GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

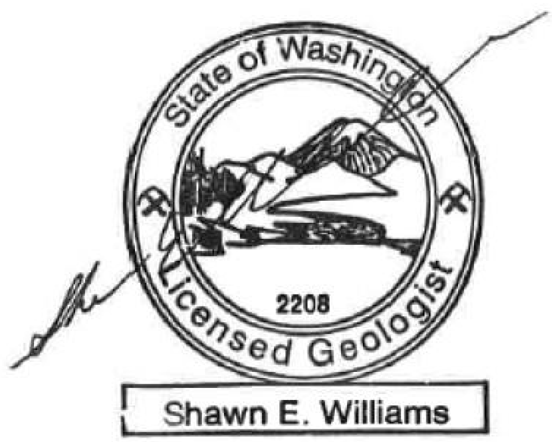
Remedial Investigation Report

JSP Silverdale Lots 25 and 26
Brian Lane, NW
Silverdale, Washington

APNs:082501-4-025-2001 and
082501-4-026-2000, Section 08, Township 25N, Range 01E

Facility /Site No.: 6865393
VCP No: NW3213

October 19, 2021



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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
AEG	Associated Environmental Group, LLC
ASTM	American Society for Testing and Materials
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes
COC	Chain-of-custody
COPC	Contaminants of potential concern
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons
CSCSL	Confirmed and Suspected Contaminated Sites List
CSM	Conceptual site model
DP	Debris piles
DSA	Drum storage area
E&E	Ecology and Environment, Inc.
Ecology	Washington Department of Ecology
EnviroSound	EnviroSound Consulting, Inc.
EPA	United States Environmental Protection Agency
FA	Further Action
HASP	Health and Safety Plan
HSL	Hazardous Sites List
IDW	Investigation-derived waste
KCHD	Kitsap County Health District
Krazan	Krazan and Associates
mg/kg	milligrams per kilogram
MS/MSD	matrix spike and matrix spike duplicate
MTCA	Model Toxics Control Act
NFA	No further action
NW	Northwest
NWTPH	Northwest Total Petroleum Hydrocarbons
PCB	Polychlorinated biphenyls
PQL	Project quantitation limit
QC	Quality Control
RI	Remedial Investigation
SAP	Sampling and Analysis Plan
SHA	Site Hazard Assessment
TEE	Terrestrial Ecological Evaluation
TEQ	Toxicity equivalents
TPH (g, d, or o)	Total Petroleum Hydrocarbons (gasoline, diesel, or heavy oil)
USEPA	U.S. Environmental Protection Agency
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

The subject property consists of two contiguous rectangular-shaped tax parcels located in Kitsap County. The Property is currently undeveloped land. Identified soil contamination is associated with wastes that were historically disposed of at the Site. The objective of this Remedial Investigation (RI) is to complete characterization of the site based on the March 9, 2021, Further Action (FA) opinion letter from the Washington Department of Ecology (Ecology) to determine if any further remedial action or site monitoring is required to meet substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW in order to achieve a No Further Action (NFA) opinion for the site.

Environmental assessments have been conducted at the Site since 1997. Identified areas of concern were a former drum storage area, two debris pile areas, and the location of a drum by the former residence. The contaminants of potential concern (COPCs) historically identified are arsenic, diesel, gasoline, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). A Sampling and Analysis Plan (SAP) for conducting this Remedial Investigation (RI) was prepared by Krazan in April 2021 and submitted to Ecology for approval. The sampling strategy was formulated to fill identified data gaps in response to correspondence with Ecology. This SAP was approved on June 10, 2021.

Representatives of Krazan collected surface soil samples in the areas of concern on June 18, 2021. Monitoring wells MW-1 through MW-5 were installed and subsurface soil samples were collected in July 2021. The monitoring wells were located to sample soil and groundwater adjacent to the identified areas of concern. Two quarterly sets of groundwater samples were collected for analysis from MWs 1 through 5 on July 21 and October 6, 2021.

Lead was detected in surface soil above the MTCA Method A Cleanup Level in Sample 2021-SS-2 in the vicinity of the former Debris Pile No. 1. Diesel and motor oil were detected in surface soil above MTCA Method A Cleanup Levels in Samples 2021-SS-10 and 2021-SS-11 in the vicinity of the former drum located near the former House and Drum Area .

An interim action was conducted in September 2021 wherein soil was over-excavated at Debris Pile No.1 and the former House and Drum Area. Confirmation soil samples were collected in each case, and results of the sampling confirmed that no residual contamination was left in place. A total of approximately 31 cubic yards (46.53 tons) of soil was excavated and transported to the Waste Management Transfer Station in Bremerton, Washington. The excavations were not backfilled.

Based on the CSM (Section 6), no source material remains at the site that would adversely impact receptors. All detected concentrations of COPCs in soil and groundwater samples are below MTCA Method A Cleanup Levels. Therefore, all transport pathways identified in the CSM are incomplete and remaining conditions at the site are protective of Human Health and the Environment. Based on the results of this RI, as well as data obtained following the interim removal action, no further action is warranted at this site.

1. INTRODUCTION

The objective of this Remedial Investigation (RI) is to complete characterization of the site based on the March 9, 2021, Further Action (FA) opinion letter from the Washington Department of Ecology (Ecology). Site characterization data was collected and evaluated in this report to determine if any further remedial action or site monitoring is required to meet substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW in order to achieve a No Further Action (NFA) opinion for the site.

1.1 GENERAL SITE INFORMATION

Lots 25 & 26 of the JSP Silverdale site consist of two contiguous rectangular-shaped tax parcels located in Kitsap County, in the southeast quarter of Section 08, Township 25, Range 01E. The northern parcel, Tax No. 082501-4-026-2000, is designated Parcel A and the southern parcel, Tax No. 082501-4-025-2001, is designated Parcel B. The two parcels, which cover approximately 9.78 acres of undeveloped land, are located east of Brian Lane NW in central Kitsap County, northwest of Silverdale, Washington, and are shown on the Vicinity Map, Figure 1. No street number has been assigned to the Property.

The Property is heavily vegetated with overgrown blackberry bushes, weeds, tall grasses, and other underbrush. An approximately 1-acre area on the western portion of the Property was cleared. A primitive logging road crosses the Property tracking southwest to northeast. Access to the Property is via a 30-foot-wide easement from Brian Lane NW, which is located west of the Property. No utilities are provided to the Property. The Property is bounded with undeveloped land to the north, south, and west, and single-familyresidences to the east and southwest.

1.2 SITE HISTORY

The Property is currently undeveloped land. An aerial photograph in 1981 shows that the central portion of the Property was cleared, with a building structure and a primitive road entering from the west; aerial photographs from 1990 to present show that the southwestern portion of the Property was cleared (AEG 2020). A historic report indicated that three abandoned building structures were present on the Property in 1997 (E&E 1997). Other historic reports indicated that the abandoned building structures were a house, a chicken coop, and a shed. The building structures were reportedly removed from the Property (decayed at the time) in June 2005 (EnviroSound 2015). The Property has been vacant and undeveloped since that time. The locations of the former building structures are depicted on Figure 2.

Soil contamination is associated with wastes that were historically disposed of at the Site. One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 2). A total of eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with "Roybond Primer" but the exact contents of the drums were unknown. A few debris piles were also discovered on the property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc. The contaminants of potential concern (COPCs) historically identified include arsenic, diesel, gasoline, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs).

1.3 SITE USE

The property is currently undeveloped. The property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest. The property is zoned for commercial use with the Kitsap County comprehensive plan land use designation of Urban High Intensity Commercial. Future receptors may be residents, workers, or construction workers.

2. FIELD INVESTIGATIONS

2.1 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Environmental assessments have been conducted at the Site since 1997. The list below is from the Site Description in the March 9, 2021, Ecology Further Action (FA) Opinion letter outlining site investigations and regulatory history in chronological order:

- In 1985 and 1986, complaints were made by a neighboring property owner to the Kitsap County Health District (KCHD) alleging that illegal dumping was being conducted on the Property. KCHD was unable to substantiate the claims of illegal burial of drums and cylinders at the time.
- In August 1997, the current Property owner was notified by the U.S. Environmental Protection Agency (EPA) that there were allegations of illegal dumping on the Site, presumably from the same neighbor. As a result of the allegation, a Site investigation was conducted on behalf of the EPA.
- The investigation included clearing brush and debris, conducting a geophysical survey, and digging three trenches to a maximum depth of 11 feet below ground surface (bgs) on the Site. The locations of the trenches are depicted as "E&E 1997 Trench #1, 2, and 3" on Figure 2.
- One 55-gallon drum discovered west of the former house was reportedly approximately ¼ full (Figure 2). One sample was collected from the drum. The analytical results were consistent with a diesel or heating oil type of petroleum product. The drum was emptied and recycled at the time.
- In March and April 2005, Ecology and KCHD conducted an initial Site investigation:
    - On March 14, 2005, KCHD received complaints from a neighbor that solid waste was uncovered at the Site due to land-clearing activities. KCHD visited the Site on March 18 and confirmed the

presence of several piles of trash and rubbish. KCHD contacted the current owner to inquire about the status of the waste; the owner related that he was planning on developing the Property and cleaning up the solid waste.

- On March 25, 2005, the current owner informed KCHD that additional brush-clearing activities revealed a 10-foot by 10-foot area where 18 55-gallon drums were discovered. The area is depicted as "Former Drum Storage Area" on Figure 2. KCHD inspected the drums on March 28; all drums were full or close to full. Four of the drums reportedly showed signs of leakage or spillage. Several drums were labeled with "Roybond Primer." The area around the drums reportedly smelled of solvents. KCHD provided the information to Ecology.
- On March 29, 2005, a nearby property owner contacted Ecology reporting the drums found by the current owner and alleged additional drums (dumped in 1985 to 1986) were still buried on the Site. The complaint suggested that the 1997 trenching area was not in the alleged dumping area.
- As a result of the initial investigation, Ecology listed the Site on the Confirmed and Suspected Contaminated Sites List (CSCSL) in April 2005 and requested that KCHD conduct a Site Hazard Assessment (SHA).

- KCHD conducted the Site Hazard Assessment (SHA) from August 2005 to February 2006:
  - During the time of the SHA, the current owner demolished the building structures in June 2005 and removed the 18 drums on August 17, 2005.
  - A ground-penetrating radar and magnetic survey was conducted in August 2005 in areas that were not covered by the 1997 survey and trenching. No buried metallic objects andno signs of excavation were found. The 2005 survey area is depicted on Figure 2.
  - Five soil samples (SP1 through SP5) were collected from the cleared areas of the Site from ground surface to 1-foot bgs (Figure 3). Two of the soil samples were collected from the former drum storage area; two were from the areas of the debris piles; and one was from the former house area. One soil sample, SP2, was reported to contain cPAHs TEQ concentration above the Model Toxics Control Act (MTCA) Method A soil cleanup level. However, review of this data indicated that this result was mis-calculated by three orders of magnitude (e.g. ug/kg was incorrectly reported as mg/kg) and that the corrected TEQ concentration was significantly under the MTCA Method A action levels.
  - Two groundwater samples were collected from the two closest drinking water wells, respectively (Figure 4). The water sample collected from the Landsworth Creek water system well (east of the Site and in the shallow aquifer) contained an arsenic concentration and a cPAHs TEQ above the MTCA Method A groundwater cleanup levels. The cPAHs TEQ in a blank water sample also exceeded the MTCA Method A groundwater cleanup level.
  - As a result of the SHA, Ecology listed the Site on the Hazardous Sites List (HSL) in February 2006, with a hazard ranking of 2 (moderate to high risk).
- In June to October 2015, soil sampling and excavation were conducted at the Site by EnviroSound Consulting:

  - In June and July 2015, seven soil samples were collected at five locations (SL-1, S1-SL-1.5, SL-2, SL-3, and SL-4) within or near the former drum storage area from the ground surface to 1.5 feet bgs (Figure 3). The soil samples collected at the ground surface from locations SL-1 and SL-2 contained arsenic concentrations above the MTCA Method A soil cleanup level.
  - Two soil samples (DP1-S5-SL-09 and DP2-S6-SL-11) were collected from the areas of the two debris piles, respectively. One soil boring (SP5-S7-SL-13) was collected near the former house. All three soil samples were collected at the ground surface, and all contained arsenic concentrations above the MTCA Method A soil cleanup level. The areas where these samples were collected are depicted on Figure 3.
  - In October 2015, approximately 5.5 cubic yards of contaminated soil were removed from the former drum storage area. The excavation was completed to a size of 10-foot by 10-foot, and to a depth of 1.5 feet bgs. The excavation was not backfilled.
  - Two confirmation soil samples (DSA-S5 and DSA-S6) were collected by EnviroSound Consulting at the bottom of the excavation at 1.5 feet bgs (Figure 3). The soil samples did not contain detectable cPAHs. No arsenic analysis was conducted on these confirmation samples.
  - The current owner submitted the investigation results and entered the Site in Ecology's Voluntary Cleanup Program (VCP) on March 7, 2016. The Site was assigned a VCP project number of #NW3037. Ecology issued a *Further Action opinion letter* on June 22, 2016, to request additional work. This VCP agreement was terminated on December 3, 2018, due to lack of active cleanup activities.

- In March 2018, a direct-push soil boring was advanced to 20 feet bgs at the east side of the former drum storage area by the current owner. One groundwater sample was collected from the soil boring. The groundwater sample contained concentrations of TPHg and BTEX above the laboratory PQL but below the MTCA Method A groundwater cleanup levels. Concentrations of TPHd, TPHo, cPAHs, and arsenic were below the laboratory PQL. However, the PQL for TPHd plus TPHo (750 micrograms per liter [µg/L]) was above the MTCA Method A groundwater cleanup level (500 µg/L). The groundwater sample was not collected in accordance with Ecology guidelines.
- In June to September 2020, a Phase I Environmental Site Assessment was conducted for the site by Associated Environmental Group, LLC (AEG), and a letter report was prepared to summarize Site data. The Site re-entered Ecology's VCP on October 1, 2020 and was assigned a VCP project number of #NW3293.
- In October 2020, a Phase I Environmental Site Assessment was conducted by Krazan for the Site and adjacent parcels for Russell Square Consulting, Inc.
- In October 2020, exploratory test pits were excavated on the subject property as part of a Geotechnical Engineering Investigation by N. L. Olson & Associates, Inc. A representative of Krazan observed the majority of the test pits on the subject parcel as part of their Phase I ESA for the property. No visible evidence of contamination was observed in the test pits and no visible evidence of buried drums were noted. Test pit locations are shown on figures following the N. L. Olson report text (Appendix E).

- In November 2020, nine soil samples (CS-1 through CS-9) were collected by Krista Webb Consulting in the former drum storage area at ground surface to 1.5 feet bgs (Figure 3). None of the soil samples contained arsenic concentrations above MTCA soil cleanup levels.

2.2 SITE CHARACTERIZATION

A Sampling and Analysis Plan (SAP) for conducting this RI was prepared by Krazan in April 2021 and submitted to Ecology for approval. The sampling strategy was formulated in response to correspondence with Ecology to fill identified data gaps. This SAP, provided in Appendix A, was approved on June 10, 2021.

As part of this RI, representatives of Krazan located the former drum storage area, debris pile areas, and the location of the drum by the former residence during a May 2021 site reconnaissance. These areas were marked with survey tape for future sampling. Stakes and tape from the 2015 sampling event by EnviroSound were located in the field and used to verify these locations. A photo log of site characterization activities is provided in Appendix B.

Representatives of Krazan collected surface soil samples on June 18, 2021. The surface soil samples were collected in the areas of concern: two debris piles, the former house and drum area, and the former drum storage area as shown on Figure 3. The rationale for selection of the locations is provided in the SAP. All the surface soil samples were collected approximately 0 to 6 inches below the ground surface using clean, stainless-steel sampling instrument and placed in clean sample containers provided by the laboratory. The stainless-steel sampling instrument was decontaminated between each sample collection and a rinsate sample was collected. Data pertinent to each sample (e.g., date, sample number, analysis), is recorded in the project notebook.

Representatives of Krazan collected subsurface soil samples and logged the installation of monitoring wells MW-1 through MW-3 on July 12, 2021, and the installation of monitoring wells MW-4 and MW-5 on July 13, 2021. The monitoring wells were drilled and installed using a truck-mounted, hollow-stem auger drill rig to a maximum depth of 26.5 feet bgs. The monitoring wells were located to permit sampling of the soil and groundwater adjacent to the identified areas of concern as described in the SAP. The locations of the monitoring wells are shown on Figure 4.

During drilling, soil samples were collected in 18-inch sections using a 2.0-inch or 3.0-inch diameter split-spoon sampler. The samples were visually described using the Unified Soils Classification System (ASTM D2487). Lithologic logs with well construction details are attached in Appendix C. The collected soil samples were screened in the field using a Photo-Ionization Detector (PID) for the presence of volatile organic compounds. Soil samples were collected every 5.0-feet from each boring.

On completion of drilling each boring, the monitoring well was installed. The monitoring wells were constructed with 2-inch diameter Schedule 40 PVC well screen and riser pipe. Each well contains at least a 10-foot-long section of 10-slot (0.010-inch) PVC well screen. The well screen was placed to ensure that the top of the water table was below the top of the screen. The annular space between the well screen and borehole wall was backfilled with sand. A bentonite seal was placed above the sand pack to one-foot below the ground surface. The top of each well was completed with an above ground steel monument, which was cemented in place with three steel bollards protecting each well. Data pertinent to each water sample collected (e.g., date, sample number, analysis), is recorded on a field data sheet provided in Appendix B.

Public and private underground utilities were located prior to the installation of the monitoring wells. Due to the nature of the site use, no utilities were located on the subject property. The horizontal sample locations were marked in the field and surveyed by a licensed surveyor (AES Consultants). The measuring point elevations of the monitoring wells were surveyed using the North American Vertical Datum of 1988 by a Washington-state licensed surveyor, in accordance with WAC 173-340-840(4)(e). Depths to groundwater were measured to the nearest 0.01 foot and elevations were contoured to determine the predominant groundwater flow direction at the site. The depth to groundwater is shown on the monitoring well boring logs in Appendix C and Figures 5 and 6.

2.2.2 SAMPLING AND MONITORING

Sampling was conducted according to the SAP (Appendix A). All samples specified were collected at all locations as planned without deviation.

Silica gel cleanup was used on groundwater samples due to biogenic interferences with the initial sampling run. This is discussed in detail in Section 4.4.

2.2.3 SITE GEOLOGY

The site is located in the Puget Lowland, part of a regional north-south trending trough that extends from southwest British Columbia southward into Oregon. The lowland is filled with glacial and non-glacial sediments consisting of interbedded gravel, sand, silt, clay, till, and peat deposits. The area in the vicinity of the subject property is underlain by glacial till deposits.

Twelve test pits were excavated on the site during a geotechnical investigation by N.L. Olson & Associates, Inc., in October, 2020. Test pits were excavated to a depth of 10 to 14 feet. The soil encountered in all test pits was described as a dense to very dense glacial till, consisting primarily of fine-grained sand with traces of gravel and cobbles. The test pit logs are included in the N. L. Olson report, attached in Appendix E.

The soil conditions encountered in the five monitoring wells installed for this RI to a depth of 26.5 feet generally consisted of dense to very dense glacial till to a depth ranging from 11.5 to 21.5 feet. The upper few feet typically consist of a looser ablation till. The till layer was underlain by a dense to very dense medium to coarse sand with gravel to the 26.5-foot depth. For a more thorough description of the soil conditions encountered, please refer to the boring logs in Appendix C. The description of the subsurface conditions provided herein was derived from on-site observations of soil samples collected only from the locations where monitoring wells were installed.

The Geologic Map of the Seabeck and Poulsbo 7.5-Minute Quadrangles (Polenz, M., et. al., 2013) indicates that the site is underlain by Vashon Lodgement Till in the western portion and Pre-Vashon outwash sand in the eastern portion. The Vashon Till typically consists of a compact sandy matrix, resembling concrete, with clay, silt, sand, pebbles, cobbles, and isolated boulders. The Pre-Vashon outwash sand typically consists of compact medium to fine-grained sand with occasional pebbles.

2.2.4 SITE HYDROGEOLOGY

Groundwater was encountered in all of the monitoring well locations installed for this RI. The groundwater appears to occur in the Pre-Vashon outwash sand, which was saturated beneath the Vashon Till layer in all boreholes. The groundwater table occurred at a depth of about nineteen feet beneath the western-most well and at a depth of about twelve feet beneath the eastern-most well. Groundwater level measurements and well elevations are listed in Table 1. The water table configuration on July 21, 2021, measured eight days after well installation, is shown in Figure 4, at about elevation 197 feet. The water table slopes to the east, indicating that the groundwater appears to move in that direction. Hydrogeologic cross sections of the site vicinity showing lithology and groundwater level of this upper aquifer are provided in Figures 5 and 6.

This Pre-Vashon outwash sand aquifer is underlain and separated from the underlying regional aquifer by fine grained interglacial deposits designated the Kitsap Formation, which acts as an aquitard. The Kitsap County Ground Water Management Plan (1991) maps the underlying regional ‘Shallow Aquifer’ water table to occur in the site vicinity at about elevation 150 feet, or a depth of about 50 feet. This is confirmed by water supply well logs in the site vicinity that were drilled to depths of 120 to 140 feet, with static water levels ranging from 50 to 80 feet. This shallow aquifer occurs in the ‘Third Glacial Deposits’, or Double

Bluff Drift, which occurs between elevations of about 0 (mean sea level) and 100 feet in this area. This aquifer is also mapped as flowing to the east, toward Clear Creek.

Table 1. Groundwater Level Measurements

Monitoring Well	Top of Casing Elevation (feet)	Date	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	217.26	7/21/21	19.92	197.34
		9/27/21	21.25	196.01
		10/6/21	21.95	195.31
MW-2	210.21	7/21/21	13.20	197.01
		9/27/21	14.51	195.70
		10/6/21	14.70	195.51
MW-3	213.72	7/21/21	16.40	197.32
		9/27/21	17.75	195.97
		10/6/21	17.92	195.80
MW-4	208.67	7/21/21	12.70	195.97
		9/27/21	14.00	194.67
		10/6/21	14.05	194.62
MW-5	215.74	7/21/21	18.36	197.38
		9/27/21	19.77	195.97
		10/6/21	19.94	195.80

3. PROPOSED CLEANUP STANDARDS

3.1 SOIL CLEANUP STANDARDS

For soil cleanup levels based on the protection of groundwater, the point of compliance is defined as Site-wide throughout the soil profile and may extend below the water table. For soil cleanup levels based on protection of terrestrial ecological receptors, the point of compliance is defined as Site-wide from the ground surface to 15 feet bgs.

The cleanup levels for soil are the MTCA Method A soil cleanup levels based on protection of groundwater. In addition, as recommended by Ecology in their March 9, 2021 letter, a simplified Terrestrial Ecological Evaluation (TEE) was prepared (Appendix F). In accordance with WAC 173- 360-900, based on the Simplified TEE, screening levels for the upper 15 feet of soil need to be adjusted as per Table 749-2. Soil Screening Levels in Table 2 are the lowest of the human health or ecological screening levels applicable.

Table 2. Soil Screening Levels

Contaminants of Potential Concern (COPCs)	Soil Cleanup Levels (0 to 15 feet bgs)	Soil Cleanup Levels (below 15 feet)
Gasoline-range petroleum hydrocarbons (TPHg)	30/100 mg/kg [c]	100 mg/kg
Diesel- and heavy oil-rangepetroleum hydrocarbons (TPHd and TPHo) [a]	460 mg/kg	2,000 mg/kg
Benzene	0.03 mg/kg	0.3 mg/kg
Toluene	7 mg/kg	7 mg/kg
Ethylbenzene	6 mg/kg	6 mg/kg
Total Xylenes	9 mg/kg	9 mg/kg
cPAHs [b]	0.1 mg/kg	0.1 mg/kg
Arsenic	20 mg/kg	20 mg/kg
Lead	220 mg/kg	250 mg/kg
Polychlorinated Biphenyls(PCBs) [c]	1 mg/kg	1 mg/kg

Notes:
Concentrations listed in milligrams per kilogram (mg/kg).
[a] The cleanup levels should be compared with the sum of TPHd and TPHo concentrations, in accordance with Ecology's guidance.
[b] This is the total toxic equivalent concentration (TEQ) of all cPAHs. See Ecology's guidance on calculating cPAHs Total TEQ.
[c] This is the total value of all PCBs in the PCB mixture.
[dc] The lower value applies when benzene is detected in soil; the higher value applies when benzene is not detected.

3.2 GROUNDWATER CLEANUP STANDARDS

The groundwater cleanup levels are the MTCA Method A cleanup levels for drinking water (Table 9). The point of compliance for groundwater is throughout the Site, from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected.

Table 3. Groundwater Cleanup Levels

Contaminants of Potential Concern (COPCs)	Groundwater Cleanup Levels µg/L
Gasoline-range petroleum hydrocarbons (TPHg)	800/1,000[a] µg/L
Diesel- and heavy oil-range petroleum hydrocarbons, (TPHd and TPHo)	500 µg/L
Benzene	5 µg/L
Toluene	1,000 µg/L
Ethylbenzene	700 µg/L
Total Xylenes	1,000 µg/L
cPAHs [b]	0.1 µg/L
Arsenic	5 µg/L
Lead	15 µg/L
Polychlorinated Biphenyls(PCBs) [b]	0.1 µg/L

Notes:
Concentrations listed in micrograms per liter (µg/L).
[a]: The lower value applies when benzene is detected in soil; the higher value applies when benzene is not detected.
[b] This is the total value of all PCBs in the PCB mixture.

4. SAMPLING/ANALYTICAL RESULTS

Analysis and interpretation of the data generated during the field investigation and laboratory testing is presented in the following sections. Where appropriate, the results are compared with regulatory limits for the chemicals identified in the soil and groundwater. Copies of the Certified Analytical Results and Chain-of-Custody Records are included in Appendix D.

