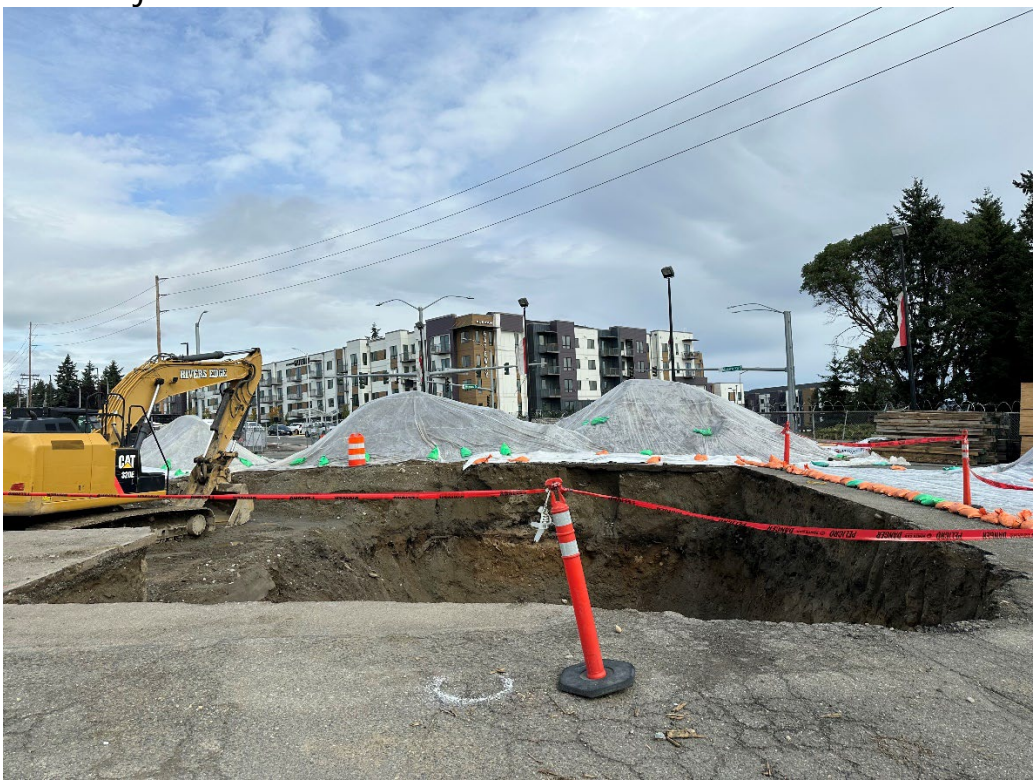
Remedial Action Completion Report

Valley I5 Poulsbo RV Site

Puget Sound Gateway Program
SR 509 Completion, Stage 1B
CSID: 6674 / FSID: 78643737
VCP Project NW3335



Prepared for:

Washington State Department of Transportation

April 10, 2024
PBS Project 40757.022
Contract # 9424

PBS
214 E GALER STREET, SUITE 300
SEATTLE, WA 98102
206.233.9639 MAIN
866.727.0140 FAX
PBSUSA.COM

Remedial Action Completion Report

Site:
SR 509 Completion, Stage 1B
Poulsbo RV
23051 Military Road South
Kent, Washington

Prepared for:
Washington State Department of Transportation

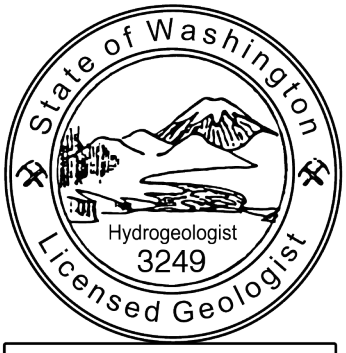
PBS Project 40757.022

Digitally signed by Sarah Newport
Date: 2024.04.10 10:33:44 -07'00'

Sarah Newport — Date
Staff Geologist

Digitally signed by James Welles
Date: 2024.04.10 15:05:28 -07'00'

James Welles, LHG — Date
Sr. Hydrogeologist



PBS
214 E GALER STREET, SUITE 300
SEATTLE, WA 98102
206.233.9639 MAIN
866.727.0140 FAX
PBSUSA.COM

Table of Contents

Supporting Data

FIGURES

TABLES

APPENDICES

Acronyms and Abbreviations

ARAR	Applicable, relevant, and appropriate requirements
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and total xylenes
CFR	code of federal regulations
COCs	constituents of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CUL	MTCA Method A cleanup level for unrestricted land use
Ecology	Washington State Department of Ecology
HASP	health and safety plan
IC	institutional controls
ID	Identification
mg/kg	milligrams per kilogram
MTCA	(Washington State) Model Toxics Control Act
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PCS	petroleum contaminated soil
RAP	Remedial Action Plan
RACR	Remedial Action Completion Report
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
Site	Poulsbo RV
SR	State Route
TEE	Terrestrial Ecological Evaluation
TESC	Temporary Erosion and Sediment Control
TPH	total petroleum hydrocarbons
TPH-G	gasoline range total petroleum hydrocarbons
TPH-D	diesel range total petroleum hydrocarbons
UST	underground storage tank
VCP	Voluntary Cleanup Program
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
µg/L	micrograms per liter

COVER LETTER

April 10, 2024

David Unruh, LG
Site Manager, Voluntary Cleanup Program
Washington Department of Ecology, Northwest Regional Office (NWRO)
P.O. Box 330316
Shoreline, WA 98133-9716

Dear Mr. Unruh,

PBS Engineering and Environmental (PBS) has overseen remedial action by soil removal at the property located at 23051 Military Road South in Kent, Washington. The remedial action was conducted to remove contaminated soil following a release of gasoline from a regulated underground storage tank (UST) system at the property. Remedial action was completed in accordance with the Remedial Action Work Plan prepared for the Site by PBS dated August 18, 2021 (PBS, 2021). Additionally, shallow soil sampling to assess potential impacts was performed in accordance with the Shallow Soil Sampling Memorandum (PBS, 2022).

On behalf of the Washington State Department of Transportation (WSDOT), PBS requests an opinion from Ecology as related to the following questions:

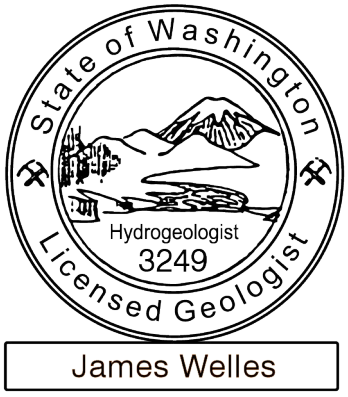
- Does Ecology concur that the Site is eligible for closure by unrestricted No Further Action (NFA) determination via Groundwater Model Remedy Number 1 including removal of institutional controls in the form of an environmental covenant recorded for the property?

Please provide comments and/or questions regarding this report.

Sincerely,
PBS Engineering and Environmental Inc.

Digitally signed by James Welles
Date: 2024.04.10 15:04:18 -07'00'

James Welles, LHG Date
Senior Hydrogeologist



Cc: Drew Rankin (WSDOT)

1 INTRODUCTION

PBS Engineering and Environmental (PBS) has prepared this Remedial Action Completion Report (RACR) for the Valley I5 Poulsbo RV (Site) to document remedial actions performed in September of 2023. Remedial actions were performed in accordance with the Remedial Action Work Plan prepared for the Site by PBS dated August 18, 2021 (PBS, 2021). Refer to Figure 1 for site vicinity.

The Site is registered with Ecology with the following information:

Site Name:	Valley I5 Poulsbo RV
Site Address:	23051 Military Road South Kent, Washington
Property Owner:	Washington State Department of Transportation
Ecology Facility Site Identification (ID):	78643737
Ecology Cleanup Site ID:	6674
Ecology UST program ID:	7000
Ecology Voluntary Cleanup Program ID:	NW3335
Ecology Site Manager:	David Unruh
Site Cleanup Status:	No Further Action (with environmental covenant)

1.1 Background

The Site is defined as the area in which contaminants in soil and/or groundwater exceed their respective cleanup levels. The Site is located completely within King County parcels 1522049027 and 7260200060 (the Poulsbo RV property). It is situated between Military Road South and Interstate Highway 5, immediately to the north of the State Route 516 in Kent, Washington (see Figure 1).

Several underground storage tanks (USTs) were in use at the Site from as early as 1973 (when the site was developed for commercial uses). Two 2,000-gallon gasoline USTs, one 1,000-gallon used oil UST and approximately 30 cubic yards of petroleum contaminated soil (PCS) were removed from the Site by Sound Environmental Consulting (SEC) in 1998 (SEC, 1998). Site assessment by SEC at the time of UST removal suggested that the contamination appeared to originate from the oil/water separator, which was located above the gasoline USTs and adjacent to the building. Confirmation soil sampling efforts indicated that contamination extended 11 feet or less below ground surface. The location of the former USTs as well as previous soil sample locations are depicted in Figure 2.

1.2 Regulatory Correspondence

The Site was issued a No Further Action (NFA) determination from the Washington State Department of Ecology (Ecology) dated November 16, 2006 under Voluntary Cleanup Project Number NW1486. The NFA was dependent on effectiveness of institutional controls implemented at the Site in the form of an Environmental Covenant (EC). The EC was required for closure based on residual petroleum contamination remaining in place at the Site at the time of closure in 2006. PBS understands that the property owner, WSDOT, seeks to remove the EC from the property.

A Remedial Action Work Plan (RAWP) was prepared by PBS for the Site (PBS, 2021) and was submitted to Ecology for opinion. Ecology responded in a June 8, 2022 opinion letter (Ecology, 2022). The opinion letter offered the following conclusions regarding proposed remedial actions at the Site:

- The Site is located within the projected boundary of the Tacoma Smelter Plume. Surface soil samples should be collected and analyzed for lead and arsenic to evaluate potential for contamination from this source.
- Additional sampling is necessary to confirm the absence of groundwater contamination.
- Evaluation of the vapor intrusion (VI) pathway is needed.

Ecology, WSDOT, and PBS met at the Site on July 6, 2022 to review details of the proposed cleanup action and Ecology's June 2022 opinion letter. After the on-site meeting, WSDOT and PBS responded to Ecology's June 2022 opinion letter with a brief letter dated July 14, 2022 seeking clarification on soil characterization and monitoring well replacement following remedial excavation. Ecology provided the following additional opinions by email on July 21, 2022:

- Replacement of monitoring wells is only necessary in the case that they are damaged during the remedial action or construction.
- The total number of sampling locations required to characterize Tacoma Smelter Plume impacts at the Site should be increased.

PBS responded to Ecology's July 21, 2022 email with a Shallow Soil Sampling memorandum dated August 31, 2022 outlining proposed shallow soil sampling locations to characterize potential Tacoma Smelter Plume impacts. Ecology issued an opinion by email on September 1, 2022 concurring with the proposed sampling plan for Tacoma Smelter Plume impacts.

The Shallow Soil Sampling memorandum and RAWP, less appendices, are presented as Appendix A.

2 CONTAMINANTS OF CONCERN (COCS) AND ADOPTED REGULATORY CRITERIA

2.1 Contaminants of Concern (COCs)

Based on the known previous uses of the Site and the frequency at which contaminants were detected during environmental investigations, the following constituents have been established as COCs in soil at the Site:

- Gasoline-range petroleum hydrocarbons
- BTEX compounds
- Diesel-range petroleum compounds

The following constituents have been established as COCs in groundwater at the Site:

- Gasoline-range petroleum hydrocarbons
- Diesel-range petroleum hydrocarbons
- BTEX compounds

2.2 Adopted Regulatory Criteria

This section discusses the selection of applicable or relevant and appropriate screening levels to evaluate the extent of contamination and potential risks to human health and the environment from Site contaminants. Cleanup levels (CULs) have been developed based on Site history and detections.

Washington State Model Toxics Control Act (MTCA) specifies that CULs must be set in consideration of the reasonable maximum exposure that is expected to occur at the property. Reasonable maximum exposure is defined as "the highest exposure that can be expected to occur for a human or other living organism at a site under current and potential future site use" (WAC 173-340-200). In accordance with MTCA, CULs were developed based on the reasonable maximum exposure anticipated to occur for humans and ecological receptors exposed to soil and groundwater at the Site.

MTCA Method A Cleanup Levels for Unrestricted Land Use values for direct contact and protection of drinking water were selected as cleanup levels for the Site. The following table provides the CULs for COCs:

Chemicals of Concern	Soil CUL (mg/kg)	Groundwater CUL (µg/L)
Total Petroleum Hydrocarbons (TPH)		
TPH-G (gasoline)	30*	800*
Sum of TPH-D (diesel) and TPH-HO (heavy oil)	2,000	500
Volatile Organic Compounds (VOCs)		
Benzene	0.03	5
Toluene	7	1,000
Ethylbenzene	6	700
Xylenes	9	1,000

*the selected CUL for TPH-G is the MTCA-A CUL when benzene is present.

3 SITE CHARACTERIZATION AND INTERIM REMEDIAL ACTION

This section describes site characterization and interim remedial action activities completed at the Site in accordance with the RAWP and Shallow Soil Sampling memorandum.

3.1 Shallow Soil Sampling for Tacoma Smelter Plume Characterization

Shallow soil sampling was completed at the Site on November 1, 2022, September 20, 2023, and January 12, 2024, to characterize potential impacts to the Site from the Tacoma Smelter Plume. Sampling was performed as proposed in the Shallow Soil Sampling Memorandum (PBS, 2022 / Appendix A) and in general accordance with the Tacoma Smelter Plume Model Remedies Guidance, Ecology Publication number 19-09-101 dated July 2019 (Ecology, 2019). Samples were collected at a depth of zero to six inches from eight of the proposed 16 locations on November 1, 2022. Additionally, a deeper sample was collected at a depth of 6 to 12 inches from two out of the eight locations. The remainder of the locations were covered by hardscaping at the time of sample collection.

An additional two of the 16 locations were sampled on September 20, 2023, when hardscaping had been removed from the area for the purpose of remedial excavation. The samples were collected from the sidewalls of the excavation from a depth of zero to six inches below the bottom of the asphalt slab. Six of the 16 locations proposed for shallow soil sampling in the memorandum were covered by hardscaped surfaces.

The hardscaped surfaces overlying the remaining six locations were removed and the six remaining soil samples were collected on January 12, 2024. Samples were collected at a depth of zero to six inches from the six locations. A deeper sample was collected at a depth of 6 to 12 inches from two out of the six locations.

In total, shallow soil samples were collected from 16 locations for the purpose of characterizing potential impacts to soil from the Asarco Smelter Plume. Samples were collected at a depth of 1 to 6 inches bgs. An additional sample was collected from a depth of 6 to 12 inches from 4 out of the 16 locations. It is noted that a second sample was unnecessarily collected from location SP-1 during remedial excavation. Results of both SP-1 samples are presented in this report.

Analytical results of shallow soil sampling are summarized in Table 1. The sample locations are presented in Figure 2. Laboratory reports are included as Appendix E.

3.2 Quarterly Groundwater Monitoring

Quarterly groundwater monitoring of the four on-site monitoring wells was performed as proposed in the RAWP from September 2021 through August 2022. Groundwater sampling methodology along with a summary of flow conditions and analytical data are presented in the quarterly groundwater monitoring reports (Appendix B).

3.3 Remedial Action by Soil Removal and Offsite Disposal

PBS staff was on site September 18th through the 22nd, 2023 to oversee removal of contaminated soil by excavation and offsite disposal and perform associated field screening and soil sampling. Soil was screened for volatile organics using a hand-held MiniRAE 2000 photoionization detector (PID), equipped with a 10.6eV UV lamp. The PID can detect volatile organic compounds (VOCs) in the gasoline and diesel hydrocarbon ranges.

The first 10 feet of soil was observed to be relatively clean with PID readings between 0 and 10 ppm. The excavation was cut vertically to 15' rather than the proposed 1H:1V slope in the RAWP (see Figure 2) due to limited observation of contamination outside of the core excavation in the proposed sloped areas.

An oil water separator was unearthed and removed. Soil directly below the separator exhibited PID readings of approximately 80 parts per million (ppm). The oil water separator was noted in previous reports as the suspected source of release at the Site. Soil removed from beneath the oil water separator was placed in a contaminated soil pile for profiling and offsite disposal. Indications of contaminated soil from the historical UST's were first observed in the excavation between approximately 10 and 12 feet bgs with PID readings between 23 and 102 ppm. Native soil as gray silty sand with rounded gravel and cobbles was observed at a depth of 11 feet bgs in the excavation with PID readings between 86 and 852 ppm observed at depths between 11 and 14 feet. Clean soil was encountered at depths between 14 and 15 feet based on field observations. The excavation was advanced to a total depth of 15 feet bgs.

Excavated soil was separated into clean and contaminated piles based on PID readings and field evidence of contamination. The first 0 to 5 feet of clean soil was separated into its own pile and is represented by soil samples OB-1 through OB-3. Soil surrounding and beneath the oil water separator as well as soil from depths greater than 10 feet bgs was segregated into a contaminated soil pile and is represented by soil samples WS-1 through WS-3. Soil from the 5 to 10-foot depth range which was not impacted by the release from the oil water separator was segregated into a third pile and is represented by soil samples OB-7 through OB-9. It is noted that samples OB-4 through OB-6 were unintentionally collected of the first pile which had already been sampled, and requested analysis of the samples by the laboratory was canceled. An additional three samples (OB-7 through OB-9) were collected of the material generated from 5 to 10 feet and given new sample IDs. Stockpiled soil was underlain by plastic sheeting, surrounded by straw wattle, and covered with plastic sheeting at the end of each workday to prevent dust and runoff.

Photographs of remedial action implementation at the Site are included as Appendix C.

4 CONFIRMATION SOIL SAMPLING

Confirmation soil sampling documents that the cleanup action has attained cleanup levels. Performance monitoring for soil excavation included confirmation soil sampling of excavation boundaries.

Based on field observations indicating that all contaminated soil had been removed, PBS proceeded with confirmation sampling of the vertical excavation to determine if additional excavation was required. Soil samples were collected following the procedures established in the RAWP as detailed below:

4.1.1 Confirmation Soil Sample Collection

PBS staff was on site on September 22 and 25, 2023 to collect confirmation soil samples. PBS collected samples from the base of the excavation on 15-foot grid centers. Confirmation soil samples were also collected from the sidewalls of the excavation where gridlines intersected the sidewall. Soil from various depths at each sidewall sample location was collected with the excavator bucket and screened with the PID to determine the depth of sample collection. Samples were collected at depth intervals exhibiting the highest PID reading at a given sidewall sample location. In the event that significant PID readings were not encountered, a depth corresponding to the approximate depth where the greatest field evidence of contamination was observed in the adjacent excavation was selected for collection of the sidewall confirmation sample.

Soil samples were collected directly from the excavator bucket, with care being taken to not sample material adhered to the excavator bucket. Samples were collected directly into laboratory provided containers and stored in a cooler on ice under chain-of-custody documentation for transport to the analytical laboratory. PBS personnel wore new disposable nitrile gloves to protect against cross-contamination between samples. Figure 3 shows the confirmation sample IDs and locations.

4.1.2 Laboratory Analysis of Confirmation Soil Samples

As established in the RAWP, confirmation soil samples were submitted for the following analyses:

- TPH-G by Method NWTPH-Gx;
- TPH-D and TPH-HO by Method NWTPH-Dx;
- BTEX by EPA Method 8021B or 5021A

In addition, confirmation soil samples from the north-northeast side wall and base of excavation (in the vicinity of the former waste oil tank) were analyzed for the following:

- cPAHs by EPA Method 8270 SIM
- PCBs by EPA Method 8082A
- RCRA-8 Total Metals by EPA Method 6020B

See Section 3.1 for further discussion of COCs at the Site.

5 CONTAMINATED MEDIA MANAGEMENT AND WASTE DISPOSAL

5.1 Contaminated Soil

Remedial excavation at the Site generated 274.11 tons of petroleum contaminated soil (PCS) for offsite disposal. During the remediation, PCS was segregated into stockpiles next to the excavation. Stockpiles were covered at the end of each work shift and surrounded by straw berms pending load out and disposal.

PCS was hauled from the Site to Waste Management's (WM) facility at 7400 8th Avenue South in Seattle, Washington where it was bulked onto rail cars for transport to Columbia Ridge Landfill in Arlington, Oregon, the final disposal location. Management and disposal of PCS from the Site was performed based on the WM soil profile. The soil profile was generated based on analytical data of waste soil samples collected of stockpiled soil removed from the excavation by PBS on September 19, 2023 (WS-1 through WS-3).

Analytical results of waste soil samples used to profile soil for offsite disposal are summarized in Table 5. The soil profile and trucking receipts for disposal of PCS are presented in Appendix D.

5.2 Segregation of Clean Soil

Clean overburden soil was encountered in the upper 10 feet of the excavation. Clean overburden soil from this area was segregated from contaminated soil during excavation based on visual and olfactory (smell) observations and field screening with a PID. A small portion of soil in the upper 10 feet surrounding and beneath the oil water separator were combined with the contaminated soil pile for offsite disposal. Clean soil was stockpiled as it accumulated, resulting in two clean soil stockpiles. Six stockpile soil samples (OB-1 through OB-3 and OB-7 through OB-9) were collected from the clean pile and analyzed for TPH-G (by Methods NWTPH-Gx), TPH-D (by NWTPH-Dx), BTEX (by EPA Method 8021) and lead (by EPA Method 6020B). Contaminants were not detected above laboratory reporting limits with the exception of toluene, xylenes, and lead, which were detected at low concentrations below Method A CULs in two of the samples. Following laboratory analysis, the clean soil was placed back in the excavation as backfill.

Analytical results of clean overburden soil reused as backfill are summarized in Table 6 and presented in Friedman and Bruya laboratory reports 309409 and 309263, included in Appendix E.

5.3 Contaminated Water

No groundwater was encountered in the excavation. Dewatering was not necessary. Stormwater controls were used to prevent stormwater accumulation in the excavation.

No wastewater was generated by the remedial activities requiring management and/or disposal. A small volume of sludge was removed from the oil water separator by vacuum truck and disposed of at PRS Plant in Tacoma. Disposal documentation is provided in Appendix D.

6 SUMMARY OF ANALYTICAL RESULTS

6.1 Shallow Soil Sampling for Smelter Plume Impacts

No elevated concentrations of lead or arsenic in shallow soil were identified by soil characterization sampling completed at the Site. Results of shallow soil sampling performed to date are summarized in Table 1.

6.2 Quarterly Groundwater Monitoring

Depth to water at the Site ranged from approximately 23 to 35 feet below ground surface (bgs). COCs were not detected above laboratory reporting limits with the exception of TPH-HO and select metals in MW-3 and TPH-HO in MW-4, which were detected below the MTCA Method A CUL in select quarters of groundwater monitoring. COCs were not detected above Method A CULs in on-site wells during any of the four consecutive quarterly groundwater monitoring events completed at the Site. Table 2 presents groundwater elevation and flow direction data. Groundwater analytical results are summarized in Table 3. Laboratory reports are included as Appendix E.

6.3 Confirmation Soil Sampling

A total of 16 confirmation soil samples were collected from the remedial excavation. Analysis of confirmation soil samples indicated that contaminant concentrations were below laboratory reporting limits for all analytes with the exception of metals, which were detected below Method A cleanup levels. Analytical results for confirmation soil samples are presented in Table 1.

6.4 Waste Soil Sampling

TPH-G and TPH-D were detected above MTCA Method A cleanup levels in waste soil samples collected of contaminated soil stockpiled at the Site. The waste soil was characterized as Category 4 petroleum contaminated soil per Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology 2016), a

Washington State non-dangerous solid waste. Analytical results of waste soil samples are summarized in Table 5.

6.5 Overburden Soil Sampling

Contaminants of concern were not detected above MTCA Method A cleanup levels in soil samples collected of clean overburden soil removed from the excavation as described in Section 5.2. The material was used to backfill the excavation. Analytical results of overburden soil samples are summarized in Table 6.

7 PRELIMINARY VAPOR INTRUSION EVALUATION

At the request of Ecology, this section evaluates the vapor intrusion (VI) pathway at the Site. VI in Washington State is regulated and evaluated by Ecology's Guidance for Evaluating Vapor Intrusion in Washington State, Ecology Publication Number 09-09-047 (Ecology, 2022). Based on the guidance, VI is evaluated using a tiered approach. The first tier is a preliminary assessment. The goal of a preliminary assessment is to determine whether chemicals of sufficient toxicity and volatility are known (or reasonably suspected) to be present in the subsurface and could migrate into nearby buildings. Because contaminants of sufficient toxicity and volatility are not present at the Site to pose a VI threat, no further VI evaluation is required beyond the preliminary VI assessment, and the VI pathway is considered incomplete.

8 CONCLUSIONS AND REQUESTS FOR OPINION

8.1 Conclusions

Based on review of data collected during and following completion of remedial action by contaminated soil removal, the following conclusions have been drawn regarding the Site:

1. Remedial excavation was successful in removing soil contaminated with COCs.
2. The Site is in compliance with Method A CULs for all COCs in soil and groundwater.
3. The VI pathway at the Site is incomplete based on a lack of volatile contaminants in the subsurface.
4. Shallow soil at the Site is not impacted by the Tacoma Smelter Plume as evidenced by results of shallow soil sampling.
5. An environmental covenant based on remaining soil contamination is no longer appropriate as soil contamination no longer remains in place.

8.2 Recommendations

The following recommendations are presented regarding regulatory closure for the Site:

1. Pursue Site closure via NFA determination via Groundwater Model Remedy 1.

9 REFERENCES

PBS Engineering and Environmental (PBS), 2021, *Remedial Action Work Plan Poulso RV*, August 18, 2021.

PBS, 2022, *Shallow Soil Sampling Plan Poulso RV*, August 31, 2022.

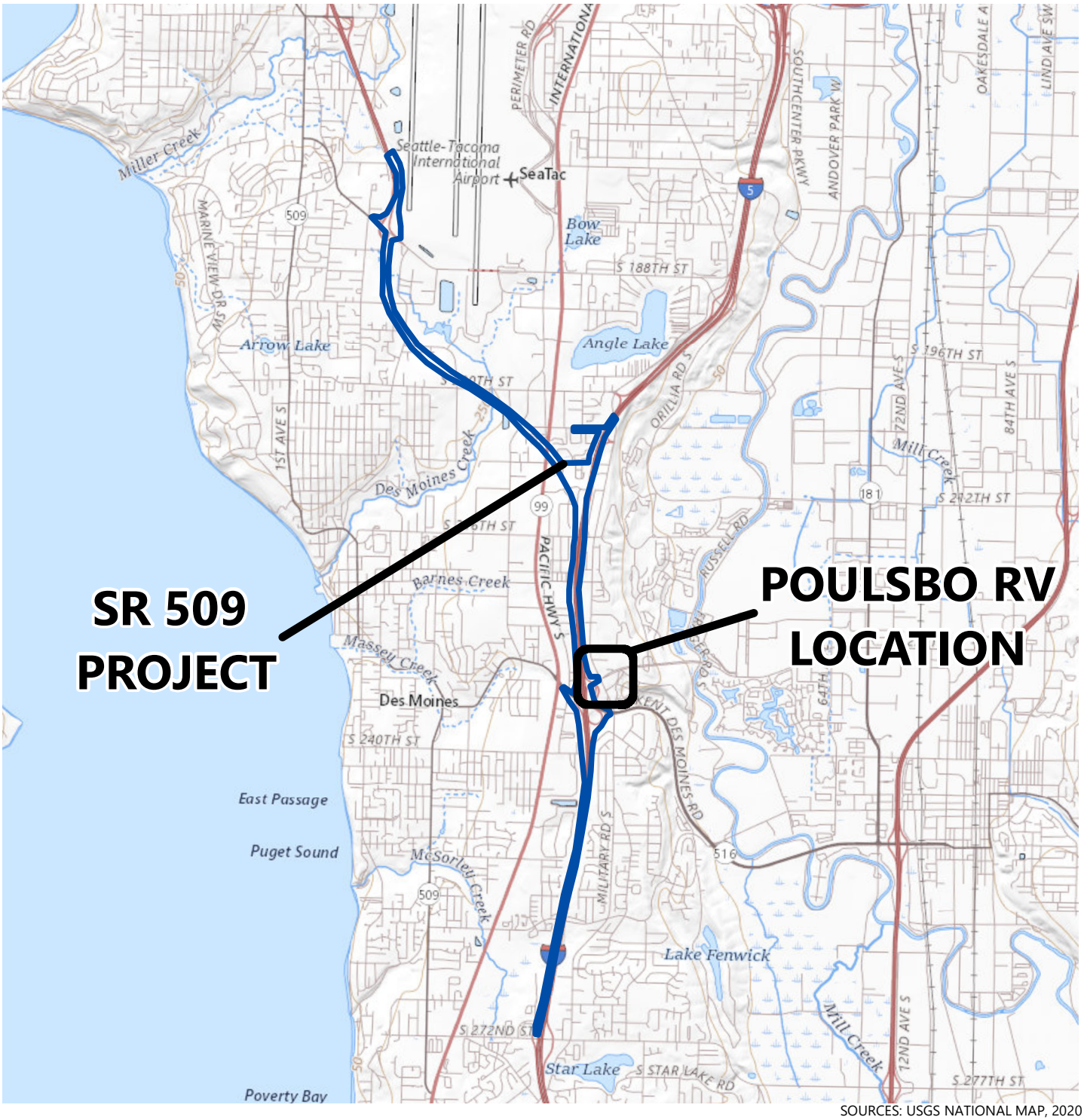
Ecology, 2016, *Guidance for Remediation of Petroleum Contaminated Sites, Toxics Cleanup Program, publication no. 10-09-057*, REVISED June 2016, available https://fortress.wa.gov/ecy/publications/documents/1009057.pdf

Ecology, 2017, *Model Remedies for Sites with Petroleum Impacts to Groundwater, Toxics Cleanup Program, publication no. 16-09-057*, REVISED December 2017, available https://fortress.wa.gov/ecy/publications/documents/1609057.pdf.

