

**PHASE II ENVIRONMENTAL
SITE ASSESSMENT
QUALITY 4x4 TRUCK SUPPLY
2509 E EDDY LANE
PORT ANGELES, WASHINGTON**

Project No. 104-22002
February 21, 2022

Prepared for:
Estate of Burt Senf
1120 West 6th Street
Port Angeles, Washington 98363

Prepared by:
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Project No. 104-22002

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February 21, 2022

Project No. 104-22002

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
QUALITY 4X4 TRUCK SUPPLY
2509 E EDDY LANE
PORT ANGELES, WASHINGTON**

1.0 INTRODUCTION

This report summarizes the results of a Phase II Environmental Site Assessment (ESA) conducted by Krazan & Associates, Inc. (Krazan) on the referenced property. The scope of work (Proposal No. E21085WAP, dated December 23, 2021) was approved by Mr. Greg Senf, a personal representative to the estate of Mr. Burt Senf on January 14, 2022.

2.0 SITE LOCATION AND DESCRIPTION

The subject site known as Quality 4x4 is an automotive repair shop located at 2509 E Eddy Lane in Port Angeles, Washington (Figure 1). The site consists of one tax parcel, tax account number 063012571330, and encompasses a total of 0.42 acres. The site is currently occupied with one commercial building that includes an attached garage on the east side, with a door on the eastern wall leading to a 4.5 foot-wide, outdoor walkway along the eastern wall with a slight downslope to the north. The current building on the site has reportedly been used as an automotive repair shop with a machine shop since the 1970s. The machine shop was shut down in 2012. Full service auto repair was stopped in 2017. The facilities use as an auto parts store started in November, 2021.

At the time of the site visit the facility was in use as a parts store. There was no visible contamination on the surface soils on the eastern portion of the site.

3.0 PROJECT BACKGROUND

The following information is summarized from archived communication provided to a representative of Krazan between the client, Clallam County Environmental Health Division (CCEHD), and Washington State Department of Ecology (Ecology) regarding the Quality 4x4 site.

In 1990, a complaint was submitted to Ecology alleging engine block degreaser housed in a cold dip tank was being disposed of directly into the ground outside the eastern door of the building, at a rate of several drums per month.

On August 22, 1990, Jim Oberlander, a representative from Ecology's Spills Program, observed the reported waste disposal at Quality 4x4 while investigating the complaint. Subsequently, Ecology notified Mr. Senf of the report and requested he returns receipts for waste disposal and a detailed plan to conduct site clean-up. On November 21, 1990 Mr. Senf replied stating that the tank was removed from the eastern

side of the building and that further engine block cleaning would be sub-contracted until adequate onsite cleaning was constructed. A plan for clean-up was not presented to Ecology.

On June 12, 1991, Mr. Canapary of Ecology notified Mr. Senf that Quality 4x4 was added to the Confirmed and Suspected Contaminated Sites list. The description associated with the listing included suspected contamination of soil and groundwater by base/neutral compounds, halogenated organic compounds, EPA priority pollutant metals, polychlorinated biphenyls (PCBs), petroleum products, polyaromatic hydrocarbons (PAHs), and conventional organic and inorganic contaminants.

On July 29, 2002, CCEHD took two soil samples at the suspected contamination site along the east side of the Quality 4x4 site as part of a Site Hazard Assessment (FS ID#1003). Analysis conducted on the samples included Model Toxics Control Act (MTCA)-5 metals, petroleum hydrocarbons, and PAHs. Sample 1 met or exceeded MTCA soil clean up levels for diesel-range petroleum hydrocarbons, residual-range petroleum hydrocarbons, cadmium, and lead. Sample 2 met or exceeded MTCA soil clean up levels for residual-range petroleum hydrocarbons, cadmium, and lead. Documentation pertaining to the Site Hazard Assessment conducted by CCEHD did not adequately describe the location of samples taken, other than they were obtain along the east side of the Quality 4x4 building adjacent to the suspected contamination site. The CCEHD Site Hazard Assessment resulted in an Ecology Site Hazard Ranking of 3, where 1 represents the highest relative risk and 5 represents the lowest.

In December, 2021, additional shallow subsurface samples were collected along the east side of the building by Tracy Gudgel of Zenovic & Associates. The results showed similar concentrations of metals and hydrocarbons documented by CCEHD and warranted conducting a Phase II ESA to fully determine the extent of contamination and make any necessary recommendations pertaining to clean-up. This work was conducted as part of a real-estate transaction and not in response to any regulatory requirements.

4.0 SCOPE OF SERVICES

The intent of this assessment was to provide sufficient information needed to assess the extent and nature of soil contamination. The collected information was used to make recommendations regarding potential remediation efforts. The work done at the subject property consisted of:

- Drilling of four 6.0 to 6.5-foot deep soil borings with a Geoprobe 57LT Mini limited access, direct-push drill rig and the collection of soil samples.
- Screening of each soil sample for the presence of volatile hydrocarbons using a photoionization detector (PID).
- Chemical analysis of selected soil samples for Total Petroleum Hydrocarbons in the diesel-extended range (NWTPH-Dx), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), or MTCA 5 metals: mercury, lead, cadmium, chromium, and arsenic).
- Preparation of a report documenting the field investigation and findings.

