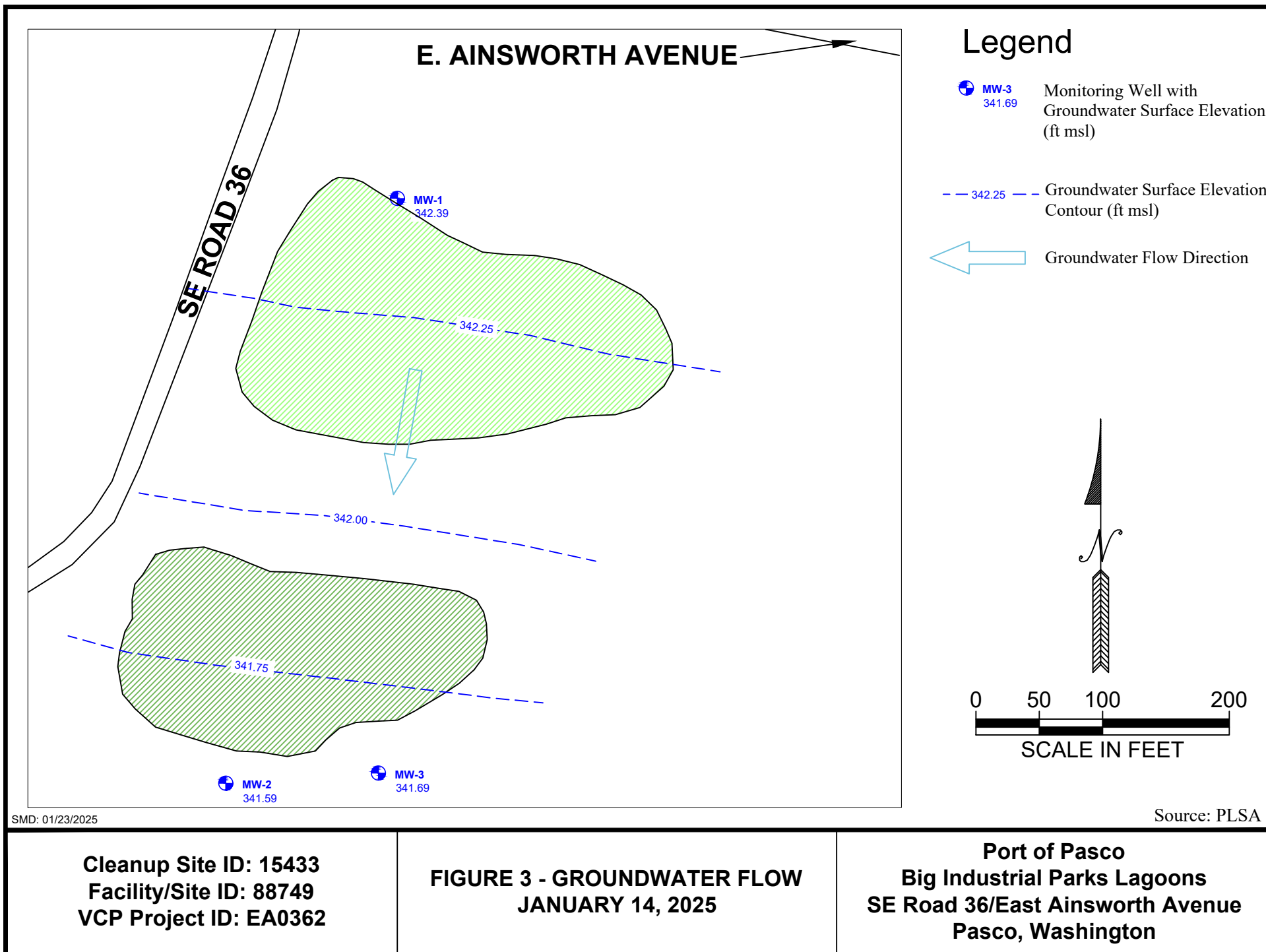


TABLE 1
Monitoring Well Groundwater Surface Data and Well Installation Details
Port of Pasco Lagoons, Pasco, Washington

Monitoring Well Number	Date Measured	Top of Casing Elevation (feet NAVD88)	Depth-To-Water Below Top of Casing (feet btoc)	Groundwater Elevation (feet NAVD88)	LNAPL Thickness (feet)	Volume of Groundwater Purged (gallons)	Screened Interval (feet bgs)	Sandpack Interval (feet bgs)	Bentonite Interval (feet bgs)
Monitoring Wells									
MW-1	12/4/23	351.98	9.81	342.17	0.00	25	5 - 25'	3 - 25'	1 - 3'
	1/14/25		9.59	342.39	0.00	7			
MW-2	12/4/23	352.15	10.79	341.36	0.00	16	5 - 20'	3 - 20'	1 - 3'
	1/14/25		10.56	341.59	0.00	4.5			
MW-3	12/4/23	351.96	10.54	341.42	0.00	16	5 - 20'	3 - 20'	1 - 3'
	1/14/25		10.27	341.69	0.00	4			

Notes:

NAVD88 = North American Vertical Datum 1988

btoc = below top of casing

TABLE 2
Groundwater Sample Results - Organic Compounds (nanograms/Liter)
Big Industrial Park Lagoons
SE Road 36/East Ainsworth Avenue
Pasco, Washington 99301

Sample I.D.	Date Collected	Organic Compounds via EPA Method PFC/537M				
		Perfluoroalkyl Sulfonic Acids (PFAS)	Perfluoroalkyl Carboxylic Acids (PFCAs)	Perfluoroalkyl Sulfonamido Substances	Fluorotelomer Sulfonic Acids (FTSAs)	Perfluoroalkyl Ether Carboxylic Acids (PFECAs)
BMEC GROUNDWATER SAMPLING EVENT - DECEMBER 2023						
MW1	12/4/23	4.6 J	2.7 J	2.8 J	3.9 J	< 1.5
	1/14/25	1.3 J	1.1 J	< 4.7 U	< 4.7 U	< 4.7 U
MW2	12/4/23	4.3 J	4.1 J	4.5 J	< 4.1	< 1.5
	1/14/25	1.3 J	1.82 J	< 4.6 U	< 4.6 U	< 4.6 U
MW3	12/4/23	9.3 J	5.0 J	1.8 J	< 4.1	< 1.5
	1/14/25	1.2 J	1.48 J	< 4.5 U	< 4.5 U	< 4.5 U
Screening Levels =						
		15	10	NR	NR	NR
Notes: J = The analyte was detected below the calibrated range but above the Established Detection Limit (EDL) U = The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL = EDL MTCA = Model Toxics Control Act NA = Not Analyzed NR = Not Researched DNE = Does Not Exist ft bsg = feet below surface grade ng/L = nanograms per Liter or parts per billion (ppb) BOLD = sample yielded detectable concentration of analyzed compound						