Washington State Department of Ecology (Ecology), 2021, *Opinion Pursuant to WAC 173-340-515(5) on Remedial Action for Valley I-5 a.k.a. Poulsbo RV*, letter issued June 8, 2021, available: https://apps.ecology.wa.gov/cleanupsearch/document/113172

Ecology, 2022, *Guidance for Evaluating Vapor Intrusion in Washington State, publication no. 09-09-047*, REVISED March 2022, available https://apps.ecology.wa.gov/publications/SummaryPages/0909047.html

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT INTL FT

N

SCALE: 1 " = 1 miles

0 0.5 1 2 Miles

PREPARED FOR: GUY ATKINSON CONSTRUCTION

C:\Users\nathand\Desktop\GIS\poulsbo\Fig1_SiteVicinity.mxd

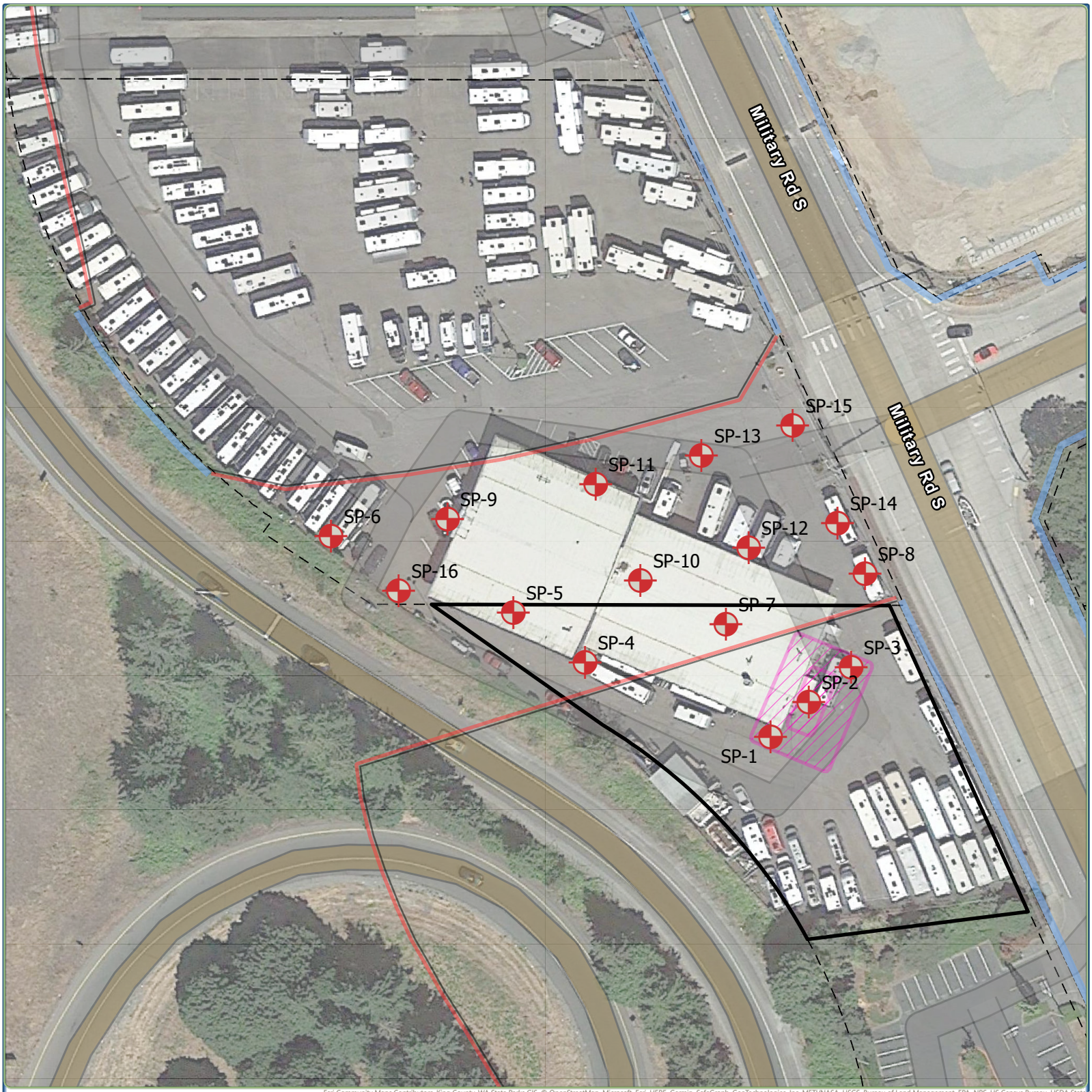
PBS

SITE VICINITY

23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

JAN 2024
40757.022

FIGURE
1



PROPOSED As/Pb SOIL SAMPLING LOCATIONS - AUGUST 2022

23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

FIGURE: 1

- Proposed As/Pb Sample Locations
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Proposed Remedial Excavation (approx. 0.08 acres)

1 INCH = 75 FEET

0 75 Feet

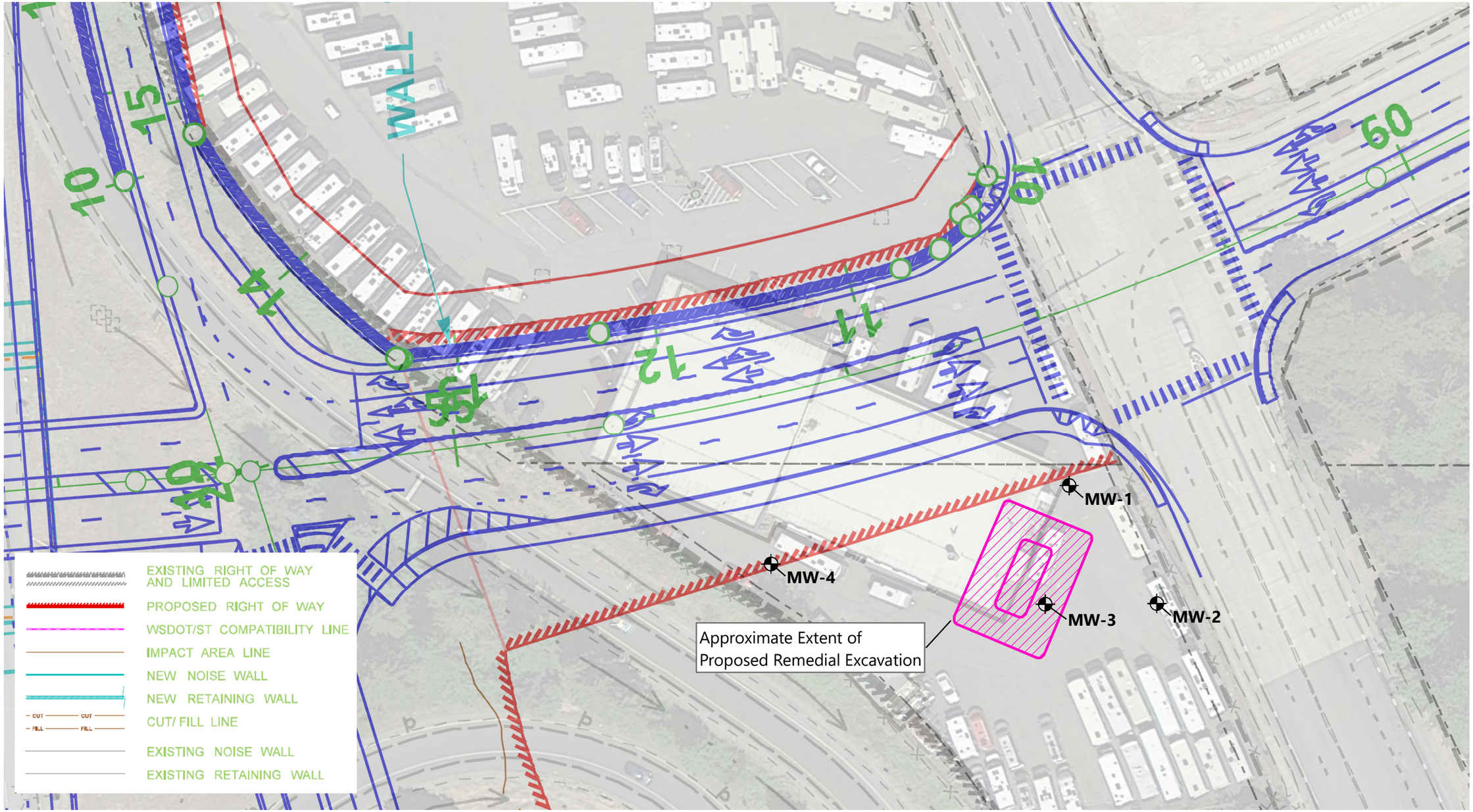
PBS

FUTURE LAND USE AND GROUNDWATER MONITORING LOCATIONS

POULSBO RV
23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

PBS Engineering and Environmental Inc.
214 E Galer St., Ste 300
Seattle, WA 98102
206.233.9639
pbsusa.com

PROJECT	DATE	FIGURE
40757.022	JAN 2024	3



LEGEND

- Proposed Remedial Excavation
- Approximate Parcel Boundaries
- Monitoring Well (EHSI, 2020)
  (May be decommissioned and then replaced after remediation and construction are complete)

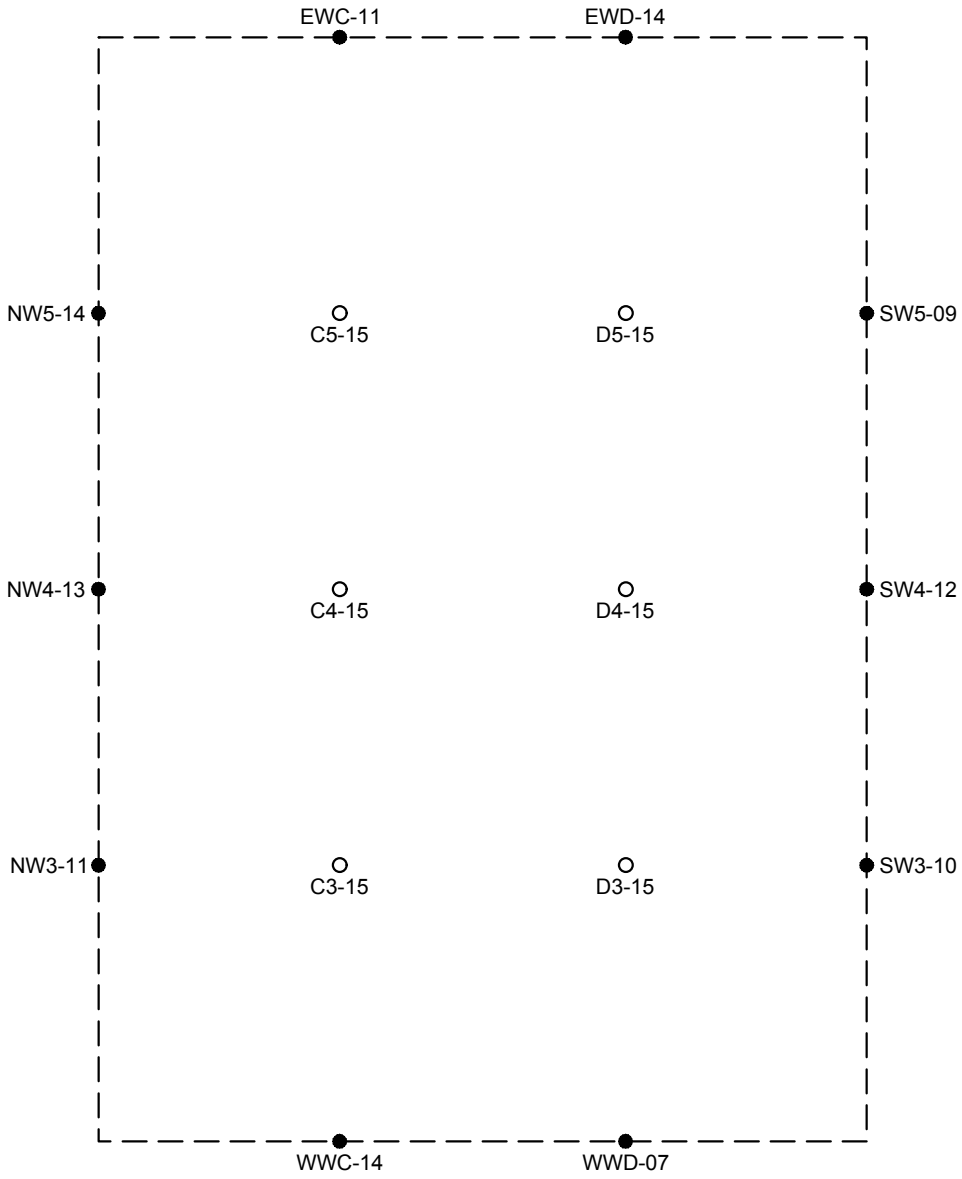
SOURCES: GOOGLE EARTH AERIAL IMAGERY (DATED AUGUST 2020); KING COUNTY GIS; ATKINSON PROPOSED CONSTRUCTION CONCEPT PLANS

1 inch = 50 feet

0 25 50 100'

PREPARED FOR: GUY ATKINSON CONSTRUCTION

C:\Users\nathand\Desktop\GIS\poulsbo\Fig3_FutureLandUse.mxd



LEGEND

● NW-3-11	CONFIRMATION SOIL SAMPLE (EXCAVATION SIDEWALL) SAMPLE ID - DEPTH (FEET BGS)
○ C5-15	CONFIRMATION SOIL SAMPLE (EXCAVATION BASE) SAMPLE ID - DEPTH (FEET BGS)

Scale 1" = 8'

0' 4' 8' 16'

PREPARED FOR: ATKINSON CONSTRUCTION

PBS

FINAL EXCAVATION EVENT AND CONFIRMATION SOIL SAMPLES

23051 MILITARY ROAD SOUTH
KENT, WASHINGTON

JAN 2024
40757.022

FIGURE
3

Tables

TABLE 1
SHALLOW SOIL ANALYTICAL RESULTS
Valley I5 Poulsbo RV Site
23051 Military Road South
Kent, Washington
PBS Project No. 40757.022

Sample ID	Date Collected	Sample Depth Range inches bgs	Metals	
			Arsenic	Lead
			mg/kg	mg/kg
			Adopted Cleanup Criteria[a]	
			>40 maximum or >20 average	>500 maximum or >250 average
SP-1	9/20/2023	0-6	3.35	3.87
SP-1	11/1/2022	0-6	6.62	18.8
SP-1	11/1/2022	6-12	6.76	19.9
SP-2	9/20/2023	0-6	1.98	1.81
SP-3	9/20/2023	0-6	3.72	5.23
SP-4	11/1/2022	0-6	6.71	7.99
SP-4	11/1/2022	6-12	11.8	66.8
SP-5	11/1/2022	0-6	2.78	3.11
SP-6	1/12/2024	0-6	5.36	13.2
SP-7	11/1/2022	0-6	3.70	3.25
SP-8	1/12/2024	0-6	5.68	6.61
SP-8	1/12/2024	6-12	8.43	8.22
SP-9	11/1/2022	0-6	6.61	7.32
SP-10	11/1/2022	0-6	2.13	1.69
SP-11	11/1/2022	0-6	2.80	2.93
SP-12	11/1/2022	0-6	2.44	2.49
SP-13	1/12/2024	0-6	3.98	5.24
SP-14	1/12/2024	0-6	2.18	2.35
SP-15	1/12/2024	0-6	5.08	4.56
SP-16	1/12/2024	0-6	7.55	14.9
SP-16	1/12/2024	6-12	12.5	21.8
Average Concentration for the Site (0- to 6-inch depth)			4.3	6.2
Average Concentration for the Site (6- to 12-inch depth)			9.9	29.2

Bold - Sample result is elevated

[a] - Washington State Department of Ecology Tacoma Smelter Plume Model Remedies Guidance, Sampling and cleanup of arsenic and lead contaminated soils, Publication Number 19-09-101, July 2019.

Abbreviations & Acronyms:

mg/kg - milligrams per kilogram

bgs - below ground surface

TABLE 2
GROUNDWATER ELEVATION DATA
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Well ID	Date	Well Screen Interval (ft bgs)	TOC Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
MW-1	9/8/2021	20-35	364.636	27.57	337.07
	12/6/2021			25.12	339.52
	3/16/2022			24.32	340.32
	8/10/2022			26.32	338.32
MW-2	9/8/2021	20-35	361.096	Dry	Dry
	12/6/2021			30.10	331.00
	3/16/2022			29.00	332.10
	8/10/2022			31.00	330.10
MW-3	9/8/2021	20-35	364.134	27.68	336.45
	12/6/2021			27.87	336.26
	3/16/2022			22.81	341.32
	8/10/2022			26.08	338.05
MW-4	9/8/2021	20-32.25	365.19	30.59	334.60
	12/6/2021			25.50	339.69
	3/16/2022			25.42	339.77
	8/10/2022			26.29	338.90

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

Date	Groundwater Flow Direction	Hydraulic Gradient (feet/feet)
9/8/2021	60° West of South (southwest)	0.0178
12/6/2021	166° East of North (south-southeast)	0.1296
3/16/2022	159° East of North (south-southeast)	0.0648
8/10/2022	158° East of North (south-southeast)	0.0846

Groundwater flow direction was determined graphically on a scaled site plan with the tabulated groundwater elevations and survey data

TABLE 3
GROUNDWATER ANALYTICAL RESULTS
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Sample Identification	Date	Results µg/L												
		TPHs			VOCs				cPAHs	Metals				
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes		Mercury	Arsenic	Cadmium	Chromium	Lead
MTCA Method A Cleanup Levels For Groundwater[a]		500	500	1000	5	1,000	700	1,000	0.1	2	5	5	50	15
MW-1	9/8/2021	<99	<99	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	12/6/2021	<116	<116	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<113	<113	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<92.9	<92.9	<50.0	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
MW-2	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<117	<117	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<114	<114	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/8/2021	<99.3	132	<50	<0.440	<0.750	<0.400	<1.00	<0.09	<0.100	<1.00	<0.125	2.40	<0.500
	12/6/2021	<118	<118	<50	<0.440	<0.750	<0.400	<1.00	<0.0995	<0.100	1.06	<0.125	3.22	<0.500
	3/16/2022	<115	257	<50	<0.440	<0.750	<0.400	<1.00	<0.0989	<0.100	<1.00	<0.125	0.86	<0.500
	8/10/2022	<93.8	271	<50	<0.440	<0.750	<0.400	<1.00	<0.0988	<0.100	<1.00	<0.200	3.31	<0.500
MW-4	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<120	<120	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<115	<115	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<94.7	183	<50	<0.550	<0.750	<0.400	<1.00	--	--	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per liter

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxics Control Act

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

ND - not detected above laboratory method detection limit

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

TABLE 4
CONFIRMATION SOIL
ANALYTICAL RESULTS
Poulsbo RV
23031 Military Road South
Kent, Washington
PBS Project No. 40757.022

Sample ID	Depth (ft bgs)	Results (mg/kg)																	
		TPH			Benzene	Toluene	Ethyl benzene	Xylenes	cPAHs[c]	PCBs[d]	Metals[e]							
		Gasoline[a]	Diesel[b]	Heavy Oil[b]							Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Soil sampling conducted September 22 & 25, 2023																			
C5-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	<0.076	<0.09	1.32	24.2	<1	7.64	1.63	<1	<1	<1
D5-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
EWC-11	11	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
EWD-14	14	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
NW5-14	14	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	<0.076	<0.09	1.07	29.3	<1	10.3	1.21	<1	<1	<1
SW3-10	10	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
SW4-12	12	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
SW5-09	9	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
WWC-14	14	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
WWD-07	7	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
C3-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
C4-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	<0.076	<0.09	1.37	47.4	<1	8.72	1.53	<1	<1	<1
D3-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
D4-15	15	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
NW3-11	11	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
NW4-13	13	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--	--	--	--	--	--	--	--	--
Adopted Criteria[f]		**30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**0.1**	**1**	**20**	**NE**	**2**	**19**	**250**	**2**	**NE**	**NE**

Notes:
< indicates analyte not detected at or above given laboratory reporting limit
bold indicates detected concentration exceeds adopted criteria
Abbreviations & Acronyms:
mg/kg - milligrams per kilogram
ft bgs - feet below ground surface
TPH - total petroleum hydrocarbons
Gx - gasoline range hydrocarbons
Dx - diesel range hydrocarbons
NE - not established
cPAHs - Carcinogenic polycyclic aromatic hydrocarbons
PCBs - Polychlorinated biphenyls
Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Volatile Petroleum Products (Extended) (NWTPH-Gx)
[b] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx)
[c] Analyzed by Environmental Protection Agency Method 8270E
[d] Analyzed by Environmental Protection Agency Method 8082A
[e] Analyzed by Environmental Protection Agency Method 6020B
[f] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

TABLE 5
WASTE SOIL
ANALYTICAL RESULTS
Poulso RV
23031 Military Road South
Kent, Washington
PBS Project No. 40757.022

Sample ID	Results (mg/kg)							
	TPH			Benzene	Toluene	Ethyl benzene	Xylenes	Total Lead[c]
	Gasoline[a]	Diesel[b]	Heavy Oil[b]					
Soil sampling conducted September 19, 2023								
WS-1	**550**	<50	<250	<0.02	0.025	<0.02	1.7	5.53
WS-2	**280**	<50	<250	<0.02	0.039	<0.02	0.71	6.51
WS-3	**360**	**3,000**	890 x	<0.02 j	<0.1	<0.1	0.87	19.4
Adopted Criteria[d]	**30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**250**

Notes:
< indicates analyte not detected at or above given laboratory reporting limit
bold indicates detected concentration exceeds adopted criteria
x - indicates chromatogram did not resemble the fuel standard
j - indicates laboratory result is an estimate
Abbreviations & Acronyms:
mg/kg - milligrams per kilogram
TPH - total petroleum hydrocarbons
Gx - gasoline range hydrocarbons
Dx - diesel range hydrocarbons
Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Volatile Petroleum Products (Extended) (NWTPH-Gx)
[b] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx)
[c] Analyzed by Environmental Protection Agency Method 6020B
[d] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

TABLE 6
OVERBURDEN SOIL
ANALYTICAL RESULTS
Poulso RV
23031 Military Road South
Kent, Washington
PBS Project No. 40757.022

Sample ID	Results (mg/kg)							
	TPH			Benzene	Toluene	Ethyl benzene	Xylenes	Total Lead[c]
	Gasoline[a]	Diesel[b]	Heavy Oil[b]					
Soil sampling conducted on September 19, 2023								
OB-1	<5	<50	<250	<0.02	0.034 c	<0.02	<0.06	33.2
OB-2	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	49.1
OB-3	<5	<50	<250	<0.02	0.080	0.023	0.12	7.53
Soil sampling conducted on September 26, 2023								
OB-7	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	5.18
OB-8	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	6.07
OB-9	<5	<50	<250	<0.02	<0.02	<0.02	<0.06	5.72
Adopted Criteria[d]	**30**	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**250**

Notes:
< indicates analyte not detected at or above given laboratory reporting limit
bold indicates detected concentration exceeds adopted criteria
c - indicates laboratory result may be due to carryover from previous sample injections
Abbreviations & Acronyms:
mg/kg - milligrams per kilogram
ft bgs - feet below ground surface
TPH - total petroleum hydrocarbons
Gx - gasoline range hydrocarbons
Dx - diesel range hydrocarbons
Footnotes:
[a] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Volatile Petroleum Products (Extended) (NWTPH-Gx)
[b] Analyzed by Northwest Total Petroleum Hydrocarbon Method - Semi-volatile Petroleum Products (Extended) (NWTPH-Dx)
[c] Analyzed by Environmental Protection Agency Method 6020B
[d] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

Appendix A

Work Plans

Remedial Action Work Plan ([appendices omitted] PBS Engineering and Environmental, 2021)
Shallow Soil Sampling Plan (PBS, 2022)

Remedial Action Work Plan

Poulsbo RV

Puget Sound Gateway Program
SR 509 Completion, Stage 1B
Contract no. 9424

Prepared for:

Washington State Department of Transportation

August 18, 2021
PBS Project 40757.022

ATKINSON CONSTRUCTION

PBS
214 E GALER STREET, SUITE 300
SEATTLE, WA 98102
206.233.9639 MAIN
866.727.0140 FAX
PBSUSA.COM

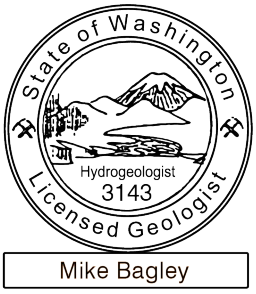
Remedial Action Work Plan

Site:
SR 509 Completion, Stage 1B
Poulsbo RV
23051 Military Road South
Kent, Washington

Prepared for:
Washington State Department of Transportation

PBS Project 40757.022

Authors:



Mike Bagley, LHG Date
Project Geologist

Reviewed by:

Melanie Young, PE Date
Senior Environmental Engineer

ATKINSON CONSTRUCTION

PBS

214 E GALER STREET, SUITE 300
SEATTLE, WA 98102
206.233.9639 MAIN
866.727.0140 FAX
PBSUSA.COM

Table of Contents

Supporting Data

FIGURES

APPENDICES

Acronyms and Abbreviations

ARAR	Applicable, relevant, and appropriate requirements
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene and total xylenes
CFR	code of federal regulations
COCs	contaminants of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CUL	cleanup level
Ecology	Washington State Department of Ecology
EHSI	EHSI International, Inc.
Eh/ORP	oxidation-reduction potential
EM	Electromagnetic
ESA	environmental site assessment
ESO	Environmental Services Office
ft/sec	feet per second
GPR	ground-penetrating radar
HASP	health and safety plan
IC	institutional controls
ID	Identification
mg/kg	milligrams per kilogram
MTCA	(Washington State) Model Toxics Control Act
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PCS	petroleum contaminated soils
PID	Photo Ionization Detector
PTAP	Petroleum Technical Assistance Program
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
SGMP	Soil and Groundwater Management Plan
Site	Poulsbo RV Site
SR	State Route
TEE	Terrestrial Ecological Evaluation
TPH	total petroleum hydrocarbon
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
µg/L	micrograms per liter

1 INTRODUCTION

This Remedial Action Work Plan (RAWP) for Poulsbo RV (Site) was prepared to meet the general requirements of the Cleanup Action Plan Checklist (Ecology, 2016a) which follows the Model Toxics Control Act (MTCA) cleanup regulations (Washington Administrative Code (WAC) Chapter 173-340). The Site is defined as the area in which contaminants in soil exceed their respective cleanup levels. A Remedial Investigation and Feasibility Study has not been completed for the Site. Therefore, this RAWP is not considered a Cleanup Action Plan per WAC Chapter 173-340 and deviates from the Cleanup Action Plan Checklist in various sections.

The Site is registered with Ecology with the following information:

Site Name:	Poulsbo RV
Site Address:	23051 Military Road South Kent, Washington
Property Owner:	Washington State Department of Transportation
Ecology Facility Site Identification (ID):	78643737
Ecology Cleanup Site ID:	6674
Ecology UST program ID:	7000
Ecology Voluntary Cleanup Program ID:	Not yet re-entered
Ecology Site Manager:	Not established
Site Cleanup Status:	No Further Action (with environmental covenant)

1.1 Purpose

The purpose of this RAWP is to describe the cleanup standards for the site, additional site characterization that will be undertaken, the methodology of the cleanup that will be used to achieve the cleanup standards, and the rationale for these decisions. Additional site characterization is planned to take place from the time of Ecology's acceptance of this RAWP through start of remedial excavation at the site. Poulsbo RV's business operations will be moved to that portion of their site to the north of the SR509 project corridor, where they currently plan to operate during the project. Demolition may begin as soon as May 2022. Remedial excavation is planned to be completed during the later spring and summer of 2022. The goal of this work is to follow the procedures outlined in the site's restrictive covenant (see Appendix A) to remove the covenant, re-enter the site into the Voluntary Cleanup Program, and obtain No Further Action status for unrestricted use of the site from Ecology (i.e., regulatory closure).

1.2 General Site Information

The Site is defined as the area in which contaminants in soil and/or groundwater exceed their respective cleanup levels. The Site is located completely within King County parcels 1522049027 and 7260200060 (the Poulsbo RV property). It is situated between Military Road South and Interstate Highway 5, immediately to the north of the State Route 516 in Kent, Washington (see Figure 1).

Several underground storage tanks (USTs) were in use on the site from as early as 1973 (when the site was developed for commercial uses). Two 2,000-gallon gasoline USTs and one 1,000-gallon used oil UST were removed from an area near the southeastern side of the Site's primary building in 1998. At that time, up to 30 cubic yards of suspected petroleum contaminated soil (PCS) was removed from the site. Sound Environmental Consulting performed soil sampling during this interim cleanup action and suggested that the contamination appeared to originate from the oil/water separator, which was located above the gasoline USTs and adjacent to the building. Confirmation soil sampling efforts indicated that contamination extended 11 feet or less

below ground surface. The locations of the oil/water separator, automotive hoists, former USTs, and associated historic remedial excavation areas are provided in Figure 2.

2 SITE DESCRIPTION AND PHYSICAL SETTING

This section describes the physical characteristics of the Site and vicinity. Descriptions are derived from historical documents and explorations conducted for the Washington Department of Transportation (WSDOT) by EHSI and others.

2.1 Location and Legal Description

The Site is in the southwest quarter of Section 15, Township 22, Range 4 of the Willamette Base and Meridian. The boundaries of the Site are presented in Section 1.2. While the Site comprises one assessor's parcel (7260200060) that is only part of the greater Poulsbo RV property, it is generally referred to by the address 23051 Military Road South. The parcel is owned by Military Road Investments LLC.

The Site is approximately 0.77 acres in size and is roughly rectangular in shape (Figure 2).

2.2 Current and Future Use

Since 1980, the site has been utilized as a retail and vehicle maintenance facility. It is currently occupied by Poulsbo RV. WSDOT acquired the property in 2020, and it will be developed as part of planned highway construction. Current plans for the SR 509 Completion Stage 1b project indicate that the majority of the site will be replaced with a roadway that ties into Military Road (see Figure 3).

2.3 Geologic Setting and Soil Descriptions

The Site is located within the Puget Sound Basin, which lies between the Cascade Range to the east and the Olympic Mountains to the west. The landscape configuration of the Puget Sound Basin was a consequence of multiple Pleistocene glaciations resulting in a series of north-trending, elongated ridges separated by deep troughs, the latter now occupied by marine waters or freshwater lakes or streams.

During explorations, the soil observed at the Site generally included the following sequence of soil stratum layers (or horizons), listed as encountered from shallowest to deepest (interpreted from boring logs, EHSI, 2020):

- ***Silty sand*** with minor gravel. Encountered from approximately 0 to 21-26 feet below ground surface (bgs) (approximately 21 to 24 feet thickness) and underlain by:
- ***Silty Gravel***, moist. Typically encountered from approximately 21 to 30 feet bgs (approximately 4 to 9 feet thickness) and underlain by:
- ***Silty Sand***, saturated with water.

Conceptual profiles of the observed subsurface conditions along transects A-A' (Figure 4) show the approximate location and distribution of the soil stratum described above, groundwater table, positive field screening results of petroleum hydrocarbon presence (odor, sheen, PID reading, or staining), and the soil sampling location that exceeded MTCA Method A cleanup levels (CULs).

2.4 Hydrogeology

The site is situated on a rise between the Green River valley to the east and Puget Sound to the west. Based on inference from site and local topography, shallow groundwater may locally flow in a southeasterly direction (EAI, 2015). Based on groundwater elevation monitoring conducted March 3, 2020, groundwater was approximately 21 feet bgs, or at an elevation of approximately 335 feet above mean sea level (EHSI, 2020).

Regionally, groundwater elevation is generally the highest toward the end of the wet season, typically April, and lowest toward the end of the dry season, typically September.

3 PREVIOUS ENVIRONMENTAL ASSESSMENTS

Environmental assessments have been performed at the Site from 1998 to 2020. This section summarizes available reports and relevant activities completed at the Site.

3.1 Underground Storage Tank Closure Site Assessment (Sound Environmental Consulting, 1998)

In October 1998, Sound Environmental Consulting (Sound) oversaw the removal of two 2,000-gallon gasoline USTs and one 1,000-gallon waste oil UST from the area to the southeast of the Site's primary building (see Figure 2). Tank removal was accomplished using two excavations. Based on their observation that petroleum contaminated soil (PCS) appeared to originate above the elevation of the USTs on the west side of the southern excavation, Sound reasoned that contamination observed in that area must have originated from the oil/water separator located near the surface in that location. During excavation, a discharge pipe was observed emerging from the oil/water separator that showed signs of patching and repair. Sound suggested that it was the most likely source of contamination. Sound estimated that up to 8 cubic yards of PCS removed from the area below the oil/water separator was segregated and disposed of off-site.

Sound collected a total of 14 soil samples from the UST excavations. The soil samples were analyzed for the following:

- Gasoline-range hydrocarbons
- Diesel-range hydrocarbons
- Oil-range hydrocarbons
- Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)
- Total Lead

Three samples ("Exc.2-South@ 8 ft.", "Exc.2-East @ 10 ft." and "Exc.2-Bottom @ 13 ft.", see Figure 2) that Sound described as "below the Oil/Water Separator" had detectable concentrations of contaminants above current MTCA Method A cleanup levels, including:

- Gasoline-range hydrocarbons
- Ethylbenzene and xylenes

Those samples appear to have been taken from soils left in place following the UST removal and limited remedial excavation.

Groundwater was not encountered during this UST removal and site assessment activity.

3.2 Limited Phase II Environmental Site Assessment (LSI Adapt, 2004)

In August 2004, LSI Adapt (Adapt) conducted a limited Phase II subsurface investigation of the Site, following up on the recommendations of a Phase I environmental site assessment they had previously completed in May 2004. This Phase II was intended to investigate subsurface conditions in the vicinity of decommissioned subsurface hoists located inside the Site's primary building, the former equipment storage area, and the oil/water separator. Adapt utilized a push-probe drilling rig and a hand auger to collect soil samples at nine locations (GP-1 through GP-8, and HB-1, see Figure 2). The borings met with refusal at depths of 10 to 14 feet bgs. Groundwater was not encountered.

Adapt collected a total of 9 soil samples from the borings. The soil samples were analyzed for the following:

- Gasoline-range hydrocarbons
- Diesel-range hydrocarbons
- Oil-range hydrocarbons
- Volatile organic compounds (VOCs)

One sample (HB-1) had detectable concentrations of gasoline-range hydrocarbons, benzene, and xylenes above MTCA Method A cleanup levels.

3.3 Supplemental Limited Phase II Environmental Site Assessment (LSI Adapt, 2005)

In July 2005, Adapt returned to the Site to advance additional borings in the vicinity of the former gasoline and waste oil USTs to attempt to more fully characterize the extent of contamination left in place. They utilized a hollow-stem auger rig to advance these borings (B-1, B-2, and B-3, see Figure 2) to depths of up to 30.5 feet bgs. They used a split spoon sampler to collect soil samples at 2.5-foot intervals, screening them with a PID.

Adapt collected a total of 6 soil samples from the borings (2 samples from each). The soil samples were analyzed for the following:

- Gasoline-range hydrocarbons
- Diesel-range hydrocarbons
- Oil-range hydrocarbons
- Kerosene-range hydrocarbons
- Volatile organic compounds (VOCs)

Adapt reported that none of the borings exhibited recoverable groundwater seepage, and no groundwater samples were collected. No contaminants of concern were detected in any of the samples.

3.4 Phase II Environmental Site Assessment (EHS-International, Inc., 2020)

Working directly for WSDOT, EHS-International, Inc. (EHSI) performed a subsurface investigation at the Site in February 2020. Four groundwater monitoring wells were installed using a hollow-stem auger drill rig. One boring was also advanced for soil sampling purposes. Soil samples were collected at 5-foot intervals during the drilling process, using a split-spoon sampler.