4.1 SURFACE SOIL

Discrete surface soil samples were collected at each designated sampling location as shown on Figure 3. The samples from all the locations were analyzed for lead and arsenic by EPA Method 6020B. The samples from the former house and drum area and the drum storage area were also analyzed for Total Petroleum Hydrocarbons in the diesel and heavy oil-range by Method NWTPH-Dx, Total Petroleum Hydrocarbons in the gasoline-range by Method NWTPH-Gx, BTEX by EPA Method 8021B, and PAHs by EPA Method 8270E.

All surface soil analytical results are listed in Tables 4 and 5. Lead was detected above the MTCA Method A cleanup level in one surface soil sample in the vicinity of Debris Pile 1 and diesel and heavy oil were detected above the MTCA Method A cleanup level in two samples in the House and drum area. The diesel result was flagged by the laboratory as having a chromatogram pattern that does not resemble the fuel standard used for quantitation.

Table 4. Summary of Surface Soil Sampling – Metals and PAH Results

Sample No.	Date Sampled	Sample Location	Depth	PAHs	Arsenic	Lead
2021-SS-1	6/18/21	Debris Pile 1	0-.5’	ND	2.28	23.1
2021-SS-2	6/18/21		0-.5’	ND	2.52	285[b]
2021-SS-3	6/18/21		0-.5’	ND	2.89	71.7
2021-SS-4	6/18/21		0-.5’	ND	1.08	5.27
2021-SS-5	6/18/21	Debris Pile 2	0-.5’	ND	2.22	9.85
2021-SS-6	6/18/21		0-.5’	ND	1.13	14.5
2021-SS-7	6/18/21		0-.5’	ND	1.13	8.27
2021-SS-8	6/18/21	House and Drum Area	0-.5’	ND	1.83	2.95
2021-SS-9	6/18/21		0-.5’	ND	1.32	4.78
2021-SS-10	6/18/21		0-.5’	ND	1.45	4.31
2021-SS-11	6/18/21		0-.5’	ND	1.48	5.34
2021-SS-12	6/18/21	Drum Storage	0-.5’	ND	<1	1.94
2021-SS-13	6/18/21		0-.5’	ND	<1	1.42
2021-SS-14	6/18/21		0-.5’	ND	<1	1.61
MTCA Method A Cleanup Levels[a]					20	220

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).
[a] Method A soil cleanup levels for the upper 15 feet of soil per Table 749-2 (Washington Administrative Code, 173-360-900). Bolded results indicate concentrations above the cleanup levels.
[b]This soil was subsequently removed (See Section5) and confirmation samples were collected to verify contamination was removed.

Table 5. Summary of Surface Soil Sampling -Petroleum Hydrocarbon Results

Sample No.	Date Sampled	Sample Location	Depth	NWTPH-Gx and BTEX 8021B					NWTPH-Dx	
				Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Diesel Range	Motor Oil Range
2021-SS-8	6/18/21	House and Drum Area	0-.5'	<0.02	<0.02	<0.02	<0.06	<5	<50	<250
2021-SS-9	6/18/21		0-.5'	<0.02	<0.02	<0.02	<0.06	<5	<50	<250
2021-SS-10	6/18/21		0-.5'	<0.02	<0.02	<0.02	<0.06	<5	1,400[b]	11,000[b]
2021-SS-11	6/18/21		0-.5'	<0.02	<0.02	<0.02	<0.06	<5	1,700[b]	13,000[b]
2021-SS-12	6/18/21	Drum Storage	0-.5'	<0.02	<0.02	<0.02	<0.06	<5	<50	<250
2021-SS-13	6/18/21		0-.5'	<0.02	<0.02	<0.02	<0.06	<5	<50	<250
2021-SS-14	6/18/21		0-.5'	<0.02	<0.02	<0.02	<0.06	<5	<50	<250
MTCA Method A Cleanup Levels[a]				0.03	7.0	6.0	9.0	30/100	460	460

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).
[a] Method A soil cleanup levels for the upper 15 feet of soil per Table 749-2 (Washington Administrative Code, 173-360-900).
Bolded results indicate concentrations above the cleanup levels.
[b]This soil was subsequently removed (See Section5) and confirmation samples were collected to verify contamination was removed.

4.2 SUB-SURFACE SOIL

During the monitoring well installation, each soil sample collected was screened using a PID to assess for the presence of volatile organic constituents. No detectable measurements were recorded from the soil samples. Soil samples were collected from the borings as specified in the SAP. All samples were analyzed for Total Petroleum Hydrocarbons in the diesel and heavy oil range by Method NWTPH-Dx, Total Petroleum Hydrocarbons in the gasoline range by Method NWTPH-Gx, BTEX by EPA Method 8021B, PAHs by EPA Method 8270E, PCBs by Method EPA 8082A, and lead and arsenic by EPA Method 6020B.

All subsurface soil analytical results are listed in Table 6. No COPCs were detected in concentrations greater than MTCA Method A cleanup levels in any sample.

Table 6. Summary of Subsurface Soil Total Petroleum Hydrocarbon Results

Sample No.	MW No. & Date Sampled	Depth (feet)	NWTPH-Gx and BTEX 8021B					NWTPH-Dx		PAHs	Lead	Arsenic	PCBs
			Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Diesel Range	Motor Oil Range				
2021-SB-16	MW-1 7/12/21	2.5	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	4.09	2.25	ND
2021-SB-17		5.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	3.09	1.80	ND
2021-SB-18		10.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.36	<1	ND
2021-SB-19		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.58	1.27	ND
2021-SB-20		20.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.44	1.08	ND
2021-SB-21		25.0	<0.02	<0.02	<0.02	<0.06	19	<50	<250	ND	1.19	<1	ND
2021-SB-22	MW-2 7/12/21	2.5	<0.02	<0.02	<0.02	<0.06	13	<50	<250	ND	1.15	1.01	ND
2021-SB-23		5.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.02	1.73	ND
2021-SB-24		10.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.22	1.02	ND
2021-SB-25		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.07	<1	ND
2021-SB-26		20.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.17	<1	ND
2021-SB-27		25.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.12	<1	ND
2021-SB-28	MW-3 7/12/21	2.5	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.32	<1	ND
2021-SB-29		5.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.09	<1	ND
2021-SB-30		10.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.24	<1	ND
2021-SB-31		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.22	<1	ND
2021-SB-32		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.23	<1	ND
2021-SB-33		20.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.44	1.03	ND
2021-SB-34		25.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.21	1.05	ND

Sample No.	MW No. & Date Sampled	Depth (feet)	NWTPH-Gx and BTEX 8021B					NWTPH-Dx		PAHs	Lead	Arsenic	PCBs
			Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Diesel Range	Motor Oil Range				
2021-SB-35	MW-4 7/13/21	2.5	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.62	1.17	ND
2021-SB-36		5.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.19	<1	ND
2021-SB-37		10.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	<1	<1	ND
2021-SB-38		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	<1	<1	ND
2021-SB-39		20.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.27	<1	ND
2021-SB-40		25.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.44	1.23	ND
2021-SB-41		25.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.35	<1	ND
2021-SB-42	MW-5 7/13/21	2.5	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	<1	<1	ND
2021-SB-43		5.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	<1	<1	ND
2021-SB-44		10.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.56	<1	ND
2021-SB-45		15.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.60	<1	ND
2021-SB-46		20.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.63	1.14	ND
2021-SB-47		25.0	<0.02	<0.02	<0.02	<0.06	<5	<50	<250	ND	1.35	<1	ND
MTCA Method A Cleanup Levels*			0.03	7	6	9	100	2,000	2,000	0.1	220	20	1

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).
* Method A soil cleanup levels per Table 749-2 (Washington Administrative Code, 173-360-900).
Bolded results indicate concentrations above the cleanup levels.

4.3 GROUNDWATER

Two quarterly sets of groundwater samples, with one field duplicate each, were collected for analysis from MWs 1 through 5 on July 21 and October 6, 2021. All the samples were analyzed for Total Petroleum Hydrocarbons in the diesel-extended and gasoline ranges, BTEX, PAHs, PCBs, gasoline-range VOCs, and RCRA-8 Metals. The results are listed in Tables 7 and 8. No COPCs were detected in groundwater greater than MTCA Method A Cleanup Levels.

Table 7. Summary of Groundwater Total Petroleum Hydrocarbon and BTEX Results

Well No.	Sample Number	Date Sampled	NWTPH-Gx and BTEX 8021B					NWTPH-Dx	
			Benzene (µg/l)	Toluene (µg/l)e	Ethylbenzene (µg/l)	Xylenes (µg/l)	Gasoline (µg/l)	Diesel[a] (µg/l)	Lube Oil (µg/l)
MW-1	2021-GW-101	7/21/2021	<1	<1	<1	<3	<100	<50	<250
	2021-GW-201	10/6/2021	<1	<1	<1	<3	<100	<60	<300
MW-2	2021-GW-102	7/21/2021	<1	<1	<1	<3	<100	<50	<250
	2021-GW-202	10/6/2021	<1	<1	<1	<3	<100	73[b]	<250
MW-3	2021-GW-103	7/21/2021	<1	<1	<1	<3	<100	<50	<250
	2021-GW-203	10/6/2021	<1	<1	<1	<3	<100	<60	<250
	2021-GW-204	10/6/2021	<1	<1	<1	<3	<100	<50	<250
MW-4	2021-GW-104	7/21/2021	<1	<1	<1	<3	<3	<60	<300
	2021-GW-205	10/6/2021	<1	<1	<1	<3	<100	<50	<250
MW-5	2021-GW-105	7/21/2021	<1	<1	<1	3.3	370	86[b]	<250
	2021-GW-106	7/21/2021	<1	<1	<1	3.1	380	84[b]	<250
	2021-GW-206	10/6/2021	<1	<1	<1	<3	<100	<50	<250
MTCA Method A Cleanup Levels			5	1,000	700	1,000	800	500	500

Notes:
Concentrations listed in micrograms per liter (µg/l), or parts per billion (ppb).
MTCA = the Model Toxics Control Act regulation and the regulations promulgated thereunder (WAC, Chapter 173-340).
Bolded results indicate concentrations above cleanup levels.
[a] Sample extracts passed through silica gel column prior to analysis.
[b] The sample chromatogram pattern does not resemble the fuel standard used for quantitation.

Table 8. Summary of Groundwater PAHs, PCBs, Lead, and Arsenic Results

Well No.	Sample No.	Date Sampled	PAHs (µg/l)	PCBs (µg/l)	Lead (µg/l)	Arsenic (µg/l)
MW-1	2021-GW-101	7/21/2021	ND	<0.1	<1	<1
	2021-GW-201	10/6/2021	ND	ND	<1	<1
MW-2	2021-GW-102	7/21/2021	ND	<0.1	<1	<1
	2021-GW-202	10/6/2021	ND	ND	<1	<1
MW-3	2021-GW-103	7/21/2021	ND	<0.1	<1	<1
	2021-GW-203	10/6/2021	ND	ND	<1	<1
	2021-GW-204	10/6/2021	ND	ND	<1	<1
MW-4	2021-GW-104	7/21/2021	ND	<0.1	<1	<1
	2021-GW-205	10/6/2021	ND	ND	<1	<1
MW-5	2021-GW-105	7/21/2021	ND	<0.1	<1	<1
	2021-GW-106	7/21/2021	ND	<0.1	<1	<1
	2021-GW-206	10/6/2021	ND	ND	<1	<1
MTCA Method A Cleanup Levels			0.1	0.1	5	15

Notes:
Concentrations listed in micrograms per liter (µg/l), or parts per billion (ppb).
MTCA = the Model Toxics Control Act regulation and the regulations promulgated thereunder (WAC, Chapter 173-340).
Bolded results indicate concentration above cleanup levels.

4.4 QUALITY ANALYSES

Friedman and Bruya Inc. of Seattle WA performed all analyses for this project. All samples were collected in accordance with the Quality Assurance specifications in the Field Sampling Plan (Appendix A).

Samples were submitted under chain-of-custody procedures within 24 hours of collection, and no deviations from custody protocols were noted. Samples all arrived in good condition and at appropriate temperatures.

All sample holding times and quality control measures (matrix spikes/matrix spike duplicates, field duplicates etc.) were within control limits and run at the correct frequencies. No chemicals were detected in rinsate or trip blank samples. Detection levels for all analyses met data quality objective requirements.

Krazan reviewed the data, including chromatograms (for detected compounds) post analysis and observed that the chromatogram profiles for fuel on groundwater samples 2021-GW-105 (both the sample and field duplicate) did not align with fuel profiles, and were likely the result of biogenic interferences.

It is well established that methods for petroleum-range organic analysis are complicated by biogenic interference. Non-petroleum biogenics are present in many soils and especially prevalent in forest areas or in peat deposits. As a result, biogenic interference is the term that is used to describe false positives quantified and reported as DRO and/or RRO. Biogenic interference concentrations may occur at levels well above regulatory cleanup levels.

Non-petroleum organics can elute in the GRO or DRO ranges, resulting in false positives. Potential interferences may include: naturally occurring organic material (e.g leaves, humic acid, peat, etc), terpenes, animal and vegetable oils/fats, phthalates, chlorinated hydrocarbons, phenols, and organic acids.

Silica gel cleanup can be used to remove potential DRO interferences. Likewise, silica gel cleanup is a well-established analytical procedure utilized to separate analytes from interfering compounds of different polarity. The majority of "fresh" or non-biodegraded petroleum hydrocarbons are considered non-polar compounds. Depending on the soil makeup, the majority of the biogenic compounds may be polar or semi-polar in nature. The silica gel cleanup procedure will preferentially remove polar and semi-polar compound leaving the polar petroleum hydrocarbons in the sample.

In response to the inconsistent chromatograms, FBI passed the groundwater samples through a silica gel column and performed the NWTPH-Dx analysis again. DRO was still detected in sample 2021-GW-105 in well MW-5 and its duplicate at 86 and 84 ug/L, respectively. The result was also flagged in the laboratory report that the "chromatogram does not resemble the fuel standards used for quantitation."

5. INTERIM REMEDIAL ACTION

Lead was detected above the MTCA Method A Cleanup Level for surface soil in Sample 2021-SS-2 in the vicinity of the former debris pile No. 1. Diesel and motor oil were detected in surface soil above MTCA Method A Cleanup Levels for surface soil in Samples 2021-SS-10 and 2021-SS-11 in the vicinity of the former drum found near the former house.

These two areas were excavated to at least 2 feet below ground surface in the locations of elevated lead and elevated petroleum. A photo log of excavation activities is provided in Appendix B. Each excavation area was 10 by 10 feet (Figure 3). Three confirmation soil samples were collected within each excavation bottom. Lead was detected in concentrations below the MTCA Method A Cleanup Level. No petroleum constituents were detected. See Table 9 for confirmation sample results. A total of approximately 31 cubic yards (46.53 tons) of soil was excavated from the two areas and transported to the Waste Management

Transfer Station in Bremerton, Washington. The excavations were not backfilled. Following removal, no COPCs were detected in concentrations above MTCA Method A Cleanup Levels. The laboratory data is provided in Appendix D and photo copies of the transfer station receipts are provided in the photo log.

Table 9. Confirmation Sample Results

Sample No.	Date Sampled	Sample Location	Depth	Diesel-Range	Motor Oil Range	Lead
2021-SS-47	9/27/21	Debris Pile 1	0-.5’	NA	NA	2.95
2021-SS-48	9/27/21		0-.5’	NA	NA	2.35
2021-SS-49	9/27/21		0-.5’	NA	NA	2.15
2021-SS-50	9/27/21	House and Drum Area	0-.5’	<50	<250	NA
2021-SS-51	9/27/21		0-.5’	<50	<250	NA
2021-SS-52	9/27/21		0-.5’	<50	<250	NA
MTCA Method A Cleanup Levels[a]				460	460	220

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).
[a] Method A soil cleanup levels per Table 749-2 (Washington Administrative Code, 173-360-900).

6. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is used to identify contaminants of potential concern (COPCs), affected media, potential migration routes, and exposure pathways by which human and ecological receptors may be exposed to hazardous substances (WAC 173-340- 708[3][e]).

An exposure pathway consists of four main parts (WAC 173-340-200), listed below:

- Source of contamination (e.g., primary sources, such as spills and leaks, and secondary sources, such as impacted soil or groundwater)
- Transport or exposure medium (e.g., a solute moving with groundwater flow and contamination present in soil)
- Point of exposure (e.g., an open excavation)
- Route of exposure (e.g., inhalation and dermal contact).

When all of these parts are present, connecting the source of contamination to a receptor and result in an unacceptable health risk, the exposure pathway is considered complete. If one or more parts are not present, the pathway is incomplete, and exposure does not occur. It is also possible to have a potentially complete exposure pathway without health risk if chemicals are not detected or chemical concentrations are within an acceptable range. Potential human receptors were identified for the Property based on current and reasonable future land use.

6.1 SOURCE AREAS

Soil and groundwater were potentially contaminated as a result of leaking from wastes that were historically disposed of at the Site. Wastes include:

- One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 2). It is not known to have leaked.
- Eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with “Roybond Primer” but the exact contents of the drums were unknown.
- Two debris piles discovered on the Property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc.

6.2 CONTAMINANTS OF POTENTIAL CONCERN

Petroleum hydrocarbons (gasoline, diesel, and heavy oil), metals (specifically lead and arsenic), volatile organic carbons (VOCs) such as benzene, ethylbenzene, toluene and xylenes (BTEX), PAHs, and polychlorinated biphenyls (PCBs), were analyzed in surface soil, subsurface soil, and groundwater samples. Lead was detected in surface soil in one sample in the vicinity of debris pile 1 and diesel-range organics (not matching a fuel pattern) and heavy oil organics were detected in two samples in the house and drum area. Soil containing COPCs was subsequently removed, and conformation samples collected. Following soil removal, all results in remaining soils were below MTCA Method A cleanup levels. No COPCs were confirmed in groundwater in concentrations greater than MTCA Method A cleanup levels for groundwater.

6.3 CONTAMINANT MIGRATION AND EXTENT

Sampling for this investigation was planned to confirm the presence or absence of residuals after removal of drums and debris, as well as evaluate other areas of concern to Ecology, such as groundwater and subsurface soil. This sampling also confirmed whether contamination migrated to groundwater prior to the removal action, as well as whether groundwater is contaminated at two other potential source areas (Debris piles 1 and 2) to determine if any contamination migrated from soil to groundwater. Sampling rationale to meet the goals of this evaluation are described in Section 2.2.2. Sampling confirms that contamination is no longer present in surface soil, subsurface soil, or groundwater in the areas of concern.

6.4 CURRENT AND FUTURE SITE USE/RECEPTORS

The property is currently undeveloped. The property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest. The property is zoned for commercial use with the Kitsap County comprehensive plan land use designation of Urban High Intensity Commercial. Future receptors may be residents, workers, or construction workers.

6.5 POTENTIAL EXPOSURE PATHWAYS

No COPCs remain present above MTCA Method A cleanup levels in surface soil; thus, future receptors are not expected to be exposed to contaminants in surface soil by incidental ingestion, dermal contact, and inhalation of soil particulates and VOCs. No COPCs were detected above MTCA Method A cleanup levels in subsurface soil or groundwater; therefore, future receptors are not expected to be exposed to contaminants in subsurface soil and groundwater by inhalation of VOCs in indoor (e.g., inhalation of off-gassing VOCs from shallow groundwater or soil) or outdoor air, drinking water by ingestion, dermal exposure, or inhalation of volatiles from tap water. A graphic conceptual site model is provided as Figure 7 illustrating potential exposure pathways. All potential exposure pathways for this site are incomplete.

7. SUMMARY AND CONCLUSIONS

All contaminants originally identified as present at the site have been removed, and no samples indicate that any residual levels associated with the source areas remain above cleanup levels in soil. Soil sample results and subsequent excavation indicated that the shallow soil contamination resulted from spills or leaks from the former drum and slight impact from the metal debris in Debris Pile 1. The sources of this contamination were removed.

Initial groundwater samples indicated that residual GRO levels existed in two samples at MW-5, however, concentrations of all petroleum constituents are below cleanup levels. Also no GRO levels were detected in the second round of sampling. Two additional quarters of groundwater sampling are scheduled for 2022 to complete the annual sampling to confirm this conclusion. Additionally, the probability of transport of GRO from the localized perched aquifer to drinking water sources (e.g. the regional shallow aquifer) are likely prevented by the presence of the aquitard (Kitsap Formation) below the perched zone that separates the aquifers.

Based on the CSM, no source material still remains at the site that would adversely impact receptors. Therefore, all transport pathways identified in the CSM are incomplete and remaining conditions at the site are protective of Human Health and the Environment.

8. RECOMMENDATIONS

Based on the results of this RI, as well as data obtained following the interim removal action, no further action is warranted at this site.

9. REFERENCES

Associated Environmental Group, LLC, 2020. *Phase I Environmental Site Assessment, Seitz Property*, Silverdale, Washington, July 19, 2020.

Ecology and Environment, Inc., 1997. *Silverdale Dump Site Removal Site Assessment Trip Report*, October 30, 1997.

EnviroSound Consulting Inc., 2015. *Site Soil Investigation, Seitz Property, Silverdale, Washington*, November 30, 2015'

Kitsap County Ground Water Management Plan, 1991, Prepared by Kitsap County Ground Water Advisory Committee, April, 1991.

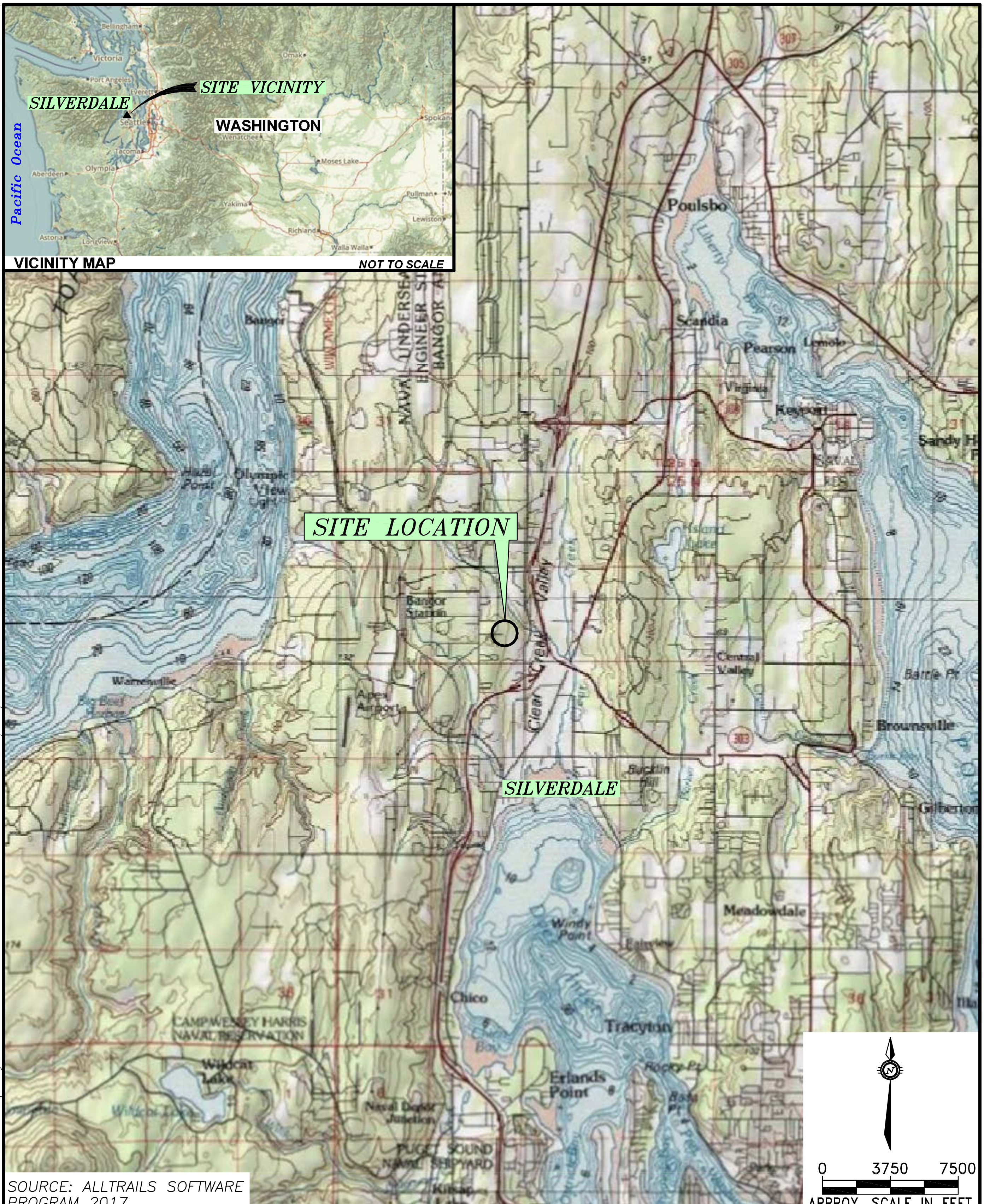
Krazan & Associates, Inc., 2020 Phase I Environmental Site Assessment, JSP Silverdale Project, 11493 and 11531 Clear Creek Road NW, Silverdale, Washington, November 2, 2020.

Krazan & Associates, Inc., 2021 Sampling and Analysis Plan, Lots 25 & 26, Brian Lane NW, Silverdale, Washington, June 10, 2021.

Krista Webb Consulting, 2020. Seitz Summary Letter, September 22, 2020.

N. L. Olson & Associates., Geotechnical Engineering Investigation, Silverdale Multifamily/Commercial Development Near Clear Creek Road NW and NW Greaves Way, Silverdale, Washington, March, 2021.

