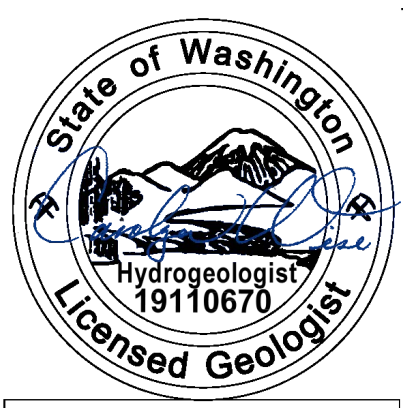
Technical Memorandum

To: Steve Teel, LHG

Date: July 28, 2026

From: Fiona Bellows and Carolyn Wise, LHG
Maul Foster & Alongi, Inc.

Project No.: M0615.20.017



CAROLYN ROCHELLE WISE 7-28-2026

Re: Supplemental Groundwater Sampling Report
Hylebos Marsh Property - Taylor Way and Alexander Avenue Fill Area (TWAAFA) Site
Facility Site ID 1403183, Cleanup Site ID 4692

On behalf of the Port of Tacoma (the Port), Maul Foster & Alongi, Inc. (MFA) has prepared this supplemental groundwater sampling report to describe the environmental characterization activities on the eastern portion of Hylebos Marsh property, located at 1212 Taylor Way and 1229 E Alexander Ave in Tacoma, Washington in Pierce County tax parcels 0321263045 and 0321352064 (the Property; see Figure 1). The Property is part of the Taylor Way and Alexander Avenue Fill Area (TWAAFA) site (the Site) (Washington State Department of Ecology [Ecology] facility ID no. 1403183; cleanup site ID no. 4692).

Purpose

This investigation was conducted to evaluate tetrachloroethene (PCE) and trichloroethene (TCE) concentrations in groundwater in the Property where an August 2024 subsurface investigation identified PCE and TCE in soil at concentrations exceeding the soil to groundwater to surface water criteria colocated with lime waste in TWA-BS-12 (MFA 2024). Concentrations of PCE and TCE colocated with lime waste is an indicator of lime solvent sludge at the TWAAFA site. Because concentrations of PCE and TCE in soil exceed Ecology preliminary soil cleanup levels for protection of groundwater to marine surface water in TWA-SB-12, which are based on conservative transport assumptions, collection and analysis of groundwater was proposed as an empirical demonstration of whether migration into groundwater from soil is occurring due to lime solvent sludge. Therefore,

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assessment of PCE and TCE and other contaminant concentrations in groundwater for the TWAAFA Site within this area containing lime solvent sludge waste was completed.

MFA performed field activities at the Property consistent with the *Supplemental Groundwater Sampling Plan* prepared by MFA (MFA 2026a), included as an appendix to the *Hylebos Marsh Interim Action Plan* (MFA 2026b).

Background

Property Description

The Property encompasses approximately 15.7 acres of currently vacant and undeveloped industrial land with low-lying vegetated areas and degraded, category III wetlands present. The Port has been working with Washington State Department of Agriculture and the United States Department of Agriculture to eradicate an invasive species of snail present on the Property, *Cernuella virgata* (Vineyard Snail). The invasive snails are currently limited to the Property.

The Port is planning to conduct an interim action to address hazardous substances on the Property. The interim action consists of containment and capping to prevent direct contact exposure to contaminated media concurrent with wetland filling and grading to eradicate the snails (MFA 2026b).

Property History and Previous Investigations

Automobile shredder fluff (referred to as auto fluff in this report) generated by General Metals of Tacoma operations came to be located on an unpermitted landfill coinciding with the current location of the neighboring Stericycle dangerous waste facility. Auto fluff extends from Stericycle facility onto the Property forming an elevated area of sloped topography along the eastern border of the Property (see Figure 2). Elevated concentrations of metals, total petroleum hydrocarbons (TPH), and polychlorinated biphenyls have been detected in auto fluff samples collected from the Site (Dalton, Olmsted & Fuglevand [DOF] 2020).

Auto fluff and lime solvent sludge is present in the upper fill unit on the western portion of the Stericycle property, extending beyond the Stericycle property and onto portions of the Property (see Figure 2; DOF 2020, 2022; MFA 2024). The average elevation on the Stericycle property is approximately 3 to 5 ft higher than the average downslope elevation of the Property boundary. Anthropogenic fill (including auto fluff) corresponds to a portion of the hummocky area on the Property that slopes upward to the Stericycle property. Landfill materials included byproducts of auto scrapping (auto fluff), lime solvent sludge, wood waste, and other lime waste (Ecology 2020). Auto fluff is a potential source of petroleum hydrocarbons; metals, including arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, and total cyanide; volatile organic compounds (VOCs); semivolatile organic compounds (SVOCs); and PCBs (DOF 2020, 2025). Lime solvent sludge is a source of PCE and TCE (Ecology 2020, DOF 2025).

An August 2024 investigation identified PCE and TCE in soil at concentrations exceeding the preliminary soil to groundwater to surface water cleanup criteria in boring TWA-SB-12. The PCE and TCE exceedances were colocated with a white, chalky material, consistent with lime waste (see Figure 2). At TWA-SB-12, the white, chalky material was observed in lenses between 8 and 18 feet below ground surface (bgs), and soil samples collected at 9 and 18.5 feet bgs within this interval contained concentrations of PCE and TCE at concentrations up to 0.49 milligrams per kilogram (mg/kg) and 0.64 mg/kg, respectively. These concentrations exceeded the preliminary cleanup

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levels of 0.029 mg/kg for PCE and 0.0044 mg/kg for TCE. Groundwater was encountered at approximately 19.4 ft bgs, below the interval containing the white, chalky material. The co-occurrence of PCE and TCE with the white, chalky material is considered an indicator of lime solvent sludge.

Geology and Hydrogeology

The following lithological units in order of increasing depth have been identified for the TWAAFA Site, including the Property (DOF 2020, 2025; MFA 2024):

- Fill unit: composed of heterogenous, anthropogenic fill materials. Depending on specific location within the Site, the upper fill unit consists of a gravel road base, unconsolidated fill sediments, lime waste (consisting of light-colored, unconsolidated, fine-grained particles; some lime waste encountered contain PCE or TCE [referred to as lime solvent sludge]; Other lime wastes disposed at the Site were generated by the Domtar operations generated at a building located on Alexander Avenue in Tacoma other areas of lime waste contain no detections of PCE or TCE), auto fluff, wood waste, and demolition waste. At the Property, the upper fill unit is between 5 and 19.4 feet thick (CRETE 2020, MFA 2024, and DOF 2025). Lime solvent sludge waste was observed in the fill unit at TWA-SB-12 from approximately 8 to 18.5 feet bgs.
- Silt unit: brown to gray and soft, with local areas containing clay, sand, and organic matter, and appears to be laterally continuous across the site. Previous deep borings at the Property identified the silt unit as between 7 and 11.5 feet thick.
- Sand unit: Underlying the silt unit is a fine- to medium-grained sand deposit, with trace amounts of silt. The sand unit appears to be continuous across the Site with thickness ranging from 11 to 14 feet.
- Deeper interbedded sand and silt unit: ranging from less than one inch thick to multiple feet thick. Material appears to be continuous across the Site and is organic-rich with peat noted in some historical borings.

The Property has three hydrogeological units (listed in order of increasing depth):

- Shallow aquifer: the saturated unconfined shallow groundwater unit thickness varies seasonally and is thickest in late winter or early spring. Groundwater mounds near the center of the Site and generally flows northwest and southwest beneath the Property.
- Silt confining layer: the former mudflat, which underlies the shallow and deep aquifer units, is continuous and contains clay, sand, and organic matter as described above.
- Deep aquifer: deltaic sands are present throughout the tide flats, with silt layers encountered deeper than 50 feet bgs. The top of the deep aquifer was identified in previous borings at the Property as between 18.5 and 24.5 feet bgs; it extends to at least 60 feet bgs.

Field Investigation Activities

On June 3, 2026, MFA conducted fieldwork activities in accordance with the *Supplemental Groundwater Sampling Plan* (MFA 2026a). Field photographs from the investigation are provided in Attachment A.

MFA coordinated public and private underground utility locates prior to conducting ground-disturbing field work.

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Sonic Borings

On June 3, 2026, under MFA oversight, Anderson Environmental Contracting, LLC, of Kelso, Washington, advanced two borings (TWA-SB-17 and TWA-SB-18) via sonic drilling methods to a maximum depth of 23 feet bgs on the Property in the vicinity of TWA-SB-12 (see Figure 2). Boring TWA-SB-17 was located approximately 35 feet west-northwest of TWA-SB-12 in an inferred downgradient position, and boring TWA-SB-18 was located north-northwest-adjacent of boring TWA-SB-12. TWA-SB-17 was located at the base of the sloped topography, and TWA-SB-18 was located towards the top of the sloped topography (see Figure 2); boring completion depths and groundwater level variation aligned with the difference in ground surface elevation between boring locations.