EHSI submitted ten soil samples for laboratory analysis, along with three duplicate soil samples for quality control purposes.

The soil samples were analyzed for the following:

- Gasoline-range hydrocarbons
- Diesel-range hydrocarbons
- Oil-range hydrocarbons
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Total Metals (RCRA-8)

EHSI returned to the site to sample groundwater in the wells in March 2020. A bladder pump and low-flow sampling techniques were used to obtain a groundwater sample from each of the four wells, including one duplicate for quality control purposes. Groundwater samples were analyzed for the following:

- Gasoline-range hydrocarbons
- Diesel-range hydrocarbons
- Oil-range hydrocarbons
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Total Metals (RCRA-8)
- Dissolved metals (RCRA-8)

No contaminants of concern were detected in the analyzed soil samples. Select metals were detected in both soil and groundwater samples at low concentrations consistent with natural background levels. Diesel-range hydrocarbons were detected at a concentration of 170 micrograms per liter (µg/L) in groundwater sample MW-3. That sample was flagged by the project laboratory with the note "the sample chromatographic pattern does not resemble the fuel standard used for quantitation".

4 CLEANUP STANDARDS

4.1 Contaminants of Concern (COCs)

The section provides a summary of the COCs for the Site and discusses the locations and extent in soil and groundwater of the COCs.

Based on the known previous uses of the Site and the frequency at which contaminants were detected during environmental investigations, the following constituents have been established as COCs in soil at the Site:

- Gasoline-range petroleum hydrocarbons
- BTEX compounds
- Diesel-range petroleum compounds

Investigations have historically identified high concentrations (compared to CULs) of gasoline-range petroleum hydrocarbons and associated VOCs (benzene, ethylbenzene, and xylenes) in soil at one location on the Site. As such, those contaminants are considered the primary pollutants for the Site and will drive the remediation effort.

The following constituents have been established as COCs in groundwater at the Site:

- Gasoline-range petroleum hydrocarbons
- Diesel-range petroleum hydrocarbons
- BTEX compounds

Previous investigations have not identified concentrations of contaminants exceeding CULs in groundwater on the site. Diesel-range hydrocarbons (not matching the quantitation standard, and below CULs) were identified in one well on site.

4.2 Cleanup Levels

This section discusses the selection of applicable or relevant and appropriate screening levels to evaluate the extent of contamination and potential risks to human health and the environment from Site contaminants. CULs have been developed based on Site history and detections.

MTCA specifies that CULs must be set in consideration of the reasonable maximum exposure that is expected to occur at the property. Reasonable maximum exposure is defined as "the highest exposure that can be expected to occur for a human or other living organism at a site under current and potential future site use" (WAC 173-340-200). In accordance with MTCA, CULs were developed based on the reasonable maximum exposure anticipated to occur for humans and ecological receptors exposed to soil and groundwater at the Site.

CULs for soil and groundwater were selected as MTCA Method A Cleanup Levels for Unrestricted Land Use values for direct contact and protection of drinking water. The following table provides the CULs for COCs:

Chemicals of Concern	Soil CUL (mg/kg)	Groundwater CUL (µg/L)
Total Petroleum Hydrocarbons (TPH)		
TPH-G (gasoline)	30*	800*
Sum of TPH-D (diesel) and TPH-HO (heavy oil)	2,000	500
Volatile Organic Compounds (VOCs)		
Benzene	0.03	5
Toluene	7	1,000
Ethylbenzene	6	700
Xylenes	9	1,000

*the selected CUL for TPH-G is the MTCA-A CUL when benzene is present.

4.3 Points of Compliance

The point of compliance for human direct contact with soil based on a reasonable maximum depth of excavation and the assumption that excavated soil may be placed at the surface where contact occurs is 15 feet bgs throughout the Site (WAC 173-340-740(6)(d)).

The standard point of compliance for groundwater is throughout the Site from the uppermost level of the saturated zone at approximately 19.5 feet bgs extending vertically to the lowermost depth that could potentially be affected by the Site (WAC 173-340-720(8)(b)). However, groundwater does not appear to have been affected by the Site, based on samples collected in 2020. Groundwater compliance samples that will be collected are intended to confirm that groundwater has not been affected by COCs. Some or all of the wells currently present on site may need to be decommissioned during demolition and/or redevelopment of the site. Up to three monitoring wells may be installed following the planned remedial excavation to serve as groundwater points of compliance.

5 SITE CHARACTERIZATION PLAN

This section includes a plan for additional site characterization to complete assessment of the potential human health and environmental concerns resulting from the contamination at the Site.

5.1 Soil Characterization

Previous investigations appear to have constrained the areal extent of contamination to a narrow strip bounded to the west by GP-1, to the south by B-3, to the east by MW-3 and B-2, and to the north by B-1 (see Figure 2). The vertical extent of contamination is defined by samples Exc.2-South (8 feet bgs), HB-1 (10.5 feet bgs) and Exc.2-Bottom (13 feet bgs) and verified by the absence of COCs in groundwater (static groundwater depth appears to be approximately 19.5 feet bgs). Therefore, no additional soil characterization is proposed. However, confirmation soil samples will be collected during the remedial action.

5.2 Groundwater Characterization

As described in Section 3.4, four groundwater monitoring wells were installed at the Site in 2020. Those wells have only been sampled once. In order to characterize the Site's groundwater during the full course of seasonal variation, the environmental consultant will sample those wells on a quarterly basis for the year-long period leading up to start of earth work at the Site (i.e., four sampling events), and then sample semi-annually (two sampling events) for the year following the planned remedial excavation. Site groundwater is not used as a source of drinking water, and there is not a complete pathway for direct contact with groundwater for Site workers. Groundwater sampling events will be conducted as follows:

- Gauge depth to water in each well.

- Sampling will be conducted using low-flow sampling techniques to ensure minimal drawdown and agitation of well water and the loss of volatiles. This technique will also reduce the volume of purged groundwater needing to be disposed of at an off-site location. Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen and oxidation-reduction potential) will be recorded during purging using a YSI Model 556MSP water-quality analyzer equipped with a flow-through cell (or equivalent). Once groundwater parameters have stabilized (indicating groundwater is representative of the aquifer formation) a sample will be collected using laboratory-provided glassware.

- Groundwater samples will be collected from each well (initially, the four existing wells) and analyzed for Northwest Petroleum Hydrocarbons as Diesel/Heavy Oil Range Organics by Method NWTPH-Dx, as Gasoline by Method NWTPH-Gx, and BTEX by EPA Method 8021B. One duplicate sample will be analyzed for TPH-Gx and BTEX. The sample from MW-3 (the well closest to known soil contamination) will additionally be analyzed for PAHs and the MTCA-5 suite of metals.

In order to analyze groundwater flow direction on site, the well casing elevations and locations will be surveyed. After each quarterly groundwater monitoring event, the environmental consultant will submit a letter report summarizing the work and tabulating results.

6 SITE REMEDIATION

6.1 Description of the Cleanup Action

Based on prior environmental investigation conducted at the Site, it is anticipated that the site will be remediated by removal of petroleum contaminated soil by excavation and offsite disposal. Demolition of on-site buildings will allow for unrestricted access to the likely impacted area, and the volume of contaminated soils present at the Site will be greatly reduced or eliminated by excavation.

6.2 Site Preparation

The structures present at the Site will be demolished in preparation for cleanup actions (see Appendix C: Building Demolition Plan). Prior to implementation of the cleanup actions, the property will be secured with temporary fencing to prevent potential contact of the public (including employees and customers of Poulsbo RV, which will continue to operate on the north-adjacent parcel) with equipment or contaminated material. On-site personnel and traffic control will further prevent the public from exposure to equipment or contaminants during working hours. Open excavations will be secured with temporary fencing outside of working hours until backfill activities are complete. Construction activities for the new roadway that will pass through the site do not affect the contaminated area, and that work will occur prior to, during, and after the cleanup.

6.3 Segregation of Overburden Soil for Waste Profiling

Given the nature of petroleum releases and their tendency to migrate downward and outward from the source area, it is possible that portions of the overburden soil in the top 5 to 10 feet of the proposed excavation is not contaminated. In the event that both of the following conditions are met, portions of the overburden soil may be segregated and stored on site for use as backfill material:

- Field observations indicate the potential for portions of the overburden soil to meet criteria for reuse on site as established in the SGMP (Appendix D), and
- Adequate space exists on site for the temporary stockpiling of overburden soil pending sampling, sample analysis and possible use as backfill.

Should potentially clean overburden soil be segregated and stockpiled on site, waste samples will be collected of the stockpiled soil as established in the SGMP (Appendix C). Stockpile soil samples, if collected, will be analyzed for the following:

- TPH-G by Method NWTPH-Gx;
- TPH-D and TPH-HO by Method NWTPH-Dx;
- BTEX by EPA Method 8021B or 5021A
- Total Lead

Analytical results of stockpile samples will be used to determine the suitability of the soil for reuse as backfill material as established in the SGMP (Appendix C). Should segregated material be deemed unsuitable for reuse as backfill, it will be disposed of offsite as established in Section 8.10 of the SGMP.

6.4 Soil Excavation

Soil excavation will be completed by the contractor utilizing a track-mounted excavator. A slope of 1H:1V is proposed for the excavation sidewalls. Upon completion of the planned excavation (see Figure 4) to the proposed depth of 15 feet bgs, if there are no field indications (soil staining, petroleum odor, elevated PID readings), confirmation soil sampling will be conducted as described in Section 6.6. Otherwise, excavation will be continued until there are no field indications of contamination.

If soil sampling confirms that no contaminants of concern remain within the excavation area, it will be backfilled with clean material to a depth that will be at the Atkinson's discretion to reach project design goals.

6.5 Soil Stockpile and Loading

Excavated soil may be temporarily stockpiled on site and staged for load and haul out. The stockpiled soil will be located adjacent to the excavation areas, with specific site logistics controlled by Atkinson. Atkinson will manage contaminated soil stockpiles in accordance with the procedures established in the SGMP, Section 5.4 (Appendix C).

General requirements for the temporary stockpile include: (a) prevent intermixing of stockpiled materials with underlying soils or materials from other sources/or with other contaminants; (b) prevent influx of rainwater; (c) prevent erosion of stockpiled materials; (d) apply stormwater BMPs as appropriate for stockpile construction and maintenance; (e) maintain daily inventory of stockpile areas and provide information to the Project Engineer, as requested, and (f) appropriate site security such as signage and fences to alleviate hazards to the public.

6.6 Performance Soil Sampling and Analysis Plan

Performance monitoring for soil excavation will include confirmation soil sampling of the excavation on an approximate 20-foot grid centers. The sampling method and procedures are presented below.

6.6.1 Sample Locations

Upon completion of the excavation to total depth, soil samples will be collected from the side walls and base of the excavation following PCS removal for laboratory analysis. PBS will collect samples from the base of the excavation and along the sidewalls of the excavation at prescribed distances (approximately every 20 feet) to confirm compliance with regulatory cleanup criteria. The proposed confirmation sampling grid is shown on Figure 3.

6.6.2 Sample Methods

Soil sampling will be conducted following the procedures established in Section 5.5 of the SGMP (Appendix C). Where possible, soil samples will be collected using disposable sampling equipment directly into laboratory provided containers. If non-disposable sampling equipment is used for sample collection, sampling equipment will be decontaminated as follows: sampling equipment will be scrubbed in a laboratory grade detergent (Alconox® or similar) and tap water using a hand brush, submerged in a clean tap water rinse, followed by a clean distilled water rinse. Sampling equipment will be allowed to dry following decontamination prior to collection of subsequent samples. Samples will be collected directly into laboratory provided containers and stored in a cooler on ice under chain-of-custody documentation for transport to the analytical laboratory.

Confirmation soil samples will be submitted for the following analyses:

- TPH-G by Method NWTPH-Gx;
- TPH-D and TPH-HO by Method NWTPH-Dx;
- BTEX by EPA Method 8021B or 5021A

In addition, confirmation soil samples from the north-northeast side wall and base of excavation (in the vicinity of the former waste oil tank) will be analyzed for the following:

- cPAHs by EPA Method 8270 SIM
- PCBs by EPA Method 8082A
- RCRA-8 Total Metals by EPA Method 6020B

6.7 Dewatering

Based on groundwater elevation monitoring conducted during March 2020, depth to groundwater is estimated to be approximately 19.5 feet bgs. Groundwater elevations are generally the highest toward the end of the wet season, typically April, and lowest toward the end of the dry season, typically September. Based on those groundwater measurements, and on the estimated specific yields of the lithologic units expected to be encountered during excavation, it is not expected that dewatering of the excavation will be required.

If groundwater seeps are encountered, dewatering will be performed using a sump pump placed in the deeper portions of the excavation. Water generated from dewatering will be containerized on site in an adjacent frac tank (or similar). As the tank reaches its capacity, a wastewater sample will be collected from the tank for the purposes of waste profiling. Based on the sample results, wastewater will be disposed of in accordance with the procedures established in the SGMP. If additional dewatering is required following sampling and disposal of the initial tank, the tank will be replaced with an empty tank. The procedures established above will be reiterated for additional tanks until total depth of excavation is reached, confirmation samples are collected, backfill is complete, and dewatering is no longer required.

In addition to groundwater, the potential exists for stormwater to enter the excavation via surface runoff. Berms, straw waddle, and other stormwater best management practices (BMPs) will be employed as necessary to minimize the amount of stormwater that may come in contact with the excavation. Stormwater that has entered the excavation and come into contact with contaminated materials will be managed the same as groundwater removed from the excavation as established above in this section. Discharge of any type of water (groundwater or storm water) removed from the excavation or that has otherwise come into contact with contaminated material to the sanitary or storm sewer, or any nearby surface water bodies is prohibited and will not be permitted. Wastewater generated during remedial actions will be containerized and removed from the Site for offsite disposal.

6.8 Groundwater Sampling

Sampling of groundwater which may accumulate in the excavation is not proposed. Contaminant concentrations in groundwater prior to execution of the cleanup actions are well understood given the existing groundwater data obtained from sampling of surrounding monitoring wells. Monitoring of contaminant concentrations in groundwater will continue to be performed on a select network of monitoring wells following completion of the cleanup actions as detailed in Section 5.2

6.9 Waste Profiling and Disposal

Waste soil generated from remedial actions will be profiled for offsite disposal using existing analytical data generated during previous subsurface investigations of the Site. Waste soil is expected to be characterized as non-dangerous solid waste for disposal at a Subtitle D Landfill. Material may be temporarily staged on site in stockpiles pending transport to the disposal facility. Soil stockpiling will follow stockpiling procedures established in the SGMP (PBS, 2019) as described in Section 5.5.

Wastewater contained in frac tanks on site will be sampled for the purpose of waste profiling and disposal as the tanks near capacity. The PRS Group, Inc (PRS) water treatment plant in Tacoma, Washington is proposed as the disposal location for wastewater generated at the Site. Disposal of wastewater at the PRS plant is dependent on acceptance of the wastewater by the facility, and it remains possible that another facility will be used for disposal.

A waste profile and weight tickets documenting receipt and tonnage of PCS or volume of water from the disposal facility will be included in the Remedial Action Report. Weight/volume tickets will be tallied, and total tonnage/volume of exported waste will be reported.

6.10 Schedule for Implementation

The remedial action implementation schedule outlined here identifies key elements and milestones of the cleanup action as they are understood at this time. It is noted that the schedule for implementation may be affected by the general construction schedule for the project and is subject to change.

DATE	ACTIVITY
8/1/2021	Earliest start date for quarterly groundwater monitoring
5/1/2022	Earliest start date for demolition of on-site structures
6/1/2022	Projected start date for beginning remedial excavation
1/1/2023	Projected completion of remedial actions
2/1/2023	Compliance Monitoring Well Installation
8/1/2023	Follow up groundwater monitoring event
11/1/2023	Projected submittal of Remedial Action Report to Ecology
2024	Projected year of regulatory closure
2024	Well Decommissioning

7 REMEDIAL ACTION REPORT

Following completion of cleanup actions and receipt of laboratory data and disposal documentation, a Remedial Action Report will be prepared. The Remedial Action Report will:

- Summarize cleanup actions conducted at the Site.
- Provide tabulated laboratory results of confirmation soil samples and waste soil and water samples.
- Provide disposal documentation and total tonnage/volume for waste soil and water exported from the Site.
- Describe the on-site reuse of overburden soil removed from the excavation if applicable, including estimated volumes.
- Present a plan for additional remedial actions as necessary based on the results of these cleanup actions.

8 ENVIRONMENTAL COVENANT

The environmental covenant filed with King County by Ecology and Military Road Investments, LLC on March 26, 2019 (see Appendix A) declares that the property owner (and all future property owners) must notify Ecology and obtain their approval for any property transfer or work on the Site that could disturb contaminated soil. On January 13, 2020, John White, the Puget Sound Gateway Deputy Program Administrator for WSDOT, provided a letter to Ecology notifying them that WSDOT had identified the Site for partial acquisition, and that they would work with Ecology to remove the restrictive covenant from the property (see Appendix B). They enumerated several steps that would be taken during the project to meet the requirements of the environmental covenant.

One of the steps outlined in the letter indicates that Atkinson would be required to notify Ecology regarding demolition and excavation activities on site. It is PBS's understanding that WSDOT will enter the Site into Ecology's VCP program in order to move it towards regulatory closure when Ecology has assigned a VCP Site Manager to the project, Atkinson and/or WSDOT should notify them of plans and schedule for such work at the site.

The next step in WSDOT's letter indicates that Atkinson would submit a site clean-up work plan to Ecology for approval prior to roadway construction in the Site area. This work plan document should therefore also be

provided to the assigned VCP Site Manager as soon as possible to allow time for review, feedback, possible revision, and approval prior to work at the Site.

The final step in WSDOT's notification indicates that Ecology and WSDOT will initiate and conduct the public notice and comment process mentioned in the restrictive covenant (Section 8 of the covenant). Once cleanup and the public notice process are complete, the property owner (WSDOT) will be able to record an instrument to remove the restrictive covenant. This work plan assumes that these public notification and legal processes will be handled exclusively by WSDOT and Ecology, with technical assistance from Atkinson. Communications from WSDOT in August 2021 indicate that the covenant may need to be converted into an Implementing Agreement since Parcel IDs are removed when properties are purchased by the State.

9 REFERENCES

Environmental Associates, Inc., 2015, *Phase I Environmental Site Assessment – Poulsbo RV Property,* October 14, 2015.

EHSI-International, Inc.., 2020, *Phase II Environmental Site Assessment – Poulsbo RV Property,* April 20, 2020.

LSI Adapt, Inc., 2004, *Limited Phase II Environmental Site Assessment – Kent – Poulsbo RV,* August 6, 2004.

LSI Adapt, Inc., 2005, *Supplemental Limited Phase II Environmental Site Assessment – Kent – Poulsbo RV,* July 14, 2005.

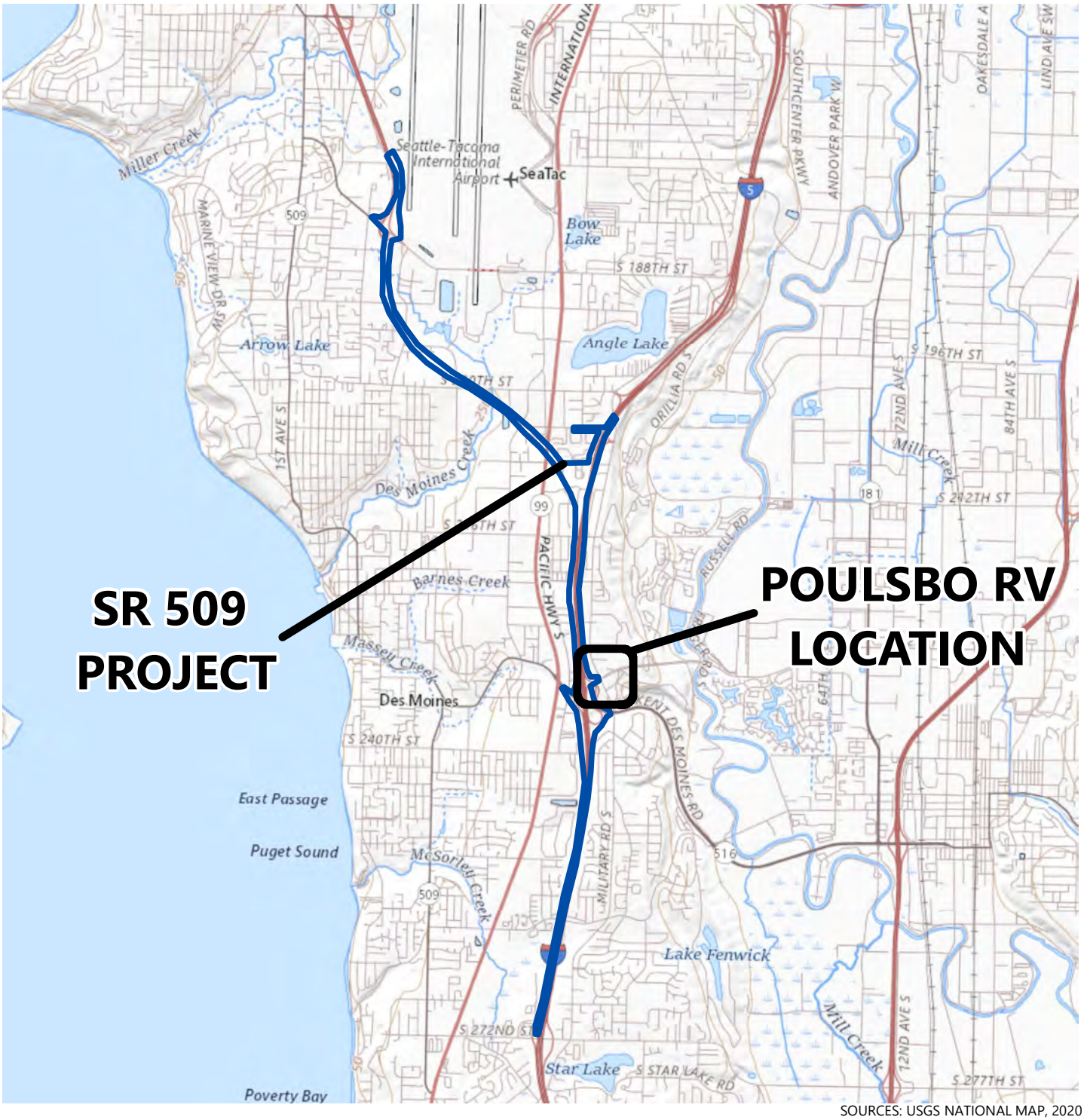
PBS Engineering and Environmental, 2020, *Soil and Groundwater Management Plan, ECP Appendix E, Contract No. 9424, State Route 509 I-5 to 24th Avenue S. – New Expressway Project,* May 2021.

Sound Environmental Consulting, 1998, *Underground Storage Tank Closure Site Assessment – Valley I-5 Motor Home, Kent, Washington*; December 14, 1998.

Washington State Department of Ecology (Ecology), 2016b, *Guidance for Remediation of Petroleum Contaminated Sites, Toxics Cleanup Program, publication no. 10-09-057*, REVISED June 2016, available https://fortress.wa.gov/ecy/publications/documents/1009057.pdf

Washington State Department of Ecology (Ecology), 2017, *Model Remedies for Sites with Petroleum Impacts to Groundwater, Toxics Cleanup Program, publication no. 16-09-057*, REVISED December 2017, available https://fortress.wa.gov/ecy/publications/documents/1609057.pdf.

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT INTL FT

N

SCALE: 1 " = 1 miles

0 0.5 1 2 Miles

PREPARED FOR: GUY ATKINSON CONSTRUCTION

C:\Users\nathand\Desktop\GIS\poulsbo\Fig1_SiteVicinity.mxd

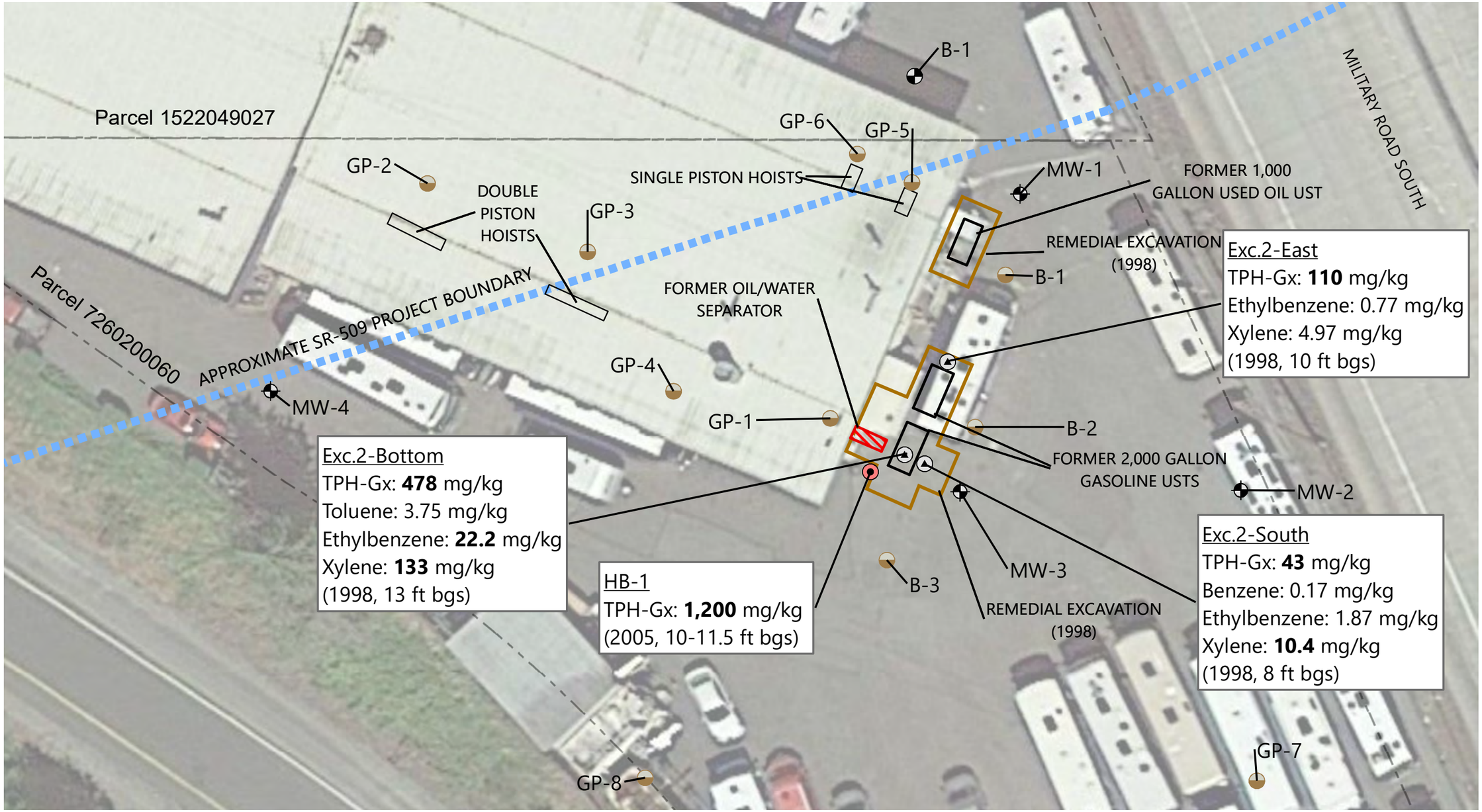
PBS

SITE VICINITY

23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

APR 2021
40757.022

FIGURE
1



Exc.2-Bottom
TPH-Gx: **478** mg/kg
Toluene: 3.75 mg/kg
Ethylbenzene: **22.2** mg/kg
Xylene: **133** mg/kg
(1998, 13 ft bgs)

HB-1
TPH-Gx: **1,200** mg/kg
(2005, 10-11.5 ft bgs)

Exc.2-East
TPH-Gx: **110** mg/kg
Ethylbenzene: 0.77 mg/kg
Xylene: 4.97 mg/kg
(1998, 10 ft bgs)

Exc.2-South
TPH-Gx: **43** mg/kg
Benzene: 0.17 mg/kg
Ethylbenzene: 1.87 mg/kg
Xylene: **10.4** mg/kg
(1998, 8 ft bgs)

SOURCES: GOOGLE EARTH AERIAL IMAGERY (DATED AUGUST 2020); KING COUNTY GIS

LEGEND

- Exc.2 — Excavation Sample (Sound Env., 1998)
- GP-1 — Direct Push Boring (Adapt, 2004)
- HB-1 — Hand Boring (Adapt, 2004)
- B-1 — Direct Push Boring (EHSI, 2020)
- MW-1 — Monitoring Well (EHSI, 2020)

Notes:
1. Concentrations in **bold** exceed MTCA Method A Cleanup Levels for Unrestricted Land Use
2. TPH-Gx = Total Petroleum Hydrocarbons, Gasoline-range
3. mg/kg = milligrams per kilogram
4. ft bgs = feet below ground surface

1 inch = 20 feet

0 10 20 40'

PREPARED FOR: GUY ATKINSON CONSTRUCTION

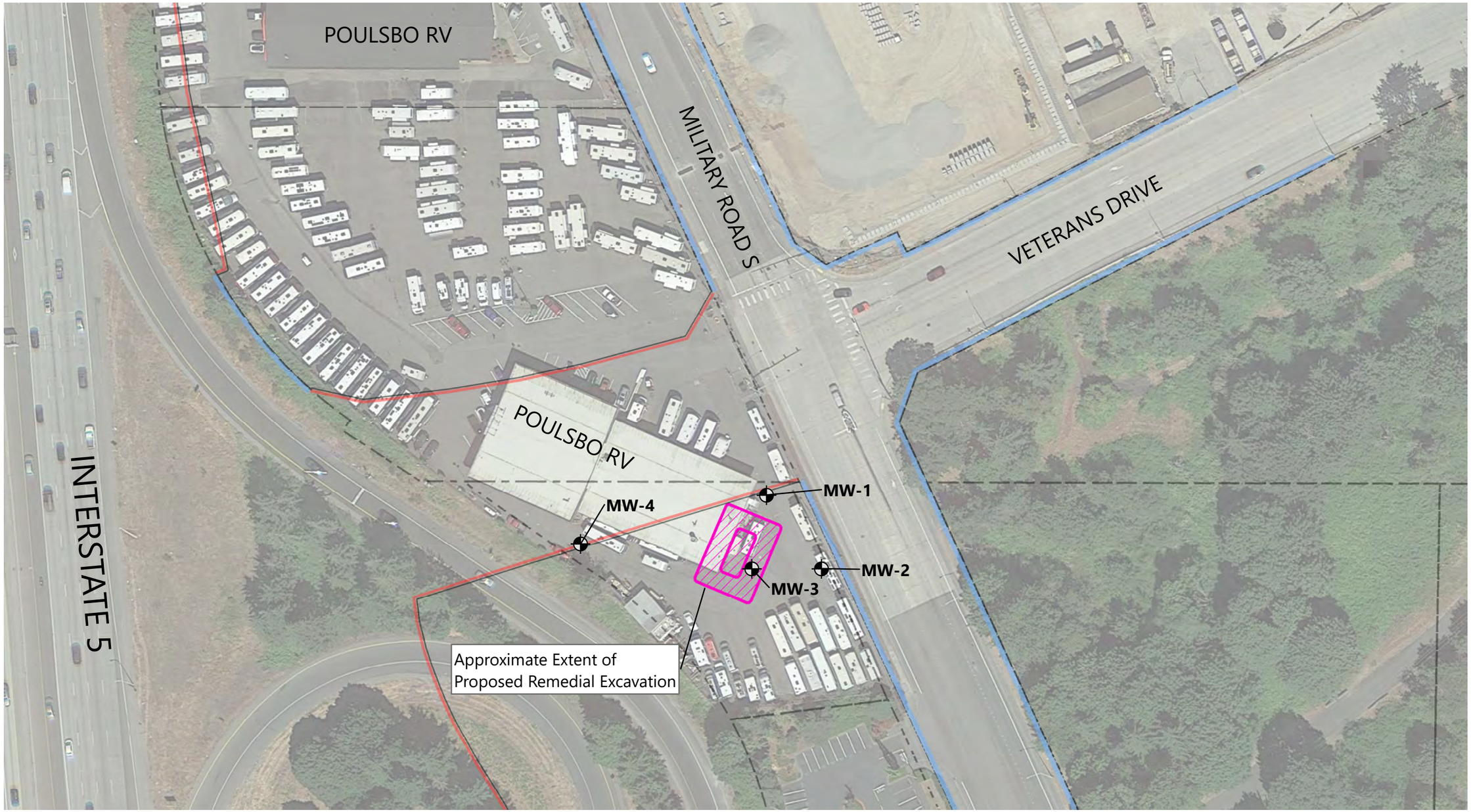
PBS Engineering and Environmental Inc.
214 E Galer St, Ste 300
Seattle, WA 98102
206.233.9639
pbsusa.com