Polenz, M., et. al., 2013, Geologic Map of the Seabeck and Poulsbo 7.5-Minute Quadrangles, Kitsap and Jefferson Counties, Washington, Washington Division of Geology and Earth Resources Map Series 2013-02, October 2013.



DATE: OCTOBER 2021 REV.: – CHKD: K.L.W DRAWN: C.E.H. PROJ. No.: 104-21020	Krazan	**SITE LOCATION MAP** JSP SILVERDALE LOTS 24 AND 25 Silverdale, Washington	**FIGURE** **1**

21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIG 1.DWG PLOTTED: 10/20/21.

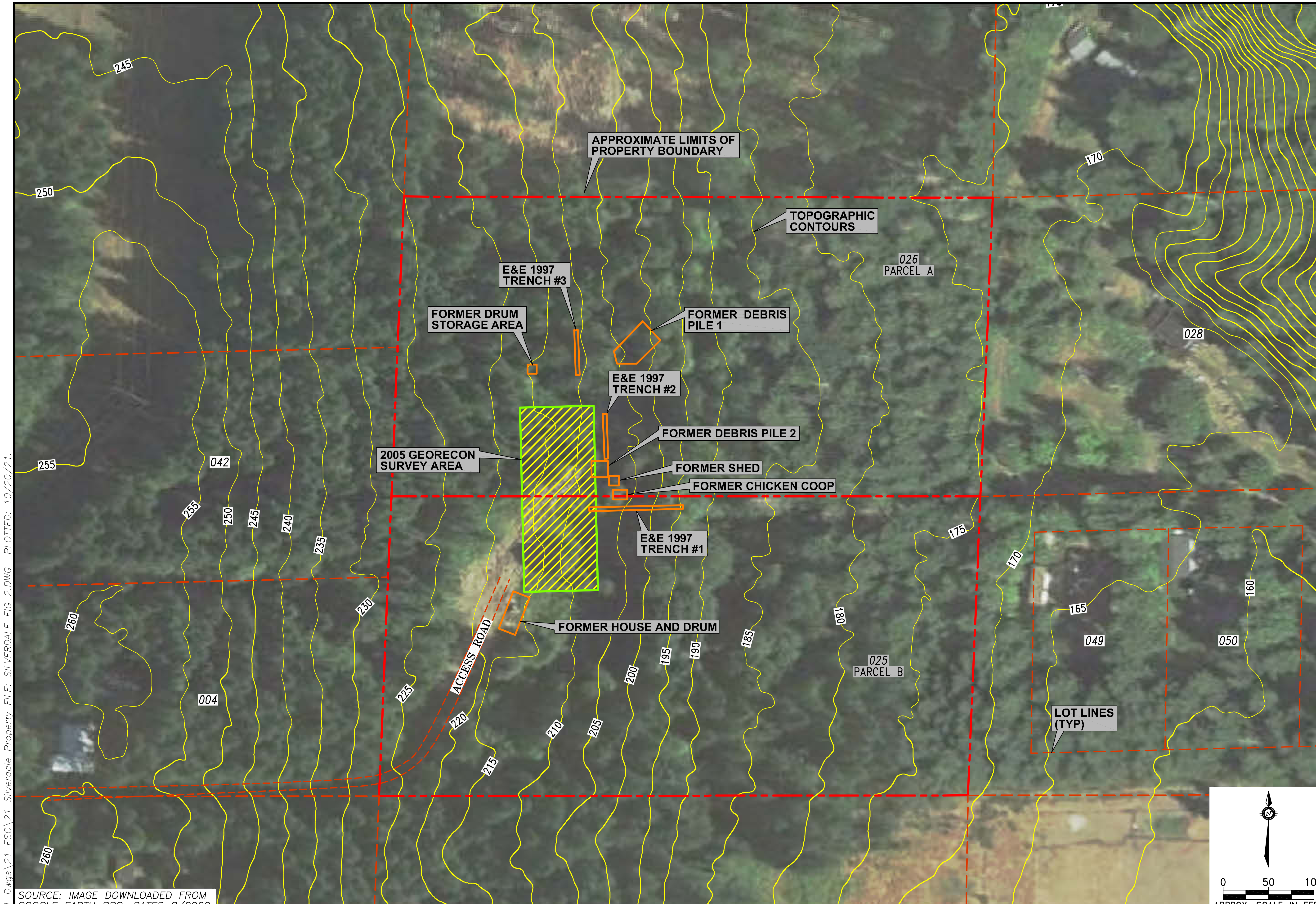


FIGURE 2

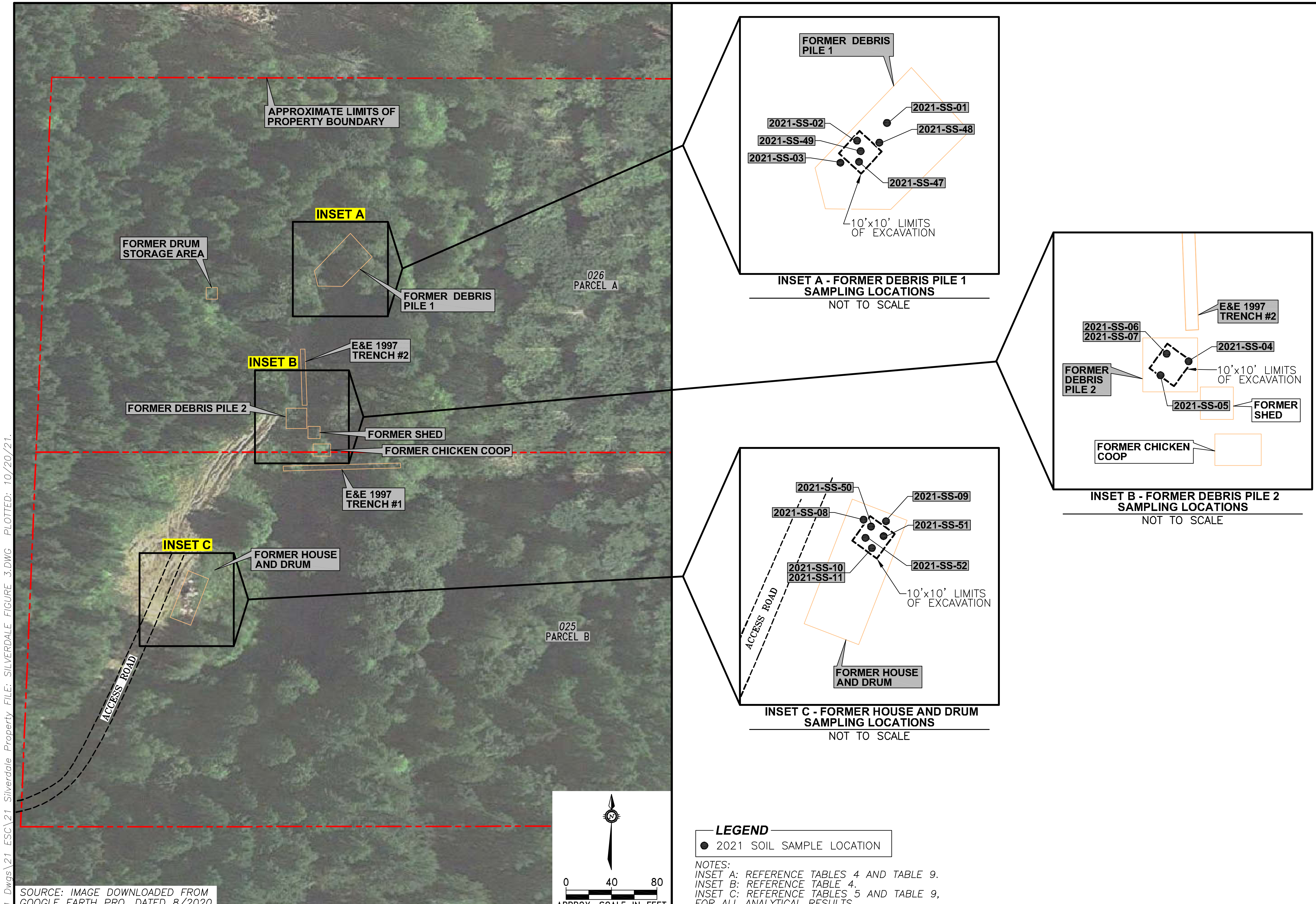
SITE PLAN

JSP SILVERDALE LOTS 24 AND 25
Silverdale, Washington

Krazan

DATE: OCTOBER 2021
REV.: –
CHKD: K.L.W.
DRAWN: C.E.H.
PROJ. No.: 104-21020

21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIG 2.DWG PLOTTED: 10/20/21.



21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIGURE 3.DWG PLOTTED: 10/20/21.

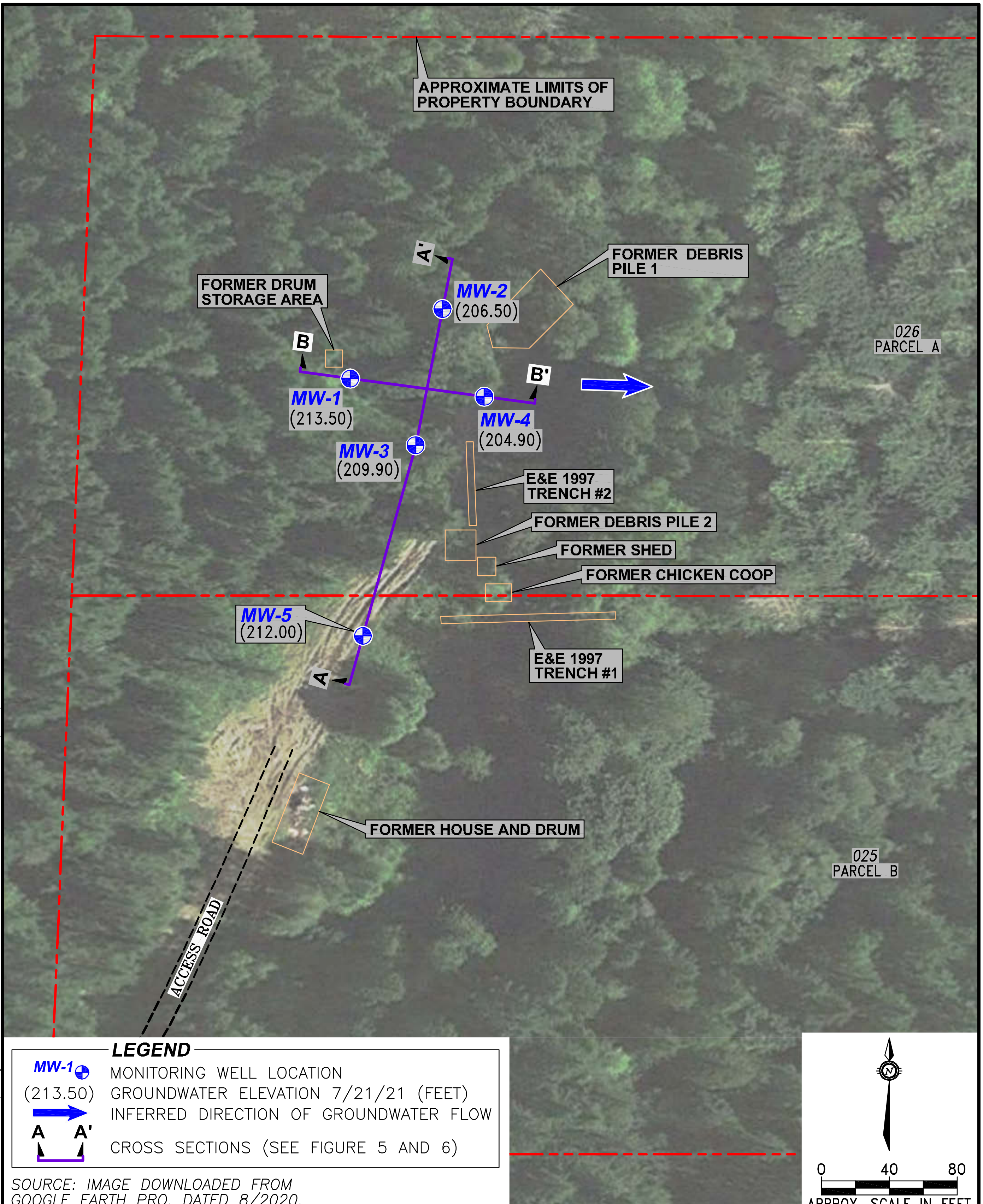
FIGURE 3

SOIL SAMPLING LOCATIONS

JSP SILVERDALE LOTS 24 AND 25
Silverdale, Washington

Krazan

DATE: OCTOBER 2021
REV.: –
CHKD: K.L.W.
DRAWN: C.E.H.
PROJ. No.: 104-21020



21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIG 4.DWG PLOTTED: 10/20/21.

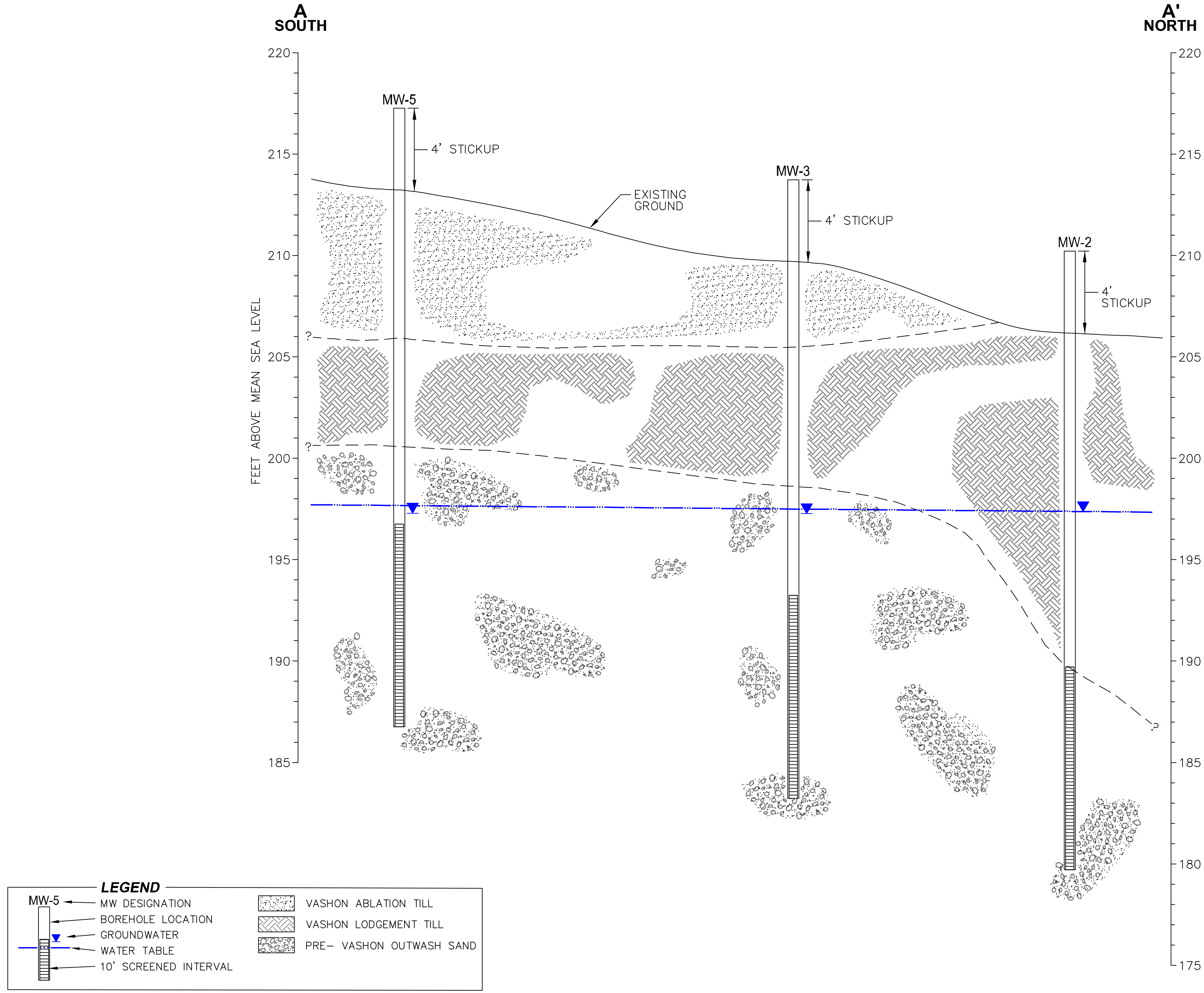
DATE: OCTOBER 2021
REV.: –
CHKD: K.L.W.
DRAWN: C.E.H.
PROJ. No.: 104-21020

Krazan

WATER TABLE MAP

JSP SILVERDALE LOTS 24 AND 25
Silverdale, Washington

FIGURE 4



HORIZONTAL SCALE: 1"-30'
VERTICAL SCALE: 1"-5'
EXAGGERATION 6X
1 INCH

FIGURE 5

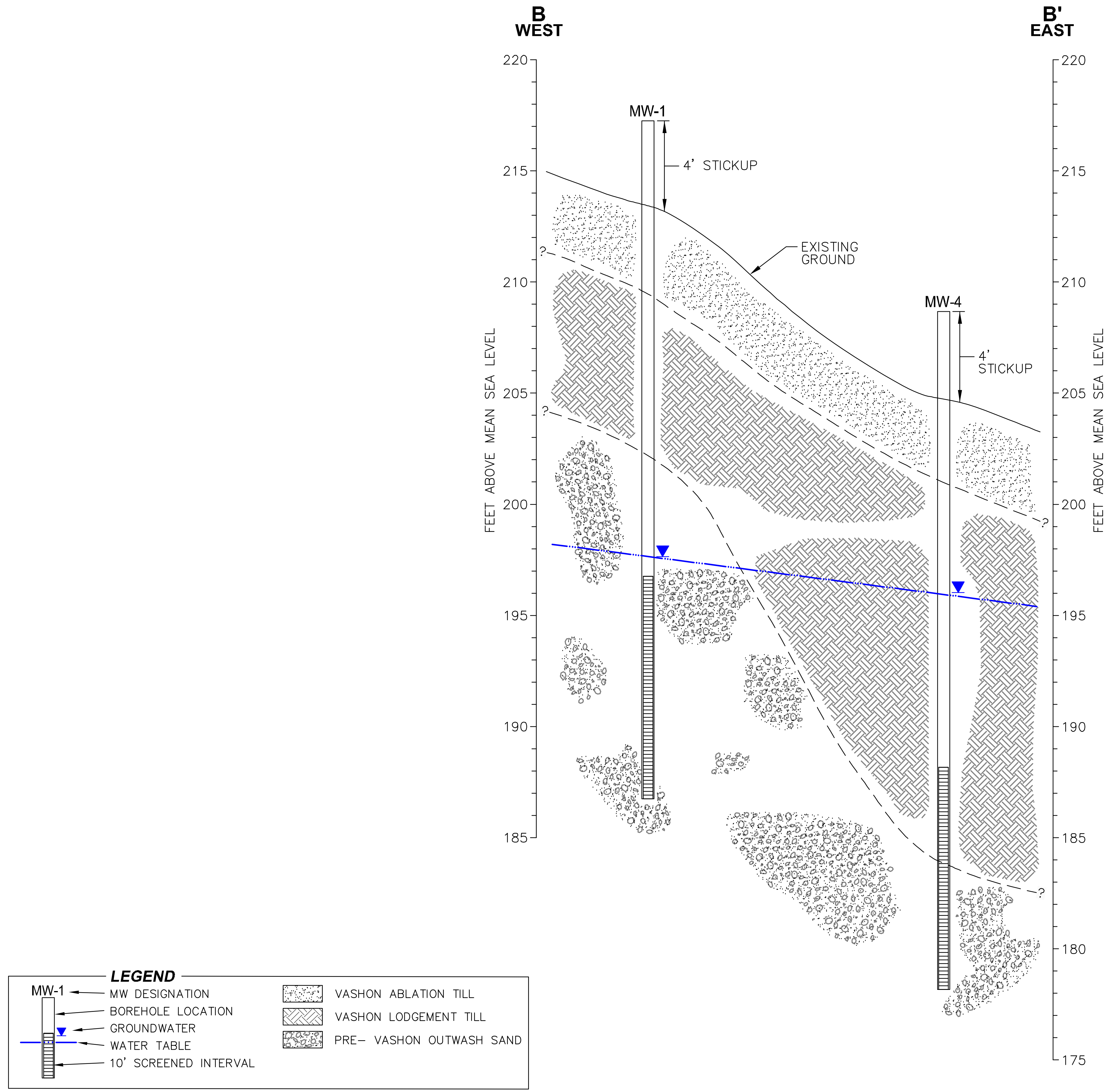
CROSS SECTION A-A'

JSP SILVERDALE LOTS 24 AND 25
Silverdale, Washington

Krazan

DATE: OCTOBER 2021
REV.: –
CHKD: K.L.W.
DRAWN: C.E.H.
PROJ. No.: 104-21020

21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIG 5.DWG PLOTTED: 10/20/21.



HORIZONTAL SCALE: 1"-30'
VERTICAL SCALE: 1"-5'
EXAGGERATION 6X

1 INCH

FIGURE 6

CROSS SECTION B-B'

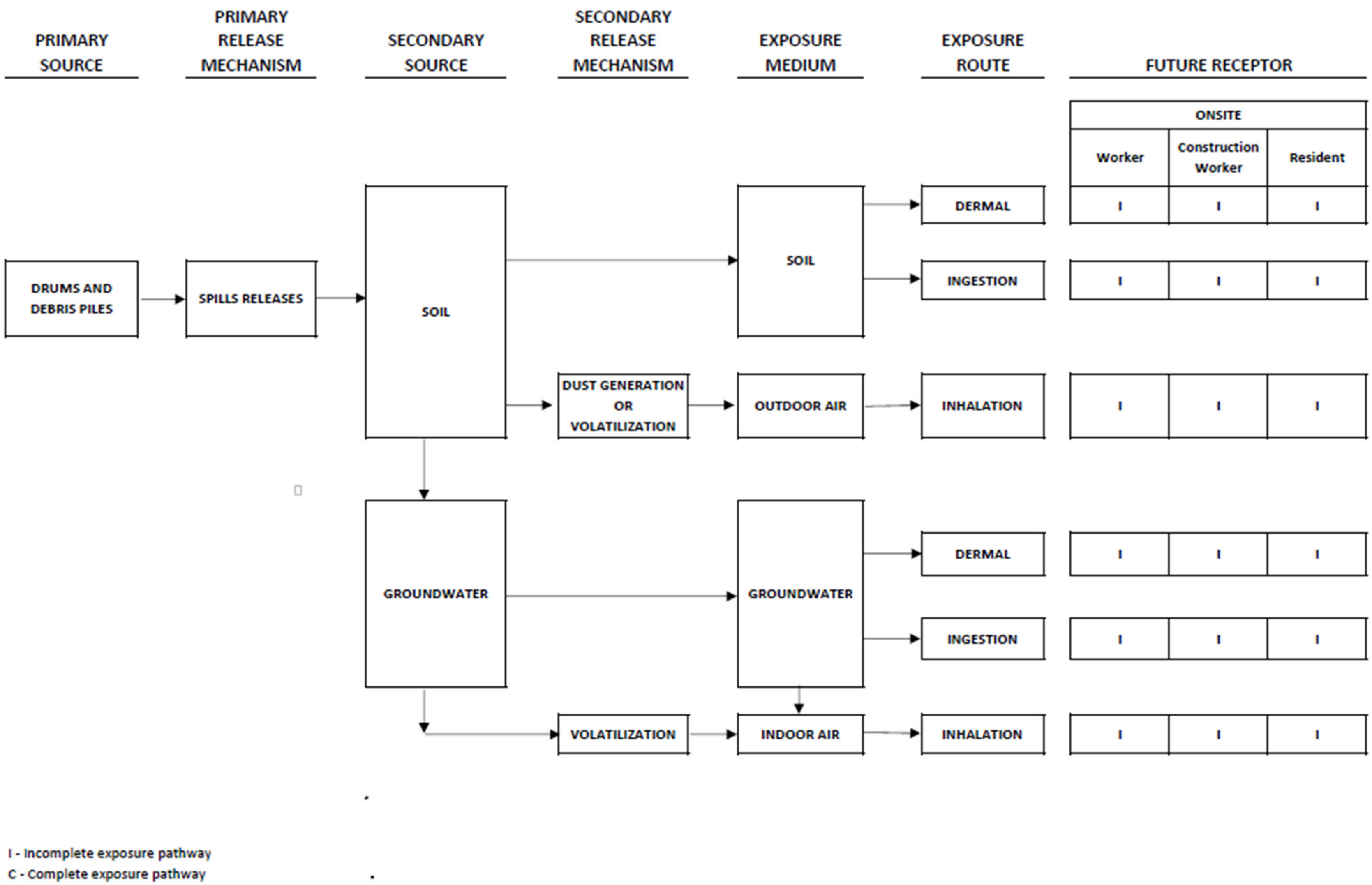
JSP SILVERDALE LOTS 24 AND 25
Silverdale, Washington

Krazan

DATE: OCTOBER 2021
REV.: –
CHKD: K.L.W.
DRAWN: C.E.H.
PROJ. No.: 104-21020

21 Dwgs\21 ESC\21 Silverdale Property FILE: SILVERDALE FIG 5.DWG PLOTTED: 10/20/21.

Figure 7. Conceptual Site Model



FSID6865393
Appendix A.
2021 Sampling and Analysis Plan

Gmail

Krista Webb <kristaleewebb@gmail.com>

NW3313 Seitz Opinion Letter

Song, Jing (ECY) <JISO461@ecy.wa.gov> Thu, Jun 10, 2021 at 1:32 PM
To: Krista Webb <kristaleewebb@gmail.com>, "Mohamed, Nancy (ECY)" <nmoh461@ecy.wa.gov>
Cc: "duane@russellsquareconsulting.com" <duane@russellsquareconsulting.com>, "malarie@russellsquareconsulting.com" <malarie@russellsquareconsulting.com>, "shawnwilliams@krazan.com" <shawnwilliams@krazan.com>, "Bardy, Louise (ECY)" <LBAR461@ecy.wa.gov>

Hi Krista –

Thanks for the quick response to my letter. I can open and review the documents.