TABLE 3
Groundwater Sample Results - Total Metals (µg/L)
Big Industrial Park Lagoons
SE Road 36/East Ainsworth Avenue
Pasco, Washington 99301

Sample I.D.	Date Collected	Total Metals via EPA Methods 200.8/7470A							
		Arsenic	Barium	Cadmium	Chromium	Mercury	Lead	Selenium	Silver
MONITORING WELLS									
MW-1	2/15/24	19	490	< 4.4	36	< 0.50	55	< 5.6	< 11
	1/14/25	5.3	NA	NA	NA	NA	< 1.0	NA	NA
MW-2	2/15/24	6.2	190	< 1.8	16	< 0.50	5.7	< 2.2	< 4.4
	1/14/25	4.2	NA	NA	NA	NA	< 1.0	NA	NA
MW-3	2/15/24	3.4	110	< 1.8	7.2	< 0.50	2.6	< 2.2	< 4.4
	1/14/25	3.9	NA	NA	NA	NA	< 1.0	NA	NA
Ecology MTCA Method A Groundwater Cleanup Levels (µg/L)									
Screening Level		5	DNE	5	50	2	15	DNE	DNE
Notes: ¹ MTCA Method A Cleanup Level for Unrestricted Land Use for Chromium VI; Cleanup Level for Chromium III is 100 µg/L ² Mercury analyzed via EPA Method 7471A. MTCA = Model Toxics Control Act NA = Not Analyzed DNE = Does Not Exist µg/L = micrograms per Liter or parts per billion (ppb) BOLD = sample yielded detectable concentration of analyzed compound									
55	BOLD with yellow highlight implies MTCA Method A Cleanup Level exceedance								

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW1

Date: Tuesday
Wednesday, 1/14/25

Facility Name/Project No.: Pasco Port Lagoon GWSE/E2025-0101

GW Sampler/Company: BNB & YM / BMEC

Well Depth (TD) below Top of Casing (TOC): 23.5' Depth to Water (DTW) below TOC: 9.59'

Height of Groundwater Column (H) = TD - DTW (Feet): 13.91' Well Radius [r] (Inches): 1"

2-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.163 Gal/Foot] X [H (Feet)] = <u>2.27 gal</u>
4-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.653 Gal/Foot] X [H (Feet)] = <u>NA</u>

Calculated Volume of Groundwater Needed to be Removed (Gal): 3V = 6.80 gal

GROUNDWATER PARAMETERS						
Volume Purged (Gal)	pH	Temp (deg C)	Cond (mS/cm @ 25°C)	Turb (ntu)	Comments [i.e., Odor(s), Water Color/Silt Content, Sheen]	DO (mg/L)
1	7.27	11.86	0.778	264	Moderately Silty; orange	9.58
2	6.96	13.07	0.775	125		8.91
3	7.04	13.45	0.765	99.1		8.43
4	7.20	14.00	0.766	131	Clear	8.46
5	7.33	13.91	0.765	96.6		8.66
6	7.35	14.24	0.765	87.7		8.40
7	7.35	14.44	0.765	87.4		8.37

Actual Volume Purged (Gal) 7 gal DTW After Purging and Before Sampling: 9.60'

GROUNDWATER SAMPLE COLLECTION DATA				
Sample ID	Time	Analyses	# of Containers/Size	Preservative
1-14-25-MW1	1120	PFAS		
		As, Pb		

NOTES: Peristaltic Pump & Dedicated Polyethylene Tubing

Weather: Cloudy, 32°F, N @ 1 MPH, dry

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW2

Date: Tuesday ~~Wednesday~~, 1/14/25

Facility Name/Project No.: Pasco Port Lagoon GWSE/E2025-0101

GW Sampler/Company: BNB & YM / BMEC

Well Depth (TD) below Top of Casing (TOC): 19' Depth to Water (DTW) below TOC: 10.56'

Height of Groundwater Column (H) = TD - DTW (Feet): 8.44' Well Radius [r] (Inches): 1"

2-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.163 Gal/Foot] X [H (Feet)] = <u>1.38 gal</u>
4-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.653 Gal/Foot] X [H (Feet)] = <u>NA</u>

Calculated Volume of Groundwater Needed to be Removed (Gal): 3V = 4.13 gal

GROUNDWATER PARAMETERS						
Volume Purged (Gal)	pH	Temp (deg C)	Cond (mS/cm @ 25)	Turb (ntu)	Comments [i.e., Odor(s), Water Color/Silt Content, Sheen]	DO (mg/L)
1	7.34	14.14	0.760	497	Moderately silty; brown ↓	8.57
2	7.31	14.56	0.760	206		8.14
3	7.30	14.93	0.759	159		8.02
4.5 BNB	7.31	14.99	0.760	117	Sl. silty	8.08
4.5	7.32	14.96	0.757	107	↓	8.02

Actual Volume Purged (Gal) 4.5 gal DTW After Purging and Before Sampling: 10.65'

GROUNDWATER SAMPLE COLLECTION DATA				
Sample ID	Time	Analyses	# of Containers/Size	Preservative
1-14-25-MW2	1205	PFAS As, Pb		

NOTES: Peristaltic Pump & Dedicated Polyethylene Tubing

Weather: Cloudy, 34°F, dry, Ne 1 MPH

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW3 Date: Tuesday ~~Wednesday~~, 1/14/25

Facility Name/Project No.: Pasco Port Lagoon GWSE/E2025-0101

GW Sampler/Company: BNB & YM / BMEC

Well Depth (TD) below Top of Casing (TOC): 18.50' Depth to Water (DTW) below TOC: 10.27

Height of Groundwater Column (H) = TD - DTW (Feet): 8.23' Well Radius [r] (Inches): 1"

2-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.163 Gal/Foot] X [H (Feet)] = <u>1.34 gal</u>
4-Inch Diameter Well:	Volume (V) of Groundwater Per Water Column in Gal = [0.653 Gal/Foot] X [H (Feet)] = <u>NA</u>

Calculated Volume of Groundwater Needed to be Removed (Gal): 3V = 4.02 gal

GROUNDWATER PARAMETERS						
Volume Purged (Gal)	Temp (deg C)	pH	Cond (µS/cm)	Turb (ntu)	Comments [i.e., Odor(s), Water Color/Silt Content, Sheen]	DO (mg/L)
1	14.40	7.32	0.746	259	Moderately silty; orange-brown	9.22
2	14.70	7.32	0.742	184		8.48
3	14.98	7.32	0.741	123	Slightly silty	8.26
4	14.91	7.33	0.741	86.9	Clear	8.20

Actual Volume Purged (Gal) 4 gal DTW After Purging and Before Sampling: 10.29'

GROUNDWATER SAMPLE COLLECTION DATA				
Sample ID	Time	Analyses	# of Containers/Size	Preservative
1-14-25-MW3	1245	PFAS As, Pb		

NOTES: Peristaltic Pump & Dedicated Polyethylene Tubing
 Weather: Cloudy, 36°F, dry, N @ 2 MPH



January 22, 2025

Service Request No:K2500478

Yancy Meyer
BMEC
125 Main St.
P.O. Box 545
Waitsburg, WA 99361

r r R r

Dear Yancy,

Enclosed are the results of the sample(s) submitted to our laboratory January 15, 2025
For your reference, these analyses have been assigned our service request number

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 3376. You may also contact me via email at Mark.Harris@alsglobal.com.