5.0 SAMPLING METHODS

5.1 Drilling and Soil Sample Collection

A representative of Krazan observed the drilling of soil borings and obtained soil samples on February 2nd, 2022, at Quality 4x4. Four soil borings were drilled with a Geoprobe 57LT Mini, limited access, direct-push drill. Attempts were made to drill 15 feet at each boresite. However, due to a layer of very dense gravels, the maximum depth achieved was 6.5 feet. The following location descriptions of soil borings are shown on Figure 2 and in greater detail on Figure 3:

- Boring B-1 was located outside the eastern most exterior wall near the northeast corner of the building;
- Boring B-2 was located outside the eastern most exterior wall directly south of boring B-1, and directly north of boring B-3;
- Boring B-3 was located outside the eastern most exterior wall directly south of boring B-2, along the northern edge of the concrete slab adjacent to the side garage door;
- Boring B-4 was located within the garage near the door along the eastern exterior wall and was drilled through the concrete slab-on-grade floor.

During drilling, soil samples were collected in four-foot sections using a 2.0-inch diameter sampler driven into the soil at the head of the probe. The samples were visually described using the Unified Soils Classification System (ASTM D 2487). Geologic logs of the soil probes are attached in Appendix A. The collected soil samples were field-screened using a photo-ionization detector (PID) for the presence of volatile organic compounds. Soil samples were collected from each of the four borings. Soil cuttings were placed in a drum pending the results of the chemical analyses. Photographs of the sample collection are attached following Figure 4.

Seven soil samples were collected from the borings for analysis of the target compounds. Soil samples selected for analysis were directly placed in clean 4-ounce glass jars provided by the laboratory using disposable stainless-steel spoons. The sample jars were completely filled with no remaining headspace. Each sample jar was labeled with the project name, number, the sequential sample number and the time of collection. Following labeling, the samples were placed in an ice chest with synthetic ice and maintained at a temperature of approximately 4° Celsius.

5.2 Laboratory Analysis

The soil samples were transported to Friedman & Bruya, Inc. in Seattle for analysis. Seven of the soil samples were analyzed for Total Petroleum Hydrocarbons in the Diesel and Oil Range (method NWTPH-Dx); four soil samples were analyzed for MTCA 5 metals; three samples were analyzed for PCBs (method 8082) and PAHs (method 8270).

6.0 SITE GEOLOGICAL CHARACTERISTICS

The subject site is located in the North Olympic Peninsula region, bounded by the Olympic Mountains to the south and the Strait of Juan de Fuca to the north. The North Olympic Peninsula is comprised of Quaternary glacial and non-glacial sediments primarily consisting of boulder, cobble, gravel, sand, silt, and clay tills; with secondary units consisting of Crescent basalts, peat, outwash sediments, and artificial fills. The area in the vicinity of the subject property is underlain by Quaternary glacial till and glacial outwash.

Quaternary glacial till consists of unconsolidated to semi-consolidated silt, sand, gravel, and/or cobble deposits; locally grades up and interfingers with Tertiary marine sediment deposits and is overlain occasionally by Quaternary landslide deposits; and locally includes modified land and artificial fill.

The borings generally encountered medium-dense to dense, gravelly coarse sand. The borings were generally terminated in a medium stiff, sandy gravel at the termination depths of up to 6.5 feet bgs. Groundwater was not encountered in any of the borings. Local well reports archived by the Department of Ecology corroborate the absence of encountered groundwater at this depth. For a detailed description of the soil conditions encountered, please refer to the soil boring logs in Appendix A. The description of the subsurface conditions provided herein was derived from on-site observations of soil samples collected only from the locations where borings were placed.

7.0 SOIL ANALYSIS RESULTS

Analysis and interpretation of the data generated during the field investigation and laboratory testing is presented in the following section. Where appropriate, the results are compared with regulatory limits for the chemicals identified (Table 1). During the drilling, each soil sample collected was screened using a PID to assess for the presence of volatile organic constituents. No detectable PID measurements were recorded from samples from any of the borings.

Seven soil samples were collected for analysis of the target compounds. Only one sample, B2-S1 at 1.0 feet, exceeded MTCA Method A cleanup levels for oil, arsenic, cadmium, and lead. Sample B3-S1 at 0.5 feet contained detectable concentrations of diesel and oil, but did not exceed MTCA Method A cleanup levels. Deeper samples in boring B-3 and samples from borings B-1 and B-4 contained no detectable diesel and oil concentrations. The results from samples analyzed for MTCA 5 metals from borings B-1, B-3, and B-4 were all below MTCA Method A cleanup levels. Samples analyzed from borings B-1, B-3, and B-4 contained no detectable concentrations of PCBs or PAHs.

TABLE 1. Summary of Soil Hydrocarbon, MTCA 5 Metals, PCB, and PAH Results
 2509 E Eddy Lane, Port Angeles, Washington

Sample Number	Sample Location and Depth	NWTPH-Dx (mg/kg)		MTCA 5 Metals (mg/kg)					PCBs (mg/kg)	PAHs (mg/kg)
		Diesel	Oil	Mercury	Lead	Cadmium	Chromium	Arsenic		
B1-S1	B-1, 1.0 feet bgs.	<50	<250	<1	3.5	<1	36.0	2.55	ND	ND
B2-S1	B-2, 1.0 feet bgs.	230	3,700	<1	3,720	10.8	101.	20.9	NA	NA
B3-S1	B-3, 0.5 feet bgs.	70	1,700	NA	NA	NA	NA	NA	NA	NA
B3-S2	B-3, 2.0 feet bgs.	<50	<250	<1	4.82	<1	36.1	2.97	ND	ND
B3-S3	B-3, 5.5 feet bgs.	<50	<250	NA	NA	NA	NA	NA	NA	NA
B4-S1	B-4, 1.0 feet bgs.	<50	<250	<1	1.70	<1	39.2	2.16	ND	ND
B4-S2	B-4, 5.0 feet bgs.	<50	<250	NA	NA	NA	NA	NA	NA	NA
MTCA Method A Industrial Land Use Cleanup Levels		2,000.	2,000.	2.	1,000	2.	2,000.	20.	1.0	-

Notes: Concentrations listed in milligrams per kilogram (mg/kg).