The revised Sampling and Analysis Plan (SAP) looks good except the following comments regarding surface soil sampling –

> In Ecology's June 7, 2021 opinion letter, Ecology states that" *Ecology recommends collecting up to three discrete surface soil samples in each of the former drum storage area, two former debris piles, and former house area, at depths between 0 to 6 inches bgs."*

- Table 3 of the SAP indicates the surface soil samples are collected from 0 to 1 foot below ground surface (bgs), but Table 1 indicates the surface soil sample is collected from 0 to 6 inches bgs. Please be consistent across Table 1 and Table 3. Ecology recommends collecting the surface soil samples from 0 to 6 inches bgs, if the collected soil is enough for required analysis.

- Currently, one discrete surface soil sample is proposed at the former drum storage area. Ecology recommends collecting one or two more discrete soil samples from the former drum storage area to provide additional data points for surface soil in this area.

I am fine with the proposed approach of stopping at an aquitard (if the aquitard is present shallower than 50 feet bgs) when groundwater is not encountered.

Again, thanks for submitting the revised SAP. You don't need to submit another revision. Please confirm with an email that you receive my comments, and state how you will proceed with the surface soil sampling. You're welcome to schedule the driller and get your field work started. Glad to see the cleanup move forward quickly!

We have moved to Shorline!

Physical Address: ***15700 Dayton Ave N, Shoreline, WA 98133***

Mailing Address: PO Box 330316, Shoreline, WA 98133-9716

Reception (24 hour) number: (206) 594-0000

Jing Song, LG, LHG

Voluntary Cleanup Program Site Manager

Toxics Cleanup Program – Northwest Regional Office

Washington Department of Ecology

Direct: (206) 594-0100
Cell: (425) 229-2565

Email: jing.song@ecy.wa.gov

From: Krista Webb <kristaleewebb@gmail.com>
Sent: Thursday, June 10, 2021 12:11 PM
To: Mohamed, Nancy (ECY) <nmoh461@ECY.WA.GOV>; Song, Jing (ECY) <JISO461@ECY.WA.GOV>
Cc: duane@russellsquareconsulting.com; malarie@russellsquareconsulting.com; shawnwilliams@krazan.com
Subject: Re: NW3313 Seitz Opinion Letter

[Quoted text hidden]

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

Sampling and Analysis Plan - REVISED

Soil and Groundwater Sampling

Lots 25 and 26
Seitz Property
Brian Lane NW
Silverdale Washington

Facility /Site No.: 6865393
Cleanup Site ID No.: 1472
VCP Project No.: NW3213

June 10, 2021

Prepared for:

Mr. Blaise Hilton, Principal
Russell Square Consulting
4857 W 147th Street, Suite D
Vancouver, WA 98660

Prepared by
Krazan & Associates, Inc.
1230 NW Finn Hill Road, #A
Poulsbo, WA 98370

Shawn E. Williams, L. G.
Senior Geologist

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Appendix A –Laboratory Methods and Specifications

ACRONYMS

µg/L	Micrograms per liter
AEG	Associated Environmental Group, LLC
ASTM	American Society for Testing and Materials
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylenes
COC	Chain-of-custody
COPC	Contaminants of potential concern
cPAHs	Carcinogenic polycyclic aromatic hydrocarbons
CSCSL	Confirmed and Suspected Contaminated Sites List
CSM	Conceptual site model
DP	Debris piles
DSA	Drum storage area
E&E	Ecology and Environment, Inc.
Ecology	Washington Department of Ecology
EnviroSound	EnviroSound Consulting, Inc.
EPA	United States Environmental Protection Agency
FA	Further Action
HASP	Health and Safety Plan
HSL	Hazardous Sites List
IDW	Investigation-derived waste
KCHD	Kitsap County Health District
Krazan	Krazan and Associates
mg/kg	milligrams per kilogram
MS/MSD	matrix spike and matrix spike duplicate
MTCA	Model Toxics Control Act
NFA	No further action
NW	Northwest
NWTPH	Northwest Total Petroleum Hydrocarbons
PCB	Polychlorinated biphenyls
PQL	Project quantitation limit
QC	Quality Control
SAP	Sampling and Analysis Plan
SHA	Site Hazard Assessment
TEE	Terrestrial Ecological Evaluation
TEQ	Toxicity equivalents
TPH (g, d, or o)	Total Petroleum Hydrocarbons (gasoline, diesel, or heavy oil)
USEPA	U.S. Environmental Protection Agency
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
WAC	Washington Administrative Code

1. INTRODUCTION

On behalf of Russell Square Consulting, Krazan and Associates (Krazan) has prepared this Soil and Groundwater Sampling and Analysis Plan (SAP) for the site located at Brian Lane NW in Silverdale, Washington. The Site consists of two contiguous rectangular-shaped Kitsap County tax parcels. Parcel A is the north parcel, with parcel number 08250140262000; Parcel B is the south parcel, with parcel number 08250140252001 (Figure 1). The two parcels are referred to as the Property in this SAP. The two parcels, which cover approximately 9.78 acres of undeveloped land, are located east of Brian Lane NW in central Kitsap County, northwest of Silverdale, Washington. No street number has been assigned to the Property. For the purposes of investigation, cleanup, and request for opinion, the Department of Ecology (Ecology) defines the site as impacted by carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and arsenic released to soil.

1.1 SITE SETTING

The Property is heavily vegetated with overgrown blackberry bushes, weeds, tall grasses, and other underbrush. An approximately 1-acre area on the western portion of the Property was cleared. A primitive road crosses the Property tracking southwest tonortheast. Access to the Property is via a 30-foot-wide easement from Brian Lane NW, which is located west of the Property. No utilities are provided to the Property. The Property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest.

1.2 SITE HISTORY

The Property was undeveloped land since as early as 1891. An aerial photograph in 1981 shows that the central portion of the Property was cleared at the time, with a building structure and a primitive road entering from the west; aerial photographs from 1990 to present show that the southwestern portion of the Property was cleared (AEG 2020). A historic report indicated that three abandoned building structures were present on the Property in 1997 (E&E 1997). Other historic reports indicated that the abandoned building structures were a house, a chicken coop, and a shed. The building structures were reportedly removed from the Property (decayed at the time) in June 2005 (EnviroSound 2015). The Property has been vacant and undeveloped since that time. The locations of the former building structures are depicted on Figure 2.

1.3 SOURCES OF CONTAMINATION

Contamination appears to be associated with wastes that were historically disposed of at the Site. One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 2). A total of eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with "Roybond Primer"; but the exact contents of the drums were unknown. A few debris piles were also discovered on Property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc. The contaminants of potential concern (COPCs) identified to date include arsenic and cPAHs in soil.

1.3.2 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Environmental assessments have been conducted at the Site since 1997. The list below is from the Site Description in the March 9, 2021 Ecology Further Action (FA) Opinion letter outlining site investigations and regulatory history in chronological order:

- In 1985 and 1986, complaints were made by a neighboring property owner to the Kitsap County Health District (KCHD) alleging that illegal dumping was being conducted on the Property. KCHD was unable to substantiate the claims of illegal burial of drums and cylinders at the time.
- In August 1997, the current Property owner was notified by the U.S. Environmental Protection Agency (EPA) that there were allegations of illegal dumping on the Site, presumably from the same neighbor. As a result of the allegation, a Site investigation was conducted on behalf of the EPA.
- The investigation included clearing brush and debris, conducting a geophysical survey, and digging three trenches to a maximum depth of 11 feet below ground surface (bgs) on the Site. The locations of the trenches are depicted as "E&E 1997 Trench #1, 2, and 3" on Figure 2.
- One 55-gallon drum discovered west of the former house was reportedly approximately ¼ full (Figure 2). One sample was collected from the drum. The analytical results were consistent with a diesel or heating oil type of petroleum product. The drum was emptied and recycled at the time.
- In March and April 2005, Ecology and KCHD conducted an initial Site investigation.
    - On March 14, 2005, KCHD received complaints from a neighbor that solid waste was uncovered at the Site due to land-clearing activities. KCHD visited the Site on March 18 and confirmed the presence of several piles of trash and rubbish. KCHD contacted the current owner to inquire about the status of the waste; the owner related that he was planning on developing the Property and cleaning up the solid waste.

  - On March 25, 2005, the current owner informed KCHD that additional brush-clearing activities revealed a 10-foot by 10-foot area where 18 55-gallon drums were discovered. The area is depicted as "Former Drum Storage Area" on Figure 2. KCHD inspected the drums on March 28; all drums were full or close to full. Four of the drums reportedly showed signs of leakage or spillage. Several drums were labeled with "Roybond Primer." The area around the drums reportedly smelled of solvents. KCHD provided the information to Ecology.
  - On March 29, 2005, a nearby property owner contacted Ecology reporting the drums found by the current owner and alleged additional drums (dumped in 1985 to 1986) were still buried on the Site. The complaint suggested that the 1997 trenching area was not in the alleged dumping area.
  - As a result of the initial investigation, Ecology listed the Site on the Confirmed and Suspected Contaminated Sites List (CSCSL) in April 2005 and requested that KCHD conduct a Site Hazard Assessment (SHA).
- KCHD conducted the Site Hazard Assessment (SHA) from August 2005 to February 2006.
  - During the time of the SHA, the current owner demolished the building structures in June 2005 and removed the 18 drums on August 17, 2005.
  - A ground-penetrating radar and magnetic survey was conducted in August 2005 in areas that were not covered by the 1997 survey and trenching. No buried metallic objects andno signs of excavation were found. The 2005 survey area is depicted on Figure 2.
  - Five soil samples (SP1 through SP5) were collected from the cleared areas of the Site from ground surface to 1-foot bgs (Figure 3). Two of the soil samples were collected from the former drum storage area; two were from the areas of the debris piles; and onewas from the former house area. One soil sample, SP2, contained a cPAHs TEQ concentration above the Model Toxics Control Act (MTCA) Method A soil cleanup level.
  - Two groundwater samples were collected from the two closest drinking water wells, respectively (Figure 1). The water sample collected from the Landsworth Creek water system well (east of the Site) contained an arsenic concentration and a cPAHs TEQ above the MTCA Method A groundwater cleanup levels. The cPAHs TEQ in a blank water sample also exceeded the MTCA Method A groundwater cleanup level.
  - As a result of the SHA, Ecology listed the Site on the Hazardous Sites List (HSL) inFebruary

2006, with a hazard ranking of 2 (moderate to high risk).

- In June to October 2015, soil sampling and excavation were conducted at the Site by EnviroSound Consulting (EnviroSound).
  - In June and July 2015, seven soil samples were collected at five locations (SL-1, S1-SL-1.5, SL-2, SL-3, and SL-4) within or near the former drum storage area from the ground surface to 1.5 feet bgs (Figures 3 and 4). The soil samples collected at the ground surface from locations SL-1 and SL-2 contained arsenic concentrations above the MTCA Method A soil cleanup level.
  - Two soil samples (DP1-S5-SL-09 and DP2-S6-SL-11) were collected from the areas of the two debris piles, respectively. One soil boing (SP5-S7-SL-13) was collected near the former house. All three soil samples were collected at the ground surface, and all contained arsenic concentrations above the MTCA Method A soil cleanup level. The areas where these samples were collected are depicted on Figure 4.
  - In October 2015, approximately 5.5 cubic yards of contaminated soil were removed from the former drum storage area. The excavation was completed to a size of 10-foot by 10- foot, and to a depth of 1.5 feet bgs. The excavation was not backfilled.
  - Two confirmation soil samples (DSA-S5 and DSA-S6) were collected by EnviroSound at the bottom of the excavation at 1.5 feet bgs (Figure 3). The soil samples did not contain detectable cPAHs. No arsenic analysis was conducted on these confirmation samples.
  - The current owner submitted the investigation results and entered the Site in Ecology's Voluntary Cleanup Program (VCP) on March 7, 2016. The Site was assigned a VCP project number of #NW3037. Ecology issued a *Further Action opinion letter* on June 22, 2016 to request additional work. This VCP agreement was terminated on December 3, 2018 due to lack of active cleanup activities.
  - In March 2018, a direct-push soil boring was advanced to 20 feet bgs at the east side of the former drum storage area by Mr. Seitz. One groundwater sample was collected from the soil boring. The groundwater sample contained concentrations of TPHg and BTEX above the laboratory PQL but below the MTCA Method A groundwater cleanup levels. Concentrations of TPHd, TPHo, cPAHs, and arsenic were below the laboratory PQL. However, the PQL for TPHd plus TPHo (750 µg/L) was above the MTCA Method A groundwater cleanup level (500 µg/L).
- In June to September 2020, a Phase I Environmental Site Assessment was conducted for the Site by

Associated Environmental Group, LLC (AEG), and a letter report was prepared to summarize Site data. The Site re-entered Ecology's VCP on October 1, 2020 and was assigned a VCP project number of #NW3293.

- In October 2020, exploratory test pits were excavated on the subject property as part of a Geotechnical Engineering Investigation by N. L. Olsen & Associates, Inc. A representative of Krazan observed the majority of the test pits on the subject parcels as part of a Phase I ESA for the property. No visible evidence of contamination was observed in the test pits and no visible evidence of drums were noted. Test pit locations are shown on Figure 4.
- In November 2020, nine soil samples (CS-1 through CS-9) were collected by Krista Webb Consulting in the former drum storage area at ground surface to 1.5 feet bgs (Figure 3). None of the soil samples contained detectable arsenic concentrations above MTCA soil cleanup levels.

2. INVESTIGATION OBJECTIVE

The objective of the work described in this plan is to complete characterization of the site based on the March 9, 2021 FA opinion letter from Ecology. Site characterization data collected will be used to determine if any remedial action is required to meet substantive requirements of MTCA, Chapter 70A.305 RCW. If contamination is identified in soil or groundwater above applicable cleanup standards, a feasibility study will be prepared to select the appropriate actions required to obtain a no further action (NFA) for unrestricted use.

3. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is used to identify contaminants of potential concern (COPCs), affected media, potential migration routes, and exposure pathways by which human and ecological receptors may be exposed to hazardous substances (WAC 173-340- 708[3][e]).

An exposure pathway consists of four main parts (WAC 173-340-200), listed below:

- Source of contamination (e.g., primary sources, such as spills and leaks, and secondary sources, such as impacted soil or groundwater)
- Transport or exposure medium (e.g., a solute moving with groundwater flow and contamination present in soil)
- Point of exposure (e.g., an open excavation)

- Route of exposure (e.g., inhalation and dermal contact).

When all of these parts are present, connecting the source of contamination to a receptor and result in an unacceptable health risk, the exposure pathway is considered complete. If one or more parts are not present, the pathway is incomplete, and exposure does not occur. It is also possible to have a potentially complete exposure pathway without health risk if chemicals are not detected or chemical concentrations are within an acceptable range.

Potential human receptors were identified for the Property based on current and reasonable future land use.

3.1 SOURCE AREAS

Soil and groundwater are potentially contaminated as a result of leaking from wastes that were historically disposed of at the Site. Wastes include:

- One 55-gallon drum was discovered on Parcel B in 1997 which contained petroleum product (E&E 1997) (Figure 3). It is not known to have leaked.
- Eighteen 55-gallon drums were discovered by the property owner on Parcel A in 2005 (Figure 2). Several of these drums were labeled with “Roybond Primer”; but the exact contents of the drums were unknown.
- Two debris piles discovered on the Property (Figure 2). These debris piles appeared to contain solid waste such as tires, trash, vehicles, etc.

3.2 CONTAMINANTS OF POTENTIAL CONCERN

The contaminants of potential concern (COPCs) identified to date include arsenic and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in soil. Additional COPCs, such as lead, gasoline, diesel, or heavy-oil range petroleum hydrocarbons, volatile organic carbons (VOCs) such as benzene, ethylbenzene, toluene, and xylenes (BTEX), other PAHs, or polychlorinated biphenyls (PCBs), may be identified on soil and groundwater upon further site characterization.

3.3 CONTAMINANT MIGRATION AND EXTENT

Contamination is potentially present in surface and subsurface soil between 0 and 15 feet bgs. It is believed that most or all the contamination present was removed during the excavation of the shallow soils near the drum storage area from 0 to 5 feet in depth. This sampling will confirm the presence or absence of residuals post removal, as well as evaluate other areas identified as being of concern by Ecology. This sampling will also evaluate the potential for contamination migrating to groundwater prior to the removal action, as well as evaluate groundwater at two other potential source areas (Debris Piles 1 and 2) to determine if any contamination has migrated to groundwater from soil. If contamination is identified and extent cannot be determined during the initial sampling event, additional sampling will be proposed to complete site characterization prior to proceeding to the RI/FS Report (see section 9 below). Sampling rationale to meet this evaluation are described in Section 4.

3.4 CURRENT AND FUTURE SITE USE

The property is currently undeveloped. The property is bounded with undeveloped land to the north, south, and west, and single-family residences to the east and southwest. The property is zoned for commercial use with the Kitsap County comprehensive plan land use designation of Urban High Intensity Commercial. Future receptors may be residents, workers, or construction workers.

3.5 POTENTIAL EXPOSURE PATHWAYS

Depending on the COPCs detected during this site characterization, future receptors may be exposed to surface and subsurface soil by incidental ingestion, dermal contact, and inhalation of soil particulates and VOCs. Future receptors may also be exposed to contaminants in subsurface soil and groundwater by inhalation of VOCs in indoor (e.g., inhalation of off-gassing VOCs from shallow groundwater or soil) or outdoor air. Receptors could be exposed to groundwater contaminants (if present) in drinking water by ingestion, dermal exposure, or inhalation of volatiles from tap water.

4. PURPOSE, SCOPE, AND RATIONALE

Several items were identified by Ecology that require additional characterization to meet the objective of this project. This work plan will identify the sampling and analysis requirements to complete characterization of the site. The results of the site characterization will be used to determine if any remediation is required to meet the overall objective of no further action (NFA) for unrestricted use.

Table 1 - Purpose, Scope, and Rationale

PURPOSE	SCOPE	RATIONALE
Evaluate the former debris piles for the nature and extent of arsenic in soil	Collect three (3) discrete surface soil samples at each of the two (2) former debris piles and test for lead and arsenic. Collect one field duplicate.	Data obtained will quantify presence or absence of arsenic above MTCA cleanup levels in vicinity of former debris piles.
Evaluate the vicinity of the former house for the presence of contamination in surface soil.	Collect three (3) discrete surface soil samples and analyze for petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene, and xylenes (BTEX), arsenic, and lead. Collect one field duplicate sample.	Data obtained will quantify presence or absence of petroleum hydrocarbons above MTCA cleanup levels in vicinity of a 55- gallon drum previously observed in vicinity of former house.
Confirm cleanup in surface soils in former drum storage area.	One (1) discrete soil sample will be collected from 0-6 inches bgs from the sides and center of the former drum storage area and analyzed for lead, arsenic, TPHg/d/o and BTEX.	Data obtained will confirm removal of petroleum hydrocarbon in near surface soils of former drum storage area.
Evaluate groundwater in former drum storage area to determine if contamination transported to groundwater.	Three (3) monitoring wells will be installed near the former drum storage area. One (1) well will be installed within footprint of former drum storage area. Two (2) additional wells will be installed to the northeast and northwest, downgradient of the former drum storage area. One (1) additional well may be used to evaluate conditions if deemed necessary. One field duplicate sample will be collected during each round of groundwater sampling.	Placement of three (3) or possibly four (4) wells will maximize the confidence that we have assessed direction and flow of groundwater and identified any potential contamination in shallow groundwater.

PURPOSE	SCOPE	RATIONALE
Evaluate subsurface soil in vicinity of former debris piles.	Collect soil samples during monitoring well installation at 5-foot intervals during drilling Analyze soil samples for lead, arsenic, polychlorinated biphenyls (PCBs), petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), PAHs and BTEX. One field duplicate sample will be collected from one boring.	Results of subsurface soil samples will indicate if any residual contamination from former debris piles have impacted subsurface soil.
Evaluate groundwater in vicinity of the two former debris piles to determine if contamination transported to groundwater..	Install one (1) monitoring well each within the footprints of the two former debris piles. If contamination is identified in groundwater or subsurface soil associated with former debris piles, additional wells will be installed downgradient.	Placement of monitoring wells in vicinity of the 2 former debris piles will determine if there are any impacts to groundwater from the former debris piles.
Evaluate whether groundwater contamination exists and if so, nature and extent of contamination.	Wells will be screened from three feet above top of water table to 7-feet below top of water table. Collect groundwater samples from all installed monitoring wells and analyze for arsenic, lead, PCBs, petroleum hydrocarbons (gasoline, diesel, and lube oil) (TPH g/d/o), PAHs and BTEX. One field duplicate sample will be collected during each round of groundwater sampling.	Setting the screens above the water table should provide information on seasonal fluctuation of water levels and identify contamination in any potential smear zone in soil column above water table.

5. PROPOSED CLEANUP STANDARDS

5.1 Soil Cleanup Standards

The cleanup levels for soil are the Method A soil cleanup levels based on protection of ground water. In addition, preparation of a simplified Terrestrial Ecological Evaluation (TEE) was recommended by Ecology in their March 9, 2021 letter. In accordance with WAC 173- 360-900, screening levels for the upper 15 feet of soil need to be adjusted as per Table 749-2. Applicable soil levels for contaminants detected at this site are provided in Table 2.

Table 2 - Soil Screening Levels

Potential Contaminants of Concern (COC)	Soil Cleanup Levels (0 to 15 feet bgs)	Soil Cleanup Levels (below 15 feet bgs)
Gasoline-range petroleum hydrocarbons (TPHg)	30/100 mg/kg [d]	30/100 mg/kg
Diesel- and heavy oil-rangepetroleum hydrocarbons (TPHd and TPHo) [a]	460 mg/kg	2,000 mg/kg
Benzene	0.03 mg/kg	0.03 mg/kg
Toluene	7 mg/kg	7 mg/kg
Ethylbenzene	6 mg/kg	6 mg/kg
Total Xylenes	9 mg/kg	9 mg/kg
cPAHs [b]	0.1 mg/kg	0.1 mg/kg
Arsenic	20 mg/kg	20 mg/kg
Lead	220 mg/kg	250 mg/kg
Polychlorinated Biphenyls(PCBs) [c]	1 mg/kg	1 mg/kg

Notes:
[a]: The cleanup levels should be compared with the sum of TPHd and TPHo concentrations, in accordance with Ecology's guidance[3,4].
[b]: This is the total toxic equivalent concentration (TEQ) of all cPAHs. See Ecology's guidance[5] on calculating cPAHs Total TEQ.
[c]: This is the total value of all PCBs in the PCB mixture.
[d]: The lower value applies when BTEX is detected in soil; the higher value applies when BTEX is not detected.

To protect terrestrial ecological receptors, a revised simplified TEE will be provided with the site characterization report.

For soil cleanup levels based on the protection of ground water, the point of compliance is defined as Site-wide throughout the soil profile and may extend below the water table. For soil cleanup levels based on protection of terrestrial ecological receptors, the point of compliance is defined as Site-wide from the ground surface to 15 feet bgs.

5.2 Groundwater Cleanup Standards

The groundwater cleanup levels are the MTCA Method A cleanup levels for drinking water. The point of compliance for groundwater is throughout the Site, from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected.

6. SAMPLING OBJECTIVES AND DESIGN

6.1 CHEMICAL ANALYSIS

All chemical analyses will include practical quantitation limits (if possible) that meet the lower of the MTCA Method A Levels or the Ecological Screening Levels based on the TEE.

6.2 FIELD SAMPLING METHODS

All samples planned for collection (including QC samples) are specified in Table 3. Locations planned for sample collection are shown in Figure 5. This Table details each location, analyses to be performed, and projected QC samples for 5 events. Events are defined as follows:

- Event 1 is the initial field work, including all drilling and soil sample collection.
- Event 2 is the first round of quarterly groundwater sampling.
- Event 3 is the second round of quarterly groundwater sampling.
- Event 4 is the third round of quarterly groundwater sampling.
- Event 5 is the fourth round of quarterly groundwater sampling.

If additional collection of samples is required, additional events will be added.

Soil will be collected using hand tools for surface samples and split spoon samplers for subsurface soil samples. Samples will be collected using a clean stainless sampling implement and placed in clean sample containers provided by the laboratory. Data pertinent to the sample (e.g., date, sample number, analysis) will be recorded on a field data sheet and a laboratory chain-of-custody prior to shipment to the approved laboratory.

Groundwater samples will be collected using a peristaltic pump. Disposable 1-use tubing will be used to fill clean sample containers provided by the laboratory. Data pertinent to the sample (e.g., date, sample number, analysis) will be recorded on a field data sheet and a laboratory chain-of-custody form prior to shipment to the approved laboratory.

6.3 MONITORING WELL CONSTRUCTION

The monitoring wells will be installed with a drill rig using 4-inch inside-diameter (I.D.) hollow-stem auger under the direction of Krazan's geologist, who will obtain and log the soil samples as drilling progresses. During drilling, soil samples will be taken at five-foot intervals, using a 2.0-inch diameter split-spoon sampler. The samples will be visually described using the Unified Soil Classification System (ASTM C2488-69) and placed in appropriate containers. The collected soil samples will be field-screened using a RAE System Toxi-RAE Photo-Ionization Detector (PID) for the presence of volatile organic compounds. Select soil samples from each borehole will be collected for chemical analysis. These samples will be directly placed in clean 4-ounce glass jars provided by the laboratory using disposable spoons.