SITE PLAN WITH DETECTED PETROLEUM HYDROCARBON CONCENTRATIONS IN SOIL

POULSBO RV
23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

PROJECT 40757.022
DATE MAY 2021
FIGURE 2

C:\Users\nathand\Desktop\GIS\poulsbo\Fig2_SitePlanwConcentrations.mxd



LEGEND

- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Proposed Remedial Excavation
- Approximate Parcel Boundaries
- Monitoring Well (EHSI, 2020)
  (May be decommissioned and then replaced after remediation and construction are complete)

SOURCES: GOOGLE EARTH AERIAL IMAGERY (DATED AUGUST 2020); KING COUNTY GIS

1 inch = 80 feet

0 40 80 160'

PREPARED FOR: GUY F. ATKINSON CONSTRUCTION

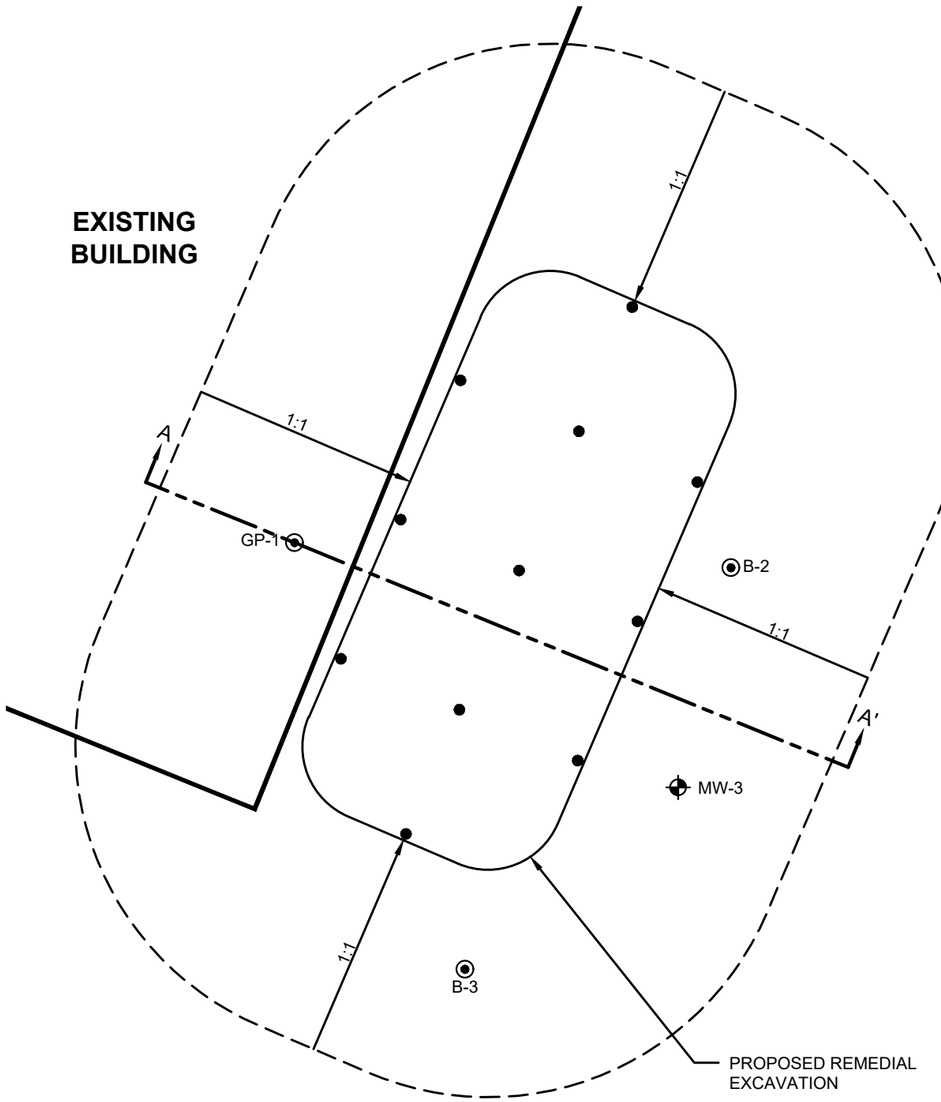
PBS Engineering and Environmental Inc.
214 E Galer St., Ste 300
Seattle, WA 98102
206.233.9639
pbsusa.com

PROPOSED RIGHTS OF WAY AND EXISTING GROUNDWATER MONITORING LOCATIONS

POULSBO RV
23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

PROJECT
40757.022
DATE
JUL 2021
FIGURE
3

\\pbsenv.lan\L\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\Phase 16 PoulsboRV Cleanup Plan\GIS\MXD\Fig3_FutureLandUse.mxd



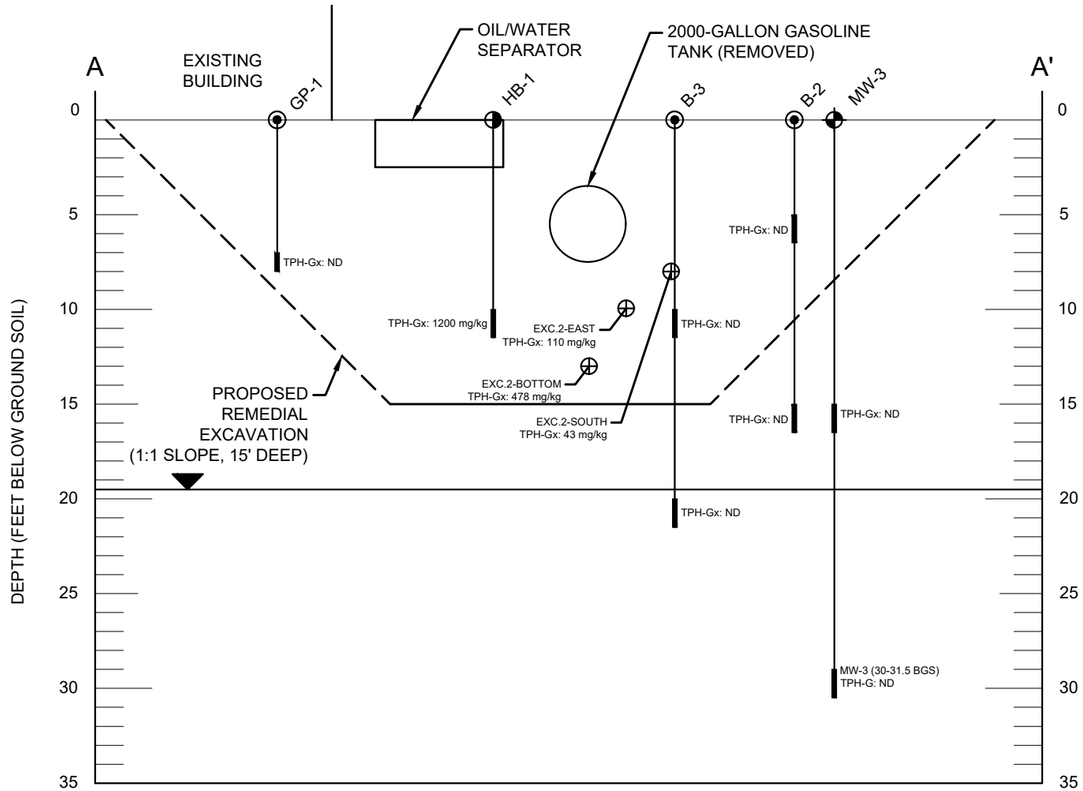
1 EXCAVATION PLAN
SCALE: 1" = 10'-0"

GENERAL NOTES

1. EXCAVATE SOIL WITHIN THE EXCAVATION EXTENT TO A DEPTH OF 15 FEET BGS. TRANSPORT EXCAVATED SOIL TO AN AUTHORIZED WASTE DISPOSAL FACILITY.
2. ENVIRONMENTAL CONSULTANT WILL CONDUCT FIELD SCREENING AND COLLECT CONFIRMATION SOIL SAMPLES ONCE A DEPTH OF 15 FEET BGS HAS BEEN ACHIEVED. IF ANY CONFIRMATION SOIL SAMPLES EXCEED MTCA METHOD A UNRESTRICTED CLEANUP LEVELS, ADDITIONAL SOIL WILL BE EXCAVATED FROM THE AREA WHERE THE EXCEEDING SAMPLE WAS COLLECTED.
3. IF GROUNDWATER IS ENCOUNTERED IN THE EXCAVATION, COLLECT AND STORE POTENTIALLY CONTAMINATED WATER IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND THE SGMP.

LEGEND

- EXC.1 — EXCAVATION SAMPLE (SOUND ENV., 1998)
- GP-1 — DIRECT PUSH BORING (ADAPT, 2004)
- HB-1 — HAND BORING (ADAPT, 2004)
- B-1 — DIRECT PUSH BORING (EHSI, 2020)
- MW-3 — MONITORING WELL (EHSI, 2020)
- A A' — CROSS SECTION LINE
- GROUNDWATER LEVEL
- CONFIRMATION SOIL SAMPLES (BASE)
- EXCAVATION EXTENT
- EXTENT OF EXCAVATION SIDESLOPE (1:1)



2 CROSS-SECTION
SCALE: 1" = 8'-0"

Full Size Sheet Format Is 11x17; If Printed Size Is Not 11x17, Then This Sheet Format Has Been Modified & Indicated Drawing Scale Is Not Accurate.

PREPARED FOR: GUY F. ATKINSON CONSTRUCTION, LLC

PBS Engineering and Environmental Inc.
214 East Galer Street, Ste 300
Seattle, WA 98102
206.233.9639
pbsusa.com

PBS

EXCAVATION PLAN & CROSS SECTION
POULSBO RV PROPERTY
23051 MILITARY ROAD SOUTH, KENT, WASHINGTON

PROJECT
40757.022
DATE
MAY 2021
SHEET ID
4

Memorandum

DATE: August 31, 2022

TO: Drew Rankin – WSDOT

FROM: Mike Bagley, LHG – PBS Eng. + Env.
Kevin Hood, CPESC - PBS Eng. + Env.

REGARDING: Poulsbo RV Shallow Soil Sampling Plan

According to the Washington Department of Ecology (Ecology), the Asarco Company operated a copper smelter in the Point Defiance area of Tacoma for almost 100 years. Air pollution from the smelter settled on the surface soils over more than 1,000 square miles of the Puget Sound basin. Arsenic, lead, and other heavy metals are still in the soil because of this pollution. Concentrations of arsenic are known to exist within the aerial plume, which includes the project site, above the MTCA Method A cleanup standard of 20 mg/kg in soil at depths of 0 to 12 inches below ground surface. The Poulsbo RV site is mapped by Ecology in a zone with a predicted arsenic concentration range of 20 to 40 mg/kg. Accordingly, shallow soil samples will be collected from the area disturbed during planned soil remediation associated with a petroleum contamination issue at the site.

Sample Locations
Samples should be obtained from each of the 16 planned sampling location laid out in the attached figure (see Figure 1). Sampling will be carried out using hand tools. Samples should generally be obtained at a depth 3 to 6 inches below top of native soil surface. At locations with vegetation/turf, hardscape (asphalt, concrete, etc.), or fill soils (gravel road base and built-up structural fill soils associated with roads), samples should be obtained at a depth of 3 to 6 inches below the depth at which native soils are first encountered. At 25% of all other sample locations (4 locations, in this case), an additional soil sample should be obtained at a depth of 6 to 12 inches below ground surface (i.e. 6 inches below the first soil sample). A total of 20 samples will be collected.

Sampling Personnel
Trained environmental personnel or Atkinson's Environmental Consultant (PBS) will perform soil sampling.

Sample Collection
Soil samples will be collected by filling laboratory-provided containers for specific analysis. For the purpose of total arsenic and lead analysis, soil will be collected in a single 4-oz jar.

Sample personnel will wear new disposable nitrile gloves for collection of each sample to protect against cross-contamination between samples. All non-disposable components of the sampling equipment (e.g. split spoon, hand augers, shovels, spoons, or other equipment) used to collect samples that contact the soil will be decontaminated prior to, and in between, collection of individual samples as follows:

- Scrub with potable water containing Alconox/Liquinox detergent
- Potable water rinse/deionized (DI) water rinse

Each soil sample should be labeled using a Unique Sample ID.

- *Location_Depth_Time_Date*

Soil samples intended for metals analysis will be packed with care to avoid breakage in containers (typically coolers) under chain-of-custody documentation for transport to the analytical laboratory. Chain of custody documents will be provided by the Environmental Consultant, and relevant field information such as sample collection times should be filled in by the sampling personnel. Additionally, the sampling personnel should sign and date the chain of custody document when it is transferred to a parcel carrier or the project laboratory and send a copy to the Environmental Consultant.

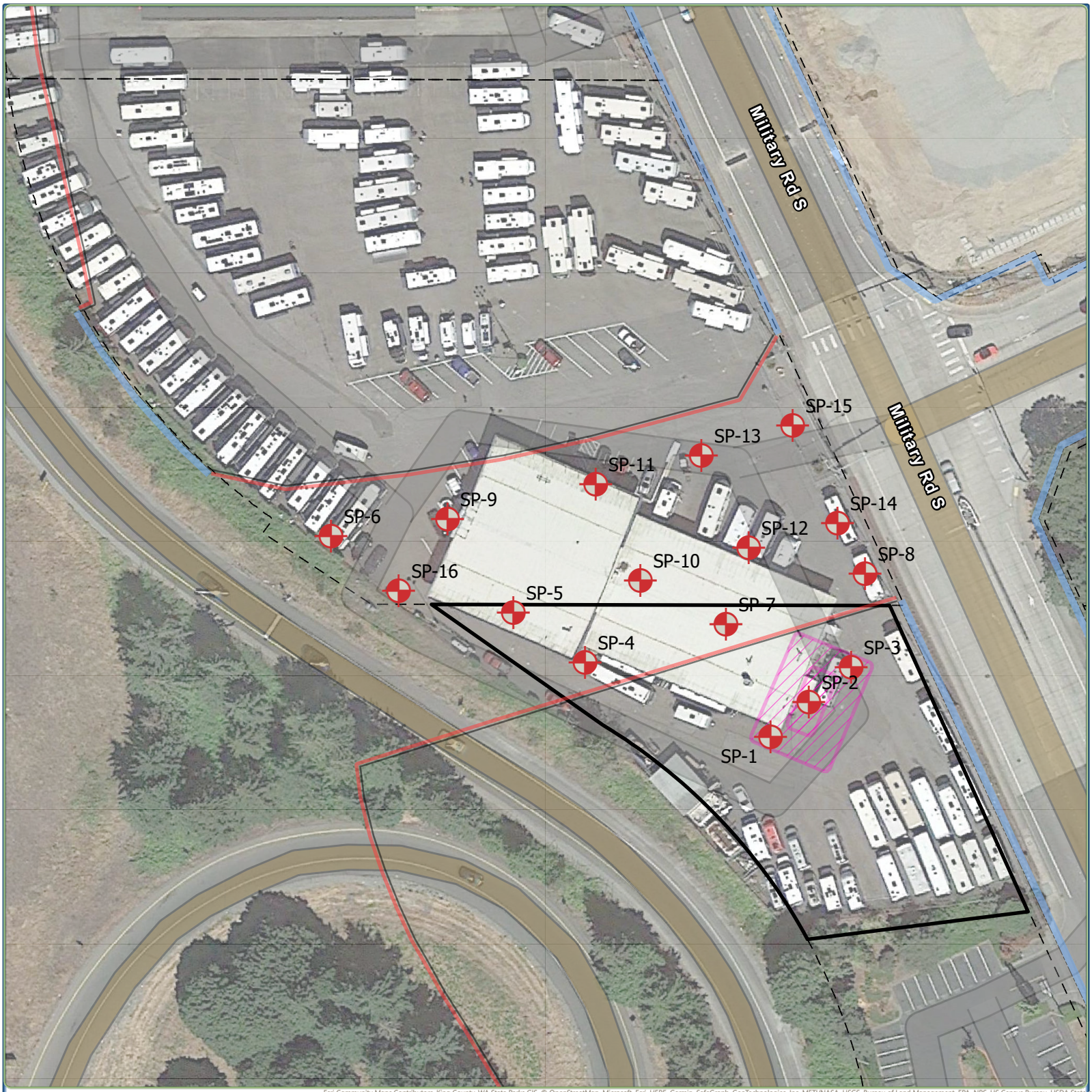
Sampling Analysis Procedures
Samples will be analyzed for the following:

- Total Metals (arsenic and lead) by EPA Method 6020A

Analytical results will be provided to Ecology per an existing understanding with WSDOT.

Attachment: Figure 1: Proposed As/Pb Soil Sampling Locations – August 2022

cc: Archie Kollmorgen – Atkinson Construction



PROPOSED As/Pb SOIL SAMPLING LOCATIONS - AUGUST 2022

23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

FIGURE: 1

- Proposed As/Pb Sample Locations
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Proposed Remedial Excavation (approx. 0.08 acres)

1 INCH = 75 FEET

0 75 Feet

PBS

NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet | L:\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\GIS\PoulsboRV GMEs\PoulsboRV_SoilSamplingPlan_Aug2022.aprx | 8/31/2022 2:09 PM

Appendix B

Quarterly Groundwater Monitoring Reports

Quarterly Groundwater Monitoring Reports for Monitoring Events Performed September 2021, December 2021, March 2022, and August 2022

September 2, 2022

Archie Kollmorgen
Atkinson Construction
707 S Grady Way #500
Renton, Washington 98057

Via email: archie.kollmorgen@atkn.com

Regarding: Groundwater Sampling Event – September 2021
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
Contract No. 9424
PBS Project 40757.022
Department of Ecology VCP Program ID: NW0951
Date Sampled: September 8, 2021

Dear Archie:

Groundwater sampling is being conducted on a quarterly basis to monitor groundwater for contaminants of concern to determine whether they are present.

PBS Engineering and Environmental Inc. (PBS) completed the first quarterly sampling event on September 8, 2021. The summary of activities performed at the site and the analytical results are described below.

REGULATORY CRITERIA

Contaminated site assessment and cleanup is conducted in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D of the Revised Code of Washington (RCW) and its implementation regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

Considering the current land use and unknown future land use, MTCA Method A Groundwater Cleanup Levels (CULs) for unrestricted land use are the applicable cleanup criteria for this site. CULs for groundwater are presented in Table 2, along with analytical results.

GROUNDWATER SAMPLING ACTIVITIES

PBS gauged four monitoring wells: MW-1, MW-2, MW-3, and MW-4. Monitoring well MW-3 was observed to be dry to its maximum depth of 34.75 feet below ground surface (bgs). Groundwater depth measurements ranged from 30.59 feet bgs in MW-4 to 27.57 feet bgs in MW-1.

Groundwater purging and sampling was conducted employing low flow sampling methodology with pumping rates not exceeding 0.37 liters/minute and creating minimal drawdown in the well. A peristaltic pump was used to collect the samples. Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, total suspended solids, and oxidation-reduction potential) were recorded during purging using a YSI ProDSS water-quality analyzer equipped with a flow-through cell.

Once groundwater parameters stabilized, which indicates groundwater is representative of the aquifer formation, a sample was collected. MW-4 pumped dry after 1.6 liters of water removal, prior to parameter stabilization, and therefore no sample was collected. PBS personnel wore new disposable nitrile gloves when collecting samples.

A total of two groundwater samples were collected from monitoring wells MW-1 and MW-3. One duplicate sample was collected from MW-3. Detailed groundwater sampling information is presented in Attachment I: Groundwater Sampling Forms.

The samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Fremont Analytical in Seattle, Washington, within specified holding times and under chain-of-custody documentation. Analyses for contaminants of concern were conducted under a standard turnaround time and included the following for both wells:

- Gasoline range total petroleum hydrocarbons (TPH) by method NWTPH-Gx
- Diesel range total petroleum hydrocarbons (TPH) by method NWTPH-Dx
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021

Additionally, the sample collected from MW-3 was analyzed for the following:

- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Methods 8270/625
- Dissolved MTCA-5 Metals (As, Cd, Cr, Hg, Pb) by EPA Methods 6020/200.8

GROUNDWATER FLOW DIRECTION

Groundwater elevations in each well were determined using depth to water measured from each top of casing (TOC) and TOC elevation data acquired during the August 2022 survey. Groundwater elevations are potentially influenced by well construction, subsurface lithology, localized precipitation infiltration, and subsurface hydraulic conductivity.

Groundwater flow direction was determined to be in a southwesterly direction. Hydraulic gradient is estimated to be approximately 0.0178 feet/foot. Groundwater elevation data for this sampling event is presented in Table 1 and shown on Figure 2.

GROUNDWATER ANALYTICAL RESULTS

No contaminants of concern were detected above CULs in the groundwater samples.

Diesel range TPH was detected in the sample obtained from MW-3 3 at a concentration of 132 micrograms per liter (µg/L), well below the CUL of 500 µg/L). Chromium was also detected in MW-3 at a concentration of 2.40 µg/L (well below the CUL of 50 µg/L).

Groundwater analytical results and the CULs are presented in Table 2. The laboratory report and chain-of-custody documentation are presented in Attachment II.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this Groundwater Monitoring Event conducted on site, the following conclusions and recommendations are made:

- Concentrations of contaminants of concern were below CULs in both wells that were sampled.
- PBS recommends submitting a copy of this report to the Washington State Department of Ecology Northwest Regional office.

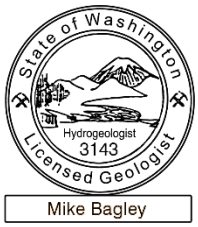
LIMITATIONS

PBS has prepared this report for use by Atkinson Construction. This report is for the exclusive use of the client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The findings and conclusions of this report are not scientific certainties but, rather, are probabilities based on professional judgment concerning the significance of the data gathered during this investigation.

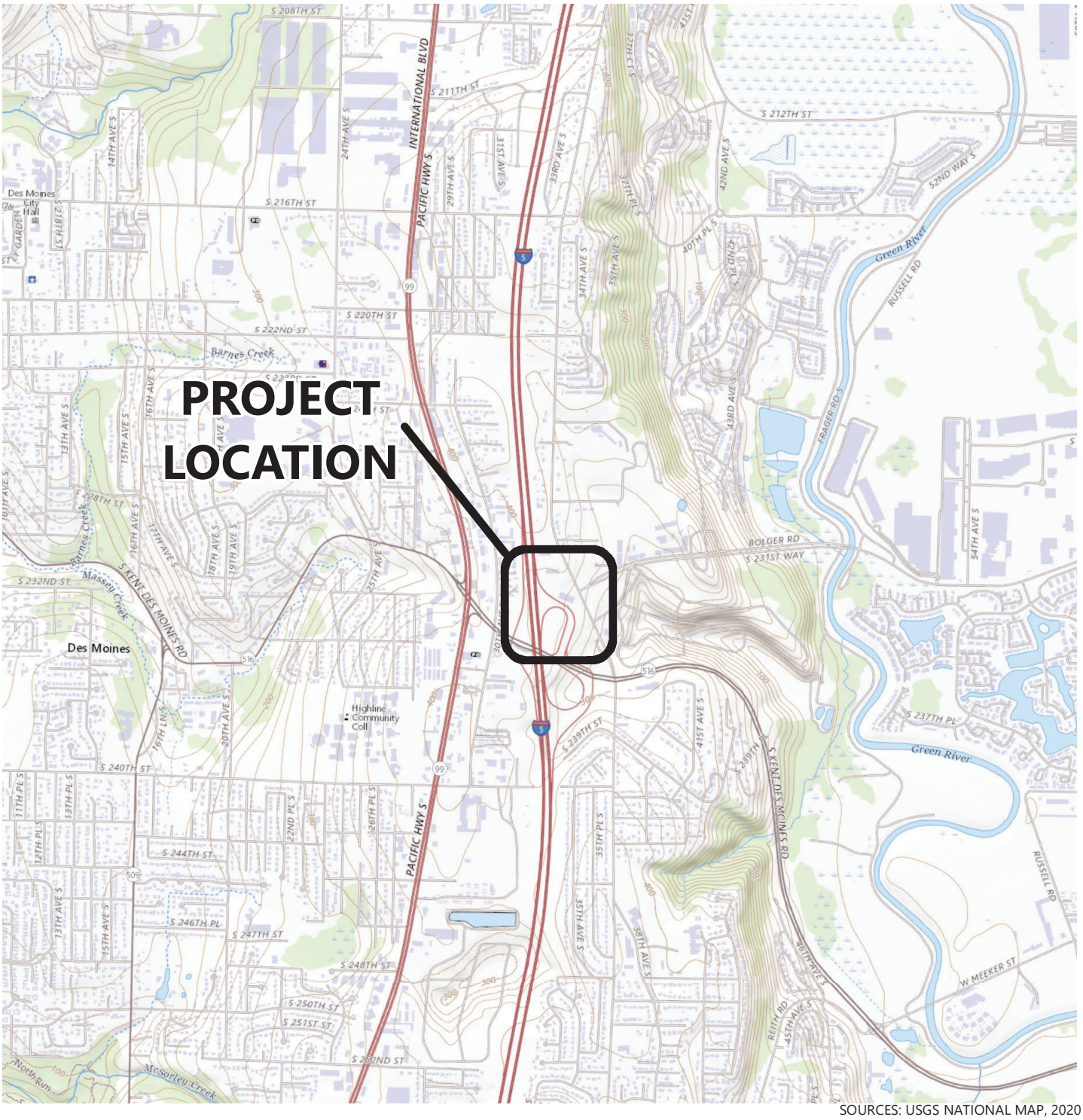
Sincerely,
PBS Engineering and Environmental Inc.

Mike Bagley, LHG
Project Geologist



Enclosed:
Figure 1: Site Vicinity
Figure 2: Site Plan and Groundwater Contours – September 2021
Table 1: Groundwater Elevation Data
Table 2: Groundwater Analytical Results
Attachment I: Q3 2021 Groundwater Sampling Datasheets
Attachment II: Laboratory Reports and Chain-of-Custody Documentation

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT US FT

N

SCALE: 1 " = 2,000 feet

0 1,000 2,000 4,000 Feet

PREPARED FOR: ATKINSON CONSTRUCTION

L:\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\GIS\PoulsboRV GMEs\arcmap_fig1\Fig1_SiteVicinity_24kDefault_Aug2022.mxd; AUTHOR: mikeb

PBS

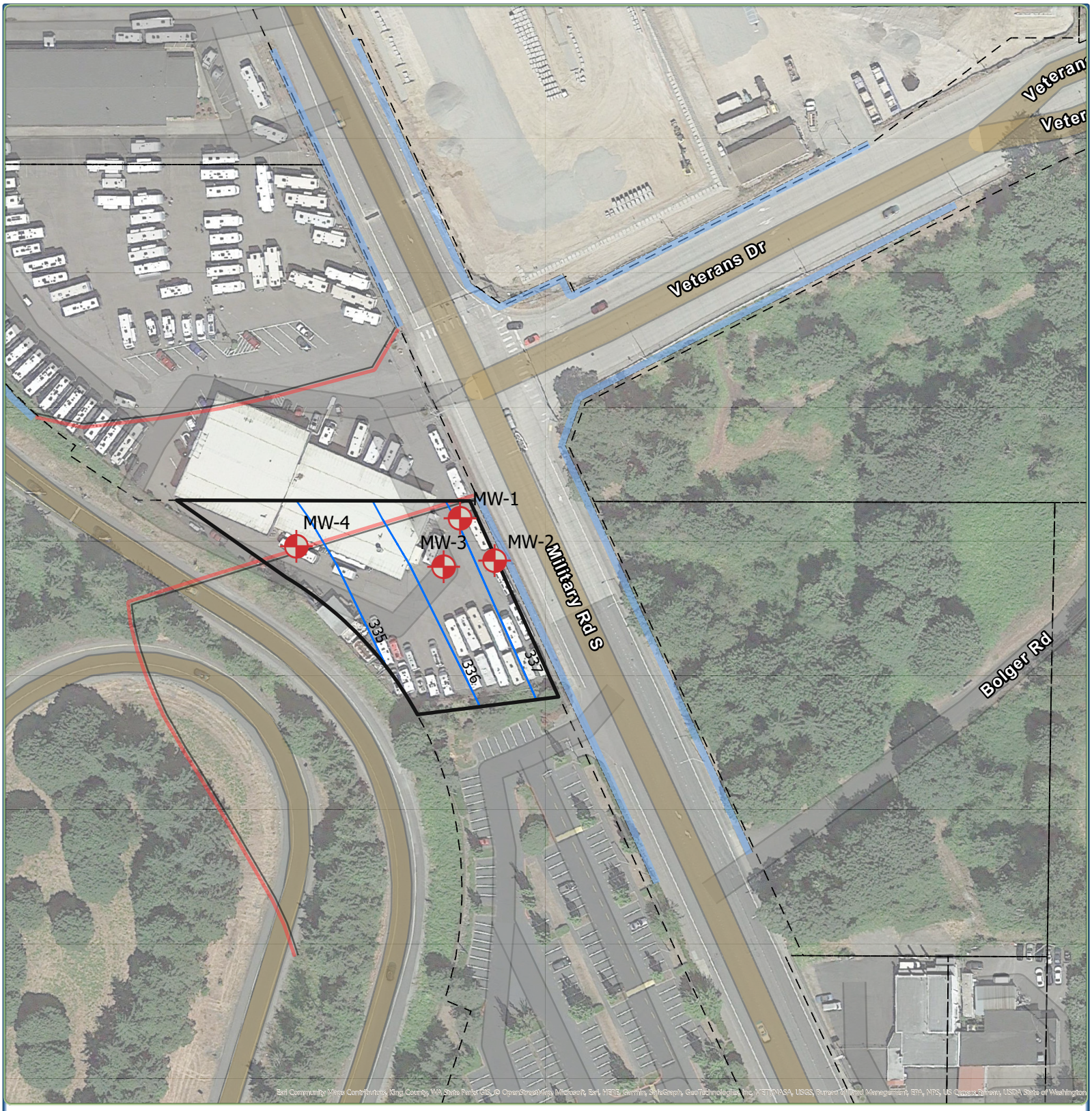
SITE VICINITY

POULSBO RV

23051 MILITARY ROAD S, KENT, WASHINGTON

AUG 2022
40757.022

FIGURE
1



SITE PLAN AND GROUNDWATER CONTOURS - SEPTEMBER 2021

23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

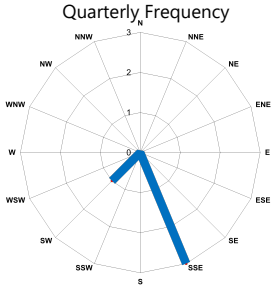
FIGURE: 2

- Monitoring Wells
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Groundwater Contours - Sept. 2021 (ft amsl)

1 INCH = 75 FEET

0 75 Feet

Groundwater Flow Direction
Quarterly Frequency



PBS

Tables

TABLE 1
GROUNDWATER ELEVATION DATA

Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Well ID	Date	Well Screen Interval (ft bgs)	TOC Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
MW-1	9/8/2021	20-35	364.636	27.57	337.07
	12/6/2021			25.12	339.52
	3/16/2022			24.32	340.32
	8/10/2022			26.32	338.32
MW-2	9/8/2021	20-35	361.096	Dry	Dry
	12/6/2021			30.10	331.00
	3/16/2022			29.00	332.10
	8/10/2022			31.00	330.10
MW-3	9/8/2021	20-35	364.134	27.68	336.45
	12/6/2021			27.87	336.26
	3/16/2022			22.81	341.32
	8/10/2022			26.08	338.05
MW-4	9/8/2021	20-32.25	365.19	30.59	334.60
	12/6/2021			25.50	339.69
	3/16/2022			25.42	339.77
	8/10/2022			26.29	338.90

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

Date	Groundwater Flow Direction	Hydraulic Gradient (feet/feet)
9/8/2021	60° West of South (southwest)	0.0178
12/6/2021	166° East of North (south-southeast)	0.1296
3/16/2022	159° East of North (south-southeast)	0.0648
8/10/2022	158° East of North (south-southeast)	0.0846

Groundwater flow direction was determined graphically on a scaled site plan with the tabulated groundwater elevations and survey data

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Sample Identification	Date	Results µg/L												
		TPHs			VOCs				cPAHs	Metals				
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes		Mercury	Arsenic	Cadmium	Chromium	Lead
MTCA Method A Cleanup Levels For Groundwater[a]		500	500	1000	5	1,000	700	1,000	0.1	2	5	5	50	15
MW-1	9/8/2021	<99	<99	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	12/6/2021	<116	<116	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<113	<113	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<92.9	<92.9	<50.0	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
MW-2	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<117	<117	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<114	<114	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/8/2021	<99.3	132	<50	<0.440	<0.750	<0.400	<1.00	<0.09	<0.100	<1.00	<0.125	2.40	<0.500
	12/6/2021	<118	<118	<50	<0.440	<0.750	<0.400	<1.00	<0.0995	<0.100	1.06	<0.125	3.22	<0.500
	3/16/2022	<115	257	<50	<0.440	<0.750	<0.400	<1.00	<0.0989	<0.100	<1.00	<0.125	0.86	<0.500
	8/10/2022	<93.8	271	<50	<0.440	<0.750	<0.400	<1.00	<0.0988	<0.100	<1.00	<0.200	3.31	<0.500
MW-4	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<120	<120	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<115	<115	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<94.7	183	<50	<0.550	<0.750	<0.400	<1.00	--	--	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per liter

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxics Control Act

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

ND - not detected above laboratory method detection limit

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

September 2, 2022

Archie Kollmorgen
Atkinson Construction
707 S Grady Way #500
Renton, Washington 98057

Via email: archie.kollmorgen@atkn.com

Regarding: Groundwater Sampling Event – December 2021
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
Contract No. 9424
PBS Project 40757.022
Department of Ecology VCP Program ID: NW0951
Date Sampled: December 6, 2021

Dear Archie:

Groundwater sampling is being conducted on a quarterly basis to monitor groundwater for contaminants of concern to determine whether they are present.