Lithographic logging and field screening were recorded under the direct supervision of a geologist licensed in the State of Washington (see Attachment B). Soil cores were observed for visual and olfactory indications of contamination and field screened for the presence of organic vapors using a photoionization detector (PID). For both locations, the borings were not advanced beyond the silt/clay aquitard to ensure no potential of cross contamination between perched and/or unconfined groundwater and confined groundwater-bearing zones.

Soil types encountered during drilling of TWA-SB-17 generally consisted of poorly graded sand overlying silt; the boring was advanced to the maximum depth of 15 feet bgs due to encountering the silt confining layer between 10 and 14 feet bgs. No anthropogenic fill materials, wood waste, or lime waste were encountered in the boring and no organic vapors were measured with the PID.

Soil types encountered during drilling of TWA-SB-18 generally consisted of poorly graded sand, gravel, and silty sand with gravel overlying silt; the boring was advanced to the maximum depth of 23 feet bgs due to encountering the silt confining layer between 13 feet bgs and 22 feet bgs. Auto fluff fill materials including fibers, wires, rubber, and metals (see photograph 6 in Attachment A) were encountered during drilling between approximately 1.25 to 7 feet bgs; clumps of woody debris were encountered around 12.5 feet bgs and 14 to 15 feet bgs. Lime waste was not observed in the boring and no organic vapors were measured with the PID.

Groundwater was encountered at approximately 2 and 8 feet bgs at TWA-17-SB and TWA-18-SB, respectively, and are inferred to be the same shallow aquifer, consistent with approximate surface elevation changes between boring locations. Specific observations are noted in each boring log (see Attachment B).

Reconnaissance Groundwater Sampling

At boring TWA-SB-17, groundwater was encountered at 2.18 feet bgs at the time of drilling, and a 5-foot temporary well screen was placed at 3 to 8 feet bgs for reconnaissance groundwater sample collection in the shallow groundwater-bearing zone.

At boring TWA-SB-18, groundwater was encountered at 8.37 feet bgs at the time of drilling, and a 5-foot temporary well screen was placed at 8 to 13 feet bgs for reconnaissance groundwater sample collection in the shallow groundwater-bearing zone. A deeper temporary well screen was placed at 15 to 20 feet bgs to attempt to collect a deep groundwater sample, if possible, but no groundwater accumulated in the well due to the silt confining layer (see Attachment B).

MFA collected reconnaissance groundwater samples from each temporary monitoring well in accordance with the sampling plan (MFA 2026a). During purging, the flow rates, water levels, and water quality parameters were recorded on the groundwater field sampling data sheet (see Attachment C). A minimum of one well volume was purged from each well prior to sample collection.

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Once water quality parameters stabilized within acceptance criteria, field staff collected groundwater samples directly into laboratory-supplied containers for analysis. Samples were collected using a peristaltic pump and dedicated tubing.

Following collection of reconnaissance groundwater samples, the temporary monitoring wells were abandoned, backfilled with hydrated bentonite, and the ground surface was restored to match existing grade.

Investigation-derived waste consisting of soil cuttings, decontamination fluids, and purged groundwater. Solid and liquid waste were separately drummed, labeled, and stored on the Property in Washington State Department of Transportation-approved containers, pending off-site disposal. A soil sample from the soil investigation-derived waste drum was collected for disposal characterization purposes.

Analytical Methods and Quality Control/Quality Assurance

Samples were submitted to Friedman & Bruya, Inc., a laboratory located in Seattle, Washington and accredited by the State of Washington and the National Environmental Laboratory Accreditation.

At Ecology's request, the analytical suite included TWAAFA Site contaminants of potential concern (COPCs) in groundwater. Groundwater samples were analyzed for the following:

- VOCs (PCE, TCE, benzene, toluene, ethylbenzene, and xylenes) by EPA Method 8260D,
- Dissolved metals (arsenic, chromium, copper, lead, manganese, mercury, nickel, and zinc) by U.S. Environmental Protection Agency (EPA) Method 6020B,
- Dissolved mercury by EPA Method 1631E,
- Gasoline-range hydrocarbons by Northwest Total Petroleum Hydrocarbons (NWTPH)-Gx,
- Diesel- and oil-range hydrocarbons by NWTPH-Dx, and
- Diesel- and oil-range hydrocarbons with silica gel cleanup (SGC) by NWTPH-Dx-SG.

EPA Method 1631E analysis was requested following receipt of initial EPA Method 6020B results to achieve a method reporting limit sufficient to meet TWAAFA Site preliminary cleanup levels (PCULs).

Diesel- and oil-range hydrocarbons analysis was performed with and without SGC in accordance with the *Draft Remedial Investigation and Feasibility Study Report* due to the weathering process of dissolved petroleum in groundwater and potential presence of polar organics and biogenic interference that has been consistently present in groundwater samples at the TWAAFA Site (DOF 2025).

Additionally, a trip blank sample was analyzed for PCE, TCE, benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260D for quality assurance/quality control purposes.

The laboratory report is provided in Attachment D. Sample analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they met project-specific data quality objectives. A data validation memorandum summarizing data evaluation procedures, data usability, and deviations from specific field and/or laboratory methods is provided in Attachment E. All data, with the appropriate data qualifiers assigned, are considered acceptable for their intended use. All data collected will be uploaded to Ecology's Environmental Information Management database by July 26, 2026.

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Results

As shown on the Table, analytical results for COPCs are screened against TWAAFA PCULs provided in the *Draft Remedial Investigation and Feasibility Study Report* (DOF 2025), currently under review by Ecology. Model Toxics Control Act (MTCA) Method A criteria are also presented on the table for comparative purposes.

Volatile organic compounds, including PCE and TCE, were non-detect at both locations.

Diesel- and oil-range hydrocarbons without SGC exceeded TWAAFA PCULs[1] in groundwater at both locations, however, all corresponding diesel- and oil-range hydrocarbons results with SGC were non-detect. The laboratory reported significant polar metabolites in the results without SGC (see Attachment D), indicating that petroleum hydrocarbons have oxidized to relatively non-toxic polar metabolites in groundwater. As a result, the diesel- and oil-range hydrocarbons results without SGC are not representative of petroleum hydrocarbon concentrations in groundwater, because the results are biased high by the presence of petroleum metabolites which are not hydrocarbons (DOF 2025, Ecology 2023). The polar metabolite fraction was calculated as the TPH result without SGC minus the TPH result with SGC (Ecology 2023); results represent the concentration of polar metabolites and are screened to the TWAAFA polar organics fraction PCUL (see Table; DOF 2025). TPH polar organics fractions exceeded the TWAAFA PCUL in groundwater at both locations, indicating that the elevated TPH results without SGC are primarily attributable to metabolic degradation by-products rather than petroleum hydrocarbons, which are non-polar by definition.

Dissolved manganese, nickel, and zinc were detected at concentrations in groundwater above the applicable TWAAFA PCULs. Dissolved manganese results were above the TWAAFA PCUL in both locations, with a higher concentration observed at TWA-SB-18. Dissolved nickel and zinc results were above TWAAFA PCULs at location TWA-SB-18. The PCULs for manganese, nickel, and zinc are target cleanup levels for soil to surface water pathway for marine waters. No MTCA Method A criteria are available for these manganese, nickel, or zinc. All remaining dissolved metals results were non-detect or detected below screening criteria.

Discussion

Auto fluff was observed in boring TWA-SB-18 at depths ranging from 1.25 to 7 feet bgs but was not observed in boring TWA-SB-17. Consistent with previous investigations, the auto fluff appears to be localized to the topographic mound along the eastern Property boundary (Figure 2). Additionally, groundwater concentrations of COPCs were higher in TWA-SB-18 than in downgradient boring TWA-SB-17 (see Table).

Lime waste was not observed in either boring advanced as part of this investigation, indicating that the material is limited to the topographic mound similar to the auto fluff. The previous PCE and TCE detections in soil were up to 0.49 and 0.64 mg/kg, respectively, above the PCULs of 0.029 and 0.0044 milligrams per kilogram, respectively, at TWA-SB-12 above the PCULs were identified in lime waste within the fill unit at depths of 9 and 18.5 feet bgs. PCULs for PCE and TCE in soil are based on protection of soil to groundwater to marine surface water, the minimum value of the evaluated MTCA criteria in the *Draft Remedial Investigation and Feasibility Study Report* (DOF 2025). Shallow groundwater was encountered at TWA-SB-18, adjacent to TWA-SB-12, at 8.3 feet bgs, and a groundwater sample was collected from 8 to 13 feet bgs within the same depth intervals as the

[1] The TWAAFA PCULs for weathered diesel is established in Ecology implementation Memo 23 and is intended to be protective of aquatic receptors in marine and fresh surface waters (Ecology 2021).

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previously observed lime waste in the unconfined shallow groundwater unit. The silt confining layer was encountered at 13 feet bgs. Groundwater was encountered at TWA-SB-17, downgradient of TWA-SB-12, at 3.3 feet bgs, and a groundwater sample was collected from 3 to 8 feet bgs in the shallow groundwater unit. The silt confining layer was encountered at 10 feet bgs.