On completion of drilling, the monitoring well will be installed in the borehole to Washington State resource protection well standards (Department of Ecology Minimum Standards for Construction and Maintenance of Wells, Chapter 173-160 WAC). The wells will be constructed with 2-inch I.D. Schedule 40 PVC well screen and riser pipe. The well screen, a 5-foot section of 10-slot (0.010-inch) PVC screen, will be placed at a depth of approximately 15 to 20 feet. A diagram showing monitoring well construction is provided as Figure 6.

The annular space between the well screen and borehole wall will be backfilled with Colorado 10-20 silica sand. A bentonite chip seal will be placed above the sand pack to one foot below the ground surface. The top of the monitoring well will be completed with a steel flush-mount monument cover, cemented in place. Each monitoring well will be developed using a downhole submersible pump to remove sediment from the well.

Soil from the drilling cuttings will be placed into steel, 55-gallon drums, which will remain on-site until proper disposal is arranged.

Monitoring wells will be advanced until either: a) groundwater is encountered, b) an aquitard (e.g. Vashon Till) is encountered, or c) 50 ft bgs.

6.4 SAMPLING LOCATIONS

The horizontal locations of all sample locations will be marked in the field and surveyed by a licensed surveyor. The measuring point elevations of the monitoring wells will be surveyed using the North American Vertical Datum of 1988 by a Washington-state licensed land surveyor, in accordance with WAC 173-340-840(4)(e). Depths to groundwater will be measured to the nearest 0.01 foot and elevations will be contoured to determine the predominant groundwater flow direction at the Site.

6.5 DECONTAMINATION PROCEDURES

Disposable sampling equipment will be used and discarded after single use. Split spoon samplers will be decontaminated after each use using a detergent solution followed by a clean water rinse.

6.6 SAMPLE CONTAINERS AND LABELS

Sample containers and preservatives will be provided by the analytical laboratory. The analytical laboratory will maintain documentation certifying the cleanliness of the sample containers and the purity of preservatives provided. Specific container requirements will be determined by the analytical laboratory.

Each sample will have an adhesive plastic or waterproof paper label affixed to the container and will be labeled at the time of collection. The following information will be recorded on the container label at the time of collection:

- Project name
- Sample identification
- Date and time of sample collection
- Preservative type (if applicable)

Samples will be uniquely identified with a sample identification that, at a minimum, specifies sample number and sample location.

6.7 FIELD DOCUMENTATION

After sample collection, the following information will be recorded in the project field notebook:

- The date, the time, and the name of person logging sample
- Weather conditions
- Sample location number
- Soil type
- Depth of water at the location
- Blow counts for drilling

Each sample will be photographed. Soil will be described in the field, using the visual-manual description procedure (Method ASTM [American Society for Testing and Materials] D-2488 modified). This information will also be recorded in the field notebook. Visual-manual characterization includes the following:

- Grain size distribution

- Density/consistency
- Plasticity
- Color and moisture content
- Biological structures
- Presence of debris and quantitative estimate (e.g., wood chips or fibers, paint chips, concrete, sandblast grit, metal debris)
- Presence of oily sheen
- Odor
- PID reading

6.8 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) will consist of will consist of soil, water, and used sampling equipment. IDW will be stored on site until appropriate disposal is arranged. .

6.9 UTILITY LOCATIONS

Buried underground utilities present a unique hazard for subsurface sampling. Private and public utility location services will be utilized to identify locatable utilities in the sampling area before field sampling activities begin, however, the presence of any utilities at the site is highly unlikely.

7. SAMPLE HANDLING PROCEDURES

Procedures for collecting, storing, and handling samples are described in this section.

7.1 FIELD QUALITY CONTROL SAMPLES

Field quality control (QC) samples will be collected to improve the reliability of the data. Krazan will collect each of the following types of samples:

- Field Duplicate: collected at a minimum of 1/10 ratio for each media sampled with a minimum of 1/ sampling event (e.g. one each quarter for groundwater monitoring) to assess the homogeneity of the samples and the precision of the sampling process.
- Equipment Blank: All equipment used in the field except the split spoon sampler with the drill rig and the sample cone with the AMS surface soil sampler, will be disposable. One equipment blank per day will be collected on all non-disposable equipment (e.g. split spoon and cone).
- Temperature Blank: A temperature blank will be collected for each sample shipment and are used to verify that adequate sample storage temperature was maintained.

- Matrix Spike Duplicate (MSD): A matrix spike duplicate is an additional replicate of the matrix spike sample following the same sample preparation and analytical testing as the original sample. MSDs are used to document the precision and bias of a method for a specific sample matrix. In addition, 2 extra volumes of a groundwater sample for laboratory matrix spike and matrix spike duplicate (MS/MSD) analysis will be collected.
- Trip Blank: One sample will be collected per day if VOCs or BTEX samples are collected and shipped in the same cooler with all VOC/BTEX samples. A trip blank is used with samples collected for volatile organic compound (VOC) testing, and its purpose is to detect and identify any VOC contaminant of the samples from travelling to and from the lab.

7.2 SAMPLE STORAGE

To maintain sample integrity, sample containers will be placed in coolers filled with ice or equivalent immediately after being filled. Samples will be maintained at approximately 4°C.

7.3 CHAIN-OF-CUSTODY PROCEDURES

Samples in the custodian’s possession, in a secured location (under lock) with restricted access or in a container that is secured with official seals such that the sample cannot be reached without breaking the seals, are considered to be under custody. Chain-of-custody (COC) procedures will be followed for all samples throughout the collection, handling, and analysis process. The principal document used to track possession and transfer of samples is the COC form supplied by the analytical laboratory. Each sample will be represented on the COC form. All data entries will be made with an ink pen.

7.4 DELIVER OF SAMPLES TO ANALYTICAL LABORATORY

All samples will be shipped or hand delivered under COC procedures to the analytical laboratory no later than the day after collection. If samples are collected on Friday, they may be held until the following Monday for shipment, provided that this does not adversely impact holding time requirements. Sample containers will be placed in a sealable plastic bag, packed to prevent breakage, and transported in a sealed ice chest containing ice or equivalent.

Upon transfer of sample possession to the analytical laboratory, the persons transferring custody of the sample container will sign the COC form. Upon receipt of samples at the laboratory, the shipping container seal will be broken and the receiver will record the condition of the samples on a sample receipt form. COC forms will be used internally in the lab to track sample handling and final disposition.

8. LABORATORY ANALYTICAL METHODS

Samples will be analyzed for Total Petroleum Hydrocarbons in the gasoline, diesel and heavy oil ranges (NWTPH-G/D/O), VOCs (BTEX), Metals (Lead and Arsenic), Polychlorinated biphenyls (PCBs), and Semi Volatile Organic Compounds (SVOCs), as shown in Table 3. All laboratory quality assurance and quality control checks will be implemented per EPA and Ecology method instructions.

The analytical data will receive a level QA1 quality assurance review. The analytical results will be tabulated and compared to Ecological Screening levels and MTCA method A cleanup levels. Sample methods and practical quantitation limits for each analyte are provided in Appendix A.

8.1 SAMPLE QUANTITATION LIMITS

Effort will be made to ensure that sample quantitation limits will be below the levels specified in WAC 173-340-900, Table 740-1 and WAC 173-360-900, Table 749-2. Unforeseen matrix interference could cause elevated quantitation limits for some compounds. All reasonable means, including additional cleanup steps and method modifications, will be used to bring sample quantitation limits below the screening levels.

9. REPORTING

Following each sampling event, a data report will be provided summarizing results. Following the second round of quarterly monitoring, an RI/FS report will be provided detailing proposed treatment or removal, if necessary. Reports will include:

- Site Investigation Data Summary
- First Quarterly Groundwater Monitoring Data Summary
- Second Quarterly Groundwater Monitoring Data Summary
- RI/FS Report
- Third Quarterly Groundwater Monitoring Data Summary (if needed)
- Fourth Quarterly Groundwater Monitoring Data Summary (if needed)

Table 3 - Sample Collection Summary

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
1	2021-SS-1	surface soil	Debris Pile 1	0-1	1	DS			X		
2	2021-SS-2	surface soil	Debris Pile 1	0-1	1	DS			X		
3	2021-SS-3	surface soil	Debris Pile 1	0-1	1	DS			X		
4	2021-SS-4	surface soil	Debris Pile 2	0-1	1	DS			X		
5	2021-SS-5	surface soil	Debris Pile 2	0-1	1	DS			X		
6	2021-SS-6	surface soil	Debris Pile 2	0-1	1	DS			X		
7	2021-SS-7	surface soil	Debris Pile 2	0-1	1	FD			X		
8	2021-SS-8	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
9	2021-SS-9	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
10	2021-SS-10	surface soil	Former House and Drum Area	0-1	1	DS	X	X	X	X	
11	2021-SS-11	surface soil	Former House and Drum Area	0-1	1	FD	X	X	X	X	
12	2021-SS-12	surface soil	Drum Storage Area	0-1	1	DS	X	X	X	X	
13	2021-SB-13	subsurface soil	Drum Storage Area MW-1	5-6.5	1	ES	X	X	X	X	X
14	2021-SB-14	subsurface soil	Drum Storage Area MW-1	10-11.5	1	ES	X	X	X	X	X
15	2021-SB-15	subsurface soil	Drum Storage Area MW-1	15-16.5	1	ES	X	X	X	X	X
16	2021-SB-16	subsurface soil	Drum Storage Area MW-1	20-21.5	1	ES	X	X	X	X	X
17	2021-SB-17	subsurface soil	Drum Storage Area MW-1	25-26.5	1	ES	X	X	X	X	X
18	2021-SB-18	subsurface soil	Drum Storage Area MW-2	5-6.5	1	ES, MS/MSD	X	X	X	X	X
19	2021-SB-19	subsurface soil	Drum Storage Area MW-2	10-11.5	1	ES	X	X	X	X	X
20	2021-SB-20	subsurface soil	Drum Storage Area MW-2	15-16.5	1	ES	X	X	X	X	X
21	2021-SB-21	subsurface soil	Drum Storage Area MW-2	20-21.5	1	ES	X	X	X	X	X
22	2021-SB-22	subsurface soil	Drum Storage Area MW-2	25-26.5	1	ES	X	X	X	X	X
23	2021-SB-23	subsurface soil	Drum Storage Area MW-3	5-6.5	1	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
24	2021-SB-24	subsurface soil	Drum Storage Area MW-3	10-11.5	1	ES	X	X	X	X	X
25	2021-SB-25	subsurface soil	Drum Storage Area MW-3	15-16.5	1	ES	X	X	X	X	X
26	2021-SB-26	subsurface soil	Drum Storage Area MW-3	15-16.5	1	FD	X	X	X	X	X
27	2021-SB-27	subsurface soil	Drum Storage Area MW-3	20-21.5	1	ES	X	X	X	X	X
28	2021-SB-28	subsurface soil	Drum Storage Area MW-3	25-26.5	1	ES	X	X	X	X	X
29	2021-SB-29	subsurface soil	Debris Pile 1 MW-4	5-6.5	1	ES	X	X	X	X	X
30	2021-SB-30	subsurface soil	Debris Pile 1 MW-4	10-11.5	1	ES	X	X	X	X	X
31	2021-SB-31	subsurface soil	Debris Pile 1 MW-4	15-16.5	1	ES	X	X	X	X	X
32	2021-SB-32	subsurface soil	Debris Pile 1 MW-4	20-21.5	1	ES	X	X	X	X	X
33	2021-SB-33	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	ES	X	X	X	X	X
34	2021-SB-34	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	FD	X	X	X	X	X
35	2021-SB-35	subsurface soil	Debris Pile 2 MW-5	5-6.5	1	ES	X	X	X	X	X
36	2021-SB-36	subsurface soil	Debris Pile 2 MW-5	10-11.5	1	ES	X	X	X	X	X
37	2021-SB-37	subsurface soil	Debris Pile 2 MW-5	15-16.5	1	ES, MS/MSD	X	X	X	X	X
38	2021-SB-38	subsurface soil	Debris Pile 2 MW-5	20-21.5	1	ES	X	X	X	X	X
39	2021-SB-39	subsurface soil	Debris Pile 2 MW-5	25-26.5	1	ES	X	X	X	X	X
900		QC			1	TB		X			
901		QC			1	TB		X			
902		QC			1	TB		X			
903		QC			1	TB		X			
950		QC			1	Temp					
951		QC			1	Temp					
952		QC			1	Temp					
953		QC			1	Temp					
101	2021-GW-101	Groundwater	Drum Storage Area MW-1		2	ES, MS/MSD	3X	3X	3X	3X	3X
102	2021-GW-102	Groundwater	Drum Storage Area MW-2		2	ES	X	X	X	X	X
103	2021-GW-103	Groundwater	Drum Storage Area MW-3		2	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
104	2021-GW-104	Groundwater	Debris Pile 1 MW-4		2	ES	X	X	X	X	X
105	2021-GW-105	Groundwater	Debris Pile 2 MW-5		2	ES	X	X	X	X	X
105 FD	2021-GW-105FD	Groundwater	Debris Pile 2 MW-5		2	FD	X	X	X	X	X
904		QC			2	TB		X			
954		QC			2	Temp					
201	2021-GW-201	Groundwater	Drum Storage Area MW-1		3	ES	X	X	X	X	X
202	2021-GW-202	Groundwater	Drum Storage Area MW-2		3	ES, MS/MSD	3X	3X	3X	3X	3X
203	2021-GW-203	Groundwater	Drum Storage Area MW-3		3	ES	X	X	X	X	X
203FD	2021-GW-203FD	Groundwater	Drum Storage Area MW-3		3	FD	X	X	X	X	X
204	2021-GW-204	Groundwater	Debris Pile 1 MW-4		3	ES	X	X	X	X	X
205	2021-GW-205	Groundwater	Debris Pile 2 MW-5		3	ES	X	X	X	X	X
905		QC			3	TB		X			
955		QC			3	Temp					
301	2021-GW-301	Groundwater	Drum Storage Area MW-1		4	ES	X	X	X	X	X
301FD	2021-GW-301FD	Groundwater	Drum Storage Area MW-1		4	FD	X	X	X	X	X
302	2021-GW-302	Groundwater	Drum Storage Area MW-2		4	ES	X	X	X	X	X
303	2021-GW-303	Groundwater	Drum Storage Area MW-3		4	ES	X	X	X	X	X
304	2021-GW-304	Groundwater	Debris Pile 1 MW-4		4	ES, MS/MSD	3X	3X	3X	3X	3X
305	2021-GW-305	Groundwater	Debris Pile 2 MW-5		4	ES	X	X	X	X	X
906		QC			4	TB		X			
956		QC			4	Temp					
401	2022-GW-401	Groundwater	Drum Storage Area MW-1		5	ES	X	X	X	X	X
402	2022-GW-402	Groundwater	Drum Storage Area MW-2		5	ES	X	X	X	X	X
402FD	2022-GW-402FD	Groundwater	Drum Storage Area MW-2		5	FD	X	X	X	X	X
403	2022-GW-403	Groundwater	Drum Storage Area MW-3		5	ES	X	X	X	X	X

Sample Number	Sample ID	Matrix	Location	Depth bgs	Event	Type	Method TPH G/D/X	BTEX	Lead/ Arsenic	PAHs	PCBs
405	2022-GW-405	Groundwater	Debris Pile 2 MW-5		5	ES	X	X	X	X	X
907		QC			5	TB		X			
957		QC			5	Temp					

Notes

ES	Environmental Sample
FD	Field Duplicate
DS	Discrete Sample
TB	Trip Blank
Temp	Temperature Blank
QC	Quality Control Sample

X	Collect Sample
3X	Collect Triple Volume
MS/MSD	Requires 3x Volume for water samples

Events

1	Initial Investigation
2	Q1 Groundwater Sampling
3	Q2 Groundwater Sampling
4	Q3 Groundwater Sampling
5	Q4 Groundwater Sampling

10. REFERENCES

N. L. Olsen & Associates, Inc. 2021. *Geotechnical Engineering Investigation, Silverdale Multi-Family/Commercial Development*, Near Clear Creek Road NW and NW Greaves Way, Silverdale, Washington, March, 2021.

Krazan & Associates, Inc. 2020. *Phase I Environmental Site Assessment, JSP Silverdale Project*, 11493 & 11531 Clear Creek Road NW, Silverdale, Washington, November 20, 2020.

Associated Environmental Group, LLC, 2020. *Phase I Environmental Site Assessment, Seitz Property*, Silverdale, Washington, July 19, 2020.

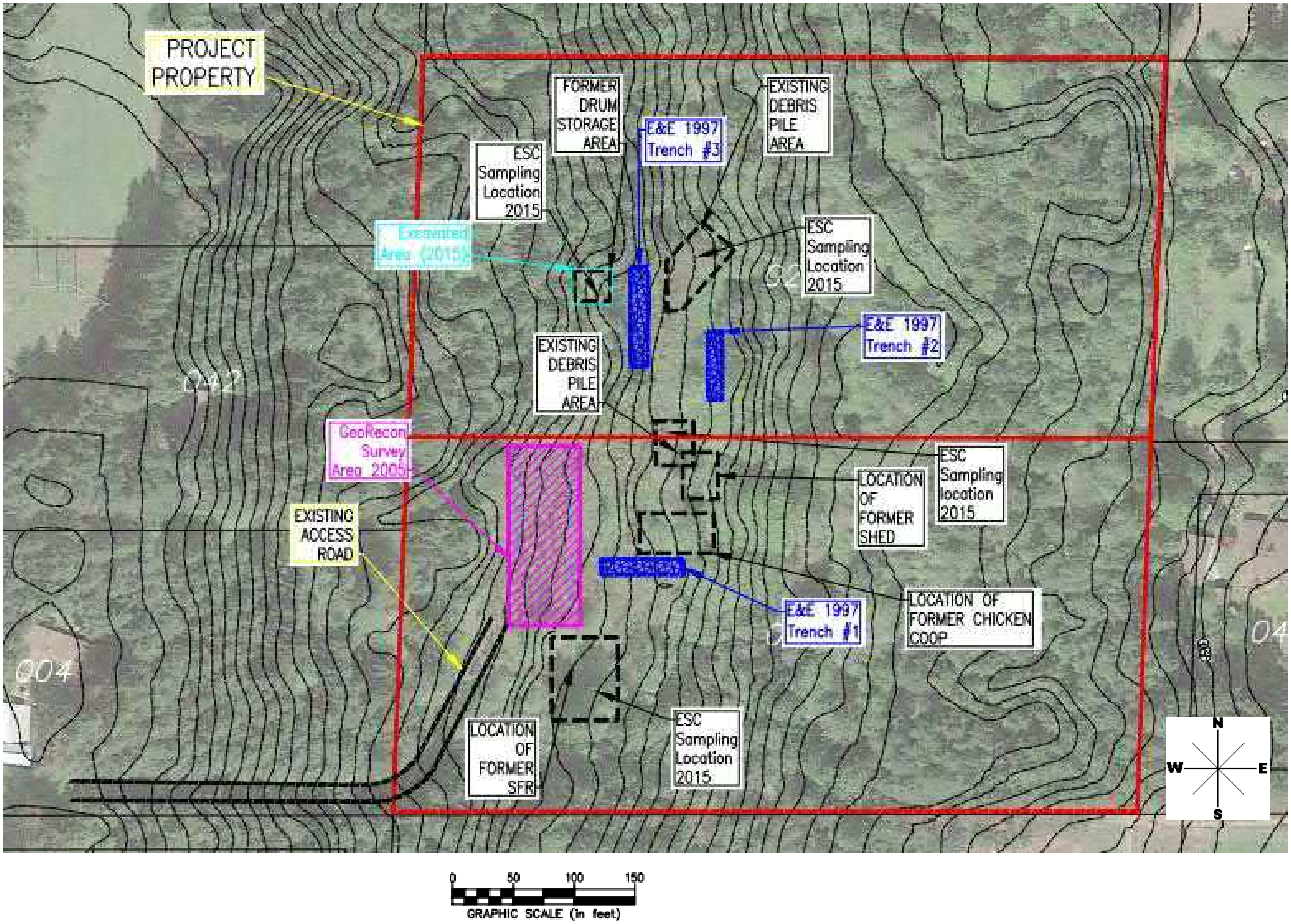
Ecology and Environment, Inc., 1997. *Silverdale Dump Site Removal Site Assessment Trip Report*, October 30, 1997.

EnviroSound Consulting Inc., 2015. *Site Soil Investigation, Seitz Property, Silverdale, Washington*, November 30, 2015.

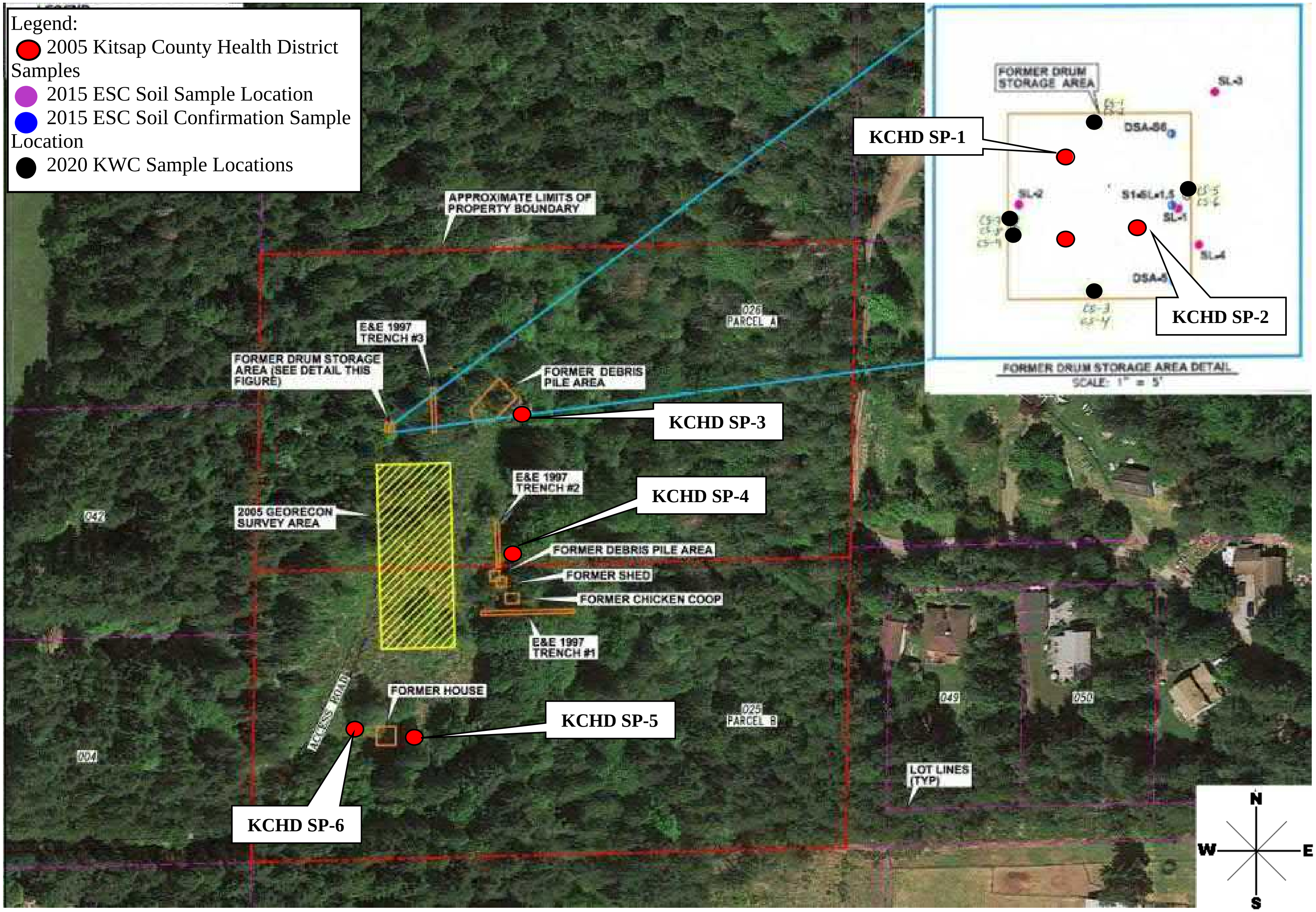
FIGURES

Source: Google Maps

VICINITY MAP	Scale: NTS	Date: April 2021	Krazan
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	Modified by: CB	Approved by: SEW	SITE DEVELOPMENT ENGINEERS *Conducting Assessments Nationwide*
	Project No. 104-21020	Figure No. 1	