MTCA = the Model Toxics Control Act regulation and the regulations promulgated thereunder (Washington Administrative Code, Chapter 173-340).

NA = Not Analyzed

ND = compound or chemical not detected.

Bolded results indicate concentration above clean up levels.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this assessment, the following conclusions have been developed:

- Soil samples collected and analyzed at boring B-2, located 28 feet south from the northeast corner of the building at a depth of 1 foot, contained concentrations of contaminants exceeding MTCA Method A Industrial Land Use Cleanup Levels, including total petroleum hydrocarbons in the heavy oil range, lead, cadmium, and arsenic. Samples from all other boring sites did not contain concentrations exceeding MTCA Method A Cleanup Levels, although the near-surface sample from boring B-3 did contain detectable concentrations of diesel and oil.
- Clean soils at Boring B-1, B-3, and B-4 indicate the shallow, dense soils encountered in the vicinity of the site limited the extent of the both lateral and vertical contaminant migration.
- We recommend excavation of near surface soils for remediation of the contaminated area (Figure 4). The contaminated area is approximately 100 square feet in size and should be

excavated to a depth of at least 1.5 feet. The total volume of material to be excavated is estimated to be approximately 5.5 cubic yards.

- At the time of the excavation of contaminated soils, confirmation samples will be collected to confirm all contamination has been removed. The proposed locations of these additional samples can be found on Figure 4.

9.0 LIMITATIONS

This survey and review of the subject property has been limited in scope to those areas defined by the client. This investigation is undertaken with the risk that visual observations and random sampling alone would not reveal the presence, full nature, and extent of contaminants of concern. Krazan makes no representation as to the content of materials not sampled or that were inaccessible to our inspector. The sample locations are approximate, and are based on field notes and diagrams of sample locations. The opinions presented herein apply to the site condition existing at the time of the investigation. Opinions and recommendations provided herein may not apply to future conditions that may exist at the site.

The findings presented in this report were based on field observations and sampling as defined by the client. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used. The information presented herein is based on professional interpretation using presently accepted methods with a degree of conservatism deemed proper as of the report date. We do not warrant that future technical developments cannot supersede such data.

This report is provided for the exclusive use of the client noted on the cover page and is subject to the terms and conditions in the applicable contract between the client and Krazan. The client is the only party to whom Krazan has explained the risks involved and has been involved in the shaping of the scope of services needed to satisfactorily manage those risks, if any, from the client's point of view. Any third-party use of this report, including use by the Client's lender, prospective purchaser, or lessee will be subject to the terms and conditions governing the contractual work between the Client and Krazan. The unauthorized use of, reliance on, or release of the information contained in this report is strictly prohibited and will be without risk or liability to Krazan.

Laboratory analysis was conducted by a laboratory accredited under the guidance of the EPA. The results of the analyses are accurate only to the degree of care exercised by the independent laboratories and the representative nature of the samples obtained.

Krazan appreciates the opportunity to provide you with this information and trusts that you will find it useful. If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (360) 598-2126.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.