Because the groundwater samples were collected from the shallow groundwater unit adjacent to and downgradient of the previously observed PCE/TCE detections in soil within the fill unit, the results demonstrate that the groundwater shallow groundwater unit has not been impacted in the vicinity of the TWA-SB-12 detections. Additionally, PCE and TCE from lime solvent sludge do not appear to have migrated from soil to groundwater in the vicinity of TWA-SB-12 and the silt confining unit is competent and prevents the downward migration of contaminants within the fill unit.

Further, the soil to groundwater to surface water criteria, currently applied as PCULs for the Site, are intended to be broadly protective and are derived using standardized assumptions regarding contaminant transport and exposure pathways. These values are based on the assumption that groundwater discharges to surface water and do not account for site-specific factors.

Although PCE and TCE concentrations in soil at TWA-SB-12 exceed the generic soil-to-groundwater PCULs, groundwater data collected in the vicinity do not indicate groundwater impacts consistent with those exceedances. This observation suggests that the assumptions underlying the generic cleanup levels soil-to-groundwater-to-surface-water pathway may not be representative of conditions in this portion of the Site. As a result, the generic PCULs for PCE and TCE may not be predictive of groundwater concentrations under observed site conditions.

Groundwater concentrations of TPH and metals are consistent with historical detections at the Site and are likely attributable to contamination associated with auto fluff fill.

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Attachments

References

Limitations

Figures

Table

A—Photograph Log

B—Boring Logs

C— Field Sampling Data Sheets

D—Analytical Laboratory Reports

E—Data Validation Memorandum

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References

CRETE. 2020. *Soil and Groundwater Data Report, Hylebos Marsh Property—1205 Alexander Avenue and 1300 Taylor Way, Taylor Way and Alexander Avenue Fill Area Site.* CRETE Consulting Inc.: Seattle, WA. March 27.

DOF. 2020. *Final Data Gaps Work Plan, Taylor Way and Alexander Avenue Fill Area Site, Tacoma, Washington.* Dalton, Olmsted & Fuglevand: Seattle, WA. July.

DOF. 2025. *Draft Remedial Investigation and Feasibility Study Report, Taylor Way and Alexander Avenue Fill Area Site, Tacoma, Washington.* Dalton, Olmsted & Fuglevand: Seattle, WA. March.

Ecology. 2021. *Implementation Memorandum No. 23: Concentrations of gasoline and diesel range organics predicted to be protective of aquatic receptors in surface waters.* Publication No. 19-09-043. Washington State Department of Ecology, Toxics Cleanup Program. August.

Ecology. 2023. *Guidance for Silica Gel Cleanup in Washington State.* Publication No. 22-09-059. Washington State Department of Ecology, Toxics Cleanup Program. November.

MFA. 2024. Audrey Hacket and Meaghan Pollock, LG, Maul Foster & Alongi, Inc. *Hylebos Marsh: Subsurface Investigation.* Letter to Steve Teel, LHG, Cleanup Project Manager/Hydrogeologist, Washington State Department of Ecology, Toxics Cleanup Program, Southwest. October 31.

MFA. 2026a. Audrey Hacket and Carolyn Wise, LHG, Maul Foster & Alongi, Inc. *Supplemental Groundwater Sampling Plan, Hylebos Marsh - Taylor Way and Alexander Avenue Fill Area (TWAAFA) Site.* Memorandum to Steve Teel, LHG, Cleanup Project Manager/Hydrogeologist, Washington State Department of Ecology, Toxics Cleanup Program, Southwest. February 26.

MFA. 2026b. *Hylebos Marsh Interim Action Plan, Taylor Way and Alexander Avenue Fill Area.* Prepared for Port of Tacoma. Maul Foster & Alongi, Inc.: Seattle, WA. February 23.

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Limitations

The services undertaken in completing this technical memorandum were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This technical memorandum is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this technical memorandum apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this technical memorandum.

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Figures

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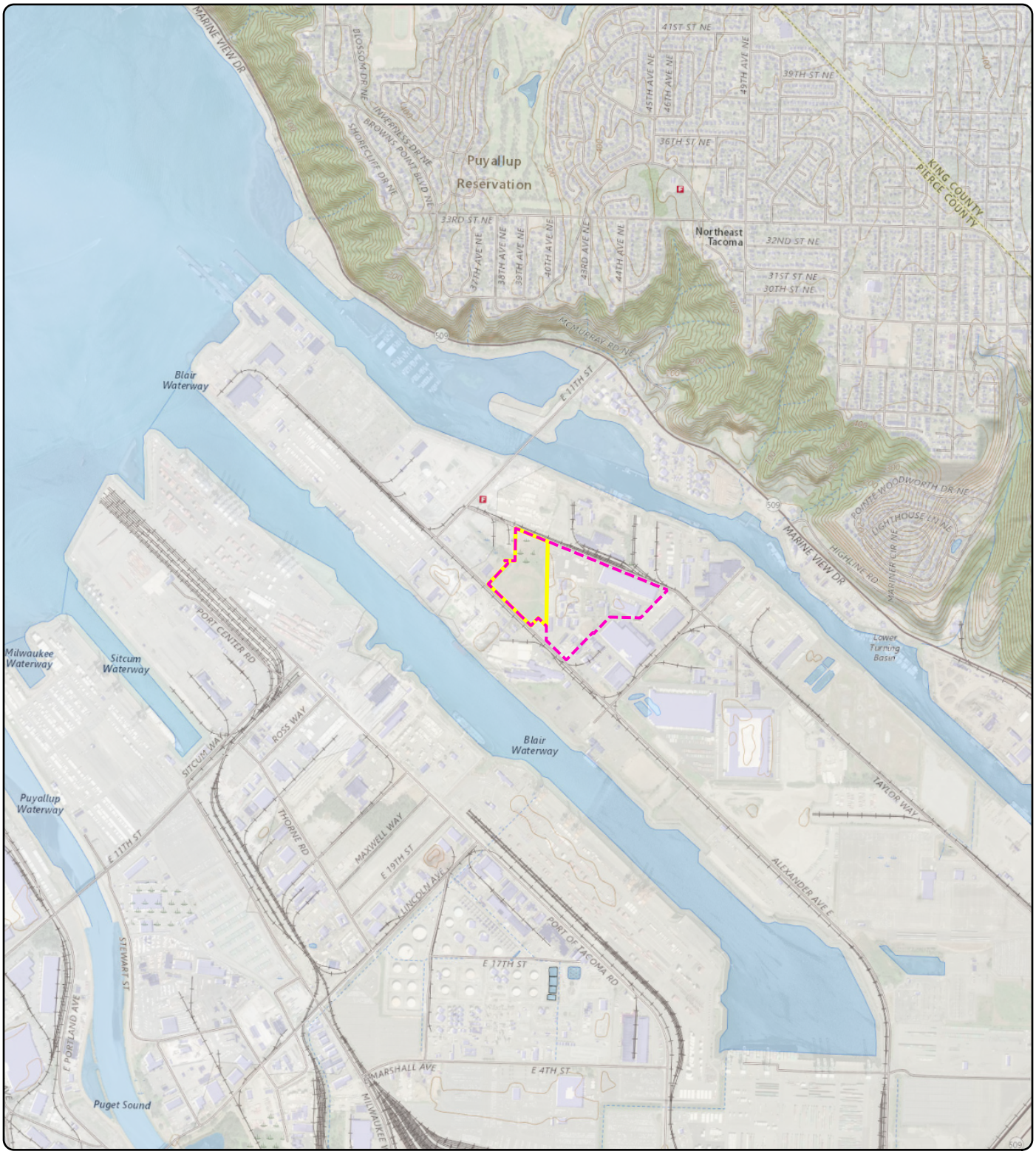

Notes
U.S. Geological Survey (2021) 7.5-minute topographic quadrangle: Tacoma.
Township 21 North, Range 3 East, Section 35.
TWAAFA = Taylor Way and Alexander Avenue Fill Area.

Data Source
Tax parcel obtained from Pierce County; TWAAFA site boundary obtained from Exhibit A of Agreed Order No. DE 14260.