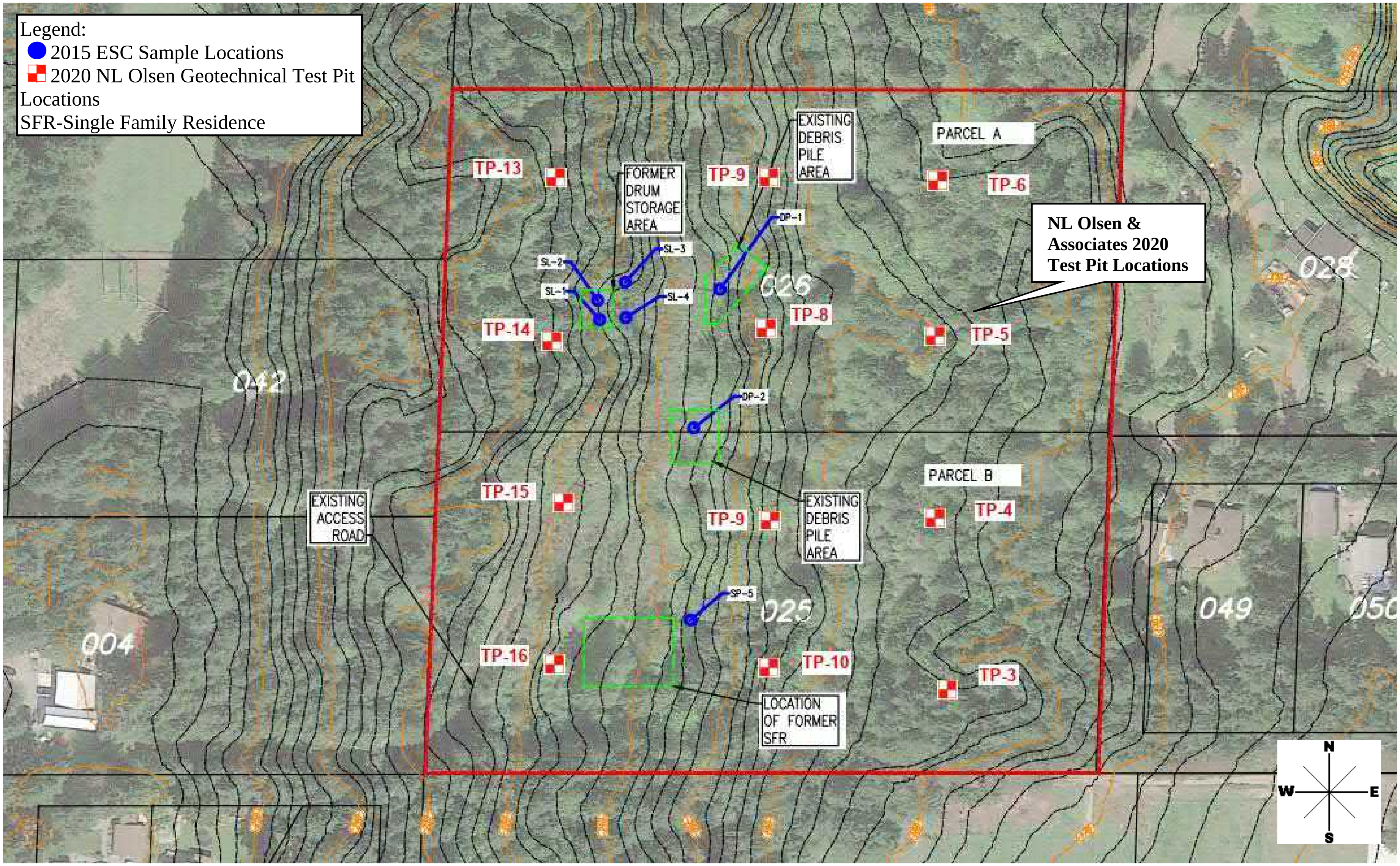


SITE MAP	Scale: 1"=100'	Date: April 2021	Krazan SITE DEVELOPMENT ENGINEERS *Conducting Assessments Nationwide*
Seitz Property – Lots 25 & 26 **Sampling and Analysis Plan** **Brian Lane** **Silverdale, Washington**	Drawn by: CB	Approved by: SEW	
	Project No. 104-21018	Figure No. 2	



Source: Google Maps

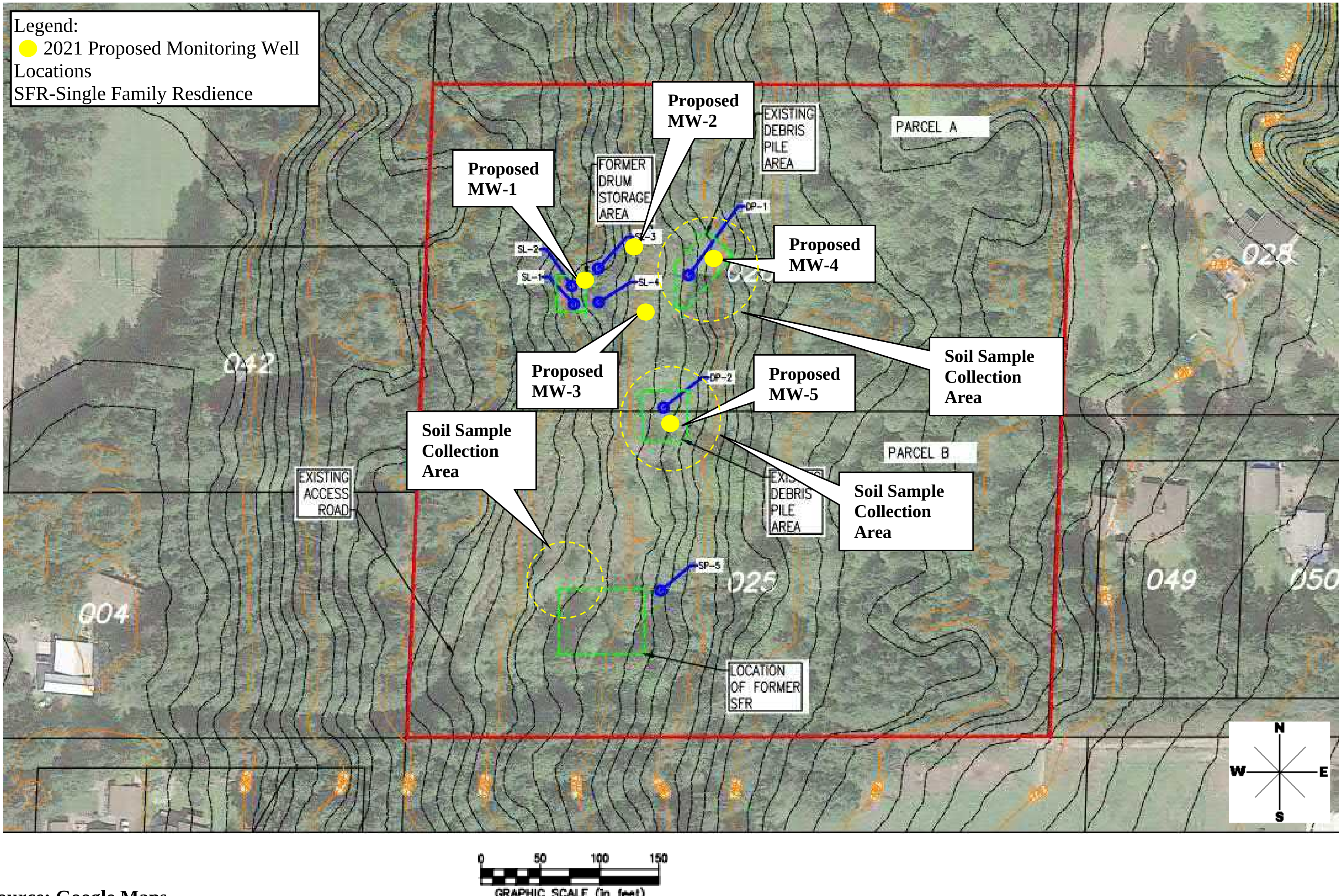
SITE MAP-Previous Sampling Locations	Scale: NTS	Date: April 2021	Krazan
Seitz Property – Lots 25 & 26 **Sampling and Analysis Plan** **Brian Lane** **Silverdale, Washington**	Drawn by: CB	Approved by: SEW	SITE DEVELOPMENT ENGINEERS
	Project No. 104-21018	Figure No. 3	*Conducting Assessments Nationwide*



0 50 100 150
GRAPHIC SCALE (in feet)

Source: Google Maps

SITE MAP-Previous Sampling Locations	**Scale:** 1"=100'	**Date:** April 2021	Krazan
Seitz Property – Lots 25 & 26 **Sampling and Analysis Plan** **Brian Lane** **Silverdale, Washington**	**Drawn by:** CB **Project No.** 104-21018	**Approved by:** SEW **Figure No.** 4	**SITE DEVELOPMENT ENGINEERS** ***Conducting Assessments Nationwide***



Source: Google Maps

SITE MAP-Proposed Sampling Locations	Scale: 1"=100'	Date: April 2021	Krazan SITE DEVELOPMENT ENGINEERS *Conducting Assessments Nationwide*
Seitz Property – Lots 25 & 26 Sampling and Analysis Plan Brian Lane Silverdale, Washington	Drawn by: CB	Approved by: SEW	
	Project No. 104-21018	Figure No. 5	

Figure 6.

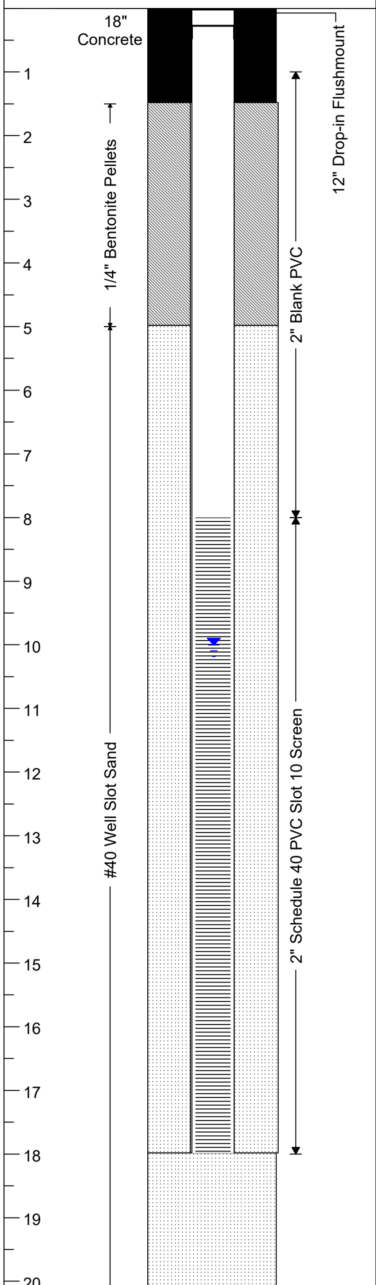
Project: **Boring:** **Page:** 1 of 2

Drilling Co.: **Drilling Method:** **Date Started:**

Well Tag No.: **Sampler/Drop:** **Date Completed:**

Logged By:

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
					1			
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			



Krazan & Associates

Lithologic Log and Well Construction Details

Client:

Project Location: **Project No.:**

Project: | **Boring:**

Drilling Co.: | **Drilling Method:** | **Date Started:**

Well Tag No.: | **Sampler/Drop:** | **Date Completed:**

Logged By:

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
21					21			
22					22			
23					23			
24					24			
25					25			
26					26			
27					27			
28					28			
29					29			
30					30			
31					31			
32					32			
33					33			
34					34			
35					35			
36					36			
37					37			
38					38			
39					39			
40					40			

Krazan & Associates

Lithologic Log and Well Construction Details

Client:

Project Location: | **Project No.:**

Appendix A
Laboratory Methods and Specifications

Sample Number	Matrix	Location	Depth	Event	Type	Method TPH G/D/X	BTEX	Lead/Arsenic	PAHs	PCBs
1	surface soil	Debris Pile 1	0-1	1	CS			X		
2	surface soil	Debris Pile 1	0-1	1	CS			X		
3	surface soil	Debris Pile 1	0-1	1	CS			X		
4	surface soil	Debris Pile 2	0-1	1	CS			X		
5	surface soil	Debris Pile 2	0-1	1	CS			X		
6	surface soil	Debris Pile 2	0-1	1	CS			X		
7	surface soil	Debris Pile 2	0-1	1	FD			X		
8	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
9	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
10	surface soil	Former House and Drum Area	0-1	1	CS	X	X	X	X	
11	surface soil	Former House and Drum Area	0-1	1	FD	X	X	X	X	
12	surface soil	Drum Storage Area	0-1	1	CS	X	X	X	X	
13	subsurface soil	Drum Storage Area MW-1	5-6.5	1	ES	X	X	X	X	X
14	subsurface soil	Drum Storage Area MW-1	10-11.5	1	ES	X	X	X	X	X
15	subsurface soil	Drum Storage Area MW-1	15-16.5	1	ES	X	X	X	X	X
16	subsurface soil	Drum Storage Area MW-1	20-21.5	1	ES	X	X	X	X	X
17	subsurface soil	Drum Storage Area MW-1	25-26.5	1	ES	X	X	X	X	X
18	subsurface soil	Drum Storage Area MW-2	5-6.5	1	ES	X	X	X	X	X
19	subsurface soil	Drum Storage Area MW-2	10-11.5	1	ES	X	X	X	X	X
20	subsurface soil	Drum Storage Area MW-2	15-16.5	1	ES	X	X	X	X	X
21	subsurface soil	Drum Storage Area MW-2	20-21.5	1	ES	X	X	X	X	X
22	subsurface soil	Drum Storage Area MW-2	25-26.5	1	ES	X	X	X	X	X
23	subsurface soil	Drum Storage Area MW-3	5-6.5	1	ES	X	X	X	X	X
24	subsurface soil	Drum Storage Area MW-3	10-11.5	1	ES	X	X	X	X	X
25	subsurface soil	Drum Storage Area MW-3	15-16.5	1	ES	X	X	X	X	X
26	subsurface soil	Drum Storage Area MW-3	15-16.5	1	FD	X	X	X	X	X
27	subsurface soil	Drum Storage Area MW-3	20-21.5	1	ES	X	X	X	X	X
28	subsurface soil	Drum Storage Area MW-3	25-26.5	1	ES	X	X	X	X	X
29	subsurface soil	Debris Pile 1 MW-4	5-6.5	1	ES	X	X	X	X	X
30	subsurface soil	Debris Pile 1 MW-4	10-11.5	1	ES	X	X	X	X	X
31	subsurface soil	Debris Pile 1 MW-4	15-16.5	1	ES	X	X	X	X	X
32	subsurface soil	Debris Pile 1 MW-4	20-21.5	1	ES	X	X	X	X	X
33	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	ES	X	X	X	X	X
34	subsurface soil	Debris Pile 1 MW-4	25-26.5	1	FD	X	X	X	X	X
35	subsurface soil	Debris Pile 2 MW-5	5-6.5	1	ES	X	X	X	X	X
36	subsurface soil	Debris Pile 2 MW-5	10-11.5	1	ES	X	X	X	X	X
37	subsurface soil	Debris Pile 2 MW-5	15-16.5	1	ES	X	X	X	X	X
38	subsurface soil	Debris Pile 2 MW-5	20-21.5	1	ES	X	X	X	X	X
39	subsurface soil	Debris Pile 2 MW-5	25-26.5	1	ES	X	X	X	X	X
900	QC			1	TB		X			
901	QC			1	TB		X			
902	QC			1	TB		X			
903	QC			1	TB		X			
950	QC			1	Temp					
951	QC			1	Temp					
952	QC			1	Temp					
953	QC			1	Temp					
101	Groundwater	Drum Storage Area MW-1		2	ES	X	X	X	X	X
102	Groundwater	Drum Storage Area MW-2		2	ES	X	X	X	X	X
103	Groundwater	Drum Storage Area MW-3		2	ES	X	X	X	X	X
104	Groundwater	Debris Pile 1 MW-4		2	ES	X	X	X	X	X
105	Groundwater	Debris Pile 2 MW-5		2	ES	X	X	X	X	X
105 FD	Groundwater	Debris Pile 2 MW-5		2	FD	X	X	X	X	X
904	QC			2	TB		X			
954	QC			2	Temp					
201	Groundwater	Drum Storage Area MW-1		3	ES	X	X	X	X	X
202	Groundwater	Drum Storage Area MW-2		3	ES	X	X	X	X	X
203	Groundwater	Drum Storage Area MW-3		3	ES	X	X	X	X	X
203FD	Groundwater	Drum Storage Area MW-3		3	FD	X	X	X	X	X
204	Groundwater	Debris Pile 1 MW-4		3	ES	X	X	X	X	X
205	Groundwater	Debris Pile 2 MW-5		3	ES	X	X	X	X	X
905	QC			3	TB		X			
955	QC			3	Temp					
301	Groundwater	Drum Storage Area MW-1		4	ES	X	X	X	X	X
301FD	Groundwater	Drum Storage Area MW-1		4	FD	X	X	X	X	X
302	Groundwater	Drum Storage Area MW-2		4	ES	X	X	X	X	X
303	Groundwater	Drum Storage Area MW-3		4	ES	X	X	X	X	X
304	Groundwater	Debris Pile 1 MW-4		4	ES	X	X	X	X	X
305	Groundwater	Debris Pile 2 MW-5		4	ES	X	X	X	X	X
906	QC			4	TB		X			
956	QC			4	Temp					
401	Groundwater	Drum Storage Area MW-1		5	ES	X	X	X	X	X
402	Groundwater	Drum Storage Area MW-2		5	ES	X	X	X	X	X
402FD	Groundwater	Drum Storage Area MW-2		5	FD	X	X	X	X	X
403	Groundwater	Drum Storage Area MW-3		5	ES	X	X	X	X	X
404	Groundwater	Debris Pile 1 MW-4		5	ES	X	X	X	X	X
405	Groundwater	Debris Pile 2 MW-5		5	ES	X	X	X	X	X
907	QC			5	TB		X			
957	QC			5	Temp					

Notes

ES	Environmental Sample
FD	Field Duplicate
CS	Composite Sample
TB	Trip Blank
Temp	Temperature Blank
QC	Quality Control Sample
X	Collect Sample

Events

1	Initial Investigation
2	Q1 Groundwater Sampling
3	Q2 Groundwater Sampling
4	Q3 Groundwater Sampling
5	Q4 Groundwater Sampling

Sample	Method	Matrix	Reporting Limit (mg/kg)	LCS (%R)	MS/MSD (%R)	Duplicate RPD (%)	Surrogate (%R)
GRO	NWTPH-Gx	Soil	5	70-130	50-150	20	50-150
DRO/RRO	NWTPH-Dx	Soil	50/250	70-130	50-150	20	50-150
BTEX	EPA 8021B	Soil	0.02 to 0.06	70-130	50-150	20	50-150
Lead/Arsenic	EPA 6020B	Soil	1	80-120	75-125	20	n/a
PAHs	EPA 8270E	Soil	0.01	70-130	50-150	20	50-150
PCBs	EPA 8082	Soil	0.02	70-130	50-150	20	50-150

Analyte	Method	Matrix	Reporting Limit (ug/L)	LCS (%R)	MS/MSD (%R)	Duplicate RPD (%)	Surrogate (%R)
GRO	NWTPH-Gx	Water	100	70-130	50-150	20	50-150
DRO/RRO	NWTPH-Dx	Water	50/250	70-130	50-150	20	50-150
BTEX	EPA 8021B	Water	1 to 3	70-130	50-150	20	50-150
Lead/Arsenic	EPA 6020B	Water	1	80-120	75-125	20	n/a
PAHs	EPA 8270E	Water	0.04	70-130	50-150	20	50-150
PCBs	EPA 8082	Water	0.1	70-130	50-150	20	50-150

LCS/MS/MSD/Surrogate %R values are method defaults. Laboratory generated acceptance criteria generated through ongoing control chart practices may also be used.

Analyte	Method	Matrix	Container Type	Preservation	Holding Time
GRO	NWTPH-Gx	Soil	40 mL VOA pre-tared	Cool to <6C for 48	14 Days
DRO/RRO	NWTPH-Dx	Soil	4 ounce WMG	Cool to <6C	14 Days
BTEX	EPA 8021B	Soil	40 mL VOA pre-tared	Cool to <6C for 48	14 Days
Lead/Arsenic	EPA 6020B	Soil	4 ounce WMG	None	1 Year
PAHs	EPA 8270E	Soil	4 ounce WMG	Cool to <6C	1 Year
PCBs	EPA 8082	Soil	4 ounce WMG	Cool to <6C	None
GRO	NWTPH-Gx	Water	40 mL VOA	Cool to <6C, HCl	14 Days
DRO/RRO	NWTPH-Dx	Water	500 mL Amber Glass	Cool to <6C	7 Days to extract, 40 to analyze
BTEX	EPA 8021B	Water	40 mL VOA	Cool to <6C, HCl	14 Days
Lead/Arsenic	EPA 6020B	Water	250 mL Poly	Cool to <6C	6 Months
PAHs	EPA 8270E	Water	500 mL Amber Glass	Cool to <6C	7 Days to extract, 40 to analyze
PCBs	EPA 8082	Water	1L Amber Glass	Cool to <6C	None

FSID6865393
Appendix B.
Field Data Sheets/
Photo Log

Photo 1: 6-18-21 Surface Sampling – Surface Soil Sampling location, former house and drum area.

Photo 2: 6-18-21 Surface Sampling – Surface Soil Sampling location, former Debris Pile Two.

Photo 3: 6-18-21 Surface Sampling – Surface Soil Sampling location, former Drum Storage Area.

Photo 4: 6-18-21 Surface Sampling – Surface Soil Sampling location, former Debris Pile 1.

Photo 5: 7-12-21 Monitoring Well Installation – Showing installation of Monitoring Well MW-3 in the former drum storage area with completed MW-1 in foreground.

Photo 6: 7-12-21 Monitoring Well Installation – Showing installation of Monitoring Well MW-2 adjacent to the former drum storage area.

Photo 7: 7-13-21 Monitoring Well Installation – Showing installation of Monitoring Well MW-4 in the area of former debris pile 1.

Photo 8: 7-13-21 Monitoring Well Installation – Showing installation of Monitoring Well MW-5 in the area of former debris pile 2.

Photo 9: 7-13-21 Monitoring Well Installation – Showing the decontamination equipment set up.

Photo 10: 9-27-21 Remedial Action Soil Removal – Showing soil removal in the area of former debris pile 1.

Photo 11: 9-27-21 Remedial Action Soil Removal – Showing the limits of the soil removal excavation in the area of former debris pile 1.

Photo 12: 9-27-21 Remedial Action Soil Removal – Showing soil removal in the former house and drum area.

Photo 13: 9-27-21 Remedial Action Soil Removal – Showing limits of the soil removal excavation in the former house and drum area.

Photo 14: 9-27-21 Remedial Action Soil Removal – Showing some of the removed soil being placed in the truck for transport to offsite disposal site.

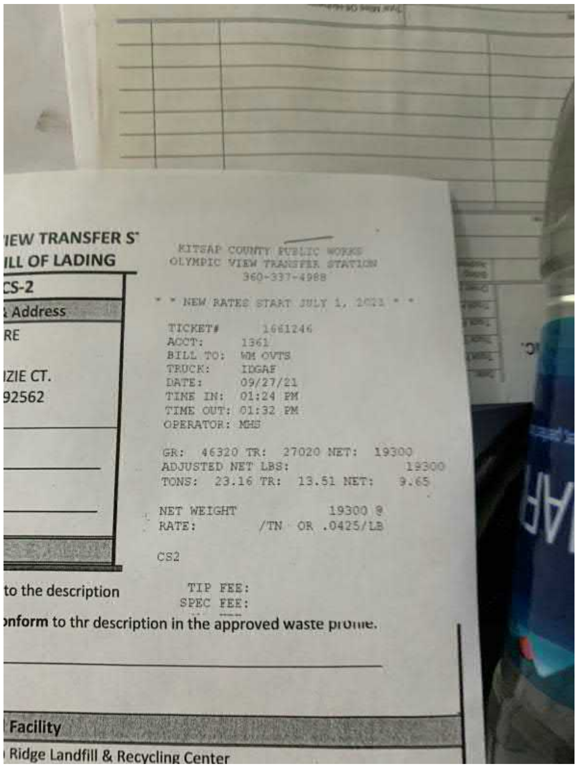


Photo 15: 9-27-21 Receipt for transfer station

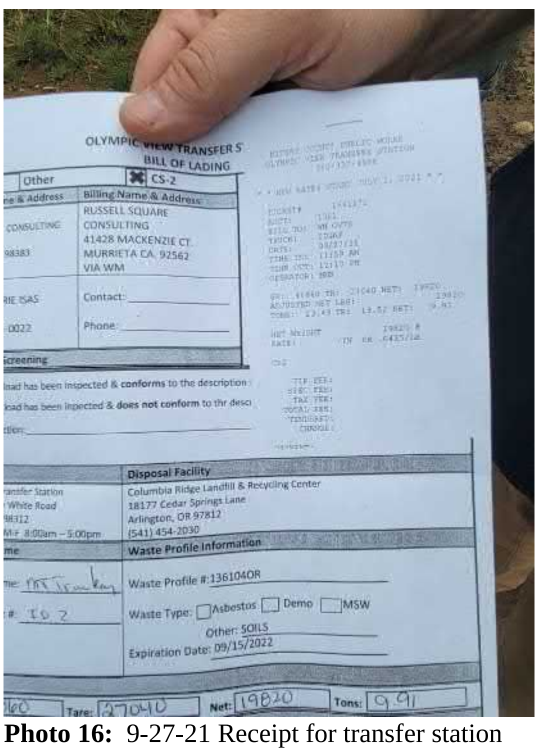


Photo 16: 9-27-21 Receipt for transfer station

FSID6865393
Appendix C.
Boring Logs

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: – Sample Location: MW-1

Inspector(s): CB Date/Time: 7/21/21 11:30am

Company: Krazan

Weather/Temperature: 60° Overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 19.92

Total Depth of Well Below Top of Casing (feet): –

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): –

Liters per Foot: – Liters in Well: –

3 Times Casing Volume (liters): – Liters Purged from Well: –

Water Sample Data

Sample ID: 2021-GW-101 Time Sample Collected: 12:00 pm

Remarks (Color/Odor): Clear No odor Sheen on purge water? None

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
	11:45	6.73	80.91	4.54		17.3		

Notes: 0.6 ppm BMT-479

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-2

Inspector(s): CB Date/Time: 7/21/21 10:00am

Company: Krazan

Weather/Temperature: 60° Overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 13.2

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): —

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-102 Time Sample Collected: 10:30 am

Remarks (Color/Odor): ~~A~~ clear | None Sheen on purge water? None

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
	10:15	6.80	76.16	2.54		17.9		

Notes: 0.7 ppm BMT-484

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47

1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: – Sample Location: MW-3

Inspector(s): CB Date/Time: 7/21/21 10:45am

Company: Krazan

Weather/Temperature: 60° overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 16.4

Total Depth of Well Below Top of Casing (feet): –

Product Thickness (feet): None Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): –

Liters per Foot: – Liters in Well: –

3 Times Casing Volume (liters): – Liters Purged from Well: –

Water Sample Data

Sample ID: 2021-GW-103 Time Sample Collected: 11:05am

Remarks (Color/Odor): Clear / None Sheen on purge water? None

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
	10:50	6.46	107.9	2.19		17.5		