Respectfully submitted,

r r d r

Mark Harris

Mark Harris
Project Manager

DDR 1317 S. 13th Avenue, Kelso, WA 98626
+1 360 577 7222 | +1 360 636 1068
r r
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: BMEC
Project: Pop Lagoons
Sample Matrix: Water

Service Request: K2500478
Date Received: 01/15/2025

CASE NARRATIVE

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

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 01/15/2025. 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.

Organic LC:

Method PFC/537M, 01/17/2025: The upper control criterion was exceeded for Perfluorotridecanoic acid (PFTrDA) in Laboratory Control Sample (LCS) KQ2500801-01. 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.

The upper control criterion was exceeded for 13C8-FOSA and D9-EtFOSE in sample MW-2-1-14-25. The associated native analytes were not detected above the Method Reporting Limit (MRL) in the affected extract. 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 appropriate.

Approved by



Date

01/22/2025

M D MM R

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

D M			D			
	R		MD	MR		M d
Perfluorobutane sulfonic acid (PFBS)	1.3	J	0.28	4.7	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	1.1	J	0.40	4.7	ng/L	PFC/537M

D M			D			
	R		MD	MR		M d
Perfluorobutane sulfonic acid (PFBS)	1.3	J	0.28	4.6	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	1.2	J	0.40	4.6	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	0.62	J	0.35	1.8	ng/L	PFC/537M

D M			D			
	R		MD	MR		M d
Perfluorobutane sulfonic acid (PFBS)	1.2	J	0.28	4.5	ng/L	PFC/537M
Perfluorobutanoic acid (PFBA)	0.93	J	0.40	4.5	ng/L	PFC/537M
Perfluorooctanoic acid (PFOA)	0.55	J	0.35	1.8	ng/L	PFC/537M



Sample Receipt Information

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

r BMEC
Pop Lagoons/E2025/0101

r R K2500478

M R R R

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2500478-001	MW-1-1-14-25	1/14/2025	1120
K2500478-002	MW-2-1-14-25	1/14/2025	1205
K2500478-003	MW-3-1-14-25	1/14/2025	1245



142210

CHAIN OF CUSTODY

142210

001

K2500478

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Onsite Environmental Incorporated
Pop Lagoons

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068

www.alsglobal.com

Page 1 of 1

Project Name POP LAGOONS		Project Number E2025/0101		NUMBER OF CONTAINERS 14D		PFC/37M / PFAS						Remarks					
Project Manager B. BECKERON																	
Company BMEC																	
Address City, State PO Box 545 WAITSBURG WA																	
Phone # 509-520-4416				email ymeyer@bmeccw.com													
Sampler Signature 				Sampler Printed Name YANCY MEYER													
CLIENT SAMPLE ID		LABID		SAMPLING Date Time State		Matrix											
1. MW-1-1-14-25				1-14-25 11:20		H ₂ O		2 X									
2. MW-2-1-14-25				1-14-25 12:05		H ₂ O		2 X									
3. MW-3-1-14-25				1-14-25 12:45		H ₂ O		2 X									
4.																	
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

Report Requirements		Invoice Information		Circle which metals are to be analyzed	
☒ I. Routine Report: Method Blank, Surrogate, as required		P.O.#		Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg	
☐ II. Report Dup., MS, MSD as required		Bill To: <u>JAME</u>		Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Ti Sn V Zn Hg	
☐ III. CLP Like Summary (no raw data)		Turnaround Requirements		Special Instructions/Comments:	
☐ IV. Data Validation Report		☐ 24 hr. ☐ 48 hr. ☒ Standard		*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other _____ (Circle One)	
☒ V. EDD		Requested Report Date			
Relinquished By:		Received By:		Relinquished By:	
Signature		Signature		Signature	
Printed Name YANCY MEYER		Printed Name YANCY MEYER		Printed Name	
Firm BMEC		Firm ALS		Firm	
Date/Time 1-14-25 1600		Date/Time 1-13-25 0945		Date/Time	

PM WJ

Cooler Receipt and Preservation Form

Client Onsite Service Request K25 00478
 Received: 11/5/25 Opened: 11/5/25 By: MM Unloaded: 11/5/25 By: MM

- 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? _____
 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>6.7</u>	<u>3.7</u>	<u>1206</u>				<u>284370046406</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 # above 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 samples received within the method specified time limit? If not, notate the error below and notify the PM NA Y N
- 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: Temp blank away from ice



Miscellaneous Forms

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Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.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: BMEC
Project: Pop Lagoons/E2025/0101

Service Request: K2500478

Sample Name: MW-1-1-14-25
Lab Code: K2500478-001
Sample Matrix: Water

Date Collected: 01/14/25**Date Received:** 01/15/25

Analysis Method
PFC/537M

Extracted/Digested By
JCARTER

Analyzed By
PSALYARDS

Sample Name: MW-2-1-14-25
Lab Code: K2500478-002
Sample Matrix: Water

Date Collected: 01/14/25**Date Received:** 01/15/25

Analysis Method
PFC/537M

Extracted/Digested By
JCARTER

Analyzed By
PSALYARDS

Sample Name: MW-3-1-14-25
Lab Code: K2500478-003
Sample Matrix: Water

Date Collected: 01/14/25**Date Received:** 01/15/25

Analysis Method
PFC/537M

Extracted/Digested By
JCARTER

Analyzed By
PSALYARDS



Sample Results

ALS Environmental—Kelso Laboratory
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www.alsglobal.com



Organic Compounds by HPLC/MS/MS

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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: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 11:20
Date Received: 01/15/25 09:45