Legend

- TWAAFA Boundary
- Hylebos Marsh Property

Figure 1
Property Location

Hylebos Marsh Property
1212 Taylor Way and 1229 E Alexander Avenue
Tacoma, WA

0 1,000 2,000
Feet

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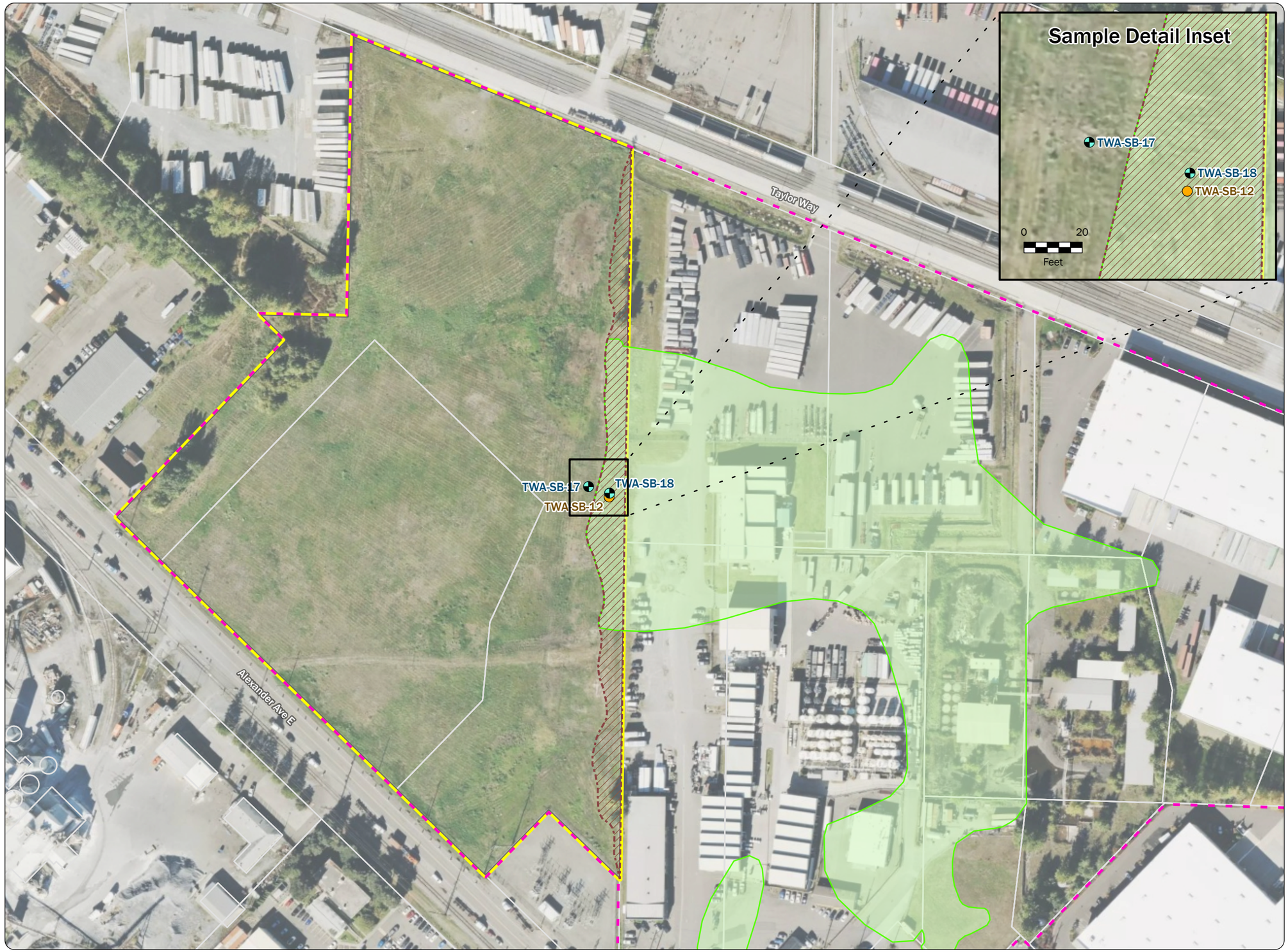

Figure 2
Sample Locations

Hylebos Marsh Property
1212 Taylor Way and
1229 E Alexander Ave
Tacoma, WA

Legend

- Temporary Monitoring Well
- Prior Soil Boring (August 2024)
- Extent of Sloped Topography
- Approximate Extent of Auto Fluff Fill
- TWAAFA Site Boundary
- Hylebos Marsh Property
- Parcel

Note
DOF = Dalton, Olmsted & Fuglevand.
TWAAFA = Taylor Way and Alexander Avenue Fill Area.

0 150
Feet

Data Sources
Aerial imagery obtained from Mapbox; parcels obtained from Pierce County; TWAAFA site boundary obtained from Exhibit A of Agreed Order No. DE 14260); approximate extent of auto fluff fill obtained from DOF 2020 Data Gaps Work Plan including updates based on HGI geophysical survey and MFA 2024 subsurface investigation results.

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Table

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Table
Groundwater Analytical Results
Supplemental Groundwater Sampling
Hylebos Marsh, TWAAFA Site, Tacoma, Washington

Location:	MTCA Method A[1]	TWAAFA Groundwater PCULs[2]	TWA-SB-17	TWA-SB-18
Sample Name:			TWA-SB-17-GW 5.5	TWA-SB-18-GW 10.5
Collection Date:			06/03/2026	06/03/2026
Collection Depth (ft bgs):			5.5	10.5
TPH (ug/L)				
Gasoline-range hydrocarbons	800[a]	800	100 U	100 U
Diesel-range hydrocarbons	500	2,100	860	3,500
Motor oil-range hydrocarbons	500	2,100	1,000	2,700
Diesel+Oil[b]	500	NV	1,900 T	6,200 T
TPH with SGC (ug/L)				
Diesel-range hydrocarbons	500	500	50 U	50 U
Motor oil-range hydrocarbons	500	500	200 U	200 U
Diesel+Oil[b]	500	NV	200 UT	200 UT
TPH–Polar Organics Fraction (ug/L)[c][2][3]				
Diesel-range hydrocarbons–polar metabolites	NV	500	660 T	3,300 T
Motor oil-range hydrocarbons–polar metabolites	NV	500	800 T	2,500 T
Dissolved Metals (ug/L)				
Arsenic	5	8[d][4]	2	2.5
Chromium	50	610,000[e]	1 U	1.6
Copper	NV	3.1	2.4 U	2.7
Lead	15	8.1	1 U	2.5
Manganese	NV	100	260	880
Mercury	2	0.025	0.0005 U	0.0017
Nickel	NV	8.2	5.6	46
Zinc	NV	81	5 U	720
VOCs (ug/L)				
Benzene	5	1.6	0.35 U	0.35 U
Ethylbenzene	700	31	1 U	1 U
m,p-Xylene	NV	NV	2 U	2 U
o-Xylene	NV	45,200	1 U	1 U
Tetrachloroethene (PCE)	5	2.9	1 U	1 U
Toluene	1,000	130	1 U	1 U
Trichloroethene (TCE)	5	0.7	0.5 U	0.5 U
Xylenes, total[f]	1,000	710	2 UT	2 UT

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Table
Groundwater Analytical Results
Supplemental Groundwater Sampling
Hylebos Marsh, TWAAFA Site, Tacoma, Washington

Notes

Data summation rules are as follows: non-detect results are multiplied by one-half when used for sums. When all results are non-detect, the highest reporting limit is provided as the sum.

Shading indicates values that exceed TWAAFA Groundwater PCULs; non-detects (U) were not compared with screening criteria. MTCA Method A values are shown for reference only and not compared to sample results.

ft bgs = feet below ground surface.

MTCA = Model Toxics Control Act.

NV = no value.

PCUL = preliminary cleanup levels.

SGC = silica gel cleanup.

T = result is calculated.

TPH = total petroleum hydrocarbons.

TWAAFA = Taylor Way and Alexander Avenue Fill Area.

U = result is non-detect at the method reporting limit.

ug/L = micrograms per liter.

VOC = volatile organic compound.

[a]Screening level for gasoline-range hydrocarbons with detectable benzene due to historical detections.

[b]Diesel+Oil is the sum of diesel- and oil-range hydrocarbons.

[c]TPH polar organics fractions calculated as the TPH result without SGC minus the TPH result with SGC. Results represent the amount of polar metabolites and are screened to the TWAAFA polar organics fraction PCUL.

[d]This screening level is based on established natural background levels in the Puget Sound basin.

[e]Screening value for trivalent chromium.

[f]Total xylenes is the sum of m,p-xylene and o-xylene.

References

[1]Ecology. 2026. *Cleanup Levels and Risk Calculation (CLARC) table*. Washington State Department of Ecology, Toxics Cleanup Program. February.

[2]DOF. 2025. *Draft Remedial Investigation and Feasibility Study Report, Taylor Way and Alexander Avenue Fill Area Site, Tacoma, Washington*. Prepared for General Metals, Glenn Springs Holdings, Clean Earth. Table 8-3. Dalton, Olmsted, & Fuglevand: Seattle, WA. March.

[3]Ecology. 2023. *Guidance for Silica Gel Cleanup in Washington State*. Publication No. 22-09-059. Washington State Department of Ecology, Toxics Cleanup Program. November.

[4]Ecology. 2022. *Natural Background Groundwater Arsenic Concentrations in Washington State* . Publication No. 14-09-044. Washington State Department of Ecology, Toxics Cleanup Program. January.

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Attachment A

Photograph Log

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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 1.

Description

Sonic drill rig at boring location TWA-SB-17.

All photos taken on June 3, 2026.



Photo No. 2.

Description

Boring TWA-SB-17 soil from 0 to 5 feet below ground surface (ft bgs).



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 3.

Description

Boring TWA-SB-17 soil from 5 to 10 ft bgs.