Andrew Glenn
Staff Geologist



Shawn E. Williams, L.G.
Regional Environmental Manager



2-21-2022



Source: Google Earth

VICINITY MAP

Scale: See Scale

Date: February 2022

Quality 4x4 Phase II ESA
 2509 E. Eddy Lane
 Port Angeles,
 Washington

Modified by:
 AG

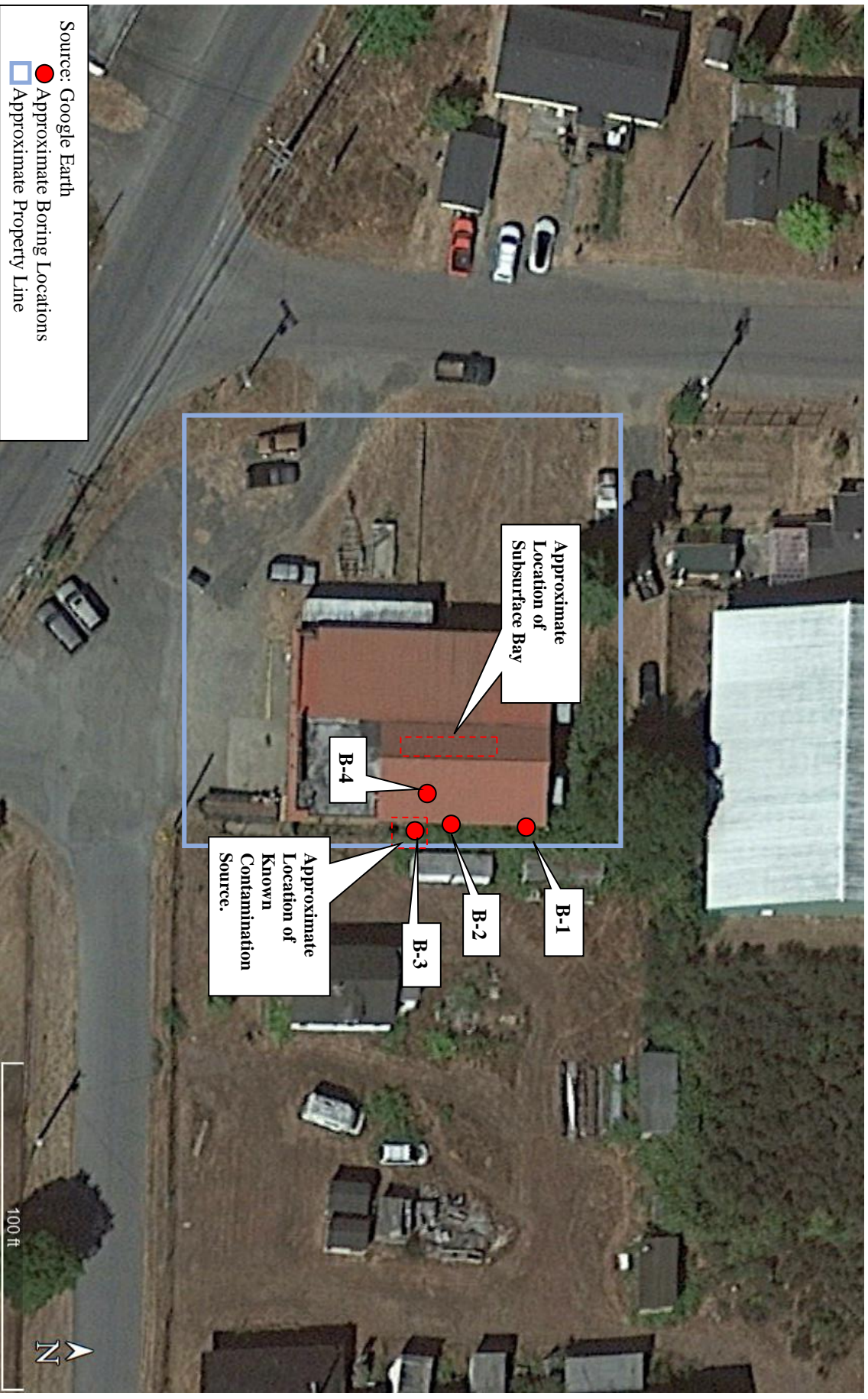
Approved by:
 SEW


Project No.
 104-22002

Figure No.
 1



SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States



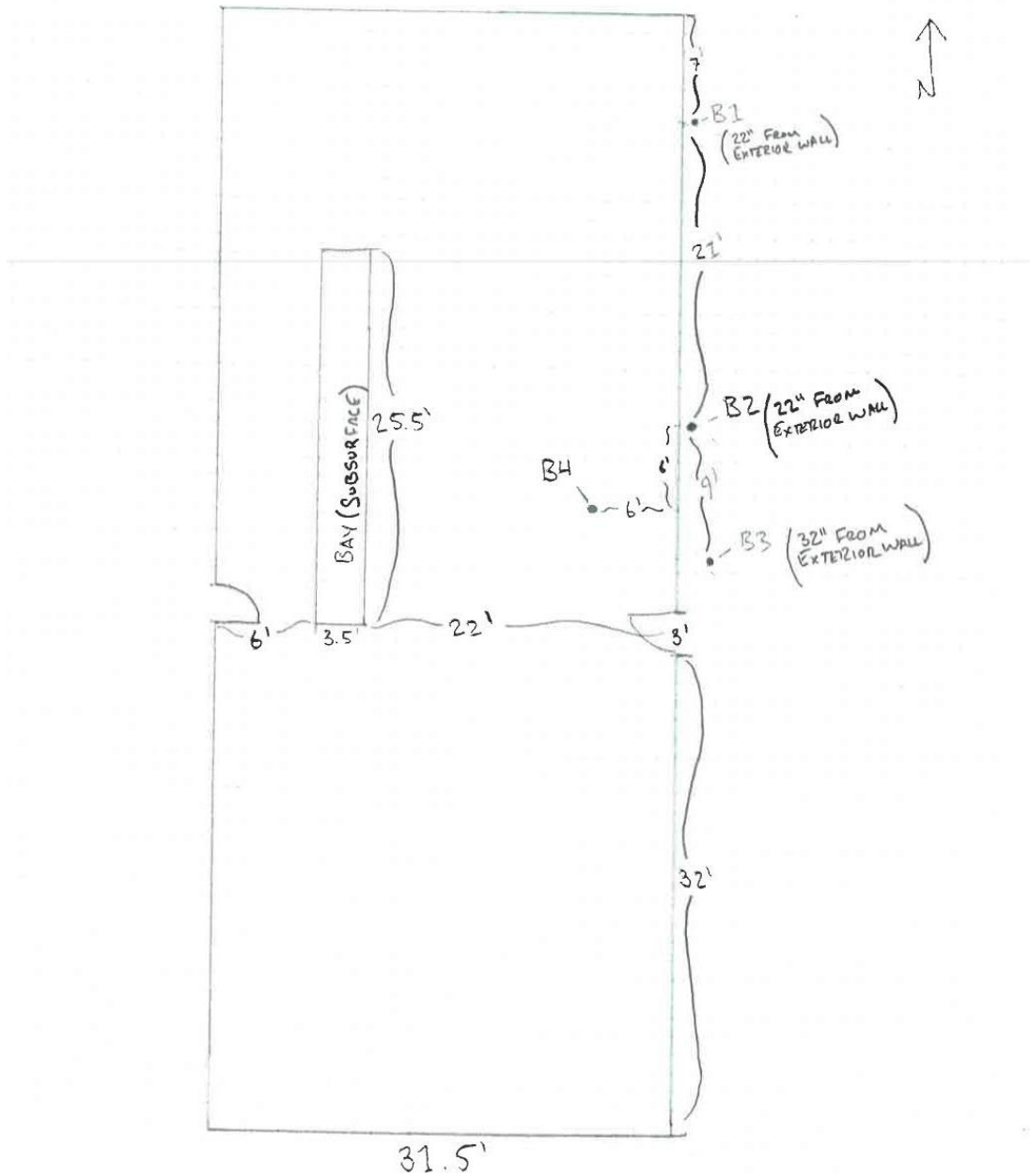
SITE MAP		Scale:	See Scale	Date:	February 2022
Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington	Drawn by:	AG	Project No. 104-22002	Approved by:	SEW
	Figure No. 2				
 SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i>					