Sample Name: MW-1-1-14-25
Lab Code: K2500478-001

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkyl Sulfonic Acids (PFSA's)							
Perfluorobutane sulfonic acid (PFBS)	1.3 J	4.7	0.28	1	01/17/25 16:51	1/17/25	
Perfluoropentane sulfonic acid (PFPeS)	ND U	4.7	1.6	1	01/17/25 16:51	1/17/25	
Perfluorohexane sulfonic acid (PFHxS)	ND U	4.7	1.3	1	01/17/25 16:51	1/17/25	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	4.7	0.44	1	01/17/25 16:51	1/17/25	
Perfluorooctane sulfonic acid (PFOS)	ND U	4.7	0.44	1	01/17/25 16:51	1/17/25	
Perfluorononane sulfonic acid (PFNS)	ND U	4.7	0.59	1	01/17/25 16:51	1/17/25	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.7	0.30	1	01/17/25 16:51	1/17/25	
Perfluoroalkyl Carboxylic Acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	1.1 J	4.7	0.40	1	01/17/25 16:51	1/17/25	
Perfluoropentanoic acid (PFPeA)	ND U	4.7	1.7	1	01/17/25 16:51	1/17/25	
Perfluorohexanoic acid (PFHxA)	ND U	9.3	8.8	1	01/17/25 16:51	1/17/25	
Perfluoroheptanoic acid (PFHpA)	ND U	4.7	0.63	1	01/17/25 16:51	1/17/25	
Perfluorooctanoic acid (PFOA)	ND U	1.9	0.35	1	01/17/25 16:51	1/17/25	
Perfluorononanoic acid (PFNA)	ND U	4.7	1.1	1	01/17/25 16:51	1/17/25	
Perfluorodecanoic acid (PFDA)	ND U	4.7	1.2	1	01/17/25 16:51	1/17/25	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.7	1.5	1	01/17/25 16:51	1/17/25	
Perfluorododecanoic acid (PFDOA)	ND U	4.7	1.3	1	01/17/25 16:51	1/17/25	
Perfluorotridecanoic acid (PFTrDA)	ND U	4.7	1.3	1	01/17/25 16:51	1/17/25	*
Perfluorotetradecanoic acid (PFTDA)	ND U	4.7	2.0	1	01/17/25 16:51	1/17/25	
Perfluoroalkyl Sulfonamido Substances							
Perfluorooctane sulfonamide (PFOSAm)	ND U	4.7	0.52	1	01/17/25 16:51	1/17/25	
N-Methylperfluorooctane sulfonamide (MeFOSA)	ND U	4.7	0.46	1	01/17/25 16:51	1/17/25	
N-Ethylperfluorooctane sulfonamide (EtFOSA)	ND U	4.7	0.27	1	01/17/25 16:51	1/17/25	
N-Methylperfluorooctane sulfonamido ethanol (MeFOSE)	ND U	4.7	0.30	1	01/17/25 16:51	1/17/25	
N-Ethylperfluorooctane sulfonamido ethanol (EtFOSE)	ND U	4.7	0.13	1	01/17/25 16:51	1/17/25	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	ND U	4.7	1.4	1	01/17/25 16:51	1/17/25	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	ND U	4.7	0.50	1	01/17/25 16:51	1/17/25	

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Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 11:20
Date Received: 01/15/25 09:45

Sample Name: MW-1-1-14-25
Lab Code: K2500478-001

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Fluorotelomer Sulfonic Acids (FTSAs)							
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND U	4.7	0.81	1	01/17/25 16:51	1/17/25	
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND U	4.7	0.55	1	01/17/25 16:51	1/17/25	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND U	4.7	0.15	1	01/17/25 16:51	1/17/25	
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	ND U	4.7	0.35	1	01/17/25 16:51	1/17/25	
Perfluoroalkyl Ether Carboxylic Acids (PFECAs)							
Hexafluoropropyleneoxide dimer acid (HFPO-DA) (GenX)	ND U	4.7	0.29	1	01/17/25 16:51	1/17/25	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	91	20 - 109	01/17/25 16:51	
18O2-PFHxS	105	26 - 122	01/17/25 16:51	
13C4-PFOS	87	25 - 121	01/17/25 16:51	
13C4-PFBA	101	27 - 124	01/17/25 16:51	
13C5-PFPeA	97	27 - 138	01/17/25 16:51	
13C2-PFHxA	96	28 - 132	01/17/25 16:51	
13C4-PFHpA	99	19 - 139	01/17/25 16:51	
13C4-PFOA	71	22 - 130	01/17/25 16:51	
13C5-PFNA	104	20 - 127	01/17/25 16:51	
13C2-PFDA	94	24 - 125	01/17/25 16:51	
13C2-PFUnDA	79	22 - 125	01/17/25 16:51	
13C2-PFDoDA	77	19 - 122	01/17/25 16:51	
13C2-PFTeDA	71	13 - 124	01/17/25 16:51	
13C8-FOSA	90	18 - 109	01/17/25 16:51	
D3-MeFOSA	72	15 - 153	01/17/25 16:51	
D5-EtFOSA	72	25 - 107	01/17/25 16:51	
D7-MeFOSE	91	24 - 112	01/17/25 16:51	
D9-EtFOSE	104	19 - 109	01/17/25 16:51	
D3-MeFOSAA	64	9 - 123	01/17/25 16:51	
D5-EtFOSAA	70	12 - 126	01/17/25 16:51	
13C2-4:2 FTS	146	10 - 197	01/17/25 16:51	
13C2-6:2 FTS	108	10 - 226	01/17/25 16:51	
13C2-8:2 FTS	115	10 - 202	01/17/25 16:51	
13C3-HFPO-DA	92	22 - 135	01/17/25 16:51	

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Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 12:05
Date Received: 01/15/25 09:45