Photo No. 4.

Description

Boring TWA-SB-17 soil from 10 to 15 ft bgs. Silt layer is visible.



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 5.

Description

Boring TWA-SB-18 soil from 0 to 5 ft bgs.



Photo No. 6.

Description

Boring TWA-SB-18 soil from 0 to 5 ft bgs; close-up of auto fluff debris.



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 7.

Description

Boring TWA-SB-17 soil from 5 to 10 ft bgs.



Photo No. 8.

Description

Boring TWA-SB-18 soil from 10 to 13 ft bgs.



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 9.

Description

Boring TWA-SB-18 soil from 13 to 18 ft bgs. Silt layer is visible.



Photo No. 10.

Description

Boring TWA-SB-18 soil from 18 to 23 ft bgs. Silt layer visible.



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 11.

Description

Boring location TWA-SB-18 following borehole abandonment.



Photo No. 12.

Description

Boring location TWA-SB-17 following borehole abandonment.



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Photographs

Project Name: Supplemental Groundwater Sampling, Hylebos Marsh
Project Number: M0615.20.017
Location: 1212 Taylor Way and 1229 E Alexander Ave, Tacoma, Washington

Photo No. 13.

Description

Investigation-derived waste drums stored on site.



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Attachment B

Boring Logs

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SOIL BORING TWA-SB-17

Project Number: M0615.20.017-001
Project Name: TWAAFA - Hylebos GW Investigation
Project Location: 1212 Taylor Way, Tacoma, WA
Date Started: 06/03/2026 Completed: 06/03/2026
Logged By: A.Clauss

Surface Elevation: N/A
Boring Location: North: - East: -
Drill Rig: AEC / Track-mounted Sonic Rig
Completion Depth: 15.00'

Depth (feet)	Water Levels	Soil Description and Remarks	Graphic Log	Samples: % Recovery	Samples: Sample ID	Samples: PID (ppm)	Temporary Well Screen Interval	Depth (ft)
0		0.0 foot to 0.2 foot: Grass and sands with roots.		30				0
1		0.2 foot to 1.5 feet: POORLY GRADED SAND (SP); brown; 100% sand, fine to medium grained; very loose; no odor; moist.				0.00		1
2	▼	1.5 feet to 5.0 feet: No recovery.						2
3								3
4								4
5	▽	5.0 feet to 9.5 feet: POORLY GRADED SAND (SP); dark brown to gray; trace fines; 100% sand, fine to medium grained; loose; no odor; wet.		90	TWA-SB-17-GW-5.5	0.00		5
6								6
7						0.00		7
8								8
9		@ 9.0 feet bgs: sandy silt lens; slight organic-like odor.				0.00		9
10		9.5 feet to 10.0 feet: No recovery.		80				10
11		10.0 feet to 14.0 feet: SILT (ML); gray; 100% fines, medium plasticity; soft; no odor; wet. [SILT AQUITARD]				0.00		11
12								12
13								13
14						0.00		14
15		14.0 feet to 15.0 feet: No recovery.						15

Notes

1) Depths are relative to feet below ground surface. 2) bgs = below ground surface. 3) PID = photoionization detector. 4) ppm = part per million.

Only one shallow water bearing zone observed prior to encountering the silt aquitard at 10.0 feet bgs.

Temporary Well screened 3.0 to 8.0 feet bgs.

▼ Water level measured at 2.18 feet bgs at time of sampling the temporary well.

▽ Water level at 5.0 feet bgs at time of drilling, based on soil cores.

Borehole Completion Details

0.0 to 15.0 feet bgs: 4-inch borehole inner diameter.

Borehole Abandonment Details

0.0 to 15.0 feet bgs: Bentonite chips hydrated with potable water.

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SOIL BORING TWA-SB-18

Project Number: M0615.20.017-001
Project Name: TWAAFA - Hylebos GW Investigation
Project Location: 1212 Taylor Way, Tacoma, WA
Date Started: 06/03/2026 Completed: 06/03/2026
Logged By: A.Clauss

Surface Elevation: N/A
Boring Location: North: - East: -
Drill Rig: AEC / Track-Mounted Sonic Rig
Completion Depth: 23.00'

Depth (feet)	Water Levels	Soil Description and Remarks	Graphic Log	Samples: % Recovery	Samples: Sample ID	Samples: PID (ppm)	Temporary Well Screen Interval	Depth (ft)
0		0.0 foot to 0.2 foot: Grass and sands with roots.		100				0
1		0.2 foot to 1.25 feet: POORLY GRADED SAND (SP); light brown; 5% fines; 85% sand, fine to coarse grained; 10% gravel, fine to medium, subrounded; loose; no odor; dry.				0.00		1
2		1.25 feet to 3.0 feet: POORLY GRADED GRAVELLY SAND (SP); brown; 5% fines; 80% sand, fine to coarse grained; 15% gravel, fine to coarse, subrounded; with minor concrete debris; loose; no odor; moist.						2
3		3.0 feet to 7.0 feet: POORLY GRADED SAND WITH SILT AND DEBRIS (SM); dark brown; 10% fines; 50% sand, fine to medium grained; 10% gravel, fine, subrounded; 30% debris (yellow fibers, steel wires, rubber gaskets, scrap metal, and wood debris); orange staining; loose; no odor; moist.				0.00		3
4								4
5				100		0.00		5
6								6
7	▽					0.00		7
8	▼	7.0 feet to 13.0 feet: POORLY GRADED SAND (SP); gray; trace fines; 100% sand, fine to medium grained, trace red particles; loose; no odor; moist to wet.						8
9		@ 9.0 feet bgs: wet.				0.00		9
10				100				10
11					TWA-SB-17-GW-10.5	0.00		11
12		@ 11.5 feet bgs: silt lens.						12
13		@ 12.5 feet bgs: silty sand with woody debris.						13
14		13.0 feet to 15.0 feet: SILT (ML); gray; 95% fines, low plasticity; 5% sand, fine grained; firm; no odor; moist. [SILT AQUITARD]		100		0.00		14
15		@ 14.0 to 15.0 feet bgs: black staining and minor woody debris.						15
16		15.0 feet to 18.0 feet: SILT (ML); gray; 100% fines, medium plasticity; firm; no odor; moist. [SILT AQUITARD]				0.00		16
17								17
18						0.00		18
19		18.0 feet to 20.0 feet: SILT (ML); gray; 100% fines, low plasticity; firm; no odor; moist to wet. [SILT AQUITARD]		80				19
20						0.00		20
21		20.0 feet to 22.0 feet: SILT (ML); gray; 95% fines, nonplastic; 5% sand, fine grained; firm; no odor; moist to wet. [SILT AQUITARD]						21

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SOIL BORING TWA-SB-18

Project Number: M0615.20.017-001
Project Name: TWAAFA - Hylebos GW Investigation
Project Location: 1212 Taylor Way, Tacoma, WA
Date Started: 06/03/2026 Completed: 06/03/2026
Logged By: A.Clauss

Surface Elevation: N/A
Boring Location: North: - East: -
Drill Rig: AEC / Track-Mounted Sonic Rig
Completion Depth: 23.00'

Depth (feet)	Water Levels	Soil Description and Remarks	Graphic Log	Samples: % Recovery	Samples: Sample ID	Samples: PID (ppm)	Temporary Well Screen Interval	Depth (ft)
23		22.0 feet to 23.0 feet: No Recovery.		80		0.00		23

Notes
1) Depths are relative to feet below ground surface. 2) bgs = below ground surface. 3) PID = photoionization detector. 4) ppm = part per million.

Only one shallow water bearing zone observed prior to encountering the silt aquitard at 13.0 feet bgs.

Temporary well screened 8.0 - 13.0 ft bgs.

A deeper temporary well was installed and screened 15.0 to 20.0 feet bgs in attempt to collect a deep groundwater sample if present. No groundwater observed in deep well due to being screened in the silt aquitard.

▼ Water level measured at 7.68 feet bgs at time of sampling the temporary well.

▽ Water level at 7.0 feet bgs at time of drilling, based on soil cores.

Borehole Completion Details
0.0 to 23.0 feet bgs: 4-inch borehole inner diameter.

Borehole Abandonment Details
0.0 to 23.0 feet bgs: Bentonite chips hydrated with potable water.

Attachment C

Field Sampling Data Sheets

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Groundwater Field Sampling Data Sheet

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Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0615.20.017-001	Port of Tacoma	TWAAFA - Hylebos Marsh	2026 GW Investigation	A.Clauss

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
TWA-SB-17	Reconnaissance	Flush-mount	Land Surface	2.0	3 - 8	5.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTW - DTP*	*DTB - DTW*	*(gal/ft x water column)*
06/03/2026	9:52	8.46		2.18		6.28	1.02

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

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, bladder pump, other*							
Purge Start Time	10:08	*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*	
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
10:30	3.1	0.2	2.24	--	--	--	--	--	33.6
10:38	3.6	0.1	2.24	7.00	16.9	843	0.55	-186.3	24.3
10:42	3.7	0.1	2.24	7.01	17.0	839	0.44	-195.8	20.8
10:45	3.8	0.1	2.24	6.99	17.0	841	0.41	-197.4	20.4
10:48	3.9	0.1	2.22	7.00	16.9	841	0.41	-198.9	18.8
10:51	4.0	0.1	2.23	7.01	16.7	708	0.39	-201.3	16.7
10:54	4.1	0.1	2.24	7.02	16.8	709	0.38	-203.8	14.0
10:57	4.3	0.1	2.23	7.01	17.0	712	0.36	-206.8	12.7
11:00	4.4	0.1	2.23	7.01	16.9	711	0.36	-207.3	12.3

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Slight tan hue then clear and colorless; no sheen; no odor.