Project Name: QUALITY 4x4 Phase II

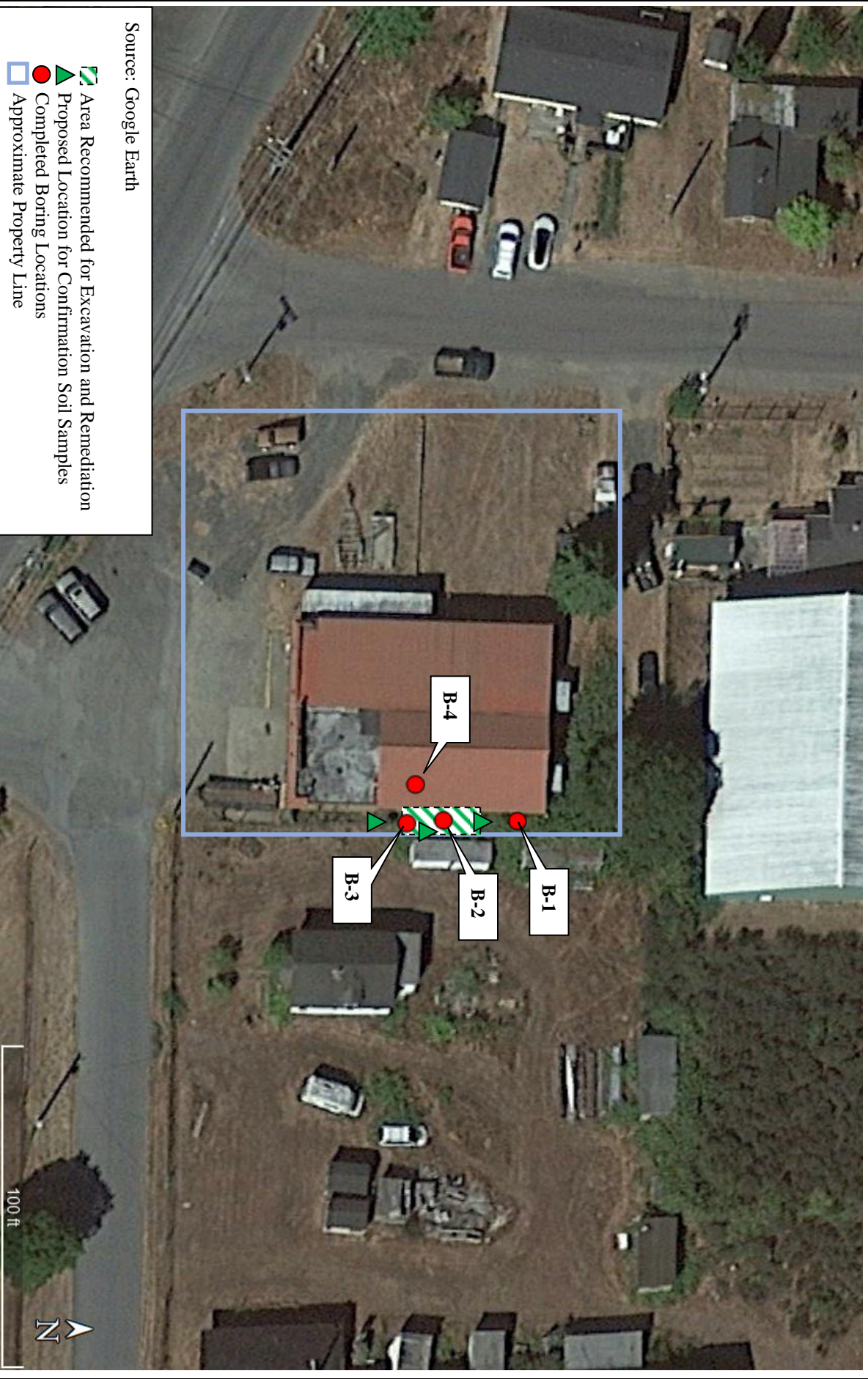
Project Number: 104-22002

Project Date: 02/02/22





SKETCH OF GARAGE ATTACHED TO EAST-SIDE OF BUILDING



Site Sketch	Scale: 1:120	Date: February 2022	 SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i>
Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington	Drawn by: AG	Approved by: SEW	
	Project No. 104- 22002	Figure No. 3	



Source: Google Earth

-  Area Recommended for Excavation and Remediation
-  Proposed Location for Confirmation Soil Samples
-  Completed Boring Locations
-  Approximate Property Line

Recommendations for Excavation and Remediation

<p>Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington</p>		<p>Scale: See Scale</p>	<p>Date: February 2022</p>
<p>Drawn by: AG</p>		<p>Approved by: SEW</p>	
<p>Project No. 104-22002</p>		<p>Figure No. 4</p>	





Photo 1: Positioned facing north along the east side of the site. Drilling of boring B-1.