Sample Name: MW-2-1-14-25
Lab Code: K2500478-002

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkyl Sulfonic Acids (PFASs)							
Perfluorobutane sulfonic acid (PFBS)	1.3 J	4.6	0.28	1	01/17/25 17:01	1/17/25	
Perfluoropentane sulfonic acid (PFPeS)	ND U	4.6	1.6	1	01/17/25 17:01	1/17/25	
Perfluorohexane sulfonic acid (PFHxS)	ND U	4.6	1.3	1	01/17/25 17:01	1/17/25	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	4.6	0.44	1	01/17/25 17:01	1/17/25	
Perfluorooctane sulfonic acid (PFOS)	ND U	4.6	0.44	1	01/17/25 17:01	1/17/25	
Perfluorononane sulfonic acid (PFNS)	ND U	4.6	0.59	1	01/17/25 17:01	1/17/25	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.6	0.30	1	01/17/25 17:01	1/17/25	
Perfluoroalkyl Carboxylic Acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	1.2 J	4.6	0.40	1	01/17/25 17:01	1/17/25	
Perfluoropentanoic acid (PFPeA)	ND U	4.6	1.7	1	01/17/25 17:01	1/17/25	
Perfluorohexanoic acid (PFHxA)	ND U	9.2	8.8	1	01/17/25 17:01	1/17/25	
Perfluoroheptanoic acid (PFHpA)	ND U	4.6	0.63	1	01/17/25 17:01	1/17/25	
Perfluorooctanoic acid (PFOA)	0.62 J	1.8	0.35	1	01/17/25 17:01	1/17/25	
Perfluorononanoic acid (PFNA)	ND U	4.6	1.1	1	01/17/25 17:01	1/17/25	
Perfluorodecanoic acid (PFDA)	ND U	4.6	1.2	1	01/17/25 17:01	1/17/25	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.6	1.5	1	01/17/25 17:01	1/17/25	
Perfluorododecanoic acid (PFDOA)	ND U	4.6	1.3	1	01/17/25 17:01	1/17/25	
Perfluorotridecanoic acid (PFTrDA)	ND U	4.6	1.3	1	01/17/25 17:01	1/17/25	*
Perfluorotetradecanoic acid (PFTDA)	ND U	4.6	2.0	1	01/17/25 17:01	1/17/25	
Perfluoroalkyl Sulfonamido Substances							
Perfluorooctane sulfonamide (PFOSAm)	ND U	4.6	0.52	1	01/17/25 17:01	1/17/25	
N-Methylperfluorooctane sulfonamide (MeFOSA)	ND U	4.6	0.46	1	01/17/25 17:01	1/17/25	
N-Ethylperfluorooctane sulfonamide (EtFOSAm)	ND U	4.6	0.27	1	01/17/25 17:01	1/17/25	
N-Methylperfluorooctane sulfonamido ethanol (MeFOSE)	ND U	4.6	0.30	1	01/17/25 17:01	1/17/25	
N-Ethylperfluorooctane sulfonamido ethanol (EtFOSE)	ND U	4.6	0.13	1	01/17/25 17:01	1/17/25	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	ND U	4.6	1.4	1	01/17/25 17:01	1/17/25	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	ND U	4.6	0.50	1	01/17/25 17:01	1/17/25	

ALS Group USA, Corp.
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Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 12:05
Date Received: 01/15/25 09:45

Sample Name: MW-2-1-14-25
Lab Code: K2500478-002

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Fluorotelomer Sulfonic Acids (FTSAs)							
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND U	4.6	0.81	1	01/17/25 17:01	1/17/25	
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND U	4.6	0.55	1	01/17/25 17:01	1/17/25	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND U	4.6	0.15	1	01/17/25 17:01	1/17/25	
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	ND U	4.6	0.35	1	01/17/25 17:01	1/17/25	
Perfluoroalkyl Ether Carboxylic Acids (PFECAs)							
Hexafluoropropyleneoxide dimer acid (HFPO-DA) (GenX)	ND U	4.6	0.29	1	01/17/25 17:01	1/17/25	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	91	20 - 109	01/17/25 17:01	
18O2-PFHxS	103	26 - 122	01/17/25 17:01	
13C4-PFOS	97	25 - 121	01/17/25 17:01	
13C4-PFBA	113	27 - 124	01/17/25 17:01	
13C5-PFPeA	101	27 - 138	01/17/25 17:01	
13C2-PFHxA	102	28 - 132	01/17/25 17:01	
13C4-PFHpA	102	19 - 139	01/17/25 17:01	
13C4-PFOA	73	22 - 130	01/17/25 17:01	
13C5-PFNA	107	20 - 127	01/17/25 17:01	
13C2-PFDA	100	24 - 125	01/17/25 17:01	
13C2-PFUnDA	81	22 - 125	01/17/25 17:01	
13C2-PFDoDA	81	19 - 122	01/17/25 17:01	
13C2-PFTeDA	61	13 - 124	01/17/25 17:01	
13C8-FOSA	112	18 - 109	01/17/25 17:01	*
D3-MeFOSA	71	15 - 153	01/17/25 17:01	
D5-EtFOSA	82	25 - 107	01/17/25 17:01	
D7-MeFOSE	99	24 - 112	01/17/25 17:01	
D9-EtFOSE	125	19 - 109	01/17/25 17:01	*
D3-MeFOSAA	73	9 - 123	01/17/25 17:01	
D5-EtFOSAA	73	12 - 126	01/17/25 17:01	
13C2-4:2 FTS	138	10 - 197	01/17/25 17:01	
13C2-6:2 FTS	105	10 - 226	01/17/25 17:01	
13C2-8:2 FTS	114	10 - 202	01/17/25 17:01	
13C3-HFPO-DA	108	22 - 135	01/17/25 17:01	

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Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 12:45
Date Received: 01/15/25 09:45

Sample Name: MW-3-1-14-25
Lab Code: K2500478-003

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkyl Sulfonic Acids (PFSA)							
Perfluorobutane sulfonic acid (PFBS)	1.2 J	4.5	0.28	1	01/17/25 17:12	1/17/25	
Perfluoropentane sulfonic acid (PFPeS)	ND U	4.5	1.6	1	01/17/25 17:12	1/17/25	
Perfluorohexane sulfonic acid (PFHxS)	ND U	4.5	1.3	1	01/17/25 17:12	1/17/25	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	4.5	0.44	1	01/17/25 17:12	1/17/25	
Perfluorooctane sulfonic acid (PFOS)	ND U	4.5	0.44	1	01/17/25 17:12	1/17/25	
Perfluorononane sulfonic acid (PFNS)	ND U	4.5	0.59	1	01/17/25 17:12	1/17/25	
Perfluorodecane sulfonic acid (PFDS)	ND U	4.5	0.30	1	01/17/25 17:12	1/17/25	
Perfluoroalkyl Carboxylic Acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	0.93 J	4.5	0.40	1	01/17/25 17:12	1/17/25	
Perfluoropentanoic acid (PFPeA)	ND U	4.5	1.7	1	01/17/25 17:12	1/17/25	
Perfluorohexanoic acid (PFHxA)	ND U	9.2	8.8	1	01/17/25 17:12	1/17/25	
Perfluoroheptanoic acid (PFHpA)	ND U	4.5	0.63	1	01/17/25 17:12	1/17/25	
Perfluorooctanoic acid (PFOA)	0.55 J	1.8	0.35	1	01/17/25 17:12	1/17/25	
Perfluorononanoic acid (PFNA)	ND U	4.5	1.1	1	01/17/25 17:12	1/17/25	
Perfluorodecanoic acid (PFDA)	ND U	4.5	1.2	1	01/17/25 17:12	1/17/25	
Perfluoroundecanoic acid (PFUnDA)	ND U	4.5	1.5	1	01/17/25 17:12	1/17/25	
Perfluorododecanoic acid (PFDOA)	ND U	4.5	1.3	1	01/17/25 17:12	1/17/25	
Perfluorotridecanoic acid (PFTrDA)	ND U	4.5	1.3	1	01/17/25 17:12	1/17/25	*
Perfluorotetradecanoic acid (PFTDA)	ND U	4.5	2.0	1	01/17/25 17:12	1/17/25	
Perfluoroalkyl Sulfonamido Substances							
Perfluorooctane sulfonamide (PFOSAm)	ND U	4.5	0.52	1	01/17/25 17:12	1/17/25	
N-Methylperfluorooctane sulfonamide (MeFOSA)	ND U	4.5	0.46	1	01/17/25 17:12	1/17/25	
N-Ethylperfluorooctane sulfonamide (EtFOSAm)	ND U	4.5	0.27	1	01/17/25 17:12	1/17/25	
N-Methylperfluorooctane sulfonamido ethanol (MeFOSE)	ND U	4.5	0.30	1	01/17/25 17:12	1/17/25	
N-Ethylperfluorooctane sulfonamido ethanol (EtFOSE)	ND U	4.5	0.13	1	01/17/25 17:12	1/17/25	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	ND U	4.5	1.4	1	01/17/25 17:12	1/17/25	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	ND U	4.5	0.50	1	01/17/25 17:12	1/17/25	