Notes: 0.0 ppm BMT-482

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-4

Inspector(s): CB Date/Time: 7/21/21 9:30am

Company: Krazan

Weather/Temperature: 60° Overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 12.7

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): None Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): —

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-104 Time Sample Collected: 9:50am

Remarks (Color/Odor): Clear / None Sheen on purge water? None

Stabilized? — 3 Casing Volumes Removed? —

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
	9:30	7.03	100.7	3.10		18.6		

Notes: 0.6 ppm BMT-483

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-5

Inspector(s): CB Date/Time: 7/21/21 8:15am

Company: Krazan

Weather/Temperature: 60° Overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 18.36 Feet

Total Depth of Well Below Top of Casing (feet): 27.65 feet

Product Thickness (feet): None Sampling/Purge Method: Peristaltic pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): —

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-105, 2021-GW-106 Time Sample Collected: 9:00am

Remarks (Color/Odor): Clear / None Sheen on purge water? N/A

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
—	8:30	6.7	136.8	20.7	—	18.6	—	—

Notes: 0.9 ppm ~~BMT-4??~~ BMT-481

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: – Sample Location: MW-1

Inspector(s): CB Date/Time: 10/6/21

Company: Krazan

Weather/Temperature: 55° overcast / Cloudy

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 21.95 feet

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): –

Liters per Foot: – Liters in Well: –

3 Times Casing Volume (liters): – Liters Purged from Well: –

Water Sample Data

Sample ID: 2021-GW-201 Time Sample Collected: 9:45

Remarks (Color/Odor): Clear / No odor Sheen on purge water? None

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
–	9:40	6.30	80	15.33	–	13.8	–	–

Notes: 0.0 ppm

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: lots 25 and 26 Project No.: 104-21020

Site Name: – Sample Location: MW-2

Inspector(s): CB Date/Time: 10/6/21

Company: krazan

Weather/Temperature: 55° overcast/Cloudy

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 14.70'

Total Depth of Well Below Top of Casing (feet): –

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): –

Liters per Foot: – Liters in Well: –

3 Times Casing Volume (liters): – Liters Purged from Well: –

Water Sample Data

Sample ID: 2021-MW-202 Time Sample Collected: 8:40am

Remarks (Color/Odor): Clear/No Odor Sheen on purge water? N/A

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
–	8:20am	6.71	87.4	6.81	–	17.6	–	–

Notes: 0.0ppm

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47

1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-3

Inspector(s): CB Date/Time: 10|6|21

Company: Krazan

Weather/Temperature: 55°/ overcast cloudy

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 17.92 feet

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): N|A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): N|A

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-203 2021-GW-204 Time Sample Collected: 10:30

Remarks (Color/Odor): Clear | None Sheen on purge water? N|A

Stabilized? N|A 3 Casing Volumes Removed? N|A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
	10:15	6.10	115.4	4.90		13.2		

Notes: 0.0 ppm

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-4

Inspector(s): CB Date/Time: 10/6/21

Company: Krazan

Weather/Temperature: 55° overcast cloudy

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 14.05 feet

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): —

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-205 Time Sample Collected: 9:15 am

Remarks (Color/Odor): Clear / None Sheen on purge water? N/A

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
—	9:05	6.0	1.23	104.1	—	15.1	—	—

Notes: 0.0 ppm

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Krazan

WATER SAMPLING LOG

Project Name: Lots 25 and 26 Project No.: 104-21020

Site Name: — Sample Location: MW-5

Inspector(s): CB Date/Time: 10/6/21

Company: Krazan

Weather/Temperature: 55° Cloudy/Overcast

Well Data

Diameter of Well Casing (inches): 2-inches

Depth to Water Below Top of Casing (feet): 19.94 feet

Total Depth of Well Below Top of Casing (feet): —

Product Thickness (feet): N/A Sampling/Purge Method: Peristaltic Pump

Calculate if well parameters do not stabilize per the work plan:

Length of Water Column in Well (feet): —

Liters per Foot: — Liters in Well: —

3 Times Casing Volume (liters): — Liters Purged from Well: —

Water Sample Data

Sample ID: 2021-GW-206 Time Sample Collected: 10:55

Remarks (Color/Odor): Clear/ None Sheen on purge water? N/A

Stabilized? N/A 3 Casing Volumes Removed? N/A

Purge Vol. (liters)	Time (min)	pH (pH units)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (C)	Salinity (%)	Redox (mv)
Criteria for three consecutive readings		±0.1 SU	±3%	±10% or <10 NTU	±10%	±10%	±10%	±10 mV
—	1047	5.52	124.1	3.18	—	13.6	—	—

Notes: 0.0 ppm

Well Casing Volumes

Liters/Foot ½" = 0.04 1-1/4" = 0.24 2" = 0.62 3" = 1.39 4" = 2.47
1-1/2" = 0.35 2-1/2" = 0.97 3-1/2" = 1.89 6" = 5.56

Project: Lots 25 and 26 | **Boring:** MW-1 | **Page:** 1 of 2

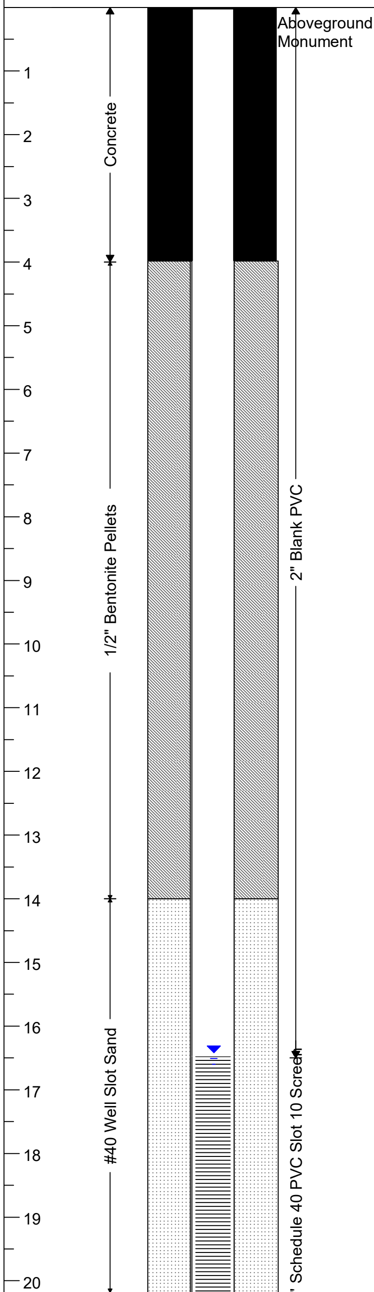
Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT479 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 213.5' | **Meas. Pt. Elev.:** 217.26' | **Reviewed by:** SEW

WELL COMPLETION DETAILS



BLOW COUNT	% RECOVERY	PID	DEPTH (ft)	DESCRIPTION	NOTES
			0-4	0-4.0' Very dense, reddish-brown, silty sand with gravels; dry (Vashon Ablation Till)	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 4.09 Arsenic: 2.25 PAHs: ND PCBs: ND
53	6"	0.0	3	Sample: 2021-SB-16	
			4-11.5	4.0'-11.5' Very dense, gray-brown, silty sand with gravels; dry (Vashon Lodgement Till)	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 3.09 Arsenic: 1.80 PAHs: ND PCBs: ND
81+	8"	0.0	6	Sample: 2021-SB-17	
50+	12"	0.0	11	Sample: 2021-SB-18	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.36 Arsenic: <1 PAHs: ND PCBs: ND
			11.5-20	11.5'-26.5' Dense to very dense, gray, medium to coarse sand with gravels; moist to wet (Pre-Vashon Outwash Sand)	
35	16"	0.0	16	Sample: 2021-SB-19	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.58 Arsenic: 1.27 PAHs: ND PCBs: ND

Lithologic Log and Well Construction Details

Krazan & Associates

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-1

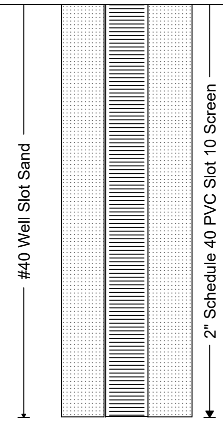
Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT479 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 213.5' | **Meas. Pt. Elev.:** 217.26' | **Reviewed by:** SEW

WELL COMPLETION DETAILS



BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	DESCRIPTION	NOTES
62	18"	0.0		21	11.5'-26.5' Dense to very dense, gray, medium to coarse sand with gravels; moist to wet (Pre-Vashon Outwash Sand) Sample: 2021-SB-20	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.44 Arsenic: 1.08 PAHs: ND PCBs: ND
65+	18"	0.0		26	Sample: 2021-SB-21	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.19 Arsenic: <1 PAHs: ND PCBs: ND

Depth scale: 21 – 40 ft

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-2 | **Page:** 1 of 2

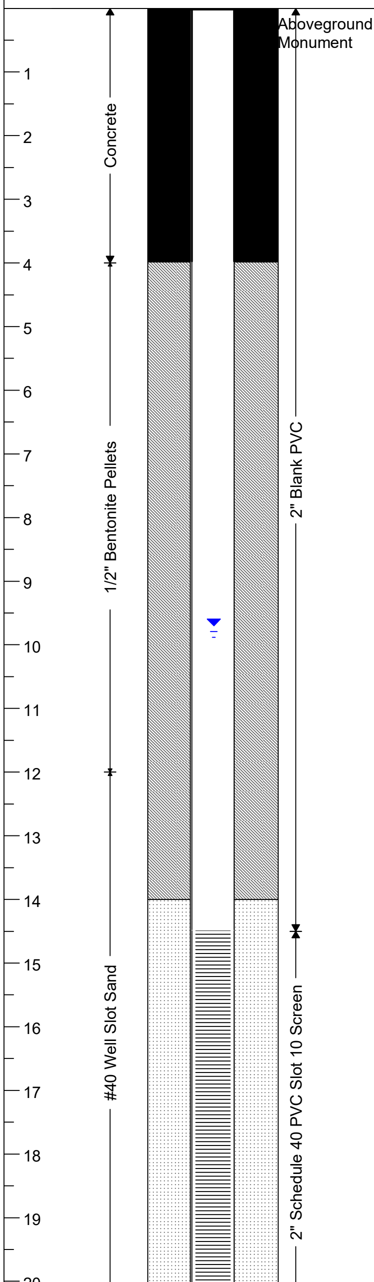
Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT484 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 206.5' | **Meas. Pt. Elev.:** 210.21' | **Reviewed by:** SEW

WELL COMPLETION DETAILS



DEPTH (ft)	BLOW COUNT	% RECOVERY	PID	DESCRIPTION	NOTES
0-16.5				0-16.5' Very dense, gray to brown, silty sand with gravels; dry, large rocks (Vashon Lodgement Till)	
2.5-4	50+	18"	0.0	Sample: 2021-SB-22	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.15 Arsenic: 1.01 PAHs: ND PCBs: ND
5-6.5	70	16"	0.0	Sample: 2021-SB-23	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.02 Arsenic: 1.73 PAHs: ND PCBs: ND
10-11.5	58	12"	0.0	Sample: 2021-SB-24	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.22 Arsenic: 1.02 PAHs: ND PCBs: ND
15-16.5	50+	12"	0.0	Sample: 2021-SB-25	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.07 Arsenic: <1 PAHs: ND PCBs: ND
16.5-26.5				16.5'-26.5 Dense, brownish-gray, medium to coarse sand; wet to saturated (Pre-Vashon Outwash Sand)	

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-2 | **Page:** 2 of 2

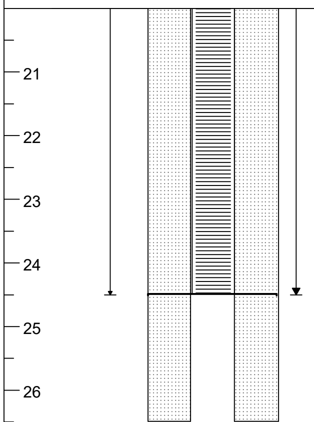
Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT484 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 206.5' | **Meas. Pt. Elev.:** 210.21' | **Reviewed by:** SEW

WELL COMPLETION DETAILS



BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
39	16"	0.0		21		16.5'-26.5' Dense, brownish-gray, medium to coarse sand; wet to saturated (Pre-Vashon Outwash Sand) Sample: 2021-SB-26	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.17 Arsenic: <1 PAHs: ND PCBs: ND
				22			
				23			
				24			
				25			
43	16"	0.0		26		Sample: 2021-SB-27	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.12 Arsenic: <1 PAHs: ND PCBs: ND
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			
				36			
				37			
				38			
				39			
				40			

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-3 | **Page:** 1 of 2

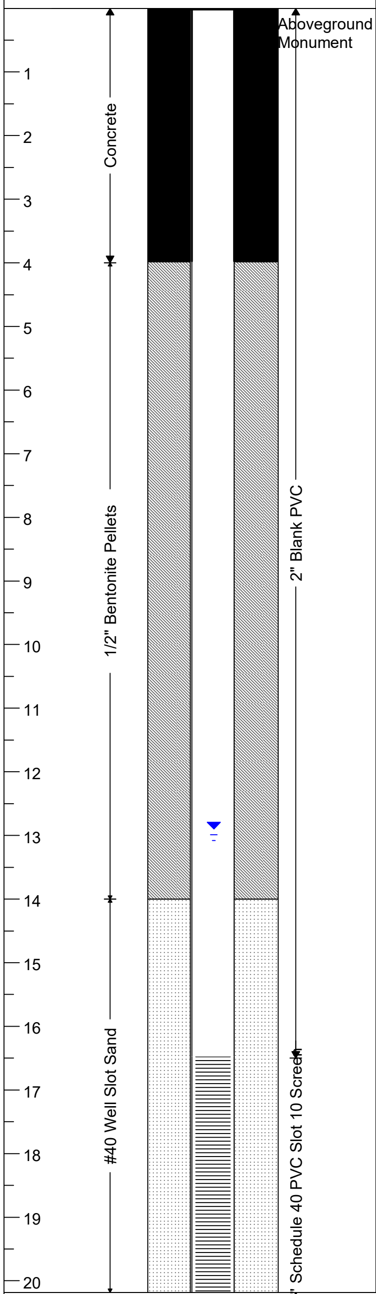
Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT482 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 209.9' | **Meas. Pt. Elev.:** 213.72' | **Reviewed by:** SEW

WELL COMPLETION DETAILS



DEPTH (ft)	BLOW COUNT	% RECOVERY	PID	DESCRIPTION	NOTES
0-4.0				0-4.0' Medium dense, gray-brown, silty sand/sandy silt; dry (Vashon Ablation Till)	
~3	28	6"	0.0	Sample: 2021-SB-28	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.32 Arsenic: <1 PAHs: ND PCBs: ND
4.0-11.5				4.0'-11.5' Very dense, gray-brown, silty sand with gravels; dry (Vashon Lodgement Till)	
~6	69	8"	0.0	Sample: 2021-SB-29	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.09 Arsenic: <1 PAHs: ND PCBs: ND
~11	50+	6"	0.0	Sample: 2021-SB-30	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.24 Arsenic: <1 PAHs: ND PCBs: ND
11.5-26.5				11.5'-26.5' Very dense, gray, medium to coarse sand with gravels; wet to saturated (Pre-Vashon Outwash Sand)	
~16	65	15"	0.0	Sample: 2021-SB-31 and 2021-SB-32	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.22 Arsenic: <1 PAHs: ND PCBs: ND Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.23 Arsenic: <1 PAHs: ND PCBs: ND

Lithologic Log and Well Construction Details

Krazan & Associates

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-3 |

Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/12/21

Well Tag No.: BMT482 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 209.9' | **Meas. Pt. Elev.:** 213.72' | **Reviewed by:** SEW

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
#40 Well Slot Sand; 2" Schedule 40 PVC Slot 10 Screen	69	10"	0.0		21		11.5'-26.5' Very dense, gray, medium to coarse sand with gravels; wet to saturated (Pre-Vashon Outwash Sand) Sample: 2021-SB-33	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.44 Arsenic: 1.03 PAHs: ND PCBs: ND
					22			
					23			
					24			
					25			
	68	10"	0.0		26		Sample: 2021-SB-34	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.21 Arsenic: 1.05 PAHs: ND PCBs: ND
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-4 | **Page:** 1 of 2

Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/13/21

Well Tag No.: BMT483 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 204.9' | **Meas. Pt. Elev.:** 208.67' | **Reviewed by:** SEW

WELL COMPLETION DETAILS: Aboveground Monument; Concrete (0–4'); 1/2" Bentonite Pellets (4–14'); #40 Well Slot Sand (14–20'); 2" Blank PVC; 2" Schedule 40 PVC Slot 10 Screen

DEPTH (ft)	BLOW COUNT	% RECOVERY	PID	DESCRIPTION	NOTES
0–4.0				0-4.0' Medium dense, gray-brown, silty sand/sandy silt; dry (Vashon Ablation Till)	
3	23	6"	0.0	Sample: 2021-SB-35	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.62 Arsenic: 1.17 PAHs: ND PCBs: ND
4.0–21.5				4.0'-21.5' Dense to very dense, gray-brown, silty sand with gravels; dry to moist (Vashon Lodgement Till)	
6	43	15"	0.0	Sample: 2021-SB-36	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.19 Arsenic: <1 PAHs: ND PCBs: ND
11	50+	18"	0.0	Sample: 2021-SB-37	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: <1 Arsenic: <1 PAHs: ND PCBs: ND
16	50+	16"	0.0	Sample: 2021-SB-38	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: <1 Arsenic: <1 PAHs: ND PCBs: ND

Project: Lots 25 and 26		**Boring:** MW-4	**Page:** 2 of 2
Drilling Co.: Holocene Drilling	**Drilling Method:** Hollow Stem Auger	**Date Installed:** 7/13/21	
Well Tag No.: BMT483	**Sampler:** SPT	**Date Measured:** 7/21/21	
	Desc. of Meas Pt.: Top of Casing	**Logged By:** CB	
Surface Elev.: 204.9'	**Meas. Pt. Elev.:** 208.67'	**Reviewed by:** SEW	

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	DESCRIPTION	NOTES
#40 Well Slot Sand; 2" Schedule 40 PVC Slot 10 Screen	50+	4"	0.0		21	4.0'-21.5' Dense to very dense, gray-brown, silty sand with gravels; dry to moist (Vashon Lodgement Till) Sample: 2021-SB-39	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.27 Arsenic: <1 PAHs: ND PCBs: ND
					22–25	21.5'-26.5' Very dense, gray, medium to coarse sand with gravels; wet to saturated (Pre-Vashon Outwash Sand)	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.44 Arsenic: 1.23 PAHs: ND PCBs: ND
	54	18"	0.0		26	Sample: 2021-SB-40 and 2021-SB-41	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.35 Arsenic: <1 PAHs: ND PCBs: ND
					27–40		

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-5 | **Page:** 1 of 2

Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/13/21

Well Tag No.: BMT481 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 212.0' | **Meas. Pt. Elev.:** 215.74' | **Reviewed by:** SEW

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
Aboveground Monument; Concrete (0–4'); 2" Blank PVC					0–6.5		0-6.5' Dense, gray-brown, silty sand/sandy silt; dry (Vashon Ablation Till)	
	37	12"	0.0		3		Sample: 2021-SB-42	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: <1 Arsenic: <1 PAHs: ND PCBs: ND
1/2" Bentonite Pellets (4–14')	38	12"	0.0		6		Sample: 2021-SB-43	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: <1 Arsenic: <1 PAHs: ND PCBs: ND
					6.5–11.5		6.5'-11.5' Very dense, gray-brown, silty sand with gravels; dry (Vashon Lodgement Till)	
	50+	16"	0.0		11		Sample: 2021-SB-44	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.56 Arsenic: <1 PAHs: ND PCBs: ND
					11.5–26.5		11.5'-26.5' Dense to very dense, gray, medium to coarse sand with gravels; wet to saturated (Pre-Vashon Outwash Sand)	
#40 Well Slot Sand (14–20'+); 2" Schedule 40 PVC Slot 10 Screen (16.5'+)	36	14"	0.0		16		Sample: 2021-SB-45	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.60 Arsenic: <1 PAHs: ND PCBs: ND

Krazan & Associates

Lithologic Log and Well Construction Details

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

Project: Lots 25 and 26 | **Boring:** MW-5

Drilling Co.: Holocene Drilling | **Drilling Method:** Hollow Stem Auger | **Date Installed:** 7/13/21

Well Tag No.: BMT481 | **Sampler:** SPT | **Date Measured:** 7/21/21

Desc. of Meas Pt.: Top of Casing | **Logged By:** CB

Surface Elev.: 212.0' | **Meas. Pt. Elev.:** 215.74' | **Reviewed by:** SEW

WELL COMPLETION DETAILS	BLOW COUNT	% RECOVERY	PID	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION	NOTES
#40 Well Slot Sand; 2" Schedule 40 PVC Slot 10 Screen (to 26.5')	59	18"	0.0		20.5–22		11.5'-26.5' Dense to very dense, gray, medium to coarse sand with gravels; wet to saturated (Pre-Vashon Outwash Sand) Sample: 2021-SB-46	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.63 Arsenic: 1.14 PAHs: ND PCBs: ND
	55	18"	0.0		25–26.5		Sample: 2021-SB-47	Gasoline: ND Diesel: ND Motor Oil: ND BTEX: ND Lead: 1.35 Arsenic: <1 PAHs: ND PCBs: ND

Depth scale: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

Lithologic Log and Well Construction Details

Krazan & Associates

Client: Russell Square Consulting

Project Location: Silverdale, WA | **Project No.:** 104-21020

FSID6865393
Appendix D.
Analytical Laboratory Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 30, 2021

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

Dear Mr Williams:

Included are the amended results from the testing of material submitted on June 18, 2021 from the Lots 25 and 26, F&BI 106341 project. The ID for sample 2021-SS-10 was corrected.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: chloebartlett@krazan.com
KZP0628R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 28, 2021

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

Dear Mr Williams:

Included are the results from the testing of material submitted on June 18, 2021 from the Lots 25 and 26, F&BI 106341 project. There are 42 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: chloebartlett@krazan.com
KZP0628R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 18, 2021 by Friedman & Bruya, Inc. from the Krazan & Associates Lots 25 and 26, F&BI 106341 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates
106341 -01	2021-SS-1
106341 -02	2021-SS-2
106341 -03	2021-SS-3
106341 -04	2021-SS-4
106341 -05	2021-SS-5
106341 -06	2021-SS-6
106341 -07	2021-SS-7
106341 -08	2021-SS-8
106341 -09	2021-SS-9
106341 -10	2021-SS-10
106341 -11	2021-SS-11
106341 -12	2021-SS-12
106341 -13	2021-SS-13
106341 -14	2021-SS-14
106341 -15	2021-SS-15

The 8270E laboratory control sample and laboratory control sample duplicate exceeded the relative percent difference for benzo(k)fluoranthene and benzo(g,h,i)perylene in water. The analytes were not detected in the sample therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341
Date Extracted: 06/22/21
Date Analyzed: 06/23/21

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)
2021-SS-8 106341-08	<0.02	<0.02	<0.02	<0.06	<5	78
2021-SS-9 106341-09	<0.02	<0.02	<0.02	<0.06	<5	93
2021-SS-10 106341-10	<0.02	<0.02	<0.02	<0.06	<5	93
2021-SS-11 106341-11	<0.02	<0.02	<0.02	<0.06	<5	84
2021-SS-12 106341-12	<0.02	0.032	<0.02	<0.06	<5	94
2021-SS-13 106341-13	<0.02	<0.02	<0.02	<0.06	<5	94
2021-SS-14 106341-14	<0.02	<0.02	<0.02	<0.06	<5	77
Method Blank 01-1413 MB	<0.02	<0.02	<0.02	<0.06	<5	93

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341
Date Extracted: 06/22/21
Date Analyzed: 06/23/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2021-SS-15 106341-15	<1	<1	<1	<3	<100	104
Method Blank 01-1412 MB	<1	<1	<1	<3	<100	96

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341
Date Extracted: 06/21/21
Date Analyzed: 06/21/21

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 53-144)
2021-SS-8 106341-08	<50	<250	95
2021-SS-9 106341-09	<50	<250	85
2021-SS-10 106341-10	1,400 x	11,000	86
2021-SS-11 106341-11	1,700 x	13,000	88
2021-SS-12 106341-12	<50	<250	88
2021-SS-13 106341-13	<50	<250	87
2021-SS-14 106341-14	<50	<250	95
Method Blank 01-1468 MB	<50	<250	86

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341
Date Extracted: 06/22/21
Date Analyzed: 06/22/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
2021-SS-15 106341-15 1/0.8	53 x	<200	89
Method Blank 01-1475 MB	<50	<250	96

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-1	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-01
Date Analyzed:	06/23/21	Data File:	106341-01.054
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.28
Lead	23.1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-2	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-02
Date Analyzed:	06/23/21	Data File:	106341-02.057
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.52

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-2	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-02 x5
Date Analyzed:	06/24/21	Data File:	106341-02 x5.121
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	285

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-3	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-03
Date Analyzed:	06/23/21	Data File:	106341-03.058
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.89
Lead	71.7

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Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-4	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-04
Date Analyzed:	06/23/21	Data File:	106341-04.059
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.08
Lead	5.27

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-5	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-05
Date Analyzed:	06/23/21	Data File:	106341-05.060
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.22
Lead	9.85

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-6	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-06
Date Analyzed:	06/23/21	Data File:	106341-06.061
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.13
Lead	14.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-7	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-07
Date Analyzed:	06/23/21	Data File:	106341-07.062
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.13
Lead	8.27

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-8	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-08
Date Analyzed:	06/23/21	Data File:	106341-08.063
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.83
Lead	2.95