General Comments

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	TWA-SB-17-GW-5.5		
Sample Date	06/03/2026	Sample Time	11:05

Container Type	Preservative	Filtered (Y/N)	No. Containers
VOA	HCl	N	6
Amber glass	None	N	1
Poly	HNO3	Y	1
		Total No. Containers:	8

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Groundwater Field Sampling Data Sheet

MAUL FOSTER ALONGI

Project Information

Project No.	Client Name	Project Name	Sampling Event	Sampler(s)
M0615.20.017-001	Port of Tacoma	TWAAFA - Hylebos Marsh	2026 GW Investigation	A.Clauss

Well Information

Location ID	Well Type	Monument Type	Depth Measuring Point	Well Diameter (in)	Screen Interval (ft)	Sample Depth (ft)
TWA-SB-18	Reconnaissance	Flush-mount	Land Surface	2.0	8 - 13	10.5

Hydrology/Level Measurements

Date	Time	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Water Column (ft)	Well Casing Volume (gal)
		DTB	*DTP*	*DTW*	*DTW - DTP*	*DTB - DTW*	*(gal/ft x water column)*
06/03/2026	13:45	13.61		7.68		5.93	0.97

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

Water Quality Data

Purge Method	Peristaltic Pump	*Purge/Sampling Methods: peristaltic pump, submersible pump, vacuum pump, inertia pump, dedicated pump, disposable bailer, bladder pump, other*							
Purge Start Time	13:55	*ideally < 0.3 ft drawdown*	*± 0.1*	*± 3%*	*± 3%*	*± 10% if > 0.5*	*± 10*	*< 5 or ± 10% if > 5*	
Time	**Cumulative Purge Volume**	**Flowrate**	**Water Level**	**pH**	**Temperature**	**Conductivity**	**Dissolved Oxygen**	**ORP**	**Turbidity**
	gal	*L/min*	*ft*	*SU*	*degrees C*	*uS/cm*	*mg/L*	*mV*	*NTU*
14:17	3.5	0.2	8.12	--	--	--	--	--	133
14:30	4.5	0.1	8.00	6.74	15.2	981	0.54	-166.5	23.3
14:34	4.7	0.1	8.01	6.73	15.2	982	0.48	-171.6	23.4
14:37	4.8	0.1	8.00	6.74	15.1	979	0.46	-176.4	22.1
14:40	4.9	0.1	8.00	6.73	15.2	981	0.44	-178.5	21.1
14:43	5.0	0.1	8.00	6.73	15.2	981	0.39	-184.1	18.9
14:46	5.1	0.1	8.00	6.73	15.2	981	0.39	-186.2	17.5

Last row of water quality data are considered final field parameters unless otherwise noted.

Water Quality Observations *(clarity, tint, odor, sheen, etc.)*: Slight tan hue then clear and colorless; no sheen; no odor.

Sample Information

Sampling Method	Peristaltic Pump		
Sample Name	TWA-SB-18-GW-10.5		
Sample Date	06/03/2026	Sample Time	14:50
Container Type	**Preservative**	**Filtered (Y/N)**	**No. Containers**
VOA	HCl	N	6
Amber glass	None	N	1
Poly	HNO3	Y	1
		Total No. Containers:	8

General Comments

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Attachment D

Analytical Laboratory Reports

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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June 12, 2026

Carolyn Wise, Project Manager
Maul Foster Alongi
114 W Magnolia St, Suite 500
Bellingham, WA 98225

Dear Ms Wise:

Included are the results from the testing of material submitted on June 4, 2026 from the Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087 project. There are 29 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Arther Clauss
MFA0612R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 4, 2026 by Friedman & Bruya, Inc. from the Maul Foster Alongi Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
606087 -01	TWA-SB-17-GW-5.5
606087 -02	TWA-SB-18-GW-10.5
606087 -03	Drum-1
606087 -04	Trip Blank

All quality control requirements were acceptable.

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087
Date Extracted: 06/09/26
Date Analyzed: 06/09/26

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
TWA-SB-17-GW-5.5 606087-01	<100	95
TWA-SB-18-GW-10.5 606087-02	<100	95
Method Blank 06-1036 MB	<100	97

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087
Date Extracted: 06/05/26
Date Analyzed: 06/09/26

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx
Sample Extracts Passed Through a Silica Gel Column Prior to Analysis
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
TWA-SB-17-GW-5.5 606087-01	<50	<200	113
TWA-SB-18-GW-10.5 606087-02	<50	<200	96
Method Blank 06-1225 MB	<50	<200	98

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087
Date Extracted: 06/05/26
Date Analyzed: 06/05/26

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
TWA-SB-17-GW-5.5 606087-01	860 x	1,000 x	93
TWA-SB-18-GW-10.5 606087-02	3,500 x	2,700 x	86
Method Blank 06-1225 MB	<50	<200	100

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087
Date Extracted: 06/05/26
Date Analyzed: 06/05/26

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

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
Drum-1 606087-03	<50	<200	101
Method Blank 06-1218 MB2	<50	<200	103

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	TWA-SB-17-GW-5.5	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/09/26	Lab ID:	606087-01
Date Analyzed:	06/09/26	Data File:	060912.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	107	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	101	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Trichloroethene	<0.5
Toluene	<1
Tetrachloroethene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	TWA-SB-18-GW-10.5	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/09/26	Lab ID:	606087-02
Date Analyzed:	06/09/26	Data File:	060913.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	94	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	103	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Trichloroethene	<0.5
Toluene	<1
Tetrachloroethene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Trip Blank	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/10/26	Lab ID:	606087-04
Date Analyzed:	06/10/26	Data File:	061011.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	109	86	113
Toluene-d8	106	88	114
4-Bromofluorobenzene	101	88	112

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Trichloroethene	<0.5
Toluene	<1
Tetrachloroethene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Hylebos Marsh GW
Date Extracted:	06/10/26	Lab ID:	06-1184 mb
Date Analyzed:	06/10/26	Data File:	061008.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	78	126
Toluene-d8	99	84	115
4-Bromofluorobenzene	98	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Trichloroethene	<0.5
Toluene	<1
Tetrachloroethene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Hylebos Marsh GW
Date Extracted:	06/09/26	Lab ID:	06-1182 mb
Date Analyzed:	06/09/26	Data File:	060908.D
Matrix:	Water	Instrument:	GCMS11
Units:	ug/L (ppb)	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	96	78	126
Toluene-d8	100	84	115
4-Bromofluorobenzene	102	72	130

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Trichloroethene	<0.5
Toluene	<1
Tetrachloroethene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client Sample ID:	TWA-SB-17-GW-5.5	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-01
Date Analyzed:	06/10/26	Data File:	606087-01.044
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.0
Chromium	<1
Copper	<2.4
Lead	<1
Manganese	260
Mercury	<1
Nickel	5.6
Zinc	<5

Analysis For Dissolved Metals By EPA Method 6020B

Client Sample ID:	TWA-SB-18-GW-10.5	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-02
Date Analyzed:	06/10/26	Data File:	606087-02.045
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	2.5
Chromium	1.6
Copper	2.7
Lead	2.5
Manganese	880
Mercury	<1
Nickel	46

Analysis For Dissolved Metals By EPA Method 6020B

Client Sample ID:	TWA-SB-18-GW-10.5	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-02 x10
Date Analyzed:	06/09/26	Data File:	606087-02 x10.212
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Zinc	720

Analysis For Dissolved Metals By EPA Method 6020B

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	NA	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	I6-600 mb
Date Analyzed:	06/09/26	Data File:	I6-600 mb.167
Matrix:	Water	Instrument:	ICPMS3
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Chromium	<1
Copper	<2.4
Lead	<1
Manganese	<1
Mercury	<1
Nickel	<1
Zinc	<5

Analysis For Total Metals By EPA Method 6020B

Client Sample ID:	Drum-1	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-03
Date Analyzed:	06/08/26	Data File:	606087-03.128
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.8
Barium	33
Cadmium	<1
Chromium	11
Mercury	<1
Selenium	<1
Silver	<1

Analysis For Total Metals By EPA Method 6020B

Client Sample ID:	Drum-1	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-03 x5
Date Analyzed:	06/10/26	Data File:	606087-03 x5.091
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	75