ALS Group USA, Corp.
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Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: 01/14/25 12:45
Date Received: 01/15/25 09:45

Sample Name: MW-3-1-14-25
Lab Code: K2500478-003

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Fluorotelomer Sulfonic Acids (FTSAs)							
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND U	4.5	0.81	1	01/17/25 17:12	1/17/25	
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND U	4.5	0.55	1	01/17/25 17:12	1/17/25	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND U	4.5	0.15	1	01/17/25 17:12	1/17/25	
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	ND U	4.5	0.35	1	01/17/25 17:12	1/17/25	
Perfluoroalkyl Ether Carboxylic Acids (PFECAs)							
Hexafluoropropyleneoxide dimer acid (HFPO-DA) (GenX)	ND U	4.5	0.29	1	01/17/25 17:12	1/17/25	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	83	20 - 109	01/17/25 17:12	
18O2-PFHxS	77	26 - 122	01/17/25 17:12	
13C4-PFOS	80	25 - 121	01/17/25 17:12	
13C4-PFBA	94	27 - 124	01/17/25 17:12	
13C5-PFPeA	84	27 - 138	01/17/25 17:12	
13C2-PFHxA	78	28 - 132	01/17/25 17:12	
13C4-PFHpA	82	19 - 139	01/17/25 17:12	
13C4-PFOA	63	22 - 130	01/17/25 17:12	
13C5-PFNA	85	20 - 127	01/17/25 17:12	
13C2-PFDA	81	24 - 125	01/17/25 17:12	
13C2-PFUnDA	69	22 - 125	01/17/25 17:12	
13C2-PFDoDA	69	19 - 122	01/17/25 17:12	
13C2-PFTeDA	50	13 - 124	01/17/25 17:12	
13C8-FOSA	98	18 - 109	01/17/25 17:12	
D3-MeFOSA	51	15 - 153	01/17/25 17:12	
D5-EtFOSA	63	25 - 107	01/17/25 17:12	
D7-MeFOSE	86	24 - 112	01/17/25 17:12	
D9-EtFOSE	100	19 - 109	01/17/25 17:12	
D3-MeFOSAA	62	9 - 123	01/17/25 17:12	
D5-EtFOSAA	65	12 - 126	01/17/25 17:12	
13C2-4:2 FTS	127	10 - 197	01/17/25 17:12	
13C2-6:2 FTS	91	10 - 226	01/17/25 17:12	
13C2-8:2 FTS	90	10 - 202	01/17/25 17:12	
13C3-HFPO-DA	100	22 - 135	01/17/25 17:12	



QC Summary Forms

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



Organic Compounds by HPLC/MS/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.
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QA/QC Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478

SURROGATE RECOVERY SUMMARY
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Extraction Method: ALS SOP

Surrogate	Control Limits	MW-1-1-14-25	MW-2-1-14-25	MW-3-1-14-25
		K2500478-001	K2500478-002	K2500478-003
13C3-PFBS	20-109	91	91	83
18O2-PFHxS	26-122	105	103	77
13C4-PFOS	25-121	87	97	80
13C4-PFBA	27-124	101	113	94
13C5-PFPeA	27-138	97	101	84
13C2-PFHxA	28-132	96	102	78
13C4-PFHpA	19-139	99	102	82
13C4-PFOA	22-130	71	73	63
13C5-PFNA	20-127	104	107	85
13C2-PFDA	24-125	94	100	81
13C2-PFUnDA	22-125	79	81	69
13C2-PFDoDA	19-122	77	81	69
13C2-PFTeDA	13-124	71	61	50
13C8-FOSA	18-109	90	112*	98
D3-MeFOSA	15-153	72	71	51
D5-EtFOSA	25-107	72	82	63
D7-MeFOSE	24-112	91	99	86
D9-EtFOSE	19-109	104	125*	100
D3-MeFOSAA	9-123	64	73	62
D5-EtFOSAA	12-126	70	73	65
13C2-4:2 FTS	10-197	146	138	127
13C2-6:2 FTS	10-226	108	105	91
13C2-8:2 FTS	10-202	115	114	90
13C3-HFPO-DA	22-135	92	108	100

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not acceptable.

ALS Group USA, Corp.
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QA/QC Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478

SURROGATE RECOVERY SUMMARY
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Extraction Method: ALS SOP

Surrogate	Control Limits	Method Blank	Lab Control Sample	Duplicate Lab Control Sample
		KQ2500801-03	KQ2500801-01	KQ2500801-02
13C3-PFBS	20-109	61	77	77
18O2-PFHxS	26-122	70	77	76
13C4-PFOS	25-121	73	81	74
13C4-PFBA	27-124	80	95	84
13C5-PFPeA	27-138	67	79	84
13C2-PFHxA	28-132	76	81	79
13C4-PFHpA	19-139	77	72	83
13C4-PFOA	22-130	63	66	61
13C5-PFNA	20-127	79	93	87
13C2-PFDA	24-125	76	87	79
13C2-PFUnDA	22-125	79	77	73
13C2-PFDoDA	19-122	68	78	70
13C2-PFTeDA	13-124	52	49	57
13C8-FOSA	18-109	73	93	97
D3-MeFOSA	15-153	45	63	66
D5-EtFOSA	25-107	49	66	63
D7-MeFOSE	24-112	54	81	83
D9-EtFOSE	19-109	59	89	81
D3-MeFOSAA	9-123	45	59	65
D5-EtFOSAA	12-126	63	63	66
13C2-4:2 FTS	10-197	83	111	113
13C2-6:2 FTS	10-226	64	89	88
13C2-8:2 FTS	10-202	81	91	101
13C3-HFPO-DA	22-135	72	92	97

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not acceptable.