PBS Engineering and Environmental Inc. (PBS) completed the second quarterly event on December 6, 2021. The summary of activities performed at the site and the analytical results are described below.

REGULATORY CRITERIA

Contaminated site assessment and cleanup is conducted in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D of the Revised Code of Washington (RCW) and its implementation regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

Considering the current land use and unknown future land use, MTCA Method A Groundwater Cleanup Levels (CULs) for unrestricted land use are the applicable cleanup criteria for this site. CULs for groundwater are presented in Table 2, along with analytical results.

GROUNDWATER SAMPLING ACTIVITIES

PBS gauged four monitoring wells: MW-1, MW-2, MW-3, and MW-4. Groundwater depth measurements ranged from 25.12 feet below ground surface (bgs) in MW-1 to 30.10 feet bgs in MW-2.

Groundwater purging and sampling was conducted employing low flow sampling methodology with pumping rates not exceeding 0.37 liters/minute and creating minimal drawdown in the well. A peristaltic pump was used to collect the samples. Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, total suspended solids, and oxidation-reduction potential) were recorded during purging using a YSI ProDSS water-quality analyzer equipped with a flow-through cell.

Once groundwater parameters stabilized, which indicates groundwater is representative of the aquifer formation, a sample was collected. PBS personnel wore new disposable nitrile gloves when collecting samples.

A total of four groundwater samples were collected, from monitoring wells MW-1, MW-2, MW-3, and MW-4. One duplicate sample was collected from MW3. Detailed groundwater sampling information is presented in Attachment I: Groundwater Sampling Forms.

The samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Fremont Analytical in Seattle, Washington, within specified holding times and under chain-of-custody documentation. Analyses for contaminants of concern were conducted under a standard turnaround time and included the following for all samples:

- Gasoline range total petroleum hydrocarbons (TPH) by method NWTPH-Gx
- Diesel range total petroleum hydrocarbons (TPH) by method NWTPH-Dx
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021

Additionally, the sample collected from MW-3 was analyzed for the following:

- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Methods 8270/625
- Dissolved MTCA-5 Metals (As, Cd, Cr, Hg, Pb) by EPA Methods 6020/200.8

GROUNDWATER FLOW DIRECTION

Groundwater elevations in each well were determined using depth to water measured from each top of casing (TOC) and TOC elevation data acquired during the August 2022 survey. Groundwater elevations are potentially influenced by well construction, subsurface lithology, localized precipitation infiltration, and subsurface hydraulic conductivity.

Groundwater flow direction was determined to be in a south-southeasterly direction. Hydraulic gradient is estimated to be approximately 0.1296 feet/foot. Groundwater elevation data for this sampling event is presented in Table 1 and shown on Figure 2.

GROUNDWATER ANALYTICAL RESULTS

No contaminants of concern were detected above CULs in the groundwater samples.

Dissolved arsenic was detected in MW-3 at a concentration of 1.06 micrograms per liter (µg/L), well below the CUL of 5 µg/L. Chromium was also detected in MW-3 at a concentration of 3.22 µg/L (well below the CUL of 50 µg/L).

Groundwater analytical results and the CULs are presented in Table 2. The laboratory report and chain-of-custody documentation are presented in Attachment II.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this Groundwater Monitoring Event conducted on site, the following conclusions and recommendations are made:

- Concentrations of contaminants of concern were below CULs in all wells that were sampled.

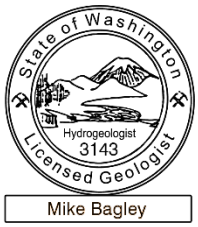
- PBS recommends submitting a copy of this report to the Washington State Department of Ecology Northwest Regional office.

LIMITATIONS

PBS has prepared this report for use by Atkinson Construction. This report is for the exclusive use of the client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The findings and conclusions of this report are not scientific certainties but, rather, are probabilities based on professional judgment concerning the significance of the data gathered during this investigation.

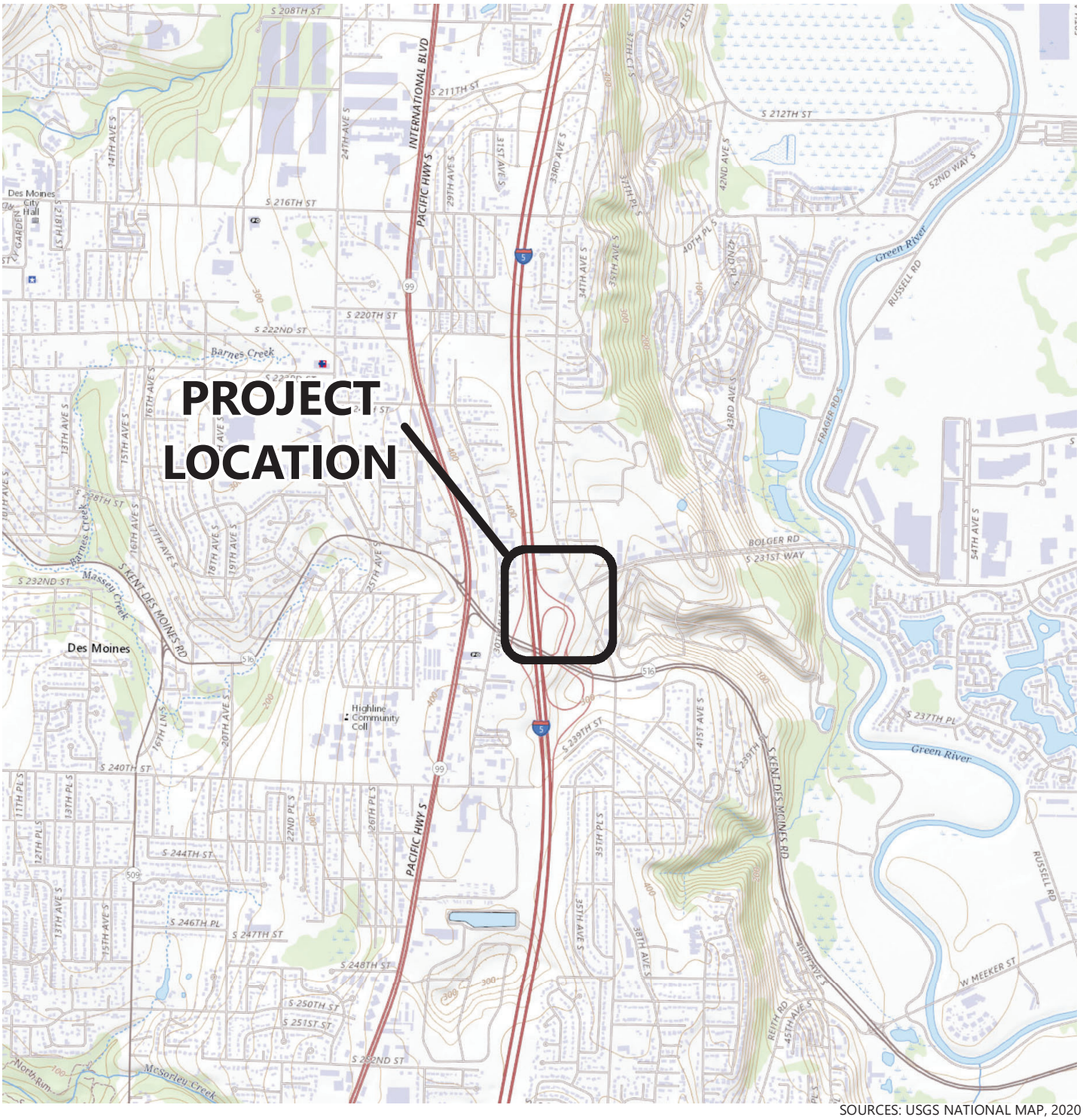
Sincerely,
PBS Engineering and Environmental Inc.



Mike Bagley, LHG
Project Geologist

Enclosed: Figure 1: Site Vicinity
Figure 2: Site Plan and Groundwater Contours – December 2021
Table 1: Groundwater Elevation Data
Table 2: Groundwater Analytical Results
Attachment I: Q3 2022 Groundwater Sampling Datasheets
Attachment II: Laboratory Reports and Chain-of-Custody Documentation

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT US FT

N

SCALE: 1 " = 2,000 feet

0 1,000 2,000 4,000 Feet

PREPARED FOR: ATKINSON CONSTRUCTION

L:\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\GIS\PoulsboRV GMEs\arcmap_fig1\Fig1_SiteVicinity_24kDefault_Aug2022.mxd; AUTHOR: mikeb

PBS

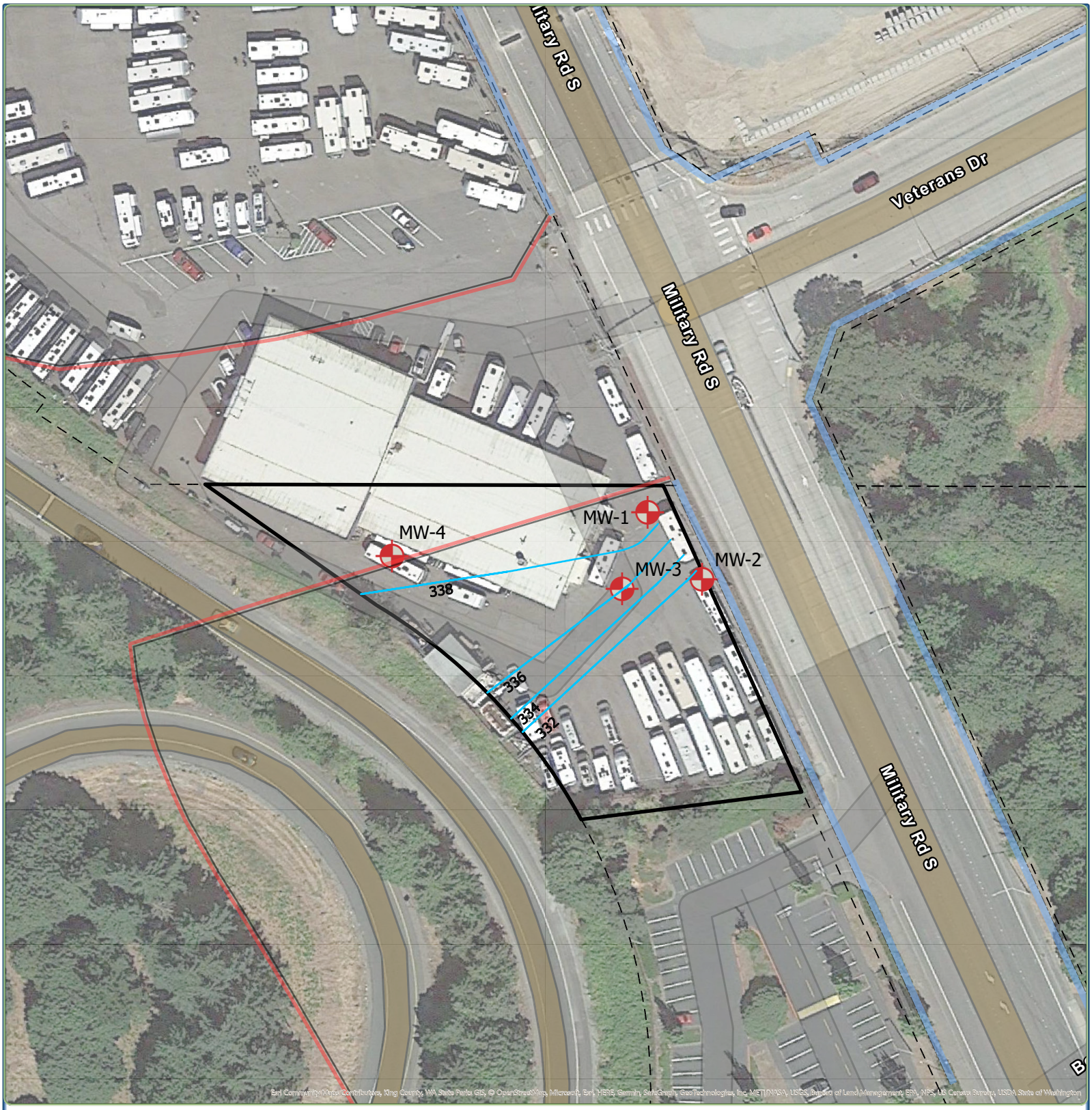
SITE VICINITY

POULSBO RV

23051 MILITARY ROAD S, KENT, WASHINGTON

AUG 2022
40757.022

FIGURE
1



SITE PLAN AND GROUNDWATER CONTOURS - DECEMBER 2021

23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

FIGURE: 2

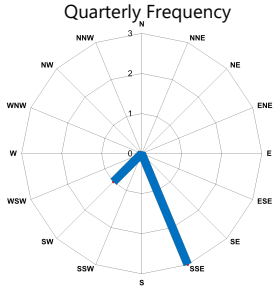
- Monitoring Wells
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Groundwater Contours, December 2021 (ft amsl)

1 INCH = 75 FEET

0 75 Feet

PBS

Groundwater Flow Direction
Quarterly Frequency



Tables

TABLE 1
GROUNDWATER ELEVATION DATA

Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Well ID	Date	Well Screen Interval (ft bgs)	TOC Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
MW-1	9/8/2021	20-35	364.636	27.57	337.07
	12/6/2021			25.12	339.52
	3/16/2022			24.32	340.32
	8/10/2022			26.32	338.32
MW-2	9/8/2021	20-35	361.096	Dry	Dry
	12/6/2021			30.10	331.00
	3/16/2022			29.00	332.10
	8/10/2022			31.00	330.10
MW-3	9/8/2021	20-35	364.134	27.68	336.45
	12/6/2021			27.87	336.26
	3/16/2022			22.81	341.32
	8/10/2022			26.08	338.05
MW-4	9/8/2021	20-32.25	365.19	30.59	334.60
	12/6/2021			25.50	339.69
	3/16/2022			25.42	339.77
	8/10/2022			26.29	338.90

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

Date	Groundwater Flow Direction	Hydraulic Gradient (feet/feet)
9/8/2021	60° West of South (southwest)	0.0178
12/6/2021	166° East of North (south-southeast)	0.1296
3/16/2022	159° East of North (south-southeast)	0.0648
8/10/2022	158° East of North (south-southeast)	0.0846

Groundwater flow direction was determined graphically on a scaled site plan with the tabulated groundwater elevations and survey data

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Sample Identification	Date	Results µg/L												
		TPHs			VOCs				cPAHs	Metals				
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes		Mercury	Arsenic	Cadmium	Chromium	Lead
MTCA Method A Cleanup Levels For Groundwater[a]		500	500	1000	5	1,000	700	1,000	0.1	2	5	5	50	15
MW-1	9/8/2021	<99	<99	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	12/6/2021	<116	<116	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<113	<113	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<92.9	<92.9	<50.0	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
MW-2	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<117	<117	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<114	<114	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/8/2021	<99.3	132	<50	<0.440	<0.750	<0.400	<1.00	<0.09	<0.100	<1.00	<0.125	2.40	<0.500
	12/6/2021	<118	<118	<50	<0.440	<0.750	<0.400	<1.00	<0.0995	<0.100	1.06	<0.125	3.22	<0.500
	3/16/2022	<115	257	<50	<0.440	<0.750	<0.400	<1.00	<0.0989	<0.100	<1.00	<0.125	0.86	<0.500
	8/10/2022	<93.8	271	<50	<0.440	<0.750	<0.400	<1.00	<0.0988	<0.100	<1.00	<0.200	3.31	<0.500
MW-4	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<120	<120	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<115	<115	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<94.7	183	<50	<0.550	<0.750	<0.400	<1.00	--	--	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per liter

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxics Control Act

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

ND - not detected above laboratory method detection limit

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

August 12, 2022

Archie Kollmorgen
Atkinson Construction
707 S Grady Way #500
Renton, Washington 98057

Via email: archie.kollmorgen@atkn.com

Regarding: Groundwater Sampling Event – March 2022
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
Contract No. 9424
PBS Project 40757.022
Department of Ecology VCP Program ID: NW0951
Date Sampled: March 16, 2022

Dear Archie:

Groundwater sampling is being conducted on a quarterly basis to monitor groundwater for contaminants of concern to determine whether they are present.

PBS Engineering and Environmental Inc. (PBS) completed the third such sampling event on March 16, 2022. The summary of activities performed at the site and the analytical results are described below.

REGULATORY CRITERIA

Contaminated site assessment and cleanup is conducted in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D of the Revised Code of Washington (RCW) and its implementation regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

Considering the current land use and unknown future land use, MTCA Method A Groundwater Cleanup Levels (CULs) for unrestricted land use are the cleanup criteria for this site. CULs for groundwater are presented in Table 2, along with analytical results.

GROUNDWATER SAMPLING ACTIVITIES

PBS gauged four monitoring wells: MW-1, MW-2, MW-3, and MW-4. Groundwater depth measurements ranged from 22.81 feet below ground surface (bgs) in MW-3 to 29.00 feet bgs in MW-2.

Groundwater purging and sampling was conducted employing low flow sampling methodology with pumping rates not exceeding 0.37 liters/minute and creating minimal drawdown in the well. A peristaltic pump was used to collect the samples. Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, total suspended solids, and oxidation-reduction potential) were recorded during purging using a YSI ProDSS water-quality analyzer equipped with a flow-through cell.

Once groundwater parameters stabilized, which indicates groundwater is representative of the aquifer formation, a sample was collected. PBS personnel wore new disposable nitrile gloves when collecting samples.

A total of four groundwater samples were collected, from monitoring wells MW-1, MW-2, MW-3, and MW-4. One duplicate sample was collected from MW3. Detailed groundwater sampling information is presented in Attachment I: Groundwater Sampling Forms.

The samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Fremont Analytical in Seattle, Washington, within specified holding times and under chain-of-custody documentation. Analyses for contaminants of concern were conducted under a standard turnaround time and included the following for all samples:

- Gasoline range total petroleum hydrocarbons (TPH) by method NWTPH-Gx
- Diesel range total petroleum hydrocarbons (TPH) by method NWTPH-Dx
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021

Additionally, the sample collected from MW-3 was analyzed for the following:

- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Methods 8270/625
- Dissolved MTCA-5 Metals (As, Cd, Cr, Hg, Pb) by EPA Methods 6020/200.8

GROUNDWATER FLOW DIRECTION

Groundwater elevations in each well were determined using depth to water measured from each top of casing (TOC) and TOC elevation data acquired during the August 2022 survey. Groundwater elevations are potentially influenced by well construction, subsurface lithology, localized precipitation infiltration, and subsurface hydraulic conductivity.

Groundwater flow direction was determined to be in a south-southeasterly direction. Hydraulic gradient is estimated to be approximately 0.0648 ft/ft. Groundwater elevation data for this sampling event is presented in Table 1 and shown on Figure 2.

GROUNDWATER ANALYTICAL RESULTS

No contaminants of concern were detected above CULs in the groundwater samples.

Arsenic was detected in MW-3 at a concentration of 1.06 micrograms per liter (µg/L), below the CUL of 5 µg/L. Chromium was also detected in MW-3 at a concentration of 3.22 µg/L (well below the CUL of 50 µg/L).

Groundwater analytical results and the CULs are presented in Table 2. The laboratory report and chain-of-custody documentation are presented in Attachment II.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this Groundwater Monitoring Event conducted on site, the following conclusions and recommendations are made:

- Concentrations of contaminants of concern were below CULs in all wells that were sampled.

- PBS recommends submitting a copy of this report to the Washington State Department of Ecology Northwest Regional office.

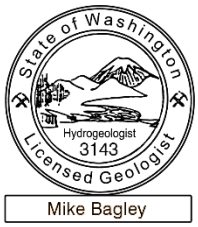
LIMITATIONS

PBS has prepared this report for use by Atkinson Construction. This report is for the exclusive use of the client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The findings and conclusions of this report are not scientific certainties but, rather, are probabilities based on professional judgment concerning the significance of the data gathered during this investigation.

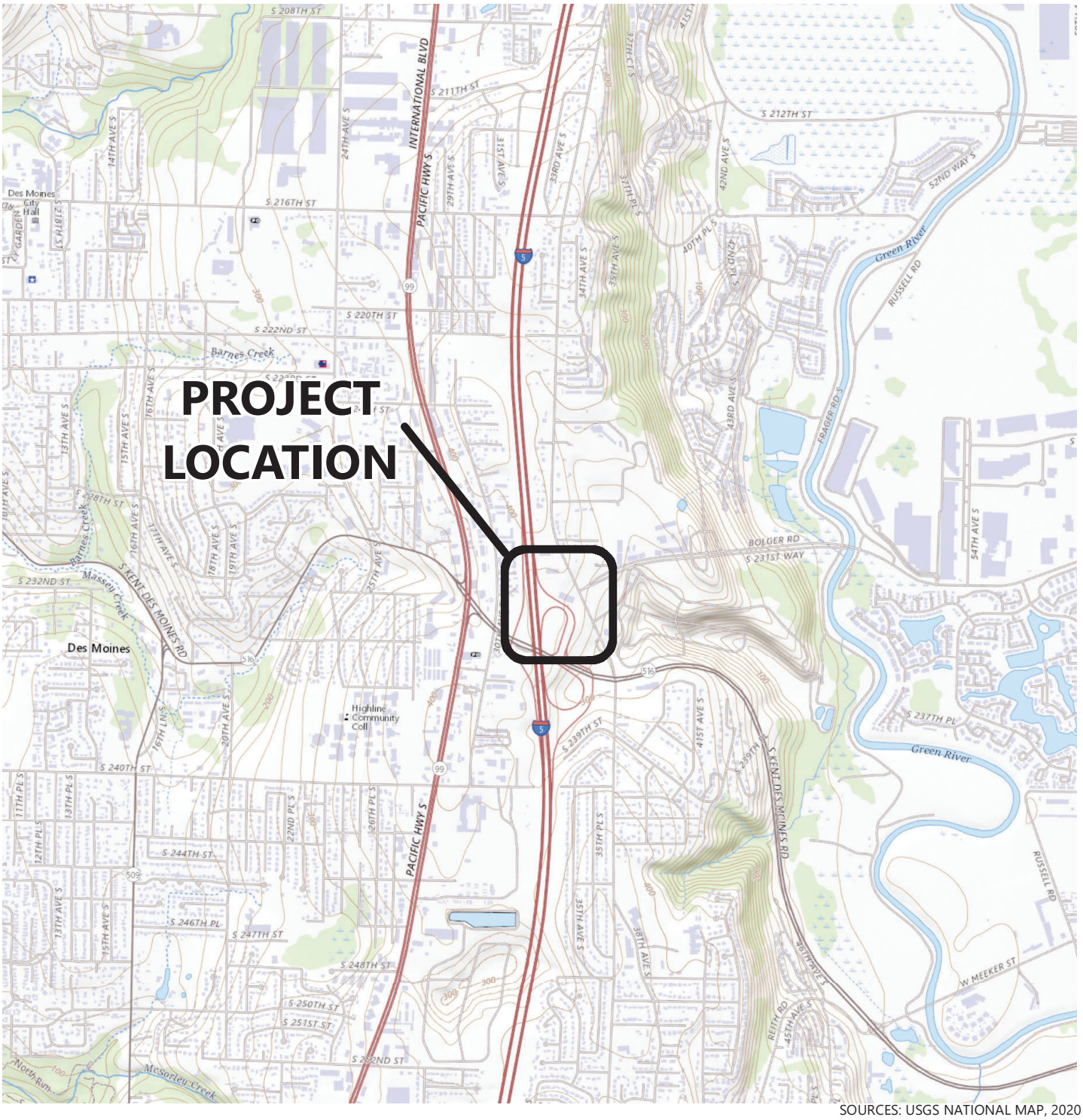
Sincerely,
PBS Engineering and Environmental Inc.

Mike Bagley, LHG
Project Geologist



Enclosed: Figure 1: Site Vicinity
Figure 2: Site Plan and Groundwater Contours – March 2022
Table 1: Groundwater Elevation Data
Table 2: Groundwater Analytical Results
Attachment I: Q3 2022 Groundwater Sampling Datasheets
Attachment II: Laboratory Reports and Chain-of-Custody Documentation

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT US FT

N

SCALE: 1 " = 2,000 feet

0 1,000 2,000 4,000 Feet

PREPARED FOR: ATKINSON CONSTRUCTION

L:\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\GIS\PoulsboRV GMEs\arcmap_fig1\Fig1_SiteVicinity_24kDefault_Aug2022.mxd; AUTHOR: mikeb

PBS

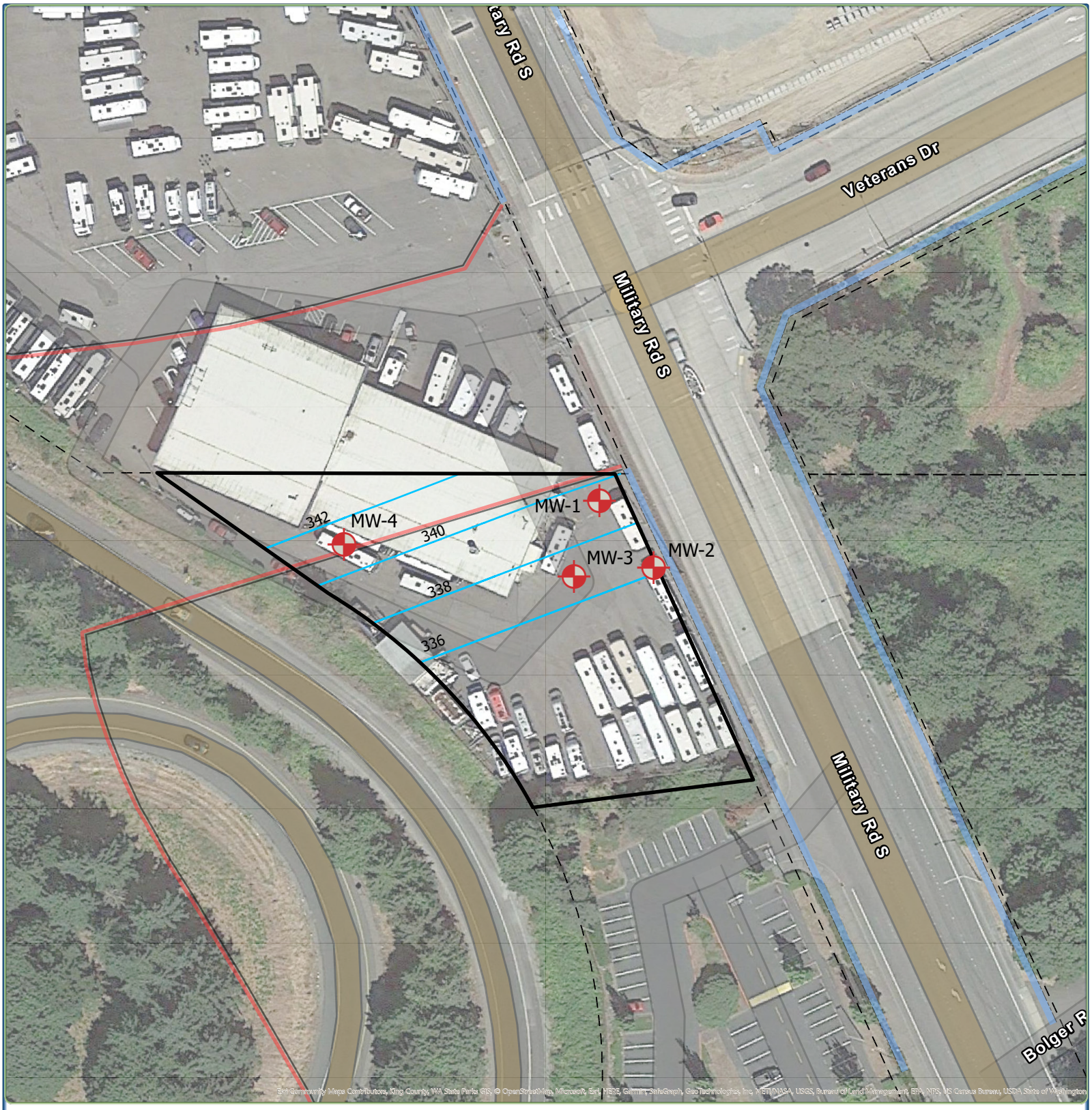
SITE VICINITY

POULSBO RV

23051 MILITARY ROAD S, KENT, WASHINGTON

AUG 2022
40757.022

FIGURE
1



SITE PLAN AND GROUNDWATER CONTOURS - MARCH 2022

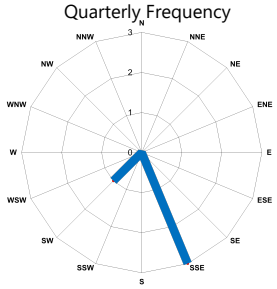
23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

FIGURE: 2

- Monitoring Wells
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Groundwater Contours, March 2022 (ft amsl)

Groundwater Flow Direction
Quarterly Frequency



1 INCH = 75 FEET

0 75 Feet

PBS

Tables

TABLE 1
GROUNDWATER ELEVATION DATA

Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Well ID	Date	Well Screen Interval (ft bgs)	TOC Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
MW-1	9/8/2021	20-35	364.636	27.57	337.07
	12/6/2021			25.12	339.52
	3/16/2022			24.32	340.32
	8/10/2022			26.32	338.32
MW-2	9/8/2021	20-35	361.096	Dry	Dry
	12/6/2021			30.10	331.00
	3/16/2022			29.00	332.10
	8/10/2022			31.00	330.10
MW-3	9/8/2021	20-35	364.134	27.68	336.45
	12/6/2021			27.87	336.26
	3/16/2022			22.81	341.32
	8/10/2022			26.08	338.05
MW-4	9/8/2021	20-32.25	365.19	30.59	334.60
	12/6/2021			25.50	339.69
	3/16/2022			25.42	339.77
	8/10/2022			26.29	338.90

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

Date	Groundwater Flow Direction	Hydraulic Gradient (feet/feet)
9/8/2021	60° West of South (southwest)	0.0178
12/6/2021	166° East of North (south-southeast)	0.1296
3/16/2022	159° East of North (south-southeast)	0.0648
8/10/2022	158° East of North (south-southeast)	0.0846

Groundwater flow direction was determined graphically on a scaled site plan with the tabulated groundwater elevations and survey data

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Sample Identification	Date	Results µg/L												
		TPHs			VOCs				cPAHs	Metals				
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes		Mercury	Arsenic	Cadmium	Chromium	Lead
MTCA Method A Cleanup Levels For Groundwater[a]		500	500	1000	5	1,000	700	1,000	0.1	2	5	5	50	15
MW-1	9/8/2021	<99	<99	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	12/6/2021	<116	<116	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<113	<113	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<92.9	<92.9	<50.0	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
MW-2	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<117	<117	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<114	<114	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/8/2021	<99.3	132	<50	<0.440	<0.750	<0.400	<1.00	<0.09	<0.100	<1.00	<0.125	2.40	<0.500
	12/6/2021	<118	<118	<50	<0.440	<0.750	<0.400	<1.00	<0.0995	<0.100	1.06	<0.125	3.22	<0.500
	3/16/2022	<115	257	<50	<0.440	<0.750	<0.400	<1.00	<0.0989	<0.100	<1.00	<0.125	0.86	<0.500
	8/10/2022	<93.8	271	<50	<0.440	<0.750	<0.400	<1.00	<0.0988	<0.100	<1.00	<0.200	3.31	<0.500
MW-4	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<120	<120	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<115	<115	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<94.7	183	<50	<0.550	<0.750	<0.400	<1.00	--	--	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per liter

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxics Control Act

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

ND - not detected above laboratory method detection limit

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

September 2, 2022

Archie Kollmorgen
Atkinson Construction
707 S Grady Way #500
Renton, Washington 98057

Via email: archie.kollmorgen@atkn.com

Regarding: Groundwater Sampling Event – August 2022
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
Contract No. 9424
PBS Project 40757.022
Department of Ecology VCP Program ID: NW0951
Date Sampled: August 10, 2021

Dear Archie:

Groundwater sampling is being conducted on a quarterly basis to monitor groundwater for contaminants of concern to determine whether they are present.