Analysis For Total Metals By EPA Method 6020B

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	NA	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	I6-596 mb
Date Analyzed:	06/08/26	Data File:	I6-596 mb.112
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Barium	<1
Cadmium	<1
Chromium	<1
Lead	<1
Mercury	<1
Selenium	<1
Silver	<1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Drum-1	Client:	Maul Foster Alongi
Date Received:	06/04/26	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	606087-03 1/30
Date Analyzed:	06/08/26	Data File:	060815.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	JH

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	89	11	162
Decachlorobiphenyl	90	11	152

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	0.21
Aroclor 1260	0.14
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Maul Foster Alongi
Date Received:	Not Applicable	Project:	Hylebos Marsh GW
Date Extracted:	06/08/26	Lab ID:	06-1233 mb 1/30
Date Analyzed:	06/08/26	Data File:	060806.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	JH

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	105	11	162
Decachlorobiphenyl	107	11	152

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606087-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	90	70-130

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	100	120	65-151	18

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	104	120	65-151	14

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606086-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	110	108	64-136	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	106	78-121

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606087-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	10	<0.35	103	50-150
Trichloroethene	ug/L (ppb)	10	<0.5	97	35-149
Toluene	ug/L (ppb)	10	<1	101	50-150
Tetrachloroethene	ug/L (ppb)	10	<1	98	50-150
Ethylbenzene	ug/L (ppb)	10	<1	103	50-150
m,p-Xylene	ug/L (ppb)	20	<2	102	50-150
o-Xylene	ug/L (ppb)	10	<1	101	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	10	103	105	70-130	2
Trichloroethene	ug/L (ppb)	10	96	98	70-130	2
Toluene	ug/L (ppb)	10	104	103	70-130	1
Tetrachloroethene	ug/L (ppb)	10	99	98	70-130	1
Ethylbenzene	ug/L (ppb)	10	105	104	70-130	1
m,p-Xylene	ug/L (ppb)	20	103	102	70-130	1
o-Xylene	ug/L (ppb)	10	104	103	70-130	1

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606104-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Benzene	ug/L (ppb)	10	<0.35	103	50-150
Trichloroethene	ug/L (ppb)	10	<0.5	94	35-149
Toluene	ug/L (ppb)	10	<1	98	50-150
Tetrachloroethene	ug/L (ppb)	10	<1	94	50-150
Ethylbenzene	ug/L (ppb)	10	<1	101	50-150
m,p-Xylene	ug/L (ppb)	20	<2	100	50-150
o-Xylene	ug/L (ppb)	10	<1	98	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	10	102	101	70-130	1
Trichloroethene	ug/L (ppb)	10	93	92	70-130	1
Toluene	ug/L (ppb)	10	99	100	70-130	1
Tetrachloroethene	ug/L (ppb)	10	95	95	70-130	0
Ethylbenzene	ug/L (ppb)	10	100	101	70-130	1
m,p-Xylene	ug/L (ppb)	20	99	99	70-130	0
o-Xylene	ug/L (ppb)	10	99	100	70-130	1

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606087-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	1.88	113	113	75-125	0
Chromium	ug/L (ppb)	20	<1	91	91	75-125	0
Copper	ug/L (ppb)	20	<5	86	86	75-125	0
Lead	ug/L (ppb)	10	<1	103	101	75-125	2
Manganese	ug/L (ppb)	20	245	95 b	85 b	75-125	11 b
Mercury	ug/L (ppb)	5	<1	105	105	75-125	0
Nickel	ug/L (ppb)	20	5.21	88 b	87 b	75-125	1 b
Zinc	ug/L (ppb)	50	<5	91	90	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	98	80-120
Chromium	ug/L (ppb)	20	99	80-120
Copper	ug/L (ppb)	20	99	80-120
Lead	ug/L (ppb)	10	100	80-120
Manganese	ug/L (ppb)	20	99	80-120
Mercury	ug/L (ppb)	5	103	80-120
Nickel	ug/L (ppb)	20	99	80-120
Zinc	ug/L (ppb)	50	99	80-120

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606120-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	4.21	82 b	101 b	75-125	21 b
Barium	mg/kg (ppm)	50	40.4	84 b	101 b	75-125	18 b
Cadmium	mg/kg (ppm)	10	<1	90	92	75-125	2
Chromium	mg/kg (ppm)	50	15.0	75 b	84 b	75-125	11 b
Lead	mg/kg (ppm)	50	11.2	86 b	94 b	75-125	9 b
Mercury	mg/kg (ppm	5	<1	93	97	75-125	4
Selenium	mg/kg (ppm)	5	<1	92	91	75-125	1
Silver	mg/kg (ppm)	10	<1	94	97	75-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	91	80-120
Barium	mg/kg (ppm)	50	95	80-120
Cadmium	mg/kg (ppm)	10	93	80-120
Chromium	mg/kg (ppm)	50	105	80-120
Lead	mg/kg (ppm)	50	95	80-120
Mercury	mg/kg (ppm)	5	97	80-120
Selenium	mg/kg (ppm)	5	94	80-120
Silver	mg/kg (ppm)	10	98	80-120

Date of Report: 06/12/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 606088-01 1/30 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	86	94	29-125	9
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	82	97	12-177	17

Laboratory Code: Laboratory Control Sample 1/30

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	109	55-137
Aroclor 1260	mg/kg (ppm)	0.25	106	51-150

Data Qualifiers & Definitions

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

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

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

606087

SAMPLE CHAIN OF CUSTODY

06/04/26 VW3/M1/L1/G2

Page # 1 of 1

Report To Carolyn Wise, Arthur Clauss

Company MFA

Address 2815 2nd Ave, Ste 540

City, State, ZIP Seattle, WA 98121

Phone — Email cwise@maulfoster.com aclauss@maulfoster.com

SAMPLERS (signature)

PROJECT NAME: Hylebos Marsh GW Inv

PO #: M0615.20.017-001

REMARKS: TWAAFA Limits

Project specific RLs? - Yes / No

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx (DRO 30 RRO)	NWTPH-Gx	Dx with SG	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	BTEX, PCE, TCE by 8260 D	Dissolved Metals (As, Cr, Cu, Pb, Mn Hg, Ni, Zn) by 6020B	RCRA 8 metals by 6020B	Notes
TWA-SB-17-GW-5.5	01 A-H	6/3/26	1105	GW	8	X	X	O					X	X		O-per CW 06/11/26 ME
TWA-SB-18-GW-10.5	02 A-H	6/3/26	1450	GW	8	X	X	O					X	X		O-per CW 06/06/26 ME
DRUM-1	03 A-E	6/3/26	1645	Soil	5	X						X			X	
Trip Blank	04 AD	—	—	water	4								O			Added at lab (NP) 6/4/26
								Samples received at 3 °C								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Arthur Clauss	MFA	6/4/26	1330
Received by:	VINH	FBI	6-4-26	1330
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Ave S.
Seattle WA 98108
(206) 285-8282
office@friedmanandbruya.com

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 606087 CLIENT MFA INITIALS/ DATE: AP 06/04/26

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature 3 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☐ Over the Counter ☑ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ (NA) Date: 06/05
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 1 days Rec 6/4

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☑ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes	☐ No	☐ Not on COC/label
Date Sampled	☑ Yes	☐ No	☐ Not on COC/label
Time Sampled	☑ Yes	☐ No	☐ Not on COC/label
# of Containers	☐ Yes	☑ No	Added Trip Blank to COC
Relinquished	☑ Yes	☐ No	
Requested analysis	☑ Yes	☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters** _____ **Number of unused TO17 tubes** _____
**Fill out Green manifolds billing sheet

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Elizabeth Webber-Bruya
Ann Webber-Bruya
Michael Erdahl
Joseph Mohammed
Eric Young

5500 4th Ave South
Seattle, WA 98108-2419
(206) 285-8282
office@friedmanandbruya.com
www.friedmanandbruya.com

June 26, 2026

Carolyn Wise, Project Manager
Maul Foster Alongi
114 W Magnolia St, Suite 500
Bellingham, WA 98225

Dear Ms Wise:

Included are the additional results from the testing of material submitted on June 4, 2026 from the Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087 project. There are 4 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Arthur Clauss, Fiona Bellows, Brian Fauth
MFA0626R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 4, 2026 by Friedman & Bruya, Inc. from the Maul Foster Alongi Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Maul Foster Alongi
606087 -01	TWA-SB-17-GW-5.5
606087 -02	TWA-SB-18-GW-10.5
606087 -03	Drum-1
606087 -04	Trip Blank

All quality control requirements were acceptable.