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ2500801-03

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluoroalkyl Sulfonic Acids (PFSA's)							
Perfluorobutane sulfonic acid (PFBS)	ND U	5.0	0.28	1	01/17/25 16:19	1/17/25	
Perfluoropentane sulfonic acid (PFPeS)	ND U	5.0	1.6	1	01/17/25 16:19	1/17/25	
Perfluorohexane sulfonic acid (PFHxS)	ND U	5.0	1.3	1	01/17/25 16:19	1/17/25	
Perfluoroheptane sulfonic acid (PFHpS)	ND U	5.0	0.44	1	01/17/25 16:19	1/17/25	
Perfluorooctane sulfonic acid (PFOS)	ND U	5.0	0.44	1	01/17/25 16:19	1/17/25	
Perfluorononane sulfonic acid (PFNS)	ND U	5.0	0.59	1	01/17/25 16:19	1/17/25	
Perfluorodecane sulfonic acid (PFDS)	ND U	5.0	0.30	1	01/17/25 16:19	1/17/25	
Perfluoroalkyl Carboxylic Acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ND U	5.0	0.40	1	01/17/25 16:19	1/17/25	
Perfluoropentanoic acid (PFPeA)	ND U	5.0	1.7	1	01/17/25 16:19	1/17/25	
Perfluorohexanoic acid (PFHxA)	ND U	10	8.8	1	01/17/25 16:19	1/17/25	
Perfluoroheptanoic acid (PFHpA)	ND U	5.0	0.63	1	01/17/25 16:19	1/17/25	
Perfluorooctanoic acid (PFOA)	ND U	2.0	0.35	1	01/17/25 16:19	1/17/25	
Perfluorononanoic acid (PFNA)	ND U	5.0	1.1	1	01/17/25 16:19	1/17/25	
Perfluorodecanoic acid (PFDA)	ND U	5.0	1.2	1	01/17/25 16:19	1/17/25	
Perfluoroundecanoic acid (PFUnDA)	ND U	5.0	1.5	1	01/17/25 16:19	1/17/25	
Perfluorododecanoic acid (PFDOA)	ND U	5.0	1.3	1	01/17/25 16:19	1/17/25	
Perfluorotridecanoic acid (PFTrDA)	ND U	5.0	1.3	1	01/17/25 16:19	1/17/25	
Perfluorotetradecanoic acid (PFTDA)	ND U	5.0	2.0	1	01/17/25 16:19	1/17/25	
Perfluoroalkyl Sulfonamido Substances							
Perfluorooctane sulfonamide (PFOSAm)	ND U	5.0	0.52	1	01/17/25 16:19	1/17/25	
N-Methylperfluorooctane sulfonamide (MeFOSA)	0.50 J	5.0	0.46	1	01/17/25 16:19	1/17/25	
N-Ethylperfluorooctane sulfonamide (EtFOSAm)	ND U	5.0	0.27	1	01/17/25 16:19	1/17/25	
N-Methylperfluorooctane sulfonamido ethanol (MeFOSE)	ND U	5.0	0.30	1	01/17/25 16:19	1/17/25	
N-Ethylperfluorooctane sulfonamido ethanol (EtFOSE)	ND U	5.0	0.13	1	01/17/25 16:19	1/17/25	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	ND U	5.0	1.4	1	01/17/25 16:19	1/17/25	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	ND U	5.0	0.50	1	01/17/25 16:19	1/17/25	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ2500801-03

Units: ng/L
Basis: NA

Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Fluorotelomer Sulfonic Acids (FTSAs)							
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	ND U	5.0	0.81	1	01/17/25 16:19	1/17/25	
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	ND U	5.0	0.55	1	01/17/25 16:19	1/17/25	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	ND U	5.0	0.15	1	01/17/25 16:19	1/17/25	
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	ND U	5.0	0.35	1	01/17/25 16:19	1/17/25	
Perfluoroalkyl Ether Carboxylic Acids (PFECAs)							
Hexafluoropropyleneoxide dimer acid (HFPO-DA) (GenX)	ND U	5.0	0.29	1	01/17/25 16:19	1/17/25	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	61	20 - 109	01/17/25 16:19	
18O2-PFHxS	70	26 - 122	01/17/25 16:19	
13C4-PFOS	73	25 - 121	01/17/25 16:19	
13C4-PFBA	80	27 - 124	01/17/25 16:19	
13C5-PFPeA	67	27 - 138	01/17/25 16:19	
13C2-PFHxA	76	28 - 132	01/17/25 16:19	
13C4-PFHpA	77	19 - 139	01/17/25 16:19	
13C4-PFOA	63	22 - 130	01/17/25 16:19	
13C5-PFNA	79	20 - 127	01/17/25 16:19	
13C2-PFDA	76	24 - 125	01/17/25 16:19	
13C2-PFUnDA	79	22 - 125	01/17/25 16:19	
13C2-PFDoDA	68	19 - 122	01/17/25 16:19	
13C2-PFTeDA	52	13 - 124	01/17/25 16:19	
13C8-FOSA	73	18 - 109	01/17/25 16:19	
D3-MeFOSA	45	15 - 153	01/17/25 16:19	
D5-EtFOSA	49	25 - 107	01/17/25 16:19	
D7-MeFOSE	54	24 - 112	01/17/25 16:19	
D9-EtFOSE	59	19 - 109	01/17/25 16:19	
D3-MeFOSAA	45	9 - 123	01/17/25 16:19	
D5-EtFOSAA	63	12 - 126	01/17/25 16:19	
13C2-4:2 FTS	83	10 - 197	01/17/25 16:19	
13C2-6:2 FTS	64	10 - 226	01/17/25 16:19	
13C2-8:2 FTS	81	10 - 202	01/17/25 16:19	
13C3-HFPO-DA	72	22 - 135	01/17/25 16:19	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: BMEC
Project: Pop Lagoons/E2025/0101
Sample Matrix: Water

Service Request: K2500478
Date Analyzed: 01/17/25
Date Extracted: 01/17/25

Duplicate Lab Control Sample Summary
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