PBS Engineering and Environmental Inc. (PBS) completed the fourth such sampling event on August 10, 2022. The summary of activities performed at the site and the analytical results are described below.

REGULATORY CRITERIA

Contaminated site assessment and cleanup is conducted in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D of the Revised Code of Washington (RCW) and its implementation regulations, Chapter 173-340 of the Washington Administrative Code (WAC).

Considering the current land use and unknown future land use, MTCA Method A Groundwater Cleanup Levels (CULs) for unrestricted land use are the cleanup criteria for this site. CULs for groundwater are presented in Table 2, along with analytical results.

GROUNDWATER SAMPLING ACTIVITIES

PBS gauged four monitoring wells: MW-1, MW-2, MW-3, and MW-4. Groundwater depth measurements ranged from 26.08 feet below ground surface (bgs) in MW-3 to 31.00 feet bgs in MW-2.

Groundwater purging and sampling was conducted employing low flow sampling methodology with pumping rates not exceeding 0.37 liters/minute and creating minimal drawdown in the well. A peristaltic pump was used to collect the samples. Groundwater field parameters (conductivity, pH, temperature, dissolved oxygen, total suspended solids, and oxidation-reduction potential) were recorded during purging using a YSI ProDSS water-quality analyzer equipped with a flow-through cell.

Once groundwater parameters stabilized, which indicates groundwater is representative of the aquifer formation, a sample was collected. PBS personnel wore new disposable nitrile gloves when collecting samples.

A total of three groundwater samples were collected, from monitoring wells MW-1, MW-3, and MW-4. One duplicate sample was collected from MW3. Groundwater could not be retrieved in sufficient quantity to sample well MW-2 using low-flow methodology. Detailed groundwater sampling information is presented in Attachment I: Groundwater Sampling Forms.

The samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to Fremont Analytical in Seattle, Washington, within specified holding times and under chain-of-custody documentation. Analyses for contaminants of concern were conducted under a standard turnaround time and included the following for all samples:

- Gasoline range total petroleum hydrocarbons (TPH) by method NWTPH-Gx
- Diesel range total petroleum hydrocarbons (TPH) by method NWTPH-Dx
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021

Additionally, the sample collected from MW-3 was analyzed for the following:

- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Methods 8270/625
- Dissolved MTCA-5 Metals (As, Cd, Cr, Hg, Pb) by EPA Methods 6020/200.8

GROUNDWATER FLOW DIRECTION

Groundwater elevations in each well were determined using depth to water measured from each top of casing (TOC) and TOC elevation data acquired during the August 2022 survey. Groundwater elevations are potentially influenced by well construction, subsurface lithology, localized precipitation infiltration, and subsurface hydraulic conductivity.

Groundwater flow direction was determined to be in a south-southeasterly direction. Hydraulic gradient is estimated to be approximately 0.0846 feet/foot. Groundwater elevation data for this sampling event is presented in Table 1 and shown on Figure 2.

GROUNDWATER ANALYTICAL RESULTS

No contaminants of concern were detected above CULs in the groundwater samples.

Heavy oil-range petroleum hydrocarbons were detected in MW-3 at a concentration of 271 micrograms per liter (µg/L) and in MW-4 at a concentration of 183 µg/L, both of which are below the CUL of 500 µg/L. Chromium was also detected in MW-3 at a concentration of 3.31 µg/L (well below the CUL of 50 µg/L).

Groundwater analytical results and the CULs are presented in Table 2. The laboratory report and chain-of-custody documentation are presented in Attachment II.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this Groundwater Monitoring Event conducted on site, the following conclusions and recommendations are made:

- Concentrations of contaminants of concern were below CULs in all wells that were sampled.
- PBS recommends submitting a copy of this report to the Washington State Department of Ecology Northwest Regional office.

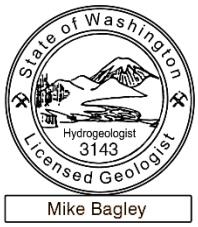
LIMITATIONS

PBS has prepared this report for use by Atkinson Construction. This report is for the exclusive use of the client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced, in total or in part, without the expressed written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The findings and conclusions of this report are not scientific certainties but, rather, are probabilities based on professional judgment concerning the significance of the data gathered during this investigation.

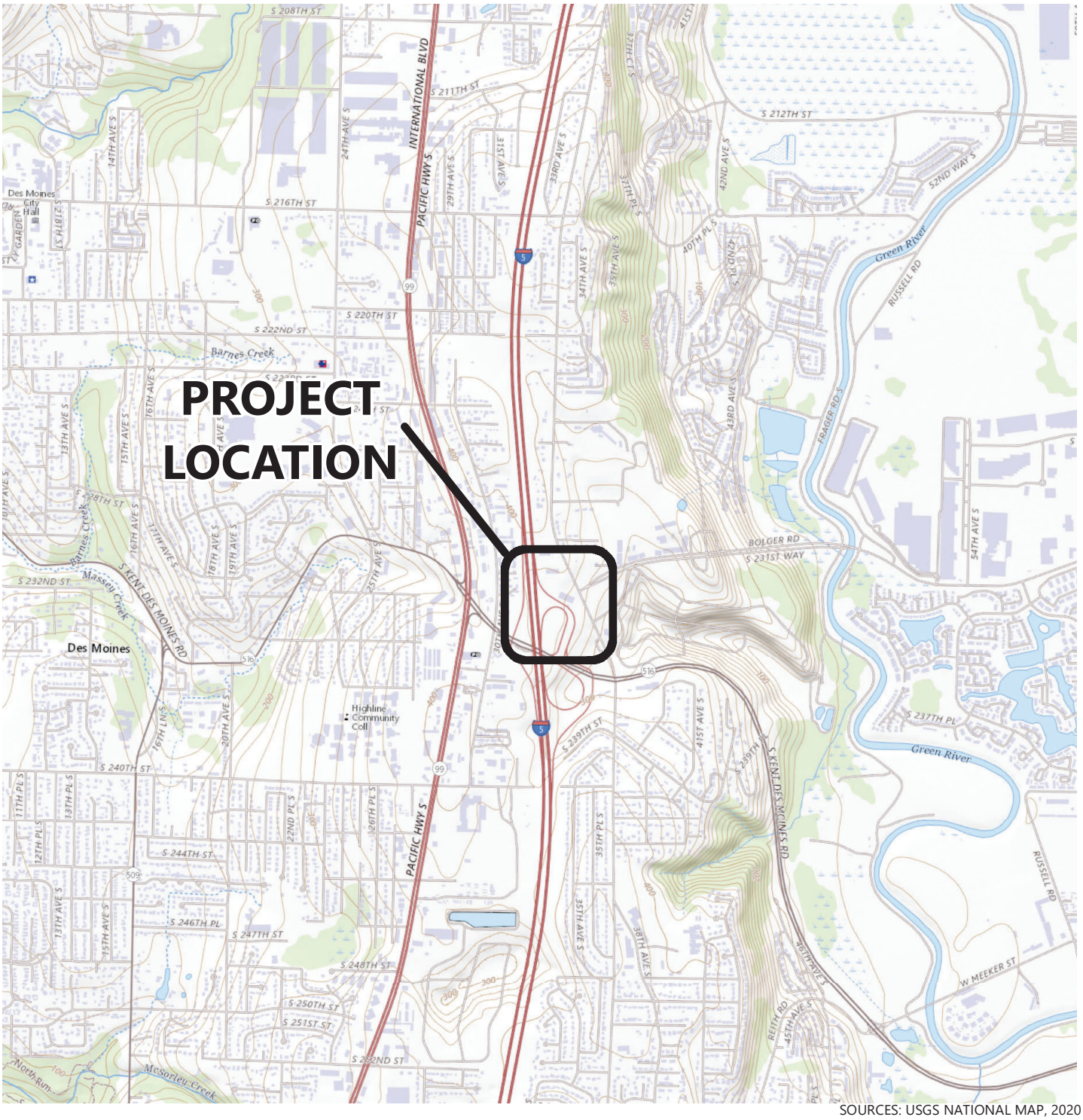
Sincerely,
PBS Engineering and Environmental Inc.

Mike Bagley, LHG
Project Geologist



Enclosed:
Figure 1: Site Vicinity
Figure 2: Site Plan and Groundwater Contours – August 2022
Table 1: Groundwater Elevation Data
Table 2: Groundwater Analytical Results
Attachment I: Q3 2022 Groundwater Sampling Datasheets
Attachment II: Laboratory Reports and Chain-of-Custody Documentation

Figures



SOURCES: USGS NATIONAL MAP, 2020
PROJECTION: NAD 2011 WA STATE PLANE NORTH LAMBERT US FT

N

SCALE: 1 " = 2,000 feet

0 1,000 2,000 4,000 Feet

PREPARED FOR: ATKINSON CONSTRUCTION

L:\Projects\40500\40757.000 Guy Atkinson Construction\40757.022 SR 509 Completion Stage 1b\GIS\PoulsboRV GMEs\arcmap_fig1\Fig1_SiteVicinity_24kDefault_Aug2022.mxd; AUTHOR: mikeb

PBS

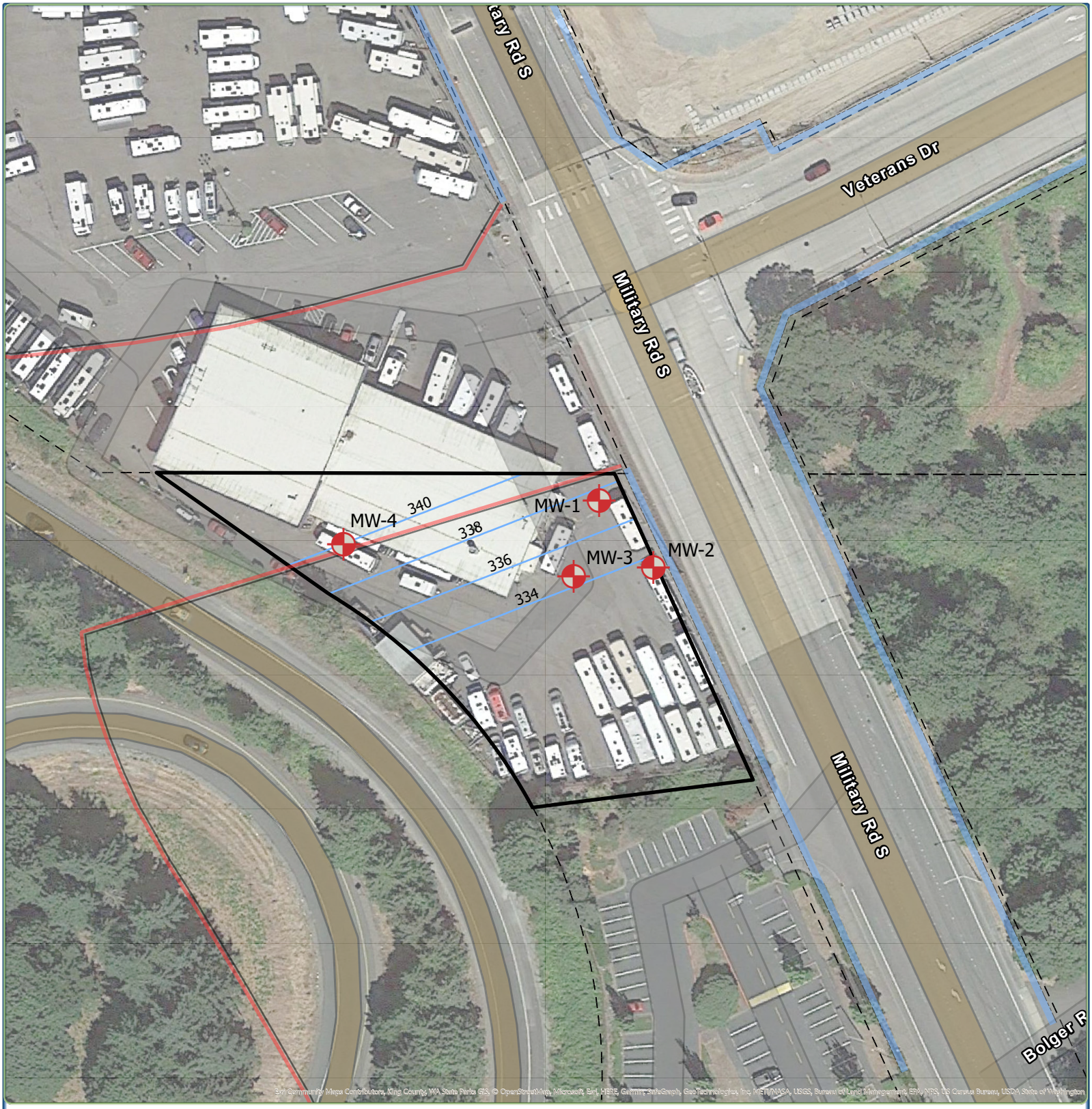
SITE VICINITY

POULSBO RV

23051 MILITARY ROAD S, KENT, WASHINGTON

AUG 2022
40757.022

FIGURE
1



SITE PLAN AND GROUNDWATER CONTOURS - AUGUST 2022

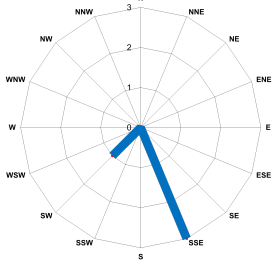
23051 Military Road South, Kent, Washington

CLIENT: ATKINSON CONSTRUCTION | DATE: AUG 2022 | PROJECT: 40757.022

FIGURE: 2

- Monitoring Wells
- Site Boundary
- Existing Right-of-Way Boundary
- Proposed New Right-of-Way Boundary
- Groundwater Contours, August 2022 (ft amsl)

Groundwater Flow Direction
Quarterly Frequency



1 INCH = 75 FEET

0 75 Feet

PBS

Tables

TABLE 1
GROUNDWATER ELEVATION DATA

Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Well ID	Date	Well Screen Interval (ft bgs)	TOC Elevation (ft amsl)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)
MW-1	9/8/2021	20-35	364.636	27.57	337.07
	12/6/2021			25.12	339.52
	3/16/2022			24.32	340.32
	8/10/2022			26.32	338.32
MW-2	9/8/2021	20-35	361.096	Dry	Dry
	12/6/2021			30.10	331.00
	3/16/2022			29.00	332.10
	8/10/2022			31.00	330.10
MW-3	9/8/2021	20-35	364.134	27.68	336.45
	12/6/2021			27.87	336.26
	3/16/2022			22.81	341.32
	8/10/2022			26.08	338.05
MW-4	9/8/2021	20-32.25	365.19	30.59	334.60
	12/6/2021			25.50	339.69
	3/16/2022			25.42	339.77
	8/10/2022			26.29	338.90

Abbreviations & Acronyms:
ft = feet
bgs = below ground surface
toc = top of casing
btoc = below top of casing
amsl = above mean sea level - NAVD 88 via Washington State Reference Network (WSRN)

Date	Groundwater Flow Direction	Hydraulic Gradient (feet/feet)
9/8/2021	60° West of South (southwest)	0.0178
12/6/2021	166° East of North (south-southeast)	0.1296
3/16/2022	159° East of North (south-southeast)	0.0648
8/10/2022	158° East of North (south-southeast)	0.0846

Groundwater flow direction was determined graphically on a scaled site plan with the tabulated groundwater elevations and survey data

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Poulsbo RV
Puget Sound Gateway Program
SR 509 Completion, Stage 1B
PBS Project 40757.022

Sample Identification	Date	Results µg/L												
		TPHs			VOCs				cPAHs	Metals				
		Diesel	Heavy Oil	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes		Mercury	Arsenic	Cadmium	Chromium	Lead
MTCA Method A Cleanup Levels For Groundwater[a]		500	500	1000	5	1,000	700	1,000	0.1	2	5	5	50	15
MW-1	9/8/2021	<99	<99	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	12/6/2021	<116	<116	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<113	<113	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<92.9	<92.9	<50.0	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
MW-2	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<117	<117	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<114	<114	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	9/8/2021	<99.3	132	<50	<0.440	<0.750	<0.400	<1.00	<0.09	<0.100	<1.00	<0.125	2.40	<0.500
	12/6/2021	<118	<118	<50	<0.440	<0.750	<0.400	<1.00	<0.0995	<0.100	1.06	<0.125	3.22	<0.500
	3/16/2022	<115	257	<50	<0.440	<0.750	<0.400	<1.00	<0.0989	<0.100	<1.00	<0.125	0.86	<0.500
	8/10/2022	<93.8	271	<50	<0.440	<0.750	<0.400	<1.00	<0.0988	<0.100	<1.00	<0.200	3.31	<0.500
MW-4	9/8/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/6/2021	<120	<120	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	3/16/2022	<115	<115	<50	<0.440	<0.750	<0.400	<1.00	--	--	--	--	--	--
	8/10/2022	<94.7	183	<50	<0.550	<0.750	<0.400	<1.00	--	--	--	--	--	--

[a] Washington State Department of Ecology Model Toxics Control Act Method A Cleanup Level for Unrestricted Land Use as established in WAC 173-340-900

µg/L - micrograms per liter

BOLD indicates above MTCA Method A Cleanup Levels for Groundwater

<50 - less than the laboratory reporting limit

MTCA - Washington State Department of Ecology Model Toxics Control Act

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

ND - not detected above laboratory method detection limit

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

Appendix C

Site Photographs

Photographs of Remedial Action Implementation at the Site

Photo 1. Excavation area as seen looking south on September 24, 2023.

Photo 2. Remedial excavation as seen looking northwest on September 24, 2023. Oil Water separator visible in right center of frame.

Photo 3. Remedial excavation as seen looking southeast on September 26, 2023. Clean overburden pile covered by white plastic visible top right of frame. A portion of the petroleum contaminated soil pile covered by white plastic is also visible top left of frame.

Photo 4. Remedial excavation as seen looking northwest on September 26, 2023.

Photo 5. Remedial excavation as seen looking northeast on September 26, 2023.

Appendix D
Disposal Documentation

№ 8452

RIVERS EDGE ENVIRONMENTAL SERVICES, INC

Phone 425.584.7089 • 17115 SE 270th PL, Suite 106 Covington, WA 98042

DELIVERY/TONNAGE TICKET

Contractor #RIVEREE855DT

Driver Name: Rick

Date: 9/29/23 Truck#: 32

TRAVEL TIME

Begin: End:

Driver Total Hours:

Total Travel: Mileage:

Lunch Down: Begin Mileage:

Fuel: Total Miles:

Pre-Trip ☐ Post-Trip ☐ DVIR #:

Out-of-State Mileage: State of Travel:

In: Out:

Trips: Total Miles:

Contractor Name: Atkinson

PO/Job: 23-246

Bill By Ton: ☐ Yard: ☐ Job#: ~~23-243~~

Start Time: 6:00/11:15 Lunch Time: Ø

Stop Time: 8:30/4:15 Down Time: Ø

Total Time: 7.5 PW

Reason for Delay (Standby)

Non PW 1.5 / 2

T&T 1.0 / 3

2.5

T&T/ SOLO	MATERIAL	HAULED FROM	ARRIVE TIME	LEAVE TIME	HAULED TO	ARRIVE TIME	LEAVE TIME	TICKET #	YARDS/ TONS
TT	~~[illegible]~~ Hogfuel	REES	6:00	6:30	~~[illegible]~~ 23-243	6:50			
TT	Export	23-243	11:53	12:06	DRF	12:25	12:33	85327	
"	"	"	12:55	1:12	"	1:30	1:37	85328	
"	"	"	2:00	2:15	"	2:40	2:45	85329	

Any on the job injury? Yes ☐ No ☑

Driver's Signature [signature]

Total Loads 4

By signing this document, I certify that all of the above information is true and accurate. Signature of the ticket will be considered your notice of our intent to lien this project. Invoices not paid after the tenth of the month following the date that services were rendered are past due and shall accrue interest at a rate of 18%. Interstate Commerce terms are Net 30 days; WA Interstate are Net 30, unless the carrier has made special terms. In the event a dispute arises, the prevailing party shall be entitled to actual attorney fees and costs incurred, regardless if suit is commenced. These attorney fees, collection costs, court costs and similar related expenses expending or incurred by Rivers Edge Environmental Services, Inc. in enforcement of collection shall include, but not limited to, telephone, postal charges, and reasonable compensation for time of Rivers Edge Environmental Services, Inc's representatives and attorneys.

WARRANTY: RIVERS EDGE ENVIRONMENTAL SERVICES, INC. AND ITS SUPPLIERS AND SUBCONTRACTORS WARRANT ALL MATERIALS SOLD HEREUNDER CONFORM TO RIVERS EDGE ENVIRONMENTAL SERVICES, INC. QUOTATION. RIVERS EDGE ENVIRONMENTAL SERVICES, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE MATERIALS, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER.

LIMITATION OF LIABILITY: Rivers Edge Environmental Services, Inc. liability to customer, however caused, whether in contract, tort, or otherwise, including without limitation, any indemnification, liabilities or damage for property or personal loss, shall in no event exceed the total compensation paid Rivers Edge Environmental Services, Inc. hereunder. This limitation of liability shall survive the completion or termination of this transaction.

Authorized Rep Signature:

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85327

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 09/29/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	09/29/2023 12:27:56	Scale 1	kfunk2	
Out	09/29/2023 12:27:56		kfunk2	

Gross	110820 lb
Tare	45620 lb
Net	65200 lb
Tons	32.60

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	32.60	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	32.60	Tons				KING

Total Tax
Total Ticket

Driver`s Signature RB

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85328

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 09/29/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	09/29/2023 13:30:54	Scale 1	kfunk2	
Out	09/29/2023 13:30:54		kfunk2	

Gross	107720 lb
Tare	45620 lb
Net	62100 lb
Tons	31.05

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	31.05	Tons				KING
2	ENERGY-Energy Surcharge	100		%				
3	GOND TON-GONDOLA PER TON	100	31.05	Tons				

Total Tax
Total Ticket

Driver`s Signature KB

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85329

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 09/29/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	09/29/2023 14:36:26	Scale 1	kfunk2	
Out	09/29/2023 14:36:26		kfunk2	

Gross	111100 lb
Tare	45620 lb
Net	65480 lb
Tons	32.74

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	32.74	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	32.74	Tons				KING

Total Tax
Total Ticket

Driver`s Signature RB

№ 8454

RIVERS EDGE ENVIRONMENTAL SERVICES, INC

Phone 425.584.7089 • 17115 SE 270th PL, Suite 106 Covington, WA 98042

DELIVERY/TONNAGE TICKET

Contractor #RIVEREE855DT

Driver Name: Rick

Date: 10/2/23 Truck#: 32

TRAVEL TIME

Begin: End:

Driver Total Hours:

Total Travel: Mileage:

Lunch Down: Begin Mileage:

Fuel: Total Miles:

Pre-Trip ☐ Post-Trip ☐ DVIR #:

Out-of-State Mileage: State of Travel:

In: Out:

Trips: Total Miles:

Contractor Name: Atkinson

PO/Job: 23.246

Bill By Ton: ☐ Yard: ☐ Job#: ~~23-243~~

Start Time: 6:15 Lunch Time: 0

Stop Time: 1:45 Down Time: 0

Total Time: 7.5 PW

Reason for Delay (Standby)

non PW 1.25

PW T&T 6.25

T&T/ SOLO	MATERIAL	HAULED FROM	ARRIVE TIME	LEAVE TIME	HAULED TO	ARRIVE TIME	LEAVE TIME	TICKET #	YARDS/ TONS
TT	Export	23-243	6:52	7:12	DRF	7:33	7:40	85332	
"	"	"	8:00	8:12	"	8:33	8:37	85335	
"	"	"	8:56	9:10	"	9:28	9:34	85341	
"	"	"	9:54	10:10	"	10:30	10:35	85348	
"	"	"	11:00	11:24	"	11:45	11:48	85359	
"	"	"	12:10	12:21	"	12:42	12:50	85362	

Any on the job injury? Yes ☐ No ☐

Driver's Signature

Total Loads

By signing this document, I certify that all of the above information is true and accurate. Signature of the ticket will be considered your notice of our intent to lien this project. Invoices not paid after the tenth of the month following the date that services were rendered are past due and shall accrue interest at a rate of 18%. Interstate Commerce terms are Net 30 days; WA Interstate are Net 30, unless the carrier has made special terms. In the event a dispute arises, the prevailing party shall be entitled to actual attorney fees and costs incurred, regardless if suit is commenced. These attorney fees, collection costs, court costs and similar related expenses expending or incurred by Rivers Edge Environmental Services, Inc. in enforcement of collection shall include, but not limited to, telephone, postal charges, and reasonable compensation for time of Rivers Edge Environmental Services, Inc's representatives and attorneys.

WARRANTY: RIVERS EDGE ENVIRONMENTAL SERVICES, INC. AND ITS SUPPLIERS AND SUBCONTRACTORS WARRANT ALL MATERIALS SOLD HEREUNDER CONFORM TO RIVERS EDGE ENVIRONMENTAL SERVICES, INC. QUOTATION. RIVERS EDGE ENVIRONMENTAL SERVICES, INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE MATERIALS, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER.

LIMITATION OF LIABILITY: Rivers Edge Environmental Services, Inc. liability to customer, however caused, whether in contract, tort, or otherwise, including without limitation, any indemnification, liabilities or damage for property or personal loss, shall in no event exceed the total compensation paid Rivers Edge Environmental Services, Inc. hereunder. This limitation of liability shall survive the completion or termination of this transaction.

Authorized Rep Signature:

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85332

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	10/02/2023 07:34:17	Scale 1	kfunk2	
Out	10/02/2023 07:34:17		kfunk2	

Gross	106280 lb
Tare	45620 lb
Net	60660 lb
Tons	30.33

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	30.33	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	30.33	Tons				KING

Total Tax
Total Ticket

Driver`s Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85335

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/02/2023 08:30:35	Scale 1	kfunk2		Gross	105960 lb
Out	10/02/2023 08:30:35		kfunk2		Tare	45620 lb
					Net	60340 lb
					Tons	30.17

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	30.17	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	30.17	Tons				KING

Total Tax
Total Ticket

Driver`s Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85341

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	10/02/2023 09:29:02	Scale 1	kfunk2	
Out	10/02/2023 09:29:02		kfunk2	

Gross	100080 lb
Tare	45620 lb
Net	54460 lb
Tons	27.23

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	27.23	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	27.23	Tons				KING

Total Tax
Total Ticket

Driver`s Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85348

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/02/2023 10:38:46	Scale 1	kfunk2		Gross	104700 lb
Out	10/02/2023 10:38:46		kfunk2		Tare	45620 lb
					Net	59080 lb
					Tons	29.54

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	29.54	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	29.54	Tons				KING

Total Tax
Total Ticket

Driver`s Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85359

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound		
In	10/02/2023 11:45:53	Scale 1	kfunk2		Gross	103500 lb
Out	10/02/2023 11:45:53		kfunk2		Tare	45620 lb
					Net	57880 lb
					Tons	28.94

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	28.94	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	28.94	Tons				KING

Total Tax
Total Ticket

Driver`s Signature RB

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Ph: 206-694-0600

Original
Ticket# 85362

Customer Name RIVERSEDGEENVIRONMENTAL RIVER
Ticket Date 10/02/2023
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 23-246/118376WA

Carrier SELF SELF
Vehicle# RE32
Container
Driver RICK BOTT
Check#
Billing# 0000009
Grid

Volume

	Time	Scale	Operator	Inbound
In	10/02/2023 12:41:56	Scale 1	kfunk2	
Out	10/02/2023 12:41:56		kfunk2	

Gross	108640 lb
Tare	45620 lb
Net	63020 lb
Tons	31.51

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Daily Cover-PCS-Tons-Pet	100	31.51	Tons				KING
2	ENERGY-Energy Surcharge	100		%				KING
3	GOND TON-GONDOLA PER TON	100	31.51	Tons				KING

Total Tax
Total Ticket

Driver`s Signature RB

PRS Group, Inc.
3003 Taylor Way
Tacoma, WA 98421

WASTE PROFILE

(not valid until signed by generator and PRS representative.)

Phone 253-383-4175
jay@prsplant.net
prs@prsplant.net

*** PRS to complete this section. ***

Profile #: 9435-B	**Approved By:**	**Date Active:** 1/9/2023-1/9/2026
Waste Name: Oily waste water and sludge	**Process Generation Waste:** Routine system maintenance	

1. Generator and PRS Customer Information:

Generator Name: Atkinson Construction	**PRS Customer Name:** Rivers Edge Environmental Services, Inc.
Technical Contact: Matt Taylor	**Technical Contact:** Dan Kuhn
Waste Generation Address: 23031 Military Rd. South	**Mailing Address:** 17115 SE 270th Place, Suite E106
City: Kent	**City:** Covington
State: WA	**State:** WA
Federal Cleanup Site? Yes ☐ No ☑	**Phone Number:** 206.962.0323
Type of Business: Former RV Sales Lot	**Email Address:** dkuhn@rivers.city
Phone Number: 425-757-4549	
Email Address: matt.taylor@atkn.com	

2. PHYSICAL & CHEMICAL CHARACTERISTICS OF WASTE

Fill in answer or check box that applies

Color: Brownish to Black	**Chlorinated Solvents?** Yes ☐ No ☑
Odor: Oily	**PCB's?** Yes ☐ No ☑
pH: 6-9	**Cyanide?** Yes ☐ No ☑
# Of Layers: Two	**Reactive Waste?** Yes ☐ No ☑
Sample Provided? Yes ☐ No ☑	**TSCA Waste?** Yes ☐ No ☑
SDS Provided? Yes ☐ No ☑	**Oil Present?** Yes ☑ No ☐ **% Oil:** 5
Lab Report Provided? Yes ☑ No ☐	**Fuel Present?** Yes ☐ No ☑
Generator Knowledge? Yes ☑ No ☐	**Flash Point:** <100F ☐ 100F to 140F ☐ >140F ☑

3. WASTE MATRIX – List All Phases of Waste and Estimated Percentage

Oily Stormwater	50	% to	60	%
Sludge	40	% to	50	%
		% to		%
		% to		%

4. List All Lab Testing Performed On This Waste: (provide copies of all lab data with this form)

Date	Tests Performed and Method
11/21/22	Total Cd, Cr, Cu, Pb, Ni, Zn, Mo, % Soilds
12/16/22	TCLP Chromium
12/16/22	Fish Bioassay

5. Waste Name, Description and Additional Information

Waste Name (what is the waste stream?): Sludge from an OWS

Give a detailed description how waste is created and any additional pertinent information:

Accumulated sludge in the bottom of an OWS for on site stormwater system.

6. Shipping Information

Containers: ☐ **Type:**	**Bulk:** ☑ **Truck Type:** Vactor	**Quantity To Ship:** 5 tons	**Frequency:** 1 time
Transporter Name: Northern Environmental or ProVac (TBD)			
DOT Shipping Description: Material not regulated by DOT			

7. Testing Overview

When testing is required for typical storm wastes that test suite would include: % solids and the following heavy metals in Total form: Cd, Cr, Cu, Pb, Ni, Zn and Mo.

Fueling stations that dispense gasoline will need a BTEX report in addition to the total metals scan above.

ALL FIELDS NEED ENTRIES OTHERWISE THE SOFTWARE WON'T GENERATE A PROFILE FOR SIGNATURE.

PRS will review this document and depending on how complete this document is we will reply with needing more information or an active profile.

Please allow 2 to 3 days for a response.

8. Generator Certification

By signing this profile sheet, the generator (representative or agent) certifies that all of the information submitted on this profile, attached documentation, and any clarifications, additions or modifications made, are correct and true. In addition, generator agrees to the following requirements and conditions:

1. The generator or the person arranging the disposal of the waste being tendered has personal knowledge of the contents of the waste stream and does not suspect or know of any hazardous or dangerous wastes that may be connected in any manner with the waste stream being tendered herewith, including but not limited to any measurable quantities of polychlorinated biphenyls (PCB's), Washington state listed, Dangerous, or Hazardous Waste, nor any US EPA hazardous, or dangerous wastes or by reference to US EPA rules 40 CFR Part 261, subpart C.
2. All relevant information that may give light as to the designation of this waste stream has been made available to PRS. The signer certifies the profile sheet, associated questionnaire and attendant documents are accurate, true and correct.
3. When samples are required of the generator or agent the sample is certified to be representative, true and accurate sample of the waste stream
4. Generator and/or arranger agree to be responsible for an indemnity and hold PRS harmless and indemnify PRS for any damages, expenses, processing non-conforming wastes to PRS.
5. PRS will take samples (Retains) and may analyze waste materials tendered. Internal sampling and analysis is the sole property of PRS Group.

Signature: Matt Taylor Printed Name: Matt Taylor Title: Construction Manager Date: 1/5/2023

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 21, 2022

Dan Kuhn, Project Manager
Rivers Edge Environmental
17115 SE 270th Pl Suite 106
Covington, WA 98042

Dear Mr Kuhn:

Included are the results from the testing of material submitted on November 4, 2016 from the Atkinson OWS 21-141, F&BI 211084 project. There are 7 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: accounting@rivers.city
RDG1121R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 4, 2022 by Friedman & Bruya, Inc. from the Rivers Edge Environmental Atkinson OWS 21-141, F&BI 211084 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Rivers Edge Environmental
211084 -01	ATKNOWS

All quality control requirements were acceptable.