Date of Report: 06/26/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087
Date Extracted: 06/22/26
Date Analyzed: 06/23/26

RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E
Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Total Mercury
TWA-SB-17-GW-5.5 606087-01	<0.0005
TWA-SB-18-GW-10.5 606087-02	0.0017
Method Blank I6-662 MB	<0.0005

Date of Report: 06/26/26
Date Received: 06/04/26
Project: Hylebos Marsh GW Inv M0615.20.017-001, F&BI 606087

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

Laboratory Code: 606087-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	ug/L (ppb)	0.01	<0.1	110	109	71-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	ug/L (ppb)	0.01	97	66-126

Data Qualifiers & Definitions

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

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

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

606087

SAMPLE CHAIN OF CUSTODY

06/04/26 VW3/M1/L1/G2

Page # 1 of 1

Report To Carolyn Wise, Arthur Clauss

Company MFA

Address 2815 2nd Ave, Ste 540

City, State, ZIP Seattle, WA 98121

Phone — Email cwise@maulfoster.com aclauss@maulfoster.com

SAMPLERS (signature)

PROJECT NAME: Hylebos Marsh GW Inv

PO #: M0615.20.017-001

REMARKS: TWAAFA Limits

Project specific RLs? Yes / No

INVOICE TO: accounting@maulfoster.com

TURNAROUND TIME
- [x] Standard turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Archive samples
- [ ] Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx (DRO 30 RRO)	NWTPH-Gx	Dx with SG	NWTPH-HCID	VOCs EPA 8260	Hg by 1631E	PCBs EPA 8082	BTEX, PCE, TCE by 8260D	Dissolved Metals (As, Cr, Cu, Pb, Mn Hg, Ni, Zn) by 6020B	RCRA 8 metals by 6020B	O-per CW 06/11/26 ME Notes
TWA-SB-17-GW-5.5	01 A-H	6/3/26	1105	GW	8	X	X	O			B		X	X		O-per CW 06/06/26 ME
TWA-SB-18-GW-10.5	02 A-H	6/3/26	1450	GW	8	X	X	O			B		X	X		~~ME~~
DRUM-1	03 A-E	6/3/26	1645	Soil	5	X						X			X	
Trip Blank	04 AD	—	—	water	4								O			added at lab (NP) 6/4/26
																B-per FB 06/22/26 ME
								Samples received at 3 °C								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Arthur Clauss	MFA	6/4/26	1330
Received by: VINH	VINH	FBI	6-4-26	1330
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Ave S.
Seattle WA 98108
(206) 285-8282
office@friedmanandbruya.com

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 606087 CLIENT MFA INITIALS/ DATE: AP 06/04/26

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature 3 °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☐ Over the Counter ☑ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ (NA) Date: 06/05
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 1 days Rec 6/4

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☐ NA ☑ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes	☐ No	☐ Not on COC/label
Date Sampled	☑ Yes	☐ No	☐ Not on COC/label
Time Sampled	☑ Yes	☐ No	☐ Not on COC/label
# of Containers	☐ Yes	☑ No	Added Trip Blank to COC
Relinquished	☑ Yes	☐ No	
Requested analysis	☑ Yes	☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters** _____ **Number of unused TO17 tubes** _____
**Fill out Green manifolds billing sheet

Attachment E

Data Validation Memorandum

MAUL
FOSTER
ALONGI

Data Validation Memorandum

Project No. M0615.20.017 | June 26, 2026 | Port of Tacoma

Maul Foster & Alongi, Inc. (MFA), conducted an independent review of the quality of analytical results for groundwater, soil, and associated quality control samples collected on June 3, 2026, at the Hylebos Marsh - Taylor Way and Alexander Avenue Fill Area Site in Tacoma, Washington.

Friedman & Bruya, Inc. (F&B) performed the analyses. MFA reviewed F&B report numbers 606087 and 606087-additional. The analyses performed and the samples analyzed are listed in the following tables. Not all analyses were performed on all samples. Some analyses were requested by MFA after initial results were received, which are indicated on the chain-of-custody (COC) form accompanying the reports.

Analysis	Reference
Diesel- and oil-range hydrocarbons	NWTPH-Dx
Diesel- and oil-range hydrocarbons with silica gel cleanup	NWTPH-Dx/SG
Gasoline-range hydrocarbons	NWTPH-Gx
Polychlorinated biphenyls as Aroclors	EPA 8082A
Total and dissolved metals	EPA 6020B
Total mercury	EPA 1631E
Volatile organic compounds	EPA 8260D

Notes
EPA = U.S. Environmental Protection Agency.
NWTPH = Northwest Total Petroleum Hydrocarbons.
SG = silica gel cleanup.

Samples Analyzed
Report 606087/606087-additional
TWA-SB-17-GW-5.5
TWA-SB-18-GW-10.5
Drum-1
Trip Blank

Data Validation Procedures

Analytical results were evaluated according to applicable sections of U.S. Environmental Protection Agency (EPA) guidelines for data review (EPA 2020a, 2020b), and appropriate laboratory- and method-specific guidelines (EPA 1986, F&B 2024).

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

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

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Final data qualifier:

- U = result is non-detect at the method reporting limit (MRL).

General Qualifications

Total Petroleum Hydrocarbons

According to report 606087, the NWTPH-Dx diesel- and oil-range hydrocarbons results for samples TWA-SB-17-GW-5.5 and TWA-SB-18-GW-10.5 were flagged by the laboratory as having chromatographic patterns that did not resemble the fuel standards used for quantitation. The results were reported as diesel- and oil-range hydrocarbons instead of specific fuel products; thus, qualification was not required.

For report 606087, NWTPH-Dx/SG analysis on samples TWA-SB-17-GW-5.5 and TWA-SB-18-GW-10.5 was requested following receipt of the initial NWTPH-Dx results. The MFA project manager confirmed with the laboratory that polar metabolites were observable in the NWTPH-Dx chromatograms. Both samples were non-detect to MRLs by NWTPH-Dx/SG.

Sample Conditions

Sample Custody

Sample custody was appropriately documented on the COC form accompanying the report.

Holding Times

Extractions and analyses were performed within the recommended holding times.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

Reporting Limits

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

For report 606087, EPA Method 1631E mercury analysis on samples TWA-SB-17-GW-5.5 and TWA-SB-18-GW-10.5 was requested following receipt of the initial EPA Method 6020B results in order to meet project MRLs. EPA Method 1631E mercury results from report 606087-additional are considered the results of record and EPA Method 6020B mercury results will not be reported.

Blank Results

Method Blanks

Laboratory method blanks are used to evaluate whether laboratory contamination was introduced during sample preparation and analysis. Laboratory method blank analyses were performed at the required frequencies, in accordance with laboratory- and method-specific requirements.

All laboratory method blank results were non-detect to MRLs.

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Equipment Rinsate Blanks

Equipment rinsate blanks are used to evaluate the adequacy of the field equipment decontamination process when decontaminated sampling equipment is used to collect samples.

These blanks were not required for this sampling event, as all samples were collected using dedicated or single-use equipment.

Trip Blanks

Trip blanks are used to evaluate whether volatile organic compound contamination was introduced during shipping and field handling procedures.

A trip blank (Trip Blank) was submitted with the sample delivery group 606087 for EPA Method 8260D analysis.

The trip blank was non-detect to MRLs for all target analytes.

Laboratory Control Sample and Laboratory Control Sample Duplicate Results

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) results are used to evaluate laboratory precision and accuracy. Where LCSD were not reported, laboratory precision was evaluated using laboratory duplicate or matrix spike (MS) and matrix spike duplicate (MSD) results. All LCS and the remaining LCSD were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

All LCS and LCSD results were within acceptance limits for percent recovery and relative percent difference (RPD).

Laboratory Duplicate Results

Laboratory duplicate results are used to evaluate laboratory precision and sample homogeneity. All laboratory duplicate samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

Laboratory duplicate results greater than five times the MRL were evaluated using laboratory RPD control limits. A secondary criterion was used when laboratory duplicate results were non-detect or less than five times the MRL. Results meet the secondary criterion if the absolute difference of the laboratory duplicate sample result and the parent sample result, or the MRL for non-detects, is equal to or less than the MRL value of the parent sample.

All laboratory duplicate results met the acceptance criteria.

Matrix Spike and Matrix Spike Duplicate Results

MS and MSD results are used to evaluate laboratory precision, accuracy, and the effect of the sample matrix on sample preparation and target analyte recovery. All MS and MSD samples were prepared and analyzed at the required frequency, in accordance with laboratory- and method-specific requirements.

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

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

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Surrogate Results

Surrogate results are used to evaluate laboratory performance of target organic compounds for individual samples.

All surrogate results were within percent recovery acceptance limits.

Field Duplicate Results

Field duplicate results are used to evaluate field precision and sample homogeneity. No field duplicate samples were submitted for analysis.

Data Package

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

According to the COC form accompanying report 606087, the Trip Blank sample was added to the COC form upon receipt at the laboratory; the reviewer confirmed the trip blank was packed with the samples during sample collection and transport and was erroneously omitted from the COC form.

No other issues were found.

References

EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA publication SW-846. 3rd ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), VI phase II (2018), VI phase III (2019), VII phase I (2019), and VII phase II (2020).

EPA. 2020a. *National Functional Guidelines for Inorganic Superfund Methods Data Review.* EPA 542-R-20-006. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

EPA. 2020b. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 540-R-20-005. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation: Washington, DC. November.

F&B. 2024. *Quality Assurance Manual.* Rev. 19. Friedman & Bruya, Inc.: Seattle, WA. October 9.

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