Photo 2: Positioned facing north along the east side of the site. Boring B-3 Located at bottom of image; Boring B-1 located at the top of image.


<p>Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington</p>		<p>Project No. 104-22002</p> <p>Date: 02/10/2022</p> <p>Approved By: SEW</p>
 <p>Krazan SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i></p>		



Photo 3: Boring from B-1 at 0-2 feet.



Photo 4: Boring from B-2 at 0-2 feet.


<p>Quality 4x4 Phase II ESA</p> <p>2509 E. Eddy Lane Port Angeles, Washington</p>	<p>Project No. 104-22002</p>	 <p>SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i></p>
	<p>Date: 02/10/2022</p>	
	<p>Approved By: SEW</p>	



Photo 5: Boring from B-3 at 0-2 feet.



Photo 6: Boring from B-4 at 0-1 feet.



Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington	Project No. 104-22002	 SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i>
	Date: 02/10/2022	
	Approved By: SEW	



Photo 7: Positioned facing south inside the garage. Drilling of boring B-4.

Quality 4x4 Phase II ESA 2509 E. Eddy Lane Port Angeles, Washington	Project No. 104-22002	 SITE DEVELOPMENT ENGINEERS <i>Offices Serving the Western United States</i>
	Date: 02/10/2022	
	Approved By: SEW	

Appendix A

Log of Soil Boring B1

Project Name: Quality 4x4 Phase II ESA
 Client: Estate Burt L. Senf
 Project Number: 104-22002

Boring Elevation: 220 ft.
 Boring Location: See Figure 1
 Depth to Groundwater: N/A

DEPTH (FT.)	USCS Classification	VISUAL PHYSICAL DESCRIPTION	SAMPLE NO.	DEPTH (FEET)	SAMPLE TYPE	PID READING (PPM)	TEST(S) PERFORMED	NOTES	LAB TESTING RESULTS FOR SAMPLE
0	SW	0-2' Tan to Brown, Gravelly Coarse Sand	S1	1.0	Soil	0.0	NWTPH-DX MTCA 5		
5		No Sample Collected, Refusal at 6'							
10		Total Depth: 6.0' Groundwater: N/A							
15									
20									

Drill Contractor: Holt Services
 Equipment: Geoprobe 54LT Mini Drill Rig
 Sampling Method: Direct Push
 Driller: Cody

Excavation Date: 02/02/2022
 Krazan Representative: SEW

Log of Soil Boring B2

Project Name: Quality 4x4 Phase II ESA
 Client: Estate Burt L. Senf
 Project Number: 104-22002

Boring Elevation: 220 ft.
 Boring Location: See Figure 2
 Depth to Groundwater: N/A

DEPTH (FT.)	USCS Classification	VISUAL PHYSICAL DESCRIPTION	SAMPLE NO.	DEPTH (FEET)	SAMPLE TYPE	PID READING (PPM)	TEST(S) PERFORMED	NOTES	LAB TESTING RESULTS FOR SAMPLE
0	SW SW	0-0.5' Dark Brown, Gravelly Coarse Sand.	S1	0.5'-1'	Soil	0.0	NWTHP-DX MTCA 5		
	SW	0.5-1' Grey, Gravelly Coarse Sand, Trace Organics, Staining							
		1'-1.5' Reddish Brown, Gravelly, Coarse to Medium Sand, Moist							
5		No Sample Collected, Refusal at 6.5'							
10		Total Depth: 6.5' Groundwater: N/A							
15									
20									

Drill Contractor: Holt Services
 Equipment: Geoprobe 57LT Mini Drill Rig
 Sampling Method: Direct Push
 Driller: Cody

Excavation Date: 02/02/2022
 Krazan Representative: SEW

Log of Soil Boring B3

Project Name: Quality 4x4 Phase II ESA
 Client: Estate Burt L. Senf
 Project Number: 104-22002

Boring Elevation: 220 ft.
 Boring Location: See Figure 1
 Depth to Groundwater: N/A

DEPTH (FT.)	USCS Classification	VISUAL PHYSICAL DESCRIPTION	SAMPLE NO.	DEPTH (FEET)	SAMPLE TYPE	PID READING (PPM)	TEST(S) PERFORMED	NOTES	LAB TESTING RESULTS FOR SAMPLE
0	SM	0-1' Dark Brown, Silty fine sand, Trace Organics, Staining.	S1	0.5'	Soil	0.0	NWTHP-DX		
	SW	1'-2.25' Gravelly Coarse Sand, Oversized Gravels (0.75"), Tan to reddish brown, Moist.	S2	2'	Soil	0.0	NWTHP-DX, PAHs, PCBs, MTCA 5		
		No Sample Collected							
5	SW	5'-5.5' Grey and Brown, Coarse Sandy Gravel.	S3	5.5'	Soil	0.0	NWTHP-DX		
		No Sample Collected, Refusal at 6'.							
10		Total Depth: 6' Groundwater: N/A							
15									
20									