Date of Report: 11/21/22
Date Received: 11/04/22
Project: Atkinson OWS 21-141, F&BI 211084
Date Extracted: NA
Date Analyzed: 09/28/22

RESULTS FROM THE ANALYSIS OF THE SOIL SAMPLES FOR PERCENT MOISTURE USING ASTM D2216-98

Sample ID Laboratory ID	% Moisture
ATKNOWS 211084-01	47

Analysis For Total Metals By EPA Method 6020B

Client ID:	ATKNOWS	Client:	Rivers Edge Environmental
Date Received:	11/04/22	Project:	Atkinson OWS 21-141
Date Extracted:	11/09/22	Lab ID:	211084-01
Date Analyzed:	11/12/22	Data File:	211084-01.234
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Cadmium	1.08
Chromium	372
Lead	72.2
Molybdenum	7.03
Nickel	80.3
Zinc	985

Analysis For Total Metals By EPA Method 6020B

Client ID:	ATKNOWS	Client:	Rivers Edge Environmental
Date Received:	11/04/22	Project:	Atkinson OWS 21-141
Date Extracted:	11/09/22	Lab ID:	211084-01 x10
Date Analyzed:	11/16/22	Data File:	211084-01 x10.140
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Copper	2,520

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Rivers Edge Environmental
Date Received:	Not Applicable	Project:	Atkinson OWS 21-141
Date Extracted:	11/09/22	Lab ID:	I2-769 mb2
Date Analyzed:	11/12/22	Data File:	I2-769 mb2.210
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Cadmium	<1
Chromium	<1
Copper	<5
Lead	<1
Molybdenum	<1
Nickel	<1
Zinc	<5

Date of Report: 11/21/22
Date Received: 11/04/22
Project: Atkinson OWS 21-141, F&BI 211084

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

Laboratory Code: 211107-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Cadmium	mg/kg (ppm)	10	6.00	85	77	75-125	10
Chromium	mg/kg (ppm)	50	<5	86	84	75-125	2
Copper	mg/kg (ppm)	50	66.9	77	75	75-125	3
Lead	mg/kg (ppm)	50	44.1	295 b	78	75-125	116 b
Molybdenum	mg/kg (ppm)	20	<5	84	85	75-125	1
Nickel	mg/kg (ppm)	25	<5	91	89	75-125	2
Zinc	mg/kg (ppm)	50	867	0 b	0 b	75-125	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Cadmium	mg/kg (ppm)	10	102	80-120
Chromium	mg/kg (ppm)	50	104	80-120
Copper	mg/kg (ppm)	50	104	80-120
Lead	mg/kg (ppm)	50	104	80-120
Molybdenum	mg/kg (ppm)	20	108	80-120
Nickel	mg/kg (ppm)	25	104	80-120
Zinc	mg/kg (ppm)	50	104	80-120

Data Qualifiers & Definitions

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

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

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

211084

SAMPLE CHAIN OF CUSTODY

11/04/22 BI2.

Page # 1 of 1

Report To Dan Kuhn

Company Rivers Edge Environmental Svcs

Address 17115 SE 270th Place Ste E106

City, State, ZIP Covington WA 98042

Phone 206-962-0323 Email DKuhn@Rivers.City

SAMPLERS (*signature*)

PROJECT NAME: ATKINSON OWS

PO # ~~AFE~~ 21-141

REMARKS: Project Specific RLs - Yes / No

INVOICE TO

TURNAROUND TIME
(Standard Turnaround)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
(Dispose after 30 days)
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Total-Cd,Cr,Pb,Ni,Zn,Mo	% Solids				Notes
ATKNOWS	01A-B	11-3	2pm	sludge	2							X	X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Patrick Wagner	Recs	11-4-22	8am
Received by:	ANNUB	FXB	11/4/22	0800
Relinquished by:				
Received by:		Samples received at 22°C		

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 16, 2022

Dan Kuhn, Project Manager
Rivers Edge Environmental
17115 SE 270th Pl Suite 106
Covington, WA 98042

Dear Mr Kuhn:

Included are the additional results from the testing of material submitted on November 4, 2016 from the Atkinson OWS 21-141, F&BI 211084 project. There are 5 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: accounting@rivers.city
RDG1216R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 4, 2022 by Friedman & Bruya, Inc. from the Rivers Edge Environmental Atkinson OWS 21-141, F&BI 211084 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Rivers Edge Environmental
211084 -01	ATKNOWS

The sample was sent to Rainier Environmental for dangerous waste characterization analysis. The report is enclosed.

All quality control requirements were acceptable.

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	ATKNOWS	Client:	Rivers Edge Environmental
Date Received:	11/04/22	Project:	Atkinson OWS 21-141
Date Extracted:	12/08/22	Lab ID:	211084-01
Date Analyzed:	12/09/22	Data File:	211084-01.038
Matrix:	Soil/Sludge	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Chromium	<1	5.0

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	Method Blank	Client:	Rivers Edge Environmental
Date Received:	Not Applicable	Project:	Atkinson OWS 21-141
Date Extracted:	12/08/22	Lab ID:	I2-879 mb
Date Analyzed:	12/09/22	Data File:	I2-879 mb.122
Matrix:	Soil/Sludge	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Chromium	<1	5.0

Date of Report: 12/16/22
Date Received: 11/04/22
Project: Atkinson OWS 21-141, F&BI 211084

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL/SLUDGE SAMPLES FOR TCLP METALS USING EPA METHODS 6020B AND 1311

Laboratory Code: 211084-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Chromium	mg/L (ppm)	2.0	<1	92	91	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chromium	mg/L (ppm)	2.0	90	80-120

Data Qualifiers & Definitions

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

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

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

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

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

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

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

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

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

211084

SAMPLE CHAIN OF CUSTODY

11/04/22 BI2.

Page # 1 of 1

Report To Dan Kuhn

Company Rivers Edge Environmental Svcs

Address 17115 SE 270th Place Ste E106

City, State, ZIP Covington WA 98042

Phone 206-962-0323 Email DKuhn@Rivers.City

SAMPLERS (*signature*)

PROJECT NAME: ATKINSON OWS

PO # ~~ATKIN~~ 21-141

REMARKS

Project Specific RLs - Yes / No

INVOICE TO

TURNAROUND TIME
(Standard Turnaround)
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
(Dispose after 30 days)
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Total-Cd,Cr,Cu Pb,Ni,Zn,Mo	% Solids	PSH BioAssay	TCLP Cr		Notes
ATKNOWS	01A-B	11-3	2pm	Sludge	2							X	X	✓	✓		per DK ✓-g 12/6/22

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Patrick Wagner	Recs	11-4-22	8am
Received by:	ANNWB	FRB	11/4/22	0800
Relinquished by:				
Received by:		Samples received at 22°C		

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

Rainier ENVIRONMENTAL

Dangerous Waste Characterization

Sample ID: ATNK OWS

Report date: December 14, 2022

Submitted to:

Freidman and Bruya, Inc.
3012 16th Ave W
Seattle, WA 98119

Rainier Environmental
5013 Pacific Hwy East
Suite 20
Tacoma, WA 98424

1.0 INTRODUCTION

A dangerous waste characterization using the test organism *Oncorhynchus mykiss* (rainbow trout) was conducted on one sample submitted by Friedman and Bruya, Inc. to Rainier Environmental. Testing was conducted following the Washington State Department of Ecology Publication 80-12.

2.0 METHODS

The sample, identified as ATNK OWS was received in the laboratory on December 6, 2022. Upon arrival at the laboratory the sample was inspected and contents verified against information provided on the chain-of-custody form. The sample was stored at 4°C in the dark until use. The test procedure is outlined in Table 1.

Table 1. Summary of Dangerous Waste Characterization Test Conditions

Parameter	Standard Fish Toxicity Test
Test number	2212-008
Sample ID	ATNK OWS
Test initiation date; time	12/9/2022; 1015h
Test termination date; time	12/13/2022; 1015h
Endpoint	Mortality at 96-hours
Test chamber	7.5 L plastic tank
Test temperature	12 ± 1°C
Dilution water	Moderately hard synthetic water
Test solution volume	6 L
Test concentrations (mg/L)	100, 10, 0
Number of organisms/chamber	10
Number of replicates	3
Test organism	*Oncorhynchus mykiss* (rainbow trout)
Feeding	No feeding during test
Photoperiod	16 hours light/ 8 hours dark
Extraction	Rotary agitation (30 +/- 2 rpm) for 18 hours
Reference Toxicant	Copper sulfate
Deviations	None

The test organisms used in the test are outlined in Table 2. The samples were tested using fish received on October 18, 2022.

Table 2. Test organisms (*Oncorhynchus mykiss*)

Test organism age	65 days post swim-up (hatch date 9/12/2022)
Mean weight	0.39 g
Mean length	39 mm
Ratio of longest to shortest	1.3
Loading	0.66 g/L
Test organism source	Trout Lodge; Sumner, WA

3.0 RESULTS

A summary of results for the dangerous waste characterization conducted on sample ATNK OWS is contained in Table 3. There was no mortality during the test. Based on these results, the sample does not designate as either a dangerous or extremely hazardous waste. Copies of the laboratory bench sheets, statistical summaries of reference toxicant tests, and chain-of-custody form are provided in Appendices A through C.

Table 3. Summary of Results

Sample ID	Concentration (mg/L)	Survival (# fish, N=30)	Percent Mortality	Dangerous Waste Designation
Control	0	30	0	NA
ATNK OWS	10	30	0	None
	100	30	0	

4.0 QUALITY ASSURANCE

The most recently completed reference toxicant test was initiated November 14, 2022. The LC_{50} of 182 g/L copper fell within the acceptable range of mean ± two standard deviations of historical test results indicating that the test organisms were of an appropriate degree of sensitivity. The coefficient of variation (CV) for the last 20 tests was 29.0 percent, which is considered excellent by the Biomonitoring Science Advisory Board.

5.0 REFERENCES

WDOE. 2016. Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria. Washington State Department of Ecology. Water Quality Program. Publication number: WQ-R-95-80, Revised June 2016.

WDOE. 2020. Biological Testing Methods 80-12 for the Designation of Dangerous Waste. Washington State Department of Ecology. Hazardous Waste and Toxics Reduction Program. Publication number: 80-12, Revised September 2020.

Appendix A
Oncorhynchus mykiss Dangerous Waste Toxicity Test
Raw Bench Sheets

Dangerous Waste Toxicity Test

Client: Friedman & Bruya, Inc.
Sample ID: ATKN ONS
Test #: 2212-008
Log In #: T22-361

Start Date & Time: 12/9/2022 1015
End Date & Time: 12/13/2022 1015
Test Organism: *Oncorhynchus mykiss*
Test Protocol: **Washington State Department of Ecology Publ. 80-12**

Rep	Conc.	Cont #	Number of Live Organisms					Dissolved Oxygen (mg/L)					pH (units)					Conductivity (umhos/cm)					Temperature (°C)					Percent Survival
			0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96	
1	CON	1	10	10	10	10	10	8.6	8.3	8.1	7.8	7.5	8.31	8.13	7.98	7.74	7.54	299				314	12.1	12.3	11.8	12.1	11.7	
2		23	10	10	10	10	10	8.4	8.2	8.0	7.7	7.4	8.34	8.11	7.97	7.71	7.56	304				311						
3		12	10	10	10	10	10	8.8	8.5	8.3	8.1	7.8	8.31	8.10	7.92	7.69	7.51	301				316						
1	10 PPM	27	10	10	10	10	10	8.5	8.1	7.9	7.6	7.4	8.32	8.11	8.00	7.67	7.54	305				314	12.0	12.1	11.9	12.0	11.8	
2		3	10	10	10	10	10	8.8	8.5	8.4	8.2	7.9	8.35	8.15	7.93	7.10	7.57	301				312						
3		14	10	10	10	10	10	8.9	8.6	8.4	8.0	7.8	8.39	8.13	7.95	7.69	7.59	300				309						
1	100 PPM	20	10	10	10	10	10	9.0	8.7	8.3	7.9	7.6	8.34	8.14	7.95	7.74	7.52	303				313	12.3	12.0	11.9	11.9	11.9	
2		10	10	10	10	10	10	8.7	8.4	8.2	7.7	7.5	8.31	8.17	7.97	7.71	7.56	306				316						
3		22	10	10	10	10	10	8.6	8.3	8.1	7.7	7.4	8.36	8.11	7.94	7.73	7.51	307				315						
1																												
2																												
3																												
1																												
2																												
3																												
1																												
2																												
3																												
1																												
2																												
3																												
Technician Initials			AJ	[illegible]	[illegible]	AJ	AJ	AJ	[illegible]	[illegible]	AJ	AJ																

Sample	Alk. (init.)	Hard. (init.)	Alk. (fin.)	Hard. (fin.)	Chlorine
	(mg/L as CaCO3)				(mg/L Cl2)
Control	68	100	68	100	<0.03
100PPM	68	100	68	100	

Animal Source: Troutlodge
Date Received: 10/18/2022
Test Volume: 6.0L
Date of Hatch: 9/12/2022
Date of Swim up: 10/4/2022

Weights (g): .37 .33 .39 .41 .44 .39 .40 .37 .43 .42 μ = .39
Lengths(mm): 37 33 38 40 42 39 41 36 44 43 μ = 39
Length max/min: 44/33 1.3
Loading: 0.66 g/L

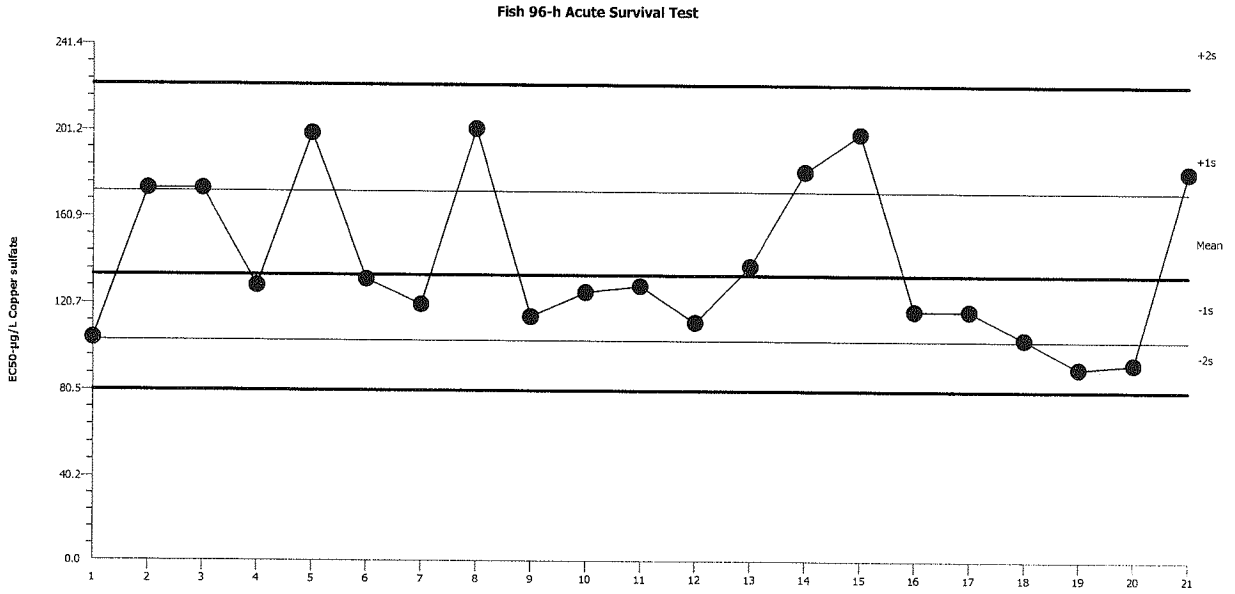
Rainier Environmental
Washington Laboratory
5013 Pacific HWY E Suite 20
Tacoma, WA 98424

Dilution Water Source: MHSW 101
QA Check [illegible]

Appendix B
Reference Toxicant Test
Control Chart and Statistical Summary

Fish 96-h Acute Survival Test **Rainier Environmental Laboratory**

Test Type: Survival (96h) **Organism:** Oncorhynchus mykiss (Rainbow Tro **Material:** Copper sulfate
Protocol: Not Applicable **Endpoint:** 96h Survival Rate **Source:** Reference Toxicant-REF



Mean:	133.9	**Count:**	20	**-1s Warning Limit:**	103.8	**-2s Action Limit:**	80.46
Sigma:	NA	**CV:**	29.00%	**+1s Warning Limit:**	172.7	**+2s Action Limit:**	222.8

Quality Control Data

Point	Year	Month	Day	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2021	Feb	25	104.7	-29.16	-0.9647			02-0723-8590	03-5049-2171
2		Mar	26	174.1	40.22	1.032	(+)		20-1005-2762	02-2683-0690
3		May	3	174.1	40.22	1.032	(+)		06-3924-6336	17-2626-4312
4		Jun	2	128.9	-4.951	-0.148			07-7369-8679	18-7582-9918
5		Jul	5	200	66.11	1.576	(+)		05-2506-1213	20-3965-9928
6		Aug	4	132	-1.937	-0.05723			08-9905-2998	16-3326-2875
7		Sep	6	120.3	-13.59	-0.4202			05-9967-6128	07-2600-9766
8		Oct	4	202.2	68.29	1.619	(+)		19-8922-3248	13-1559-3159
9		Nov	5	114.9	-19.02	-0.6017			04-8669-6249	15-6834-1433
10		Dec	6	126	-7.895	-0.2387			13-8732-0751	08-1557-4326
11	2022	Jan	5	128.9	-4.951	-0.148			08-2261-8669	03-7761-6146
12		Feb	5	112.2	-21.64	-0.6925			01-7899-0440	09-8784-8920
13		Mar	7	138.2	4.304	0.1243			15-8880-5349	18-5703-0746
14		Apr	11	182.3	48.46	1.213	(+)		19-4475-1025	00-2732-4149
15		May	11	200	66.11	1.576	(+)		04-3686-1214	17-7144-4708
16		Jun	13	117.6	-16.33	-0.511			02-1194-6933	14-6655-2671
17		Jul	11	117.6	-16.33	-0.511			18-9490-6426	20-8229-8763
18		Aug	12	104.7	-29.16	-0.9647			16-1269-6384	20-8498-8487
19		Sep	14	91.17	-42.72	-1.509	(-)		21-3997-4244	00-3631-7496
20		Oct	10	93.3	-40.58	-1.418	(-)		01-3925-6404	03-9134-1193
21		Nov	14	182.3	48.46	1.213	(+)		09-0829-7750	07-1545-0995

CETIS Summary Report

Fish 96-h Acute Survival Test — **Rainier Environmental Laboratory**

Batch ID:	15-7934-2752	**Test Type:**	Survival (96h)	**Analyst:**	Eric Tollefson
Start Date:	14 Nov-22 10:10	**Protocol:**	Not Applicable	**Diluent:**	Mod-Hard Synthetic Water
Ending Date:	18 Nov-22 10:10	**Species:**	Oncorhynchus mykiss	**Brine:**	
Duration:	96h	**Source:**	Trout Lodge Fish Farm	**Age:**	40d
Sample ID:	12-2841-0686	**Code:**	RA111422OM	**Client:**	Internal Lab
Sample Date:	14 Nov-22	**Material:**	Copper sulfate	**Project:**	
Receive Date:	14 Nov-22	**Source:**	Reference Toxicant		
Sample Age:	10h	**Station:**	In House		

Comparison Summary

Analysis ID	Endpoint	NOEL	LOEL	TOEL	PMSD	TU	Method
08-7981-3891	96h Survival Rate	100	200	141.4	18.5%		Dunnett Multiple Comparison Test

Point Estimate Summary

Analysis ID	Endpoint	Level	µg/L	95% LCL	95% UCL	TU	Method
07-1545-0995	96h Survival Rate	LC50	182.3	158.5	209.8		Spearman-Kärber

96h Survival Rate Summary

C-µg/L	Control Type	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	Dilution Water	3	1	1	1	1	1	0	0	0.0%	0.0%
25		3	1	1	1	1	1	0	0	0.0%	0.0%
50		3	1	1	1	1	1	0	0	0.0%	0.0%
100		3	0.9333	0.8902	0.9765	0.8	1	0.06667	0.1155	12.37%	6.67%
200		3	0.4333	0.3394	0.5273	0.2	0.7	0.1453	0.2517	58.08%	56.67%
400		3	0	0	0	0	0	0	0		100.0%

96h Survival Rate Detail

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	1	1	1
25		1	1	1
50		1	1	1
100		1	0.8	1
200		0.7	0.2	0.4
400		0	0	0

96h Survival Rate Binomials

C-µg/L	Control Type	Rep 1	Rep 2	Rep 3
0	Dilution Water	10/10	10/10	10/10
25		10/10	10/10	10/10
50		10/10	10/10	10/10
100		10/10	8/10	10/10
200		7/10	2/10	4/10
400		0/10	0/10	0/10

Appendix C
Chain-of-Custody Form

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 merdahl@friedmanandbruya.com

SUBCONTRACTER: RAINIER

PROJECT NAME/NO.: 211084

PO #: D-48

REMARKS: Please Email Results

Page # _____ of _____

TURNAROUND TIME
X Standard TAT
RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Fish Bioassay							Notes
ATKN OWS		11/3	1400	S	1				X							Login: JT22-361

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		~~Michael Erdahl~~ Eric Young	Friedman & Bruya	12/6/22	1300
Received by:		Annie Lee	Rainier Environmental	12/6/22	1340
Relinquished by:					
Received by:					

Appendix E

Laboratory Reports

Analytical Results and Chain-of-Custody Documentation for Sampling During Remedial Action

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 21, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the results from the testing of material submitted on September 19, 2023 from the Poulsbo RV 40757.022, F&BI 309258 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
PBS0921R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 19, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309258 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309258 -01	WS-1
309258 -02	WS-2
309258 -03	WS-3

All quality control requirements were acceptable.

Date of Report: 09/21/23
Date Received: 09/19/23
Project: Poulsbo RV 40757.022, F&BI 309258
Date Extracted: 09/20/23
Date Analyzed: 09/20/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
WS-1 309258-01	<0.02	0.025	<0.02	1.7	550	118
WS-2 309258-02	<0.02	0.039	<0.02	0.71	280	99
WS-3 309258-03 1/5	<0.02 j	<0.1	<0.1	0.87	360	90
Method Blank 03-2183 MB	<0.02	<0.02	<0.02	<0.06	<5	110

Date of Report: 09/21/23
Date Received: 09/19/23
Project: Poulsbo RV 40757.022, F&BI 309258
Date Extracted: 09/20/23
Date Analyzed: 09/20/23

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)
WS-1 309258-01	<50	<250	88
WS-2 309258-02	<50	<250	85
WS-3 309258-03	3,000	890 x	91
Method Blank 03-2268 MB	<50	<250	95

Analysis For Total Metals By EPA Method 6020B

Client ID:	WS-1	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/20/23	Lab ID:	309258-01
Date Analyzed:	09/20/23	Data File:	309258-01.060
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	5.53

Analysis For Total Metals By EPA Method 6020B

Client ID:	WS-2	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/20/23	Lab ID:	309258-02
Date Analyzed:	09/20/23	Data File:	309258-02.063
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	6.51

Analysis For Total Metals By EPA Method 6020B

Client ID:	WS-3	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/20/23	Lab ID:	309258-03 x5
Date Analyzed:	09/20/23	Data File:	309258-03 x5.069
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	19.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	NA	Project:	Poulsbo RV 40757.022
Date Extracted:	09/20/23	Lab ID:	I3-725 mb
Date Analyzed:	09/20/23	Data File:	I3-725 mb.056
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Date of Report: 09/21/23
Date Received: 09/19/23
Project: Poulsbo RV 40757.022, F&BI 309258

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309223-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	83	70-130
Toluene	mg/kg (ppm)	1.0	86	70-130
Ethylbenzene	mg/kg (ppm)	1.0	86	70-130
Xylenes	mg/kg (ppm)	3.0	90	70-130
Gasoline	mg/kg (ppm)	40	100	70-130

Date of Report: 09/21/23
Date Received: 09/19/23
Project: Poulsbo RV 40757.022, F&BI 309258

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

Laboratory Code: 309254-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	108	110	63-146	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	104	77-123

Date of Report: 09/21/23
Date Received: 09/19/23
Project: Poulsbo RV 40757.022, F&BI 309258

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

Laboratory Code: 309258-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	6.05	88	89	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	89	80-120

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

309258

SAMPLE CHAIN OF CUSTODY

[redacted] 09-19-23 [redacted] N1

Page # 1 of 1

[redacted] James Welles

Company PBS

Address 214 East Galer Ste 300

City, State, ZIP Seattle WA 98102

Phone 206-766-7[illegible] Email James.Welles@pbsusa.com

SAMPLERS (signature)	
PROJECT NAME Poulsbo RV	PO # 40757022
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

TURNAROUND TIME
- ☐ Standard turnaround
- ☐ RUSH 1 Day
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Total Lead			Lab ID	Notes
WS-1	1435	9/19/23		S	3	X	X	X					X			01 A-C	
WS-2	1440	|		|	|	X	X	X					X			02 A-C	
WS-3	1445	|		|	|	X	X	X					X			03 A-C	

Samples received at 3 °C

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Wesley Garc	PBS	9/19/23	1550
Received by: Wesley	Wesley	FBI	09/19/23	15:50
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 26, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

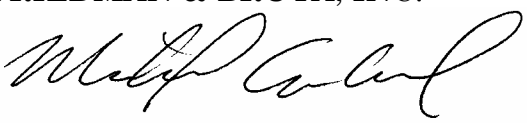
Dear Mr Welles:

Included are the results from the testing of material submitted on September 20, 2023 from the Poulsbo RV 40757.022, F&BI 309295 project. There are 7 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
PBS0926R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 20, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309295 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309295 -01	SP-1
309295 -02	SP-2
309295 -03	SP-3

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-1	Client:	PBS Engineering and Environmental
Date Received:	09/20/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/21/23	Lab ID:	309295-01
Date Analyzed:	09/21/23	Data File:	309295-01.116
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.35
Lead	3.87

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-2	Client:	PBS Engineering and Environmental
Date Received:	09/20/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/21/23	Lab ID:	309295-02
Date Analyzed:	09/21/23	Data File:	309295-02.117
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.98
Lead	1.81

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-3	Client:	PBS Engineering and Environmental
Date Received:	09/20/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/21/23	Lab ID:	309295-03
Date Analyzed:	09/21/23	Data File:	309295-03.118
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.72
Lead	5.23

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/21/23	Lab ID:	I3-725 mb2
Date Analyzed:	09/21/23	Data File:	I3-725 mb2.108
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	<1

Date of Report: 09/26/23
Date Received: 09/20/23
Project: Poulsbo RV 40757.022, F&BI 309295

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

Laboratory Code: 309258-01 x5 (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	<5	86	85	75-125	1
Lead	mg/kg (ppm)	50	6.05	88	89	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	85	80-120
Lead	mg/kg (ppm)	50	89	80-120

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

309295

SAMPLE CHAIN OF CUSTODY

09/20/23

M1

Page # 1 of 1

Report To James Wells

Company PBS

Address 214 E Galer St E 300

City, State, ZIP Seattle WA 98102

Phone 206 766 7665 Email James.Wells@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME: Parker RV

PO #: 407577.022

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
- ☒ Standard turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Lead	Arsenic			Notes
SP-1	01	9/20/23	1470	S	1								X	X			
SP-2	02	"	1435	"	"								X	X			
SP-3	03	"	1440	"	"								X	X			
								Samples received at 21 °C									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Vicky Garcia	PBS	9/20/23	1550
Received by:	ANTHPHAN	FSB	09/20/23	15:50
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 27, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the results from the testing of material submitted on September 22, 2023 from the Poulsbo RV 40757.022, F&BI 309355 project. There are 7 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: Sarah Newport
PBS0927R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 22, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309355 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309355 -01	C5-15
309355 -02	D5-15
309355 -03	EWC-11
309355 -04	EWD-14
309355 -05	NW5-14
309355 -06	SW3-10
309355 -07	SW4-12
309355 -08	SW5-09
309355 -09	WWC-14
309355 -10	WWD-07

All quality control requirements were acceptable.

Date of Report: 09/27/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
C5-15 309355-01	<0.02	<0.02	<0.02	<0.06	<5	108
D5-15 309355-02	<0.02	<0.02	<0.02	<0.06	<5	100
EWC-11 309355-03	<0.02	<0.02	<0.02	<0.06	<5	96
EWD-14 309355-04	<0.02	<0.02	<0.02	<0.06	<5	95
NW5-14 309355-05	<0.02	<0.02	<0.02	<0.06	<5	95
SW3-10 309355-06	<0.02	<0.02	<0.02	<0.06	<5	97
SW4-12 309355-07	<0.02	<0.02	<0.02	<0.06	<5	95
SW5-09 309355-08	<0.02	<0.02	<0.02	<0.06	<5	92
WWC-14 309355-09	<0.02	<0.02	<0.02	<0.06	<5	93

Date of Report: 09/27/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
WWD-07 309355-10	<0.02	<0.02	<0.02	<0.06	<5	95
Method Blank 03-2190 MB	<0.02	<0.02	<0.02	<0.06	<5	109

Date of Report: 09/27/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

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)
C5-15 309355-01	<50	<250	99
D5-15 309355-02	<50	<250	92
EWC-11 309355-03	<50	<250	100
EWD-14 309355-04	<50	<250	97
NW5-14 309355-05	<50	<250	96
SW3-10 309355-06	<50	<250	99
SW4-12 309355-07	<50	<250	103
SW5-09 309355-08	<50	<250	101
WWC-14 309355-09	<50	<250	96
WWD-07 309355-10	<50	<250	95
Method Blank 03-2287 MB	<50	<250	94

Date of Report: 09/27/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309263-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	90	70-130
Toluene	mg/kg (ppm)	1.0	90	70-130
Ethylbenzene	mg/kg (ppm)	1.0	89	70-130
Xylenes	mg/kg (ppm)	3.0	90	70-130
Gasoline	mg/kg (ppm)	40	87	70-130

Date of Report: 09/27/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355

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

Laboratory Code: 309355-01 (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	104	108	64-136	4

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

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

SAMPLE CHAIN OF CUSTODY

09-22-23 #3/VS1-#4

309355

Report To James.Welles@pbsusa.com

Company PBS Engineering & Environmental

Address 214 E Galer St Suite 300

City, State, ZIP Seattle WA 98102

Phone 206-233-9639 Email cc: Sarah.newport@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME	PO #
Poulsbo RV	40757.022
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard turnaround
- ☑ RUSH Next day
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082					Notes
CS-15	01A-E	9/22/23	11:45			X	X	X									
DS-15	02		11:35			X	X	X									
~~EWD-14~~ EWC-~~12~~ 11	03		11:00			X	X	X									
EWD-14	04		10:50			X	X	X									
NWS-14	05		11:20			X	X	X									
SW3-10	06		13:30			X	X	X									
SW4-12	07		13:00			X	X	X									
SW5-09	08		12:45			X	X	X									
WWC-14	09		14:00			X	X	X									
WWD-07	10		13:40			X	X	X									

Samples received at 1 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Sarah Newport	PBS Eng/Env.	9/22/23	16:12
Received by:	NHUT TRUONG	F&B I	9/22/23	16:12
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 29, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the additional results from the testing of material submitted on September 22, 2023 from the Poulsbo RV 40757.022, F&BI 309355 project. There are 14 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: Sarah Newport
PBS0929R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 22, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309355 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309355 -01	C5-15
309355 -02	D5-15
309355 -03	EWC-11
309355 -04	EWD-14
309355 -05	NW5-14
309355 -06	JW3-10
309355 -07	SW4-12
309355 -08	SW5-09
309355 -09	WWC-14
309355 -10	WWD-07

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	C5-15	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/26/23	Lab ID:	309355-01
Date Analyzed:	09/26/23	Data File:	309355-01.149
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.32
Barium	34.2
Cadmium	<1
Chromium	7.64
Lead	1.63
Mercury	<1
Selenium	<1
Silver	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	NW5-14	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/26/23	Lab ID:	309355-05
Date Analyzed:	09/26/23	Data File:	309355-05.150
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.07
Barium	29.3
Cadmium	<1
Chromium	10.3
Lead	1.21
Mercury	<1
Selenium	<1
Silver	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/26/23	Lab ID:	I3-748 mb
Date Analyzed:	09/26/23	Data File:	I3-748 mb.134
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	C5-15	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309355-01 1/5
Date Analyzed:	09/27/23	Data File:	092708.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Terphenyl-d14	109	50	124

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	NW5-14	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309355-05 1/5
Date Analyzed:	09/27/23	Data File:	092709.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Terphenyl-d14	113	50	124

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	03-2286 mb2 1/5
Date Analyzed:	09/27/23	Data File:	092709.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Terphenyl-d14	115	31	167

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	C5-15	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309355-01 1/30
Date Analyzed:	09/27/23	Data File:	092706.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	86	11	162
Decachlorobiphenyl	96	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

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	NW5-14	Client:	PBS Engineering and Environmental
Date Received:	09/22/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309355-05 1/30
Date Analyzed:	09/27/23	Data File:	092707.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	82	11	162
Decachlorobiphenyl	87	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

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	03-2341 mb 1/30
Date Analyzed:	09/27/23	Data File:	092704.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	98	11	162
Decachlorobiphenyl	106	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: 09/29/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355

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

Laboratory Code: 309364-15 (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	7.15	93 b	77 b	75-125	19 b
Barium	mg/kg (ppm)	50	66.2	113 b	85 b	75-125	28 b
Cadmium	mg/kg (ppm)	10	<1	101	94	75-125	7
Chromium	mg/kg (ppm)	50	20.0	91 b	83 b	75-125	9 b
Lead	mg/kg (ppm)	50	6.38	95	85	75-125	11
Mercury	mg/kg (ppm	5	<1	95	88	75-125	8
Selenium	mg/kg (ppm)	5	<1	92	83	75-125	10
Silver	mg/kg (ppm)	10	<1	96	90	75-125	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	99	80-120
Barium	mg/kg (ppm)	50	95	80-120
Cadmium	mg/kg (ppm)	10	95	80-120
Chromium	mg/kg (ppm)	50	99	80-120
Lead	mg/kg (ppm)	50	99	80-120
Mercury	mg/kg (ppm)	5	100	80-120
Selenium	mg/kg (ppm)	5	95	80-120
Silver	mg/kg (ppm)	10	94	80-120

Date of Report: 09/29/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355

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

Laboratory Code: 309367-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	105	107	50-150	2
Chrysene	mg/kg (ppm)	0.83	<0.01	109	105	50-150	4
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	106	104	50-150	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	98	95	50-150	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	102	103	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	105	103	40-140	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	104	101	41-136	3

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benz(a)anthracene	mg/kg (ppm)	0.83	117	70-130
Chrysene	mg/kg (ppm)	0.83	113	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	111	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	107	67-128
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	105	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	118	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	114	67-128

Date of Report: 09/29/23
Date Received: 09/22/23
Project: Poulsbo RV 40757.022, F&BI 309355

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

Laboratory Code: 309367-02 (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	96	102	29-125	6
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	96	104	12-177	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	106	55-137
Aroclor 1260	mg/kg (ppm)	0.25	104	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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

SAMPLE CHAIN OF CUSTODY

09-22-23 #3/VS1-A4

309355

Report To James.Welles@pbsusa.com

Company PBS Engineering & Environmental

Address 2414 E Galer St Suite 300

City, State, ZIP Seattle WA 98102

Phone 206-233-9639 Email cc: Sarah.newport@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME	PO #
Poulsbo RV	40757.022
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

Page # 1 of 1

TURNAROUND TIME
- ☐ Standard turnaround
- ☑ RUSH Next day
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	RCRA 8				Notes
CS-15	01 A-E	9/22/23	11:45			X	X	X			✓	✓	✓				✓ per JW
DS-15	02		11:35			X	X	X									✓ next day 9/26
~~END-14~~ EWC-~~11~~	03		11:00			X	X	X									
END-14	04		10:50			X	X	X									
NWS-14	05		11:20			X	X	X			✓	✓	✓				
JW3-10	06		13:30			X	X	X									
SW4-12	07		13:00			X	X	X									
SW5-09	08		12:45			X	X	X									Samples received at 1 °C
WWC-14	09		14:00			X	X	X									
WWD-07	10		13:40			X	X	X									

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Sarah Newport	PBS Eng/Env.	9/22/23	16:12
Received by:	NHUT TRUONG	F&B I	9/22/23	16:12
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 29, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the results from the testing of material submitted on September 25, 2023 from the Poulsbo RV 40757.022, F&BI 309367 project. There are 15 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: Sarah Newport
PBS0929R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 25, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309367 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309367 -01	C3-15
309367 -02	C4-15
309367 -03	D3-15
309367 -04	D4-15
309367 -05	NW3-11
309367 -06	NW4-13

All quality control requirements were acceptable.