Analysis Method: PFC/537M
Prep Method: ALS SOP

Units: ng/L
Basis: NA
Analysis Lot: 867530

Analyte Name	Lab Control Sample KQ2500801-01			Duplicate Lab Control Sample KQ2500801-02					
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	32.0	30.7	104	30.1	30.7	98	65-166	6	30
1H, 1H, 2H, 2H-perfluorododecane sulfonic acid (10:2 FTS)	33.7	30.9	109	32.0	30.9	103	37-194	5	30
1H, 1H, 2H, 2H-Perfluorohexanesulfonic acid (4:2 FTS)	31.4	30.0	105	30.5	30.0	102	80-154	3	30
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	25.8	30.4	85	32.6	30.4	107	77-150	23	30
Hexafluoropropyleneoxide dimer acid (HFPO-DA) (GenX)	27.8	32.0	87	26.9	32.0	84	66-146	3	30
N-Ethylperfluorooctane sulfonamide (EtFOSAm)	30.9	32.0	96	33.2	32.0	104	73-145	7	30
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	36.0	32.0	113	34.0	32.0	106	68-149	6	30
N-Ethylperfluorooctane sulfonamido ethanol (EtFOSE)	30.2	32.0	94	30.6	32.0	96	37-172	1	30
N-Methylperfluorooctane sulfonamide (MeFOSA)	25.3	32.0	79	26.9	32.0	84	66-142	6	30
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	29.1	32.0	91	30.6	32.0	96	66-162	5	30
N-Methylperfluorooctane sulfonamido ethanol (MeFOSE)	26.0	32.0	81	23.5	32.0	74	38-163	10	30
Perfluorobutane sulfonic acid (PFBS)	28.4	28.4	100	28.5	28.4	100	67-145	<1	30
Perfluorobutanoic acid (PFBA)	30.1	32.0	94	33.2	32.0	104	81-139	10	30
Perfluorodecane sulfonic acid (PFDS)	25.9	30.9	84	30.8	30.9	100	60-129	17	30
Perfluorodecanoic acid (PFDA)	31.5	32.0	98	35.1	32.0	110	68-152	11	30
Perfluorododecanoic acid (PFDOA)	31.4	32.0	98	37.2	32.0	116	66-142	17	30
Perfluoroheptane sulfonic acid (PFHpS)	29.7	30.5	97	29.5	30.5	97	60-162	<1	30
Perfluoroheptanoic acid (PFHpA)	31.7	32.0	99	30.5	32.0	95	64-147	4	30
Perfluorohexane sulfonic acid (PFHxS)	31.2	29.2	107	34.0	29.2	116	65-148	8	30
Perfluorohexanoic acid (PFHxA)	29.0	32.0	91	31.1	32.0	97	65-149	7	30
Perfluorononane sulfonic acid (PFNS)	29.4	30.8	96	31.8	30.8	103	67-136	8	30
Perfluorononanoic acid (PFNA)	29.9	32.0	93	34.2	32.0	107	72-145	13	30
Perfluorooctane sulfonamide (PFOSAm)	32.0	32.0	100	30.6	32.0	96	71-134	4	30
Perfluorooctane sulfonic acid (PFOS)	26.7	29.7	90	29.4	29.7	99	67-135	9	30
Perfluorooctanoic acid (PFOA)	32.3	32.0	101	34.5	32.0	108	59-147	6	30
Perfluoropentane sulfonic acid (PFPeS)	30.0	30.1	100	29.6	30.1	98	42-202	1	30
Perfluoropentanoic acid (PFPeA)	32.9	32.0	103	32.1	32.0	100	66-159	2	30
Perfluorotetradecanoic acid (PFTDA)	30.6	32.0	96	28.9	32.0	90	61-148	6	30
Perfluorotridecanoic acid (PFTrDA)	58.4	32.0	182 *	44.5	32.0	139	64-153	27	30
Perfluoroundecanoic acid (PFUnDA)	32.1	32.0	100	35.9	32.0	112	68-145	11	30



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

January 24, 2025

Brent Bergeron
Blue Mountain Environmental, Inc.
90 Baldwin Road
Walla Walla, WA 99362

Re: Analytical Data for Project E2025/0101; Port of Pasco Lagoons
Laboratory Reference No. 2501-144

Dear Peter:

Enclosed are the analytical results and associated quality control data for samples submitted on January 16, 2025.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: January 24, 2025
Samples Submitted: January 16, 2025
Laboratory Reference: 2501-144
Project: E2025/0101; Port of Pasco Lagoons

Case Narrative

Samples were collected on January 14, 2025 and received by the laboratory on January 16, 2025. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below. However the soil results for the QA/QC samples are reported on a wet-weight basis.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: January 24, 2025
 Samples Submitted: January 16, 2025
 Laboratory Reference: 2501-144
 Project: E2025/0101; Port of Pasco Lagoons

TOTAL METALS
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW1-1-14-25						
Laboratory ID: 01-144-01						
Arsenic	5.3	3.0	EPA 200.8	1-24-25	1-24-25	
Lead	ND	1.0	EPA 200.8	1-24-25	1-24-25	

Client ID: MW2-1-14-25						
Laboratory ID: 01-144-02						
Arsenic	4.2	3.0	EPA 200.8	1-24-25	1-24-25	
Lead	ND	1.0	EPA 200.8	1-24-25	1-24-25	

Client ID: MW3-1-14-25						
Laboratory ID: 01-144-03						
Arsenic	3.9	3.0	EPA 200.8	1-24-25	1-24-25	
Lead	ND	1.0	EPA 200.8	1-24-25	1-24-25	



Date of Report: January 24, 2025
 Samples Submitted: January 16, 2025
 Laboratory Reference: 2501-144
 Project: E2025/0101; Port of Pasco Lagoons

**TOTAL METALS
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water

Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0124WH1					
Arsenic	ND	3.0	EPA 200.8	1-24-25	1-24-25	
Lead	ND	1.0	EPA 200.8	1-24-25	1-24-25	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	01-067-04							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	01-067-04									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	109	103	100	100	ND	109	103	75-125	6	20
Lead	99.0	95.6	100	100	ND	99	96	75-125	3	20





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- X2 - Sample extract treated with a silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Turnaround Request
(in working days)

Laboratory Number: 01-144

Page 1 of 1

Chain of Custody

Company: BMEC					
Project Number: E2025/0101					
Project Name: Totes at Pisco Lagoon					
Project Manager: B. Belcheron					
Sampled by: Y. Meyer					
☐ Same Day ☐ 1 Day ☐ 2 Days ☐ 3 Days ☒ Standard (7 Days)					
(other) _____					
Number of Containers					
NWTPH-HCID					
NWTPH-Gx/BTEX (8021 ☐ 8260 ☐)					
NWTPH-Gx					
NWTPH-Dx (SG Clean-up ☐)					
Volatiles 8260					
Halogenated Volatiles 8260					
EDB EPA 8011 (Waters Only)					
Semivolatiles 8270/SIM (with low-level PAHs)					
PAHs 8270/SIM (low-level)					
PCBs 8082					
Organochlorine Pesticides 8081					
Organophosphorus Pesticides 8270/SIM					
Chlorinated Acid Herbicides 8151					
Total RCRA Metals					
Total MTCA Metals					
TCPL Metals					
HEM (oil and grease) 1664					
TOTAL LEAD					
TOTAL ARSENIC					
% Moisture					