Drill Contractor: Holt Services
 Equipment: Geoprobe 57LT Mini Drill Rig
 Sampling Method: Direct Push
 Driller: Cody

Excavation Date: 02/02/2022
 Krazan Representative: SEW

Log of Soil Boring B4

Project Name: Quality 4x4 Phase II ESA
 Client: Estate Burt L. Senf
 Project Number: 104-22002

Boring Elevation: 220 ft.
 Boring Location: See Figure 2
 Depth to Groundwater: N/A

DEPTH (FT.)	USCS Classification	VISUAL PHYSICAL DESCRIPTION	SAMPLE NO.	DEPTH (FEET)	SAMPLE TYPE	PID READING (PPM)	TEST(S) PERFORMED	NOTES	LAB TESTING RESULTS FOR SAMPLE
0		0'-0.5' Concrete							
	SW	0.5'-1.5' Tan to Grey, Gravelly Coarse Sand, Angular Oversized Gravel, Top 1.5" Dark Brown in Color.	S1	1'	Soil	0.0	NWTHP-DX, PAHs, PCBs, MTCA 5		
		No Sample Collected							
5	SW	5.5'-6' Grey and Brown, Coarse Sandy Gravel	S2	5.5	Soil	0.0	NWTHP-DX		
		Refusal at 6'							
10		Total Depth: 6' Groundwater: N/A							
15									
20									

Drill Contractor: Holt Services
 Equipment: Geoprobe 54LT Mini Drill Rig
 Sampling Method: Direct Push
 Driller: Cody

Excavation Date: 02/02/2022
 Krazan Representative: SEW

Appendix B

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.

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www.friedmanandbruya.com

February 11, 2022

Shawn Williams, Project Manager
Krazan & Associates (Poulsbo)
1230 Finn Hill Rd NW, Suite A
Poulsbo, WA 98370

Dear Mr Williams:

Included are the results from the testing of material submitted on February 3, 2022 from the Quality 4x4 Phase II, F&BI 202043 project. There are 24 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
KZP0211R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 3, 2022 by Friedman & Bruya, Inc. from the Krazan & Associates (Poulsbo) Quality 4x4 Phase II, F&BI 202043 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Krazan & Associates (Poulsbo)</u>
202043 -01	B1-S1
202043 -02	B2-S1
202043 -03	B3-S1
202043 -04	B3-S2
202043 -05	B3-S3
202043 -06	B4-S1
202043 -07	B4-S2

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/11/22

Date Received: 02/03/22

Project: Quality 4x4 Phase II, F&BI 202043

Date Extracted: 02/03/22

Date Analyzed: 02/03/22

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

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
B1-S1 202043-01	<50	<250	94
B2-S1 202043-02	230 x	3,700	95
B3-S1 202043-03	70 x	1,700	95
B3-S2 202043-04	<50	<250	104
B3-S3 202043-05	<50	<250	93
B4-S1 202043-06	<50	<250	93
B4-S2 202043-07	<50	<250	93
Method Blank 02-366 mb	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B1-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-01
Date Analyzed:	02/03/22	Data File:	202043-01.137
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.55
Cadmium	<1
Lead	3.50
Mercury	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B1-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-01 x5
Date Analyzed:	02/04/22	Data File:	202043-01 x5.056
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Chromium	36.0
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B2-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-02
Date Analyzed:	02/03/22	Data File:	202043-02.147
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	20.9
Cadmium	10.8
Mercury	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B2-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-02 x25
Date Analyzed:	02/04/22	Data File:	202043-02 x25.088
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Chromium	101
Lead	3,720

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B3-S2	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-04
Date Analyzed:	02/03/22	Data File:	202043-04.148
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Arsenic	2.97
Cadmium	<1
Lead	4.82
Mercury	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B3-S2	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-04 x5
Date Analyzed:	02/04/22	Data File:	202043-04 x5.090
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Chromium	36.1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B4-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-06
Date Analyzed:	02/03/22	Data File:	202043-06.149
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.16
Cadmium	<1
Lead	1.70
Mercury	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	B4-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	202043-06 x5
Date Analyzed:	02/04/22	Data File:	202043-06 x5.092
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Chromium	39.2
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	NA	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/03/22	Lab ID:	I2-98 mb
Date Analyzed:	02/03/22	Data File:	I2-98 mb.092
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B1-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-01 1/5
Date Analyzed:	02/08/22	Data File:	020811.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	68	24	111
Phenol-d6	72	37	116
Nitrobenzene-d5	75	38	117
2-Fluorobiphenyl	76	45	117
2,4,6-Tribromophenol	72	11	158
Terphenyl-d14	77	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
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
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B3-S2	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-04 1/5
Date Analyzed:	02/08/22	Data File:	020812.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	78	24	111
Phenol-d6	80	37	116
Nitrobenzene-d5	84	38	117
2-Fluorobiphenyl	86	45	117
2,4,6-Tribromophenol	75	11	158
Terphenyl-d14	92	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
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
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B4-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-06 1/5
Date Analyzed:	02/08/22	Data File:	020813.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	61	24	111
Phenol-d6	71	37	116
Nitrobenzene-d5	73	38	117
2-Fluorobiphenyl	80	45	117
2,4,6-Tribromophenol	78	11	158
Terphenyl-d14	87	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
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
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	Not Applicable	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	02-389 mb 1/5
Date Analyzed:	02/08/22	Data File:	020810.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	81	24	111
Phenol-d6	86	37	116
Nitrobenzene-d5	89	38	117
2-Fluorobiphenyl	88	45	117
2,4,6-Tribromophenol	78	11	158
Terphenyl-d14	92	50	124