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367
Date Extracted: 09/25/23
Date Analyzed: 09/26/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
C3-15 309367-01	<0.02	<0.02	<0.02	<0.06	<5	87
C4-15 309367-02	<0.02	<0.02	<0.02	<0.06	<5	88
D3-15 309367-03	<0.02	<0.02	<0.02	<0.06	<5	84
D4-15 309367-04	<0.02	<0.02	<0.02	<0.06	<5	84
NW3-11 309367-05	<0.02	<0.02	<0.02	<0.06	<5	83
NW4-13 309367-06	<0.02	<0.02	<0.02	<0.06	<5	83
Method Blank 03-2190 MB	<0.02	<0.02	<0.02	<0.06	<5	109

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

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)
C3-15 309367-01	<50	<250	92
C4-15 309367-02	<50	<250	94
D3-15 309367-03	<50	<250	94
D4-15 309367-04	<50	<250	92
NW3-11 309367-05	<50	<250	98
NW4-13 309367-06	<50	<250	93
Method Blank 03-2283 MB	<50	<250	98

Analysis For Total Metals By EPA Method 6020B

Client ID:	C4-15	Client:	PBS Engineering and Environmental
Date Received:	09/25/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/26/23	Lab ID:	309367-02
Date Analyzed:	09/26/23	Data File:	309367-02.151
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.37
Barium	47.4
Cadmium	<1
Chromium	8.72
Lead	1.53
Mercury	<1
Selenium	<1
Silver	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	NA	Project:	Poulsbo RV 40757.022
Date Extracted:	09/26/23	Lab ID:	I3-748 mb
Date Analyzed:	09/26/23	Data File:	I3-748 mb.134
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	C4-15	Client:	PBS Engineering and Environmental
Date Received:	09/25/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309367-02 1/5
Date Analyzed:	09/27/23	Data File:	092707.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Terphenyl-d14	110	50	124

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	03-2286 mb2 1/5
Date Analyzed:	09/27/23	Data File:	092709.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Terphenyl-d14	115	31	167

Compounds:	Concentration mg/kg (ppm)
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	C4-15	Client:	PBS Engineering and Environmental
Date Received:	09/25/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309367-02 1/30
Date Analyzed:	09/27/23	Data File:	092708.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	79	11	162
Decachlorobiphenyl	94	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

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	03-2341 mb 1/30
Date Analyzed:	09/27/23	Data File:	092704.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
Tetrachlorometaxylene	98	11	162
Decachlorobiphenyl	106	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: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309263-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	90	70-130
Toluene	mg/kg (ppm)	1.0	90	70-130
Ethylbenzene	mg/kg (ppm)	1.0	89	70-130
Xylenes	mg/kg (ppm)	3.0	90	70-130
Gasoline	mg/kg (ppm)	40	87	70-130

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367

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

Laboratory Code: 309324-01 (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	106	110	64-136	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	102	78-121

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367

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

Laboratory Code: 309364-15 (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	7.15	93 b	77 b	75-125	19 b
Barium	mg/kg (ppm)	50	66.2	113 b	85 b	75-125	28 b
Cadmium	mg/kg (ppm)	10	<1	101	94	75-125	7
Chromium	mg/kg (ppm)	50	20.0	91 b	83 b	75-125	9 b
Lead	mg/kg (ppm)	50	6.38	95	85	75-125	11
Mercury	mg/kg (ppm	5	<1	95	88	75-125	8
Selenium	mg/kg (ppm)	5	<1	92	83	75-125	10
Silver	mg/kg (ppm)	10	<1	96	90	75-125	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	99	80-120
Barium	mg/kg (ppm)	50	95	80-120
Cadmium	mg/kg (ppm)	10	95	80-120
Chromium	mg/kg (ppm)	50	99	80-120
Lead	mg/kg (ppm)	50	99	80-120
Mercury	mg/kg (ppm)	5	100	80-120
Selenium	mg/kg (ppm)	5	95	80-120
Silver	mg/kg (ppm)	10	94	80-120

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367

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

Laboratory Code: 309367-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	105	107	50-150	2
Chrysene	mg/kg (ppm)	0.83	<0.01	109	105	50-150	4
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	106	104	50-150	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	98	95	50-150	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	102	103	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	105	103	40-140	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	104	101	41-136	3

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benz(a)anthracene	mg/kg (ppm)	0.83	117	70-130
Chrysene	mg/kg (ppm)	0.83	113	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	111	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	107	67-128
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	105	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	118	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	114	67-128

Date of Report: 09/29/23
Date Received: 09/25/23
Project: Poulsbo RV 40757.022, F&BI 309367

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

Laboratory Code: 309367-02 (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	96	102	29-125	6
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	96	104	12-177	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	106	55-137
Aroclor 1260	mg/kg (ppm)	0.25	104	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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

309367

SAMPLE CHAIN OF CUSTODY 09/25/23 VS-A2/M2

Report To James.Welles@pbsusa.com
Company PBS Engineering & Environmental
Address 214 E Galer St Suite 300
City, State, ZIP Seattle WA 98102
Phone 206-233-9639 Email cc: Sarah.newport@pbsusa

SAMPLERS (*signature*)	
PROJECT NAME: Poulsbo RV	PO #: 40757.022
REMARKS: Project specific RLs? - Yes / No	INVOICE TO

TURNAROUND TIME
☐ Standard turnaround
☑ RUSH ASAP
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082A	cPAHs EPA 8270SIM	RCRA-8 metals total 6020B			Notes
C3-15	01 A-E	9/25/23	10:05	S	5	X	X	X				~~X~~	~~X~~	~~X~~	EP		cancelled per JW 09/26 EP
C4-15	02	↓	11:15	↓	↓	X	X	X				✓	✓	✓			✓ EP 9/26
D3-15	03		9:20			X	X	X				~~X~~	~~X~~	~~X~~			NEXT DAY EP 9/25
D4-15	04		8:55			X	X	X									
NW3-11	05		10:55			X	X	X				~~X~~	~~X~~	~~X~~			
NW4-13	06	↓	11:30	↓	↓	X	X	X									

Samples received at 1 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Sarah Newport	PBS Eng/Env.	9/25/23	12:40
Received by:	Liz Webber-Bruya	FB	9/25/23	12:40
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 29, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the results from the testing of material submitted on September 26, 2023 from the Poulsbo RV 40757.022, F&BI 309409 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0929R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 26, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 309409 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309409 -01	OB-7
309409 -02	OB-8
309409 -03	OB-9

All quality control requirements were acceptable.

Date of Report: 09/29/23
Date Received: 09/26/23
Project: Poulsbo RV 40757.022, F&BI 309409
Date Extracted: 09/27/23
Date Analyzed: 09/27/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
OB-7 309409-01	<0.02	<0.02	<0.02	<0.06	<5	80
OB-8 309409-02	<0.02	<0.02	<0.02	<0.06	<5	81
OB-9 309409-03	<0.02	<0.02	<0.02	<0.06	<5	84
Method Blank 03-2208 MB2	<0.02	<0.02	<0.02	<0.06	<5	80

Date of Report: 09/29/23
Date Received: 09/26/23
Project: Poulsbo RV 40757.022, F&BI 309409
Date Extracted: 09/27/23
Date Analyzed: 09/27/23

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)
OB-7 309409-01	<50	<250	90
OB-8 309409-02	<50	<250	94
OB-9 309409-03	<50	<250	96
Method Blank 03-2294 MB2	<50	<250	94

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-7	Client:	PBS Engineering and Environmental
Date Received:	09/26/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309409-01
Date Analyzed:	09/27/23	Data File:	309409-01.048
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	5.18

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-8	Client:	PBS Engineering and Environmental
Date Received:	09/26/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309409-02
Date Analyzed:	09/27/23	Data File:	309409-02.049
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	6.07

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-9	Client:	PBS Engineering and Environmental
Date Received:	09/26/23	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	309409-03
Date Analyzed:	09/27/23	Data File:	309409-03.050
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	5.72

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	NA	Project:	Poulsbo RV 40757.022
Date Extracted:	09/27/23	Lab ID:	I3-748 mb2
Date Analyzed:	09/27/23	Data File:	I3-748 mb2.047
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Date of Report: 09/29/23
Date Received: 09/26/23
Project: Poulsbo RV 40757.022, F&BI 309409

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309364-24 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	81	70-130
Toluene	mg/kg (ppm)	1.0	82	70-130
Ethylbenzene	mg/kg (ppm)	1.0	80	70-130
Xylenes	mg/kg (ppm)	3.0	87	70-130
Gasoline	mg/kg (ppm)	40	97	70-130

Date of Report: 09/29/23
Date Received: 09/26/23
Project: Poulsbo RV 40757.022, F&BI 309409

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

Laboratory Code: 309364-21 (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	92	94	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	92	78-121

Date of Report: 09/29/23
Date Received: 09/26/23
Project: Poulsbo RV 40757.022, F&BI 309409

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

Laboratory Code: 309364-15 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	6.38	95	85	75-125	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	99	80-120

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

SAMPLE CHAIN OF CUSTODY 09/26/23 M1/VS-A2

309409

Report To James Wellis

Company PBS

Address 214 E Galer St 300

City, State, ZIP Seattle WA 98102

Phone 206 766 7606 Email James.Wellis@pbsusa.com

SAMPLERS (signature)

PROJECT NAME Parkshore

PO # 407577.022

REMARKS

Project specific RLs? - Yes / No

INVOICE TO

Page # 1 of 1

TURNAROUND TIME

☐ Standard turnaround

☑ RUSH next day noon 9/27

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Archive samples

☐ Other

Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Lead				Notes
OB-7	01A-E	9/26/23	1540	S	5	X	X	X					X				
OB-4	02	"	1545	"	"	X	X	X					X				
OB-9	03	"	1550	"	"	X	X	X					X				

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Wesley Gamon	PBS	9/26/23	1630
Received by:	JOE MOHAMMED	FBI	9/26/23	1630
Relinquished by:	Samples received at 2 °C			
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 18, 2024

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

Dear Mr Welles:

Included are the results from the testing of material submitted on January 12, 2024 from the Poulsbo RV 40757.022, F&BI 401170 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Sarah Newport
PBS0118R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 12, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757.022, F&BI 401170 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
401170 -01	SP-15-6
401170 -02	SP-14-6
401170 -03	SP-8-6
401170 -04	SP-13-6
401170 -05	SP-16-6
401170 -06	SP-8-12
401170 -07	SP-6-6
401170 -08	SP-16-12

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-15-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-01
Date Analyzed:	01/15/24	Data File:	401170-01.147
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.08
Lead	4.56

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-14-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-02
Date Analyzed:	01/16/24	Data File:	401170-02.212
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.18
Lead	2.35

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-8-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-03
Date Analyzed:	01/16/24	Data File:	401170-03.213
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.68
Lead	6.61

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-13-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-04
Date Analyzed:	01/16/24	Data File:	401170-04.214
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.98
Lead	5.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-16-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-05
Date Analyzed:	01/16/24	Data File:	401170-05.215
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	7.55
Lead	14.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-8-12	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-06
Date Analyzed:	01/16/24	Data File:	401170-06.216
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.43
Lead	8.22

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-6-6	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-07
Date Analyzed:	01/16/24	Data File:	401170-07.226
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	5.36
Lead	13.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	SP-16-12	Client:	PBS Engineering and Environmental
Date Received:	01/12/24	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	401170-08
Date Analyzed:	01/16/24	Data File:	401170-08.227
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	12.5
Lead	21.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	Not Applicable	Project:	Poulsbo RV 40757.022, F&BI 401170
Date Extracted:	01/15/24	Lab ID:	I4-34 mb
Date Analyzed:	01/15/24	Data File:	I4-34 mb.145
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	<1

Date of Report: 01/18/24
Date Received: 01/12/24
Project: Poulsbo RV 40757.022, F&BI 401170

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

Laboratory Code: 401170-01 x5 (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	<5	112	116	75-125	4
Lead	mg/kg (ppm)	50	<5	101	105	75-125	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	98	80-120
Lead	mg/kg (ppm)	50	95	80-120

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

401170

SAMPLE CHAIN OF CUSTODY

01/12/24 M2 1 1

Report To James Welles

Company PBS Engineering & Environmental Inc

Address 214 E Galer St suite 200

City, State, ZIP Seattle WA 98102

Phone 206 766 7605 Email James.welles@pbsusa.com
CC: Sarah.newport@pbsusa.com

SAMPLERS (*signature*)

PROJECT NAME	PO #
Poulsbo RV	40757.022
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

Page # _____ of _____

TURNAROUND TIME
- ☑ Standard turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other _____
- Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Pb/As EPA 6020				Notes
SP-15-6	01	1/12/24	14:55	S	1								X				
SP-14-6	02		15:00		1								X				
SP-8-6	03		15:05		1								X				
SP-13-6	04		15:20		1								X				
SP-16-6	05		15:25		1								X				
SP-8-12	06		15:12		1								X				
SP-6-6	07		15:35		1								X				
SP-16-12	08		15:40		1								X				

Samples received at 1 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Sarah Newport	PBS Engineering/Env.	1/12/24	16:30
Received by:	ANHPHAN	FED	01/12/24	16:30
Relinquished by:				
Received by:				

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

September 27, 2023

James Welles, Project Manager
PBS Engineering and Environmental, Inc.
214 E. Galer St, Suite 300
Seattle, WA 98102

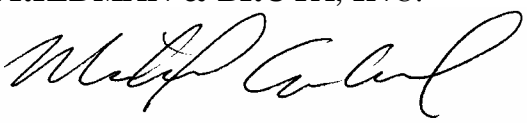
Dear Mr Welles:

Included are the results from the testing of material submitted on September 19, 2023 from the Poulsbo RV 40757-022, F&BI 309263 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
PBS0927R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 19, 2023 by Friedman & Bruya, Inc. from the PBS Engineering and Environmental Poulsbo RV 40757-022, F&BI 309263 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	PBS Engineering and Environmental
309263 -01	OB-1
309263 -02	OB-2
309263 -03	OB-3

All quality control requirements were acceptable.

Date of Report: 09/27/23
Date Received: 09/19/23
Project: Poulsbo RV 40757-022, F&BI 309263
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

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

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
OB-1 309263-01	<0.02	<0.02	<0.02	<0.06	<5	90
OB-2 309263-02	<0.02	<0.02	<0.02	<0.06	<5	82
OB-3 309263-03	<0.02	0.080	0.023	0.12	<5	91
Method Blank 03-2190 MB	<0.02	<0.02	<0.02	<0.06	<5	109

Date of Report: 09/27/23
Date Received: 09/19/23
Project: Poulsbo RV 40757-022, F&BI 309263
Date Extracted: 09/25/23
Date Analyzed: 09/25/23

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)
OB-1 309263-01	<50	<250	92
OB-2 309263-02	<50	<250	92
OB-3 309263-03	<50	<250	93
Method Blank 03-2282 MB	<50	<250	100

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-1	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757-022
Date Extracted:	09/22/23	Lab ID:	309263-01
Date Analyzed:	09/22/23	Data File:	309263-01.178
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	33.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-2	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757-022
Date Extracted:	09/22/23	Lab ID:	309263-02
Date Analyzed:	09/22/23	Data File:	309263-02.179
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	49.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	OB-3	Client:	PBS Engineering and Environmental
Date Received:	09/19/23	Project:	Poulsbo RV 40757-022
Date Extracted:	09/22/23	Lab ID:	309263-03
Date Analyzed:	09/22/23	Data File:	309263-03.180
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	7.43

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	PBS Engineering and Environmental
Date Received:	NA	Project:	Poulsbo RV 40757-022
Date Extracted:	09/22/23	Lab ID:	I3-738 mb
Date Analyzed:	09/22/23	Data File:	I3-738 mb.120
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Date of Report: 09/27/23
Date Received: 09/19/23
Project: Poulsbo RV 40757-022, F&BI 309263

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 309263-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	1.0	90	70-130
Toluene	mg/kg (ppm)	1.0	90	70-130
Ethylbenzene	mg/kg (ppm)	1.0	89	70-130
Xylenes	mg/kg (ppm)	3.0	90	70-130
Gasoline	mg/kg (ppm)	40	87	70-130

Date of Report: 09/27/23
Date Received: 09/19/23
Project: Poulsbo RV 40757-022, F&BI 309263

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

Laboratory Code: 309352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	810	118	108	63-146	9

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	118	77-123

Date of Report: 09/27/23
Date Received: 09/19/23
Project: Poulsbo RV 40757-022, F&BI 309263

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

Laboratory Code: 309262-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	1.76	88	91	75-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	97	80-120

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 below the standard reporting limit. The value reported is an estimate.

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

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

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

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

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

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

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

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

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

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

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

SAMPLE CHAIN OF CUSTODY

~~309258~~ 309263 [redacted]

09-19-23 [redacted]

7/20

Report To James Walles

Company PBS

Address 214 E Galer Ste 300

City, State, ZIP Seattle WA 98102

Phone 206-766-7665 Email James.Walles@pbsusa.com

SAMPLERS (*signature*)	
PROJECT NAME Poulsbo RV	PO # 40757.022
REMARKS Project specific RLs? - Yes / No	INVOICE TO

Page # 1 of 1 N/

TURNAROUND TIME
- ☐ Standard turnaround
- ☒ RUSH by 9/25

Rush charges authorized by: [initials] 9/22

SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other

Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	TCLP (Lead			Notes
OB-1	01 A-C	9/14/23	1450	S	3	X	X	X					X			~~Hold samples~~
OB-2	02	|	1455	|	|	X	X	X					X			~~Pending~~
OB-3	03	|	1500	|	|	X	X	X					X			~~PM Authorization~~
																Analyze [initials] 9/22

Samples received at 4 °C

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Wesley Dixon	PBS	9/14/23	1550
Received by: [signature]	Wes Dayl	FBI	9/19/23	155
Relinquished by:				
Received by:				

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Atkinson Construction
Mike Bagley
707 South Grady Way
Suite 500
Renton, WA 98057

RE: SR509 Expressway
Work Order Number: 2211021

November 09, 2022

Attention Mike Bagley:

Fremont Analytical, Inc. received 10 sample(s) on 11/1/2022 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020B

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *11/09/2022*

CLIENT: Atkinson Construction
Project: SR509 Expressway
Work Order: 2211021

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2211021-001	SP-1-6-11.1.22	11/01/2022 11:04 AM	11/01/2022 1:05 PM
2211021-002	SP-1-12-11.1.22	11/01/2022 11:05 AM	11/01/2022 1:05 PM
2211021-003	SP-4-6-11.1.22	11/01/2022 11:30 AM	11/01/2022 1:05 PM
2211021-004	SP-4-12-11.1.22	11/01/2022 11:31 AM	11/01/2022 1:05 PM
2211021-005	SP-5-6-11.1.22	11/01/2022 11:38 AM	11/01/2022 1:05 PM
2211021-006	SP-7-6-11.1.22	11/01/2022 11:10 AM	11/01/2022 1:05 PM
2211021-007	SP-9-6-11.1.22	11/01/2022 11:42 AM	11/01/2022 1:05 PM
2211021-008	SP-10-6-11.1.22	11/01/2022 11:44 AM	11/01/2022 1:05 PM
2211021-009	SP-11-6-11.1.22	11/01/2022 11:45 AM	11/01/2022 1:05 PM
2211021-010	SP-12-6-11.1.22	11/01/2022 11:15 AM	11/01/2022 1:05 PM

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

Case Narrative

WO#: **2211021**
Date: **11/9/2022**

CLIENT: Atkinson Construction
Project: SR509 Expressway

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
DUP - Sample Duplicate
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MCL - Maximum Contaminant Level
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:04:00 AM
Project: SR509 Expressway
Lab ID: 2211021-001
Matrix: Soil
Client Sample ID: **SP-1-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	6.62	0.253		mg/Kg-dry	1	11/8/2022 3:49:13 PM
Lead	18.8	0.253		mg/Kg-dry	1	11/8/2022 3:49:13 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	9.62	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:05:00 AM
Project: SR509 Expressway
Lab ID: 2211021-002
Matrix: Soil
Client Sample ID: **SP-1-12-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	6.76	0.267		mg/Kg-dry	1	11/8/2022 4:02:51 PM
Lead	19.9	0.267		mg/Kg-dry	1	11/8/2022 4:02:51 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	12.3	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:30:00 AM
Project: SR509 Expressway
Lab ID: 2211021-003
Matrix: Soil
Client Sample ID: **SP-4-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	6.71	0.259		mg/Kg-dry	1	11/8/2022 4:05:34 PM
Lead	7.99	0.259		mg/Kg-dry	1	11/8/2022 4:05:34 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	8.62	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:31:00 AM
Project: SR509 Expressway
Lab ID: 2211021-004
Matrix: Soil
Client Sample ID: **SP-4-12-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	11.8	0.278		mg/Kg-dry	1	11/8/2022 4:08:18 PM
Lead	66.8	0.278		mg/Kg-dry	1	11/8/2022 4:08:18 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	17.0	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:38:00 AM
Project: SR509 Expressway
Lab ID: 2211021-005
Matrix: Soil
Client Sample ID: **SP-5-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	2.78	0.247		mg/Kg-dry	1	11/8/2022 4:16:31 PM
Lead	3.11	0.247		mg/Kg-dry	1	11/8/2022 4:16:31 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	8.72	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:10:00 AM
Project: SR509 Expressway
Lab ID: 2211021-006
Matrix: Soil
Client Sample ID: **SP-7-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	3.70	0.244		mg/Kg-dry	1	11/8/2022 4:19:15 PM
Lead	3.25	0.244		mg/Kg-dry	1	11/8/2022 4:19:15 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	8.27	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:42:00 AM
Project: SR509 Expressway
Lab ID: 2211021-007
Matrix: Soil
Client Sample ID: **SP-9-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	6.61	0.284		mg/Kg-dry	1	11/8/2022 4:21:58 PM
Lead	7.32	0.284		mg/Kg-dry	1	11/8/2022 4:21:58 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	19.4	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:44:00 AM
Project: SR509 Expressway
Lab ID: 2211021-008
Matrix: Soil
Client Sample ID: **SP-10-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	2.13	0.265		mg/Kg-dry	1	11/8/2022 4:24:42 PM
Lead	1.69	0.265		mg/Kg-dry	1	11/8/2022 4:24:42 PM
Sample Moisture (Percent Moisture)				Batch ID: R79643		Analyst: AK
Percent Moisture	8.75	0.500		wt%	1	11/8/2022 11:10:42 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:45:00 AM
Project: SR509 Expressway
Lab ID: 2211021-009
Matrix: Soil
Client Sample ID: **SP-11-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	2.80	0.263		mg/Kg-dry	1	11/8/2022 4:27:25 PM
Lead	2.93	0.263		mg/Kg-dry	1	11/8/2022 4:27:25 PM
Sample Moisture (Percent Moisture)				Batch ID: R79644		Analyst: AK
Percent Moisture	13.6	0.500		wt%	1	11/8/2022 11:28:14 AM

Analytical Report

Work Order: **2211021**
Date Reported: **11/9/2022**

Client: Atkinson Construction
Collection Date: 11/1/2022 11:15:00 AM
Project: SR509 Expressway
Lab ID: 2211021-010
Matrix: Soil
Client Sample ID: **SP-12-6-11.1.22**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 38401		Analyst: EH
Arsenic	2.44	0.246		mg/Kg-dry	1	11/8/2022 4:30:09 PM
Lead	2.49	0.246		mg/Kg-dry	1	11/8/2022 4:30:09 PM
Sample Moisture (Percent Moisture)				Batch ID: R79644		Analyst: AK
Percent Moisture	8.42	0.500		wt%	1	11/8/2022 11:28:14 AM

Work Order: 2211021
CLIENT: Atkinson Construction
Project: SR509 Expressway

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **MB-38401** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/7/2022** RunNo: **79675**
Client ID: **MBLKS** Batch ID: **38401** Analysis Date: **11/8/2022** SeqNo: **1643002**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.242									
Lead	ND	0.242									

Sample ID: **LCS-38401** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/7/2022** RunNo: **79675**
Client ID: **LCSS** Batch ID: **38401** Analysis Date: **11/8/2022** SeqNo: **1643003**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	37.0	0.240	40.00	0	92.5	80	120				
Lead	20.7	0.240	20.00	0	104	80	120				

Sample ID: **2211021-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/7/2022** RunNo: **79675**
Client ID: **SP-1-6-11.1.22** Batch ID: **38401** Analysis Date: **11/8/2022** SeqNo: **1643006**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	51.9	0.259	43.22	6.619	105	75	125				
Lead	43.4	0.259	21.61	18.85	114	75	125				

Sample ID: **2211021-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/7/2022** RunNo: **79675**
Client ID: **SP-1-6-11.1.22** Batch ID: **38401** Analysis Date: **11/8/2022** SeqNo: **1643007**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.7	0.257	42.88	6.619	93.4	75	125	51.91	10.6	20	
Lead	39.2	0.257	21.44	18.85	95.0	75	125	43.38	10.1	20	

Sample Log-In Check List

Client Name:	**ATKN**	Work Order Number:	**2211021**
Logged by:	**Elisabeth Samoray**	Date Received:	**11/1/2022 1:05:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐	
2.	How was the sample delivered?	Client			

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐	
		No cooler present			
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑	
6.	Was an attempt made to cool the samples?	Yes ☐	No ☑	NA ☐	
		Unknown prior to receipt			
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑	
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐		
10.	Are samples properly preserved?	Yes ☑	No ☐		
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐	
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑	
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐		
14.	Does paperwork match bottle labels?	Yes ☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐		
16.	Is it clear what analyses were requested?	Yes ☑	No ☐		
17.	Were all holding times able to be met?	Yes ☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☑	No ☐	NA ☐	

Person Notified:	Mike Bagley	Date:	11/1/2022
By Whom:	Elisabeth Samoray	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	What metals PM wants to test for		
Client Instructions:	Wants to test for As & Pb		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample 1	13.5

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

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 11/1/2022 Page: 1 of 1

Laboratory Project No (internal): 2211021

Special Remarks:

Project Name: SR509 Expressway

Client: Guy F. Atkinson Construction, LLC

Project No: 150376/20117A1

Address: 707 S. Grady Way, Ste 500

Collected by:

City, State, Zip: Renton, WA 98057

Location:

Telephone: 360.830.8359

Report To (PM): Mike Bagley, PBS Eng. + Env.

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Fax:

PM Email: mike.bagley@pbsusa.com

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1 SP-1-6-11.1.22	11/1/22	11:04	S	1									X	T				
2 SP-1-12-11.1.22	11/1/22	11:05	S	1									X	T				
3 SP-4-6-11.1.22	11/1/22	11:30	S	1									X	T				
4 SP-4-12-11.1.22	11/1/22	11:31	S	1									X	T				
5 SP-5-6-11.1.22	11/1/22	11:38	S	1									X	T				
6 SP-7-6-11.1.22	11/1/22	11:10	S	1									X	T				
7 SP-9-6-11.1.22	11/1/22	11:42	S	1									X	T				
8 SP-10-6-11.1.22	11/1/22	11:44	S	1									X	T				
9 SP-11-6-11.1.22	11/1/22	11:45	S	1									X	T				
10 SP-12-6-11.1.22	11/1/22	11:15	S	1									X	T				

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☑ Standard ☐ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day ☐ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	Sarah Newport	11/1/22 13:02	x Katherine Porter	Katherine Porter	11/01 13:05
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 11/1/2022 Page: 1 of 1

Laboratory Project No (internal): 2211021

Special Remarks: Updated per MBs request - ES 11/1/22

Project Name: SR509 Expressway

Project No: 150376/20117A1

Client: Guy F. Atkinson Construction, LLC

Address: 707 S. Grady Way, Ste 500

City, State, Zip: Renton, WA 98057

Collected by:

Location:

Telephone: 360.830.8359

Report To (PM): Mike Bagley, PBS Eng. + Env.

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Fax:

PM Email: mike.bagley@pbsusa.com

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8) Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1 SP-1-6-11.1.22	11/1/22	11:04	S	1								X	T			
2 SP-1-12-11.1.22	11/1/22	11:05	S	1								X	T			
3 SP-4-6-11.1.22	11/1/22	11:30	S	1								X	T			
4 SP-4-12-11.1.22	11/1/22	11:31	S	1								X	T			
5 SP-5-6-11.1.22	11/1/22	11:38	S	1								X	T			
6 SP-7-6-11.1.22	11/1/22	11:10	S	1								X	T			
7 SP-9-6-11.1.22	11/1/22	11:42	S	1								X	T			
8 SP-10-6-11.1.22	11/1/22	11:44	S	1								X	T			
9 SP-11-6-11.1.22	11/1/22	11:45	S	1								X	T			
10 SP-12-6-11.1.22	11/1/22	11:15	S	1								X	T			

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al (As) B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni (Pb) Sb Se Sr Sn Ti Tl V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☑ Standard ☐ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day ☐ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	Sarah Newport	11/1/22 13:02	x	~~Katherine Porter~~ Katherine Porter	11/01 13:05
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		