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
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
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B1-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-01 1/6
Date Analyzed:	02/08/22	Data File:	020822.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	73	23	120

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B3-S2	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-04 1/6
Date Analyzed:	02/08/22	Data File:	020823.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	73	23	120

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B4-S1	Client:	Krazan & Associates (Poulsbo)
Date Received:	02/03/22	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	202043-06 1/6
Date Analyzed:	02/08/22	Data File:	020824.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	82	23	120

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	Not Applicable	Project:	Quality 4x4 Phase II, F&BI 202043
Date Extracted:	02/08/22	Lab ID:	02-375 mb 1/6
Date Analyzed:	02/08/22	Data File:	020818.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	MG

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	78	23	120

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/11/22

Date Received: 02/03/22

Project: Quality 4x4 Phase II, F&BI 202043

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

Laboratory Code: 202034-03 (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	82	84	73-135	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/11/22

Date Received: 02/03/22

Project: Quality 4x4 Phase II, F&BI 202043

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

Laboratory Code: 201327-14 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	105	95	75-125	10
Cadmium	mg/kg (ppm)	10	<5	111	102	75-125	8
Chromium	mg/kg (ppm)	50	13.1	91	80	75-125	13
Lead	mg/kg (ppm)	50	<5	98	91	75-125	7
Mercury	mg/kg (ppm)	5	<5	90	96	75-125	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	90	80-120
Cadmium	mg/kg (ppm)	10	101	80-120
Chromium	mg/kg (ppm)	50	104	80-120
Lead	mg/kg (ppm)	50	96	80-120
Mercury	mg/kg (ppm)	5	94	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/11/22

Date Received: 02/03/22

Project: Quality 4x4 Phase II, F&BI 202043

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

Laboratory Code: 202043-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.01	72	75	34-118	4
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	72	77	29-130	7
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	72	77	37-119	7
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	76	80	45-128	5
Acenaphthene	mg/kg (ppm)	0.83	<0.01	77	81	36-125	5
Fluorene	mg/kg (ppm)	0.83	<0.01	77	82	48-121	6
Phenanthrene	mg/kg (ppm)	0.83	<0.01	80	81	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	79	82	50-150	4
Fluoranthene	mg/kg (ppm)	0.83	<0.01	81	85	50-150	5
Pyrene	mg/kg (ppm)	0.83	<0.01	81	78	50-150	4
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	80	82	50-150	2
Chrysene	mg/kg (ppm)	0.83	<0.01	84	85	50-150	1
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	80	83	50-150	4
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	83	87	50-150	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	82	89	50-150	8
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	79	77	41-134	3
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	84	78	44-130	7
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	85	77	33-131	10

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	84	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	86	67-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	86	66-107
Acenaphthylene	mg/kg (ppm)	0.83	88	70-130
Acenaphthene	mg/kg (ppm)	0.83	89	66-112
Fluorene	mg/kg (ppm)	0.83	88	67-117
Phenanthrene	mg/kg (ppm)	0.83	95	70-130
Anthracene	mg/kg (ppm)	0.83	93	70-130
Fluoranthene	mg/kg (ppm)	0.83	93	70-130
Pyrene	mg/kg (ppm)	0.83	96	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	93	70-130
Chrysene	mg/kg (ppm)	0.83	96	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	91	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	91	69-125
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	95	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	94	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	98	67-128
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	97	64-127

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 02/11/22

Date Received: 02/03/22

Project: Quality 4x4 Phase II, F&BI 202043

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

Laboratory Code: 202055-01 1/6 (Matrix Spike) 1/6

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	90	90	44-107	0
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	96	96	38-124	0

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	95	47-158
Aroclor 1260	mg/kg (ppm)	0.25	99	69-147

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

202043
 Report To Shawn Williams

Company Keenan & Associates

Address 1230 First Hill Road NW Suite A

City, State, ZIP Portland, WA 98370

Phone (360) 598-2126 Email ShawnWilliams@keenan.com

SAMPLES (signature) [Signature]

02.03.22

PROJECT NAME

PO #

REMARKS Quality L44 Phase II

INVOICE TO

Project specific RI.s? - Yes / No

TURNAROUND TIME

Standard turnaround
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL

Archive samples
 Other _____
 Default: Dispose after 30 days

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082			
B1-S1	01A-B	2/2/22	10:40	Soil	2	<input checked="" type="checkbox"/>									
B2-S1	02J	2/2/22	11:05		2	<input checked="" type="checkbox"/>									
B3-S1	03	2/2/22	11:35		1	<input checked="" type="checkbox"/>									
B3-S2	04	2/2/22	11:40		1	<input checked="" type="checkbox"/>									
B3-S3	05	2/2/22	11:50		1	<input checked="" type="checkbox"/>									
B4-S1	06A-S	2/2/22	13:10		2	<input checked="" type="checkbox"/>									
B4-S2	07J	2/2/22	13:25		2	<input checked="" type="checkbox"/>									

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-3029

Ph. (206) 285-8282

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by: <u>[Signature]</u>		<u>Shawn Williams</u>		<u>Keenan Associates</u>		<u>2-2-22</u>	
Received by: <u>[Signature]</u>		<u>Abigail Corvex</u>		<u>FBI</u>		<u>2-3-22</u>	<u>0610</u>
Relinquished by:							
Received by:							<u>3:00</u>

Samples received at