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-9	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-09
Date Analyzed:	06/23/21	Data File:	106341-09.095
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.32
Lead	4.78

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-10	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-10
Date Analyzed:	06/23/21	Data File:	106341-10.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.45
Lead	4.31

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-11	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-11
Date Analyzed:	06/23/21	Data File:	106341-11.097
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.48
Lead	5.34

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-12	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-12
Date Analyzed:	06/23/21	Data File:	106341-12.098
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.94

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-13	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-13
Date Analyzed:	06/23/21	Data File:	106341-13.099
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.42

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-14	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-14
Date Analyzed:	06/23/21	Data File:	106341-14.157
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.61

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	I1-391 mb
Date Analyzed:	06/23/21	Data File:	I1-391 mb.047
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-15	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-15
Date Analyzed:	06/22/21	Data File:	106341-15.125
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	I1-390 mb
Date Analyzed:	06/22/21	Data File:	I1-390 mb.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-8	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-08 1/5
Date Analyzed:	06/21/21	Data File:	062114.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	67	24	111
Phenol-d6	70	37	116
Nitrobenzene-d5	78	38	117
2-Fluorobiphenyl	77	45	117
2,4,6-Tribromophenol	84	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-9	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-09 1/5
Date Analyzed:	06/21/21	Data File:	062115.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	72	24	111
Phenol-d6	72	37	116
Nitrobenzene-d5	55	38	117
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	67	11	158
Terphenyl-d14	78	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-10	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-10 1/25
Date Analyzed:	06/21/21	Data File:	062112.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	58 d	50	150
Phenol-d6	61 d	50	150
Nitrobenzene-d5	63 d	50	150
2-Fluorobiphenyl	72 d	50	150
2,4,6-Tribromophenol	73 d	50	150
Terphenyl-d14	93 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.05
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.05
Acenaphthene	<0.05
Fluorene	<0.05
Phenanthrene	<0.05
Anthracene	<0.05
Fluoranthene	<0.05
Pyrene	0.35
Benz(a)anthracene	<0.05
Chrysene	<0.05
Benzo(a)pyrene	<0.05
Benzo(b)fluoranthene	<0.05
Benzo(k)fluoranthene	<0.05
Indeno(1,2,3-cd)pyrene	<0.05
Dibenz(a,h)anthracene	<0.05
Benzo(g,h,i)perylene	0.050

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-11	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-11 1/25
Date Analyzed:	06/21/21	Data File:	062113.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	48 d	50	150
Phenol-d6	58 d	50	150
Nitrobenzene-d5	58 d	50	150
2-Fluorobiphenyl	68 d	50	150
2,4,6-Tribromophenol	77 d	50	150
Terphenyl-d14	96 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.05
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.05
Acenaphthene	<0.05
Fluorene	<0.05
Phenanthrene	<0.05
Anthracene	<0.05
Fluoranthene	<0.05
Pyrene	0.35
Benz(a)anthracene	<0.05
Chrysene	<0.05
Benzo(a)pyrene	<0.05
Benzo(b)fluoranthene	<0.05
Benzo(k)fluoranthene	<0.05
Indeno(1,2,3-cd)pyrene	<0.05
Dibenz(a,h)anthracene	<0.05
Benzo(g,h,i)perylene	<0.05

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-12	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-12 1/5
Date Analyzed:	06/21/21	Data File:	062116.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	71	37	116
Nitrobenzene-d5	72	38	117
2-Fluorobiphenyl	69	45	117
2,4,6-Tribromophenol	88	11	158
Terphenyl-d14	121	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	0.011
Benzo(b)fluoranthene	0.036
Benzo(k)fluoranthene	0.014
Indeno(1,2,3-cd)pyrene	0.016
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	0.013

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-13	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-13 1/5
Date Analyzed:	06/21/21	Data File:	062117.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	75	37	116
Nitrobenzene-d5	78	38	117
2-Fluorobiphenyl	69	45	117
2,4,6-Tribromophenol	73	11	158
Terphenyl-d14	98	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

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Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-14	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	106341-14 1/5
Date Analyzed:	06/21/21	Data File:	062118.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	51	24	111
Phenol-d6	60	37	116
Nitrobenzene-d5	63	38	117
2-Fluorobiphenyl	61	45	117
2,4,6-Tribromophenol	73	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/21/21	Lab ID:	01-1467 mb 1/5
Date Analyzed:	06/21/21	Data File:	062106.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	86	24	111
Phenol-d6	93	37	116
Nitrobenzene-d5	100	38	117
2-Fluorobiphenyl	90	45	117
2,4,6-Tribromophenol	86	11	158
Terphenyl-d14	113	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SS-15	Client:	Krazan & Associates
Date Received:	06/18/21	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	106341-15 1/2
Date Analyzed:	06/23/21	Data File:	062315.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	44	10	60
Phenol-d6	39	10	49
Nitrobenzene-d5	68	15	144
2-Fluorobiphenyl	62	25	128
2,4,6-Tribromophenol	54	10	142
Terphenyl-d14	100	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 106341
Date Extracted:	06/22/21	Lab ID:	01-1476 mb
Date Analyzed:	06/23/21	Data File:	062309.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	7 vo	10	60
Phenol-d6	7 vo	10	49
Nitrobenzene-d5	48	15	144
2-Fluorobiphenyl	61	25	128
2,4,6-Tribromophenol	52	10	142
Terphenyl-d14	95	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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: 106377-01 (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)	0.5	87	69-120
Toluene	mg/kg (ppm)	0.5	92	70-117
Ethylbenzene	mg/kg (ppm)	0.5	89	65-123
Xylenes	mg/kg (ppm)	1.5	92	66-120
Gasoline	mg/kg (ppm)	20	75	71-131

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: 106367-06 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	114	65-118
Toluene	ug/L (ppb)	50	114	72-122
Ethylbenzene	ug/L (ppb)	50	117	73-126
Xylenes	ug/L (ppb)	150	111	74-118
Gasoline	ug/L (ppb)	1,000	85	69-134

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: 106341-08 (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	88	96	64-133	9

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	58-147

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	128	132	63-142	3

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: 106341-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	1.60	77	75	75-125	3
Lead	mg/kg (ppm)	50	16.2	75 b	71 b	75-125	5 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	84	80-120
Lead	mg/kg (ppm)	50	96	80-120

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: 106325-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<1	83	88	75-125	6
Lead	ug/L (ppb)	10	75.0	72 b	61 b	75-125	17 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	95	80-120
Lead	ug/L (ppb)	10	97	80-120

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: 106342-01,,05 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	78	72	34-118	8
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	83	78	29-130	6
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	84	78	37-119	7
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	89	86	45-128	3
Acenaphthene	mg/kg (ppm)	0.83	<0.01	81	80	36-125	1
Fluorene	mg/kg (ppm)	0.83	<0.01	86	85	48-121	1
Phenanthrene	mg/kg (ppm)	0.83	<0.01	91	90	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	94	96	50-150	2
Fluoranthene	mg/kg (ppm)	0.83	<0.01	100	102	50-150	2
Pyrene	mg/kg (ppm)	0.83	<0.01	100	101	50-150	1
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	99	102	50-150	3
Chrysene	mg/kg (ppm)	0.83	<0.01	97	100	50-150	3
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	102	106	50-150	4
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	104	108	50-150	4
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	105	107	50-150	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	83	87	41-134	5
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	83	86	44-130	4
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	78	82	33-131	5

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	76	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	78	67-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	79	66-107
Acenaphthylene	mg/kg (ppm)	0.83	84	70-130
Acenaphthene	mg/kg (ppm)	0.83	78	66-112
Fluorene	mg/kg (ppm)	0.83	78	67-117
Phenanthrene	mg/kg (ppm)	0.83	87	70-130
Anthracene	mg/kg (ppm)	0.83	90	70-130
Fluoranthene	mg/kg (ppm)	0.83	92	70-130
Pyrene	mg/kg (ppm)	0.83	101	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	95	70-130
Chrysene	mg/kg (ppm)	0.83	93	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	97	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	97	69-125
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	97	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	91	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	91	67-128
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	91	64-127

Date of Report: 06/28/21
Date Received: 06/18/21
Project: Lots 25 and 26, F&BI 106341

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	72	76	66-94	5
2-Methylnaphthalene	ug/L (ppb)	5	75	86	68-98	14
1-Methylnaphthalene	ug/L (ppb)	5	75	76	67-97	1
Acenaphthylene	ug/L (ppb)	5	79	81	70-130	2
Acenaphthene	ug/L (ppb)	5	79	75	70-130	5
Fluorene	ug/L (ppb)	5	81	77	70-130	5
Phenanthrene	ug/L (ppb)	5	81	85	70-130	5
Anthracene	ug/L (ppb)	5	85	89	70-130	5
Fluoranthene	ug/L (ppb)	5	90	94	70-130	4
Pyrene	ug/L (ppb)	5	102	104	70-130	2
Benz(a)anthracene	ug/L (ppb)	5	100	101	70-130	1
Chrysene	ug/L (ppb)	5	97	97	70-130	0
Benzo(a)pyrene	ug/L (ppb)	5	118	99	70-130	18
Benzo(b)fluoranthene	ug/L (ppb)	5	109	90	62-130	19
Benzo(k)fluoranthene	ug/L (ppb)	5	117	90	70-130	26 vo
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	106	88	70-130	19
Dibenz(a,h)anthracene	ug/L (ppb)	5	109	91	70-130	18
Benzo(g,h,i)perylene	ug/L (ppb)	5	114	89	70-130	25 vo

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.

106341

SAMPLE CHAIN OF CUSTODY

06-18-21 BI3 / D04/VW1/VS1

Page # 1 of 2

Report To Shawn Williams

Company Krazan and Associates

Address 1230 NW Finn Hill Rd. Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawnwilliams@krazan.com

SAMPLERS (signature)

PROJECT NAME: Lots 25 and 26

PO #

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

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
2021-SS-1	01	6/18/21	9:03am	Soil	1									X			
2021-SS-2	02	6/18/21	9:08am	Soil	1									X			
2021-SS-3	03	6/18/21	9:12am	Soil	1									X			
2021-SS-4	04	6/18/21	8:44am	Soil	1									X			
2021-SS-5	05	6/18/21	8:48am	Soil	1									X			
2021-SS-6	06	6/18/21	8:52am	Soil	1									X			
2021-SS-7	07	6/18/21	8:52am	Soil	1									X			
2021-SS-8	08 A-E	6/18/21	8:20am	Soil	5	X	X	X			X			X			
2021-SS-9	09	6/18/21	8:27am	Soil	5	X	X	X			X			X			
2021-SS-10	10	6/18/21	8:33am	Soil	5	X	X	X			X			X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abigail Conner	FBI	6/18	18:20
Relinquished by:				
Received by:		Samples received at 4 °C		

106341

SAMPLE CHAIN OF CUSTODY

06-18-21 BI3/D04/VW1/VS1

Page # 2 of 2

Report To Shawn Williams

Company krazan and Associates

Address 1230 Finn Hill Rd. Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawnwilliams@krazan.com

SAMPLERS (signature)

PROJECT NAME: Lots 25 and 26

PO #

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

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
2021-SS-11	11 A-E	6/18/21	8:33am	Soil	5	X	X	X			X			X			
2021-SS-12	12	6/18/21	9:22am	Soil	5	X	X	X			X			X			
2021-SS-13	13	6/18/21	9:26am	Soil	5	X	X	X			X			X			
2021-SS-14	14	6/18/21	9:32am	Soil	5	X	X	X			X			X			
2021-SS-15	15 A-D	6/18/21	9:45am	Water	4	X	X	X			X			X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abbigail Cowen	FBI	6/18/21	18:20
Relinquished by:				
Received by:		Samples received at 4 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 21, 2021

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

Dear Mr Williams:

Included are the results from the testing of material submitted on July 12, 2021 from the Lots 25 and 26, F&BI 107164 project. There are 73 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
KZP0721R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on July 12, 2021 by Friedman & Bruya, Inc. from the Krazan & Associates Lots 25 and 26, F&BI 107164 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates
107164 -01	2021-SB-16
107164 -02	2021-SB-17
107164 -03	2021-SB-18
107164 -04	2021-SB-19
107164 -05	2021-SB-20
107164 -06	2021-SB-21
107164 -07	2021-SB-22
107164 -08	2021-SB-23
107164 -09	2021-SB-24
107164 -10	2021-SB-25
107164 -11	2021-SB-26
107164 -12	2021-SB-27
107164 -13	2021-SB-28
107164 -14	2021-SB-29
107164 -15	2021-SB-30
107164 -16	2021-SB-31
107164 -17	2021-SB-32
107164 -18	2021-SB-33
107164 -19	2021-SB-34

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164
Date Extracted: 07/15/21 and 07/21/21
Date Analyzed: 07/15/21, 07/16/21, 07/20/21, and 07/21/21

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 50-132)
2021-SB-16 107164-01	<0.02	<0.02	<0.02	<0.06	<5	108
2021-SB-17 107164-02	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-18 107164-03	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-19 107164-04	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-20 107164-05	<0.02	<0.02	<0.02	<0.06	<5	101
2021-SB-21 107164-06	<0.02	<0.02	<0.02	<0.06	<5	79
2021-SB-22 107164-07	<0.02	<0.02	<0.02	<0.06	<5	72
2021-SB-23 107164-08	<0.02	<0.02	<0.02	<0.06	<5	90
2021-SB-24 107164-09	<0.02	<0.02	<0.02	<0.06	<5	107
2021-SB-25 107164-10	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-26 107164-11	<0.02	<0.02	<0.02	<0.06	<5	109

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164
Date Extracted: 07/15/21 and 07/21/21
Date Analyzed: 07/15/21, 07/16/21, 07/20/21, and 07/21/21

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 50-132)
2021-SB-27 107164-12	<0.02	<0.02	<0.02	<0.06	<5	107
2021-SB-28 107164-13	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-29 107164-14	<0.02	<0.02	<0.02	<0.06	<5	108
2021-SB-30 107164-15	<0.02	<0.02	<0.02	<0.06	<5	100
2021-SB-31 107164-16	<0.02	<0.02	<0.02	<0.06	<5	110
2021-SB-32 107164-17	<0.02	<0.02	<0.02	<0.06	<5	109
2021-SB-33 107164-18	<0.02	<0.02	<0.02	<0.06	<5	109
2021-SB-34 107164-19	<0.02	<0.02	<0.02	<0.06	<5	110
Method Blank 01-1446 MB	<0.02	<0.02	<0.02	<0.06	<5	91

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164
Date Extracted: 07/13/21
Date Analyzed: 07/13/21

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 48-168)
2021-SB-16 107164-01	<50	<250	99
2021-SB-17 107164-02	<50	<250	103
2021-SB-18 107164-03	<50	<250	108
2021-SB-19 107164-04	<50	<250	101
2021-SB-20 107164-05	<50	<250	95
2021-SB-21 107164-06	<50	<250	97
2021-SB-22 107164-07	<50	<250	95
2021-SB-23 107164-08	<50	<250	107
2021-SB-24 107164-09	<50	<250	97
2021-SB-25 107164-10	<50	<250	95
2021-SB-26 107164-11	<50	<250	99

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164
Date Extracted: 07/13/21
Date Analyzed: 07/13/21

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 48-168)
2021-SB-27 107164-12	<50	<250	105
2021-SB-28 107164-13	<50	<250	93
2021-SB-29 107164-14	<50	<250	96
2021-SB-30 107164-15	<50	<250	95
2021-SB-31 107164-16	<50	<250	106
2021-SB-32 107164-17	<50	<250	99
2021-SB-33 107164-18	<50	<250	104
2021-SB-34 107164-19	<50	<250	95
Method Blank 01-1618 MB	<50	<250	109

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-16	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-01
Date Analyzed:	07/14/21	Data File:	107164-01.131
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	2.25
Lead	4.09

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-17	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-02
Date Analyzed:	07/14/21	Data File:	107164-02.132
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.80
Lead	3.09

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-18	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-03
Date Analyzed:	07/14/21	Data File:	107164-03.133
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.36

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-19	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-04
Date Analyzed:	07/14/21	Data File:	107164-04.134
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.27
Lead	1.58

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-20	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-05
Date Analyzed:	07/14/21	Data File:	107164-05.135
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.08
Lead	1.44

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-21	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-06
Date Analyzed:	07/14/21	Data File:	107164-06.141
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.19

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-22	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-07
Date Analyzed:	07/14/21	Data File:	107164-07.143
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.01
Lead	1.15

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-23	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-08
Date Analyzed:	07/14/21	Data File:	107164-08.144
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.73
Lead	1.02

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-24	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-09
Date Analyzed:	07/14/21	Data File:	107164-09.147
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.02
Lead	1.22

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-25	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-10
Date Analyzed:	07/14/21	Data File:	107164-10.154
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.07

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-26	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-11
Date Analyzed:	07/14/21	Data File:	107164-11.155
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.17

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-27	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-12
Date Analyzed:	07/14/21	Data File:	107164-12.156
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.12

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-28	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-13
Date Analyzed:	07/14/21	Data File:	107164-13.157
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.32

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-29	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-14
Date Analyzed:	07/14/21	Data File:	107164-14.158
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.09

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-30	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-15
Date Analyzed:	07/14/21	Data File:	107164-15.159
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.24

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-31	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-16
Date Analyzed:	07/14/21	Data File:	107164-16.160
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.22

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-32	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-17
Date Analyzed:	07/14/21	Data File:	107164-17.170
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.23

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-33	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-18
Date Analyzed:	07/14/21	Data File:	107164-18.171
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.03
Lead	1.44

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-34	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	107164-19
Date Analyzed:	07/14/21	Data File:	107164-19.172
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.05
Lead	1.21

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/14/21	Lab ID:	I1-433 mb
Date Analyzed:	07/14/21	Data File:	I1-433 mb.051
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-16	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-01 1/5
Date Analyzed:	07/14/21	Data File:	071410.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35 vo	39	103
Phenol-d6	44 vo	48	109
Nitrobenzene-d5	40	23	138
2-Fluorobiphenyl	52	50	150
2,4,6-Tribromophenol	75	40	127
Terphenyl-d14	68	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-17	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-02 1/5
Date Analyzed:	07/14/21	Data File:	071411.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	52	39	103
Phenol-d6	59	48	109
Nitrobenzene-d5	56	23	138
2-Fluorobiphenyl	66	50	150
2,4,6-Tribromophenol	89	40	127
Terphenyl-d14	82	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-18	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-03 1/5
Date Analyzed:	07/14/21	Data File:	071412.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	31 vo	39	103
Phenol-d6	53	48	109
Nitrobenzene-d5	47	23	138
2-Fluorobiphenyl	58	50	150
2,4,6-Tribromophenol	78	40	127
Terphenyl-d14	83	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-19	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-04 1/5
Date Analyzed:	07/14/21	Data File:	071413.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	44	39	103
Phenol-d6	50	48	109
Nitrobenzene-d5	47	23	138
2-Fluorobiphenyl	58	50	150
2,4,6-Tribromophenol	75	40	127
Terphenyl-d14	76	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-20	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-05 1/5
Date Analyzed:	07/14/21	Data File:	071414.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	48	39	103
Phenol-d6	56	48	109
Nitrobenzene-d5	51	23	138
2-Fluorobiphenyl	63	50	150
2,4,6-Tribromophenol	78	40	127
Terphenyl-d14	76	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-21	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-06 1/5
Date Analyzed:	07/14/21	Data File:	071415.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	60	39	103
Phenol-d6	67	48	109
Nitrobenzene-d5	61	23	138
2-Fluorobiphenyl	68	50	150
2,4,6-Tribromophenol	84	40	127
Terphenyl-d14	85	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-22	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/15/21	Lab ID:	107164-07 1/5
Date Analyzed:	07/15/21	Data File:	071521.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	62	24	111
Phenol-d6	70	37	116
Nitrobenzene-d5	62	38	117
2-Fluorobiphenyl	64	45	117
2,4,6-Tribromophenol	73	11	158
Terphenyl-d14	86	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-23	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-08 1/5
Date Analyzed:	07/15/21	Data File:	071527.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	58	39	103
Phenol-d6	65	48	109
Nitrobenzene-d5	60	23	138
2-Fluorobiphenyl	64	50	150
2,4,6-Tribromophenol	66	40	127
Terphenyl-d14	79	50	150

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:	2021-SB-24	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-09 1/5
Date Analyzed:	07/14/21	Data File:	071410.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	34	24	111
Phenol-d6	62	37	116
Nitrobenzene-d5	60	38	117
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	60	11	158
Terphenyl-d14	71	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-25	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-10 1/5
Date Analyzed:	07/14/21	Data File:	071411.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	31	24	111
Phenol-d6	61	37	116
Nitrobenzene-d5	62	38	117
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	51	11	158
Terphenyl-d14	71	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-26	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-11 1/5
Date Analyzed:	07/14/21	Data File:	071412.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	47	24	111
Phenol-d6	56	37	116
Nitrobenzene-d5	46	38	117
2-Fluorobiphenyl	52	45	117
2,4,6-Tribromophenol	55	11	158
Terphenyl-d14	65	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-27	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-12 1/5
Date Analyzed:	07/14/21	Data File:	071413.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	28	24	111
Phenol-d6	58	37	116
Nitrobenzene-d5	54	38	117
2-Fluorobiphenyl	55	45	117
2,4,6-Tribromophenol	61	11	158
Terphenyl-d14	78	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

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Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-28	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-13 1/5
Date Analyzed:	07/14/21	Data File:	071414.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	32	24	111
Phenol-d6	61	37	116
Nitrobenzene-d5	50	38	117
2-Fluorobiphenyl	59	45	117
2,4,6-Tribromophenol	63	11	158
Terphenyl-d14	74	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-29	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-14 1/5
Date Analyzed:	07/14/21	Data File:	071415.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	24	24	111
Phenol-d6	61	37	116
Nitrobenzene-d5	61	38	117
2-Fluorobiphenyl	61	45	117
2,4,6-Tribromophenol	60	11	158
Terphenyl-d14	75	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-30	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-15 1/5
Date Analyzed:	07/14/21	Data File:	071416.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	37	24	111
Phenol-d6	66	37	116
Nitrobenzene-d5	65	38	117
2-Fluorobiphenyl	62	45	117
2,4,6-Tribromophenol	66	11	158
Terphenyl-d14	78	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-31	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-16 1/5
Date Analyzed:	07/14/21	Data File:	071417.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	33	24	111
Phenol-d6	68	37	116
Nitrobenzene-d5	67	38	117
2-Fluorobiphenyl	65	45	117
2,4,6-Tribromophenol	69	11	158
Terphenyl-d14	81	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

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Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-32	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-17 1/5
Date Analyzed:	07/14/21	Data File:	071418.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	64	24	111
Phenol-d6	72	37	116
Nitrobenzene-d5	69	38	117
2-Fluorobiphenyl	69	45	117
2,4,6-Tribromophenol	73	11	158
Terphenyl-d14	83	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

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ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-33	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-18 1/5
Date Analyzed:	07/14/21	Data File:	071419.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	31	24	111
Phenol-d6	63	37	116
Nitrobenzene-d5	59	38	117
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	63	11	158
Terphenyl-d14	78	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:	2021-SB-34	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-19 1/5
Date Analyzed:	07/14/21	Data File:	071420.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	28	24	111
Phenol-d6	59	37	116
Nitrobenzene-d5	47	38	117
2-Fluorobiphenyl	56	45	117
2,4,6-Tribromophenol	68	11	158
Terphenyl-d14	80	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	01-1620 mb 1/5
Date Analyzed:	07/15/21	Data File:	071526.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	77	39	103
Phenol-d6	84	48	109
Nitrobenzene-d5	82	23	138
2-Fluorobiphenyl	84	50	150
2,4,6-Tribromophenol	74	40	127
Terphenyl-d14	95	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/15/21	Lab ID:	01-1632 mb 1/5
Date Analyzed:	07/15/21	Data File:	071516.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	95	24	111
Phenol-d6	100	37	116
Nitrobenzene-d5	104	38	117
2-Fluorobiphenyl	92	45	117
2,4,6-Tribromophenol	86	11	158
Terphenyl-d14	100	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

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-SB-16	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-01 1/6
Date Analyzed:	07/13/21	Data File:	071317.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	75	23	127

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:	2021-SB-17	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-02 1/6
Date Analyzed:	07/13/21	Data File:	071318.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	73	23	127

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:	2021-SB-18	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-03 1/6
Date Analyzed:	07/13/21	Data File:	071319.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	64	23	127

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

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Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-SB-19	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-04 1/6
Date Analyzed:	07/13/21	Data File:	071320.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	53	23	127

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:	2021-SB-20	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-05 1/6
Date Analyzed:	07/13/21	Data File:	071321.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	65	23	127

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:	2021-SB-21	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-06 1/6
Date Analyzed:	07/13/21	Data File:	071322.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	54	23	127

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:	2021-SB-22	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-07 1/6
Date Analyzed:	07/13/21	Data File:	071323.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	77	23	127

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:	2021-SB-23	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-08 1/6
Date Analyzed:	07/13/21	Data File:	071327.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	56	23	127

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:	2021-SB-24	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-09 1/6
Date Analyzed:	07/13/21	Data File:	071328.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	38	23	127

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:	2021-SB-25	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-10 1/6
Date Analyzed:	07/13/21	Data File:	071329.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	39	23	127

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:	2021-SB-26	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-11 1/6
Date Analyzed:	07/13/21	Data File:	071330.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	23	127

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:	2021-SB-27	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-12 1/6
Date Analyzed:	07/13/21	Data File:	071331.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	62	23	127

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:	2021-SB-28	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-13 1/6
Date Analyzed:	07/13/21	Data File:	071333.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	75	23	127

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:	2021-SB-29	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-14 1/6
Date Analyzed:	07/13/21	Data File:	071334.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	56	23	127

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:	2021-SB-30	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-15 1/6
Date Analyzed:	07/13/21	Data File:	071335.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	50	23	127

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:	2021-SB-31	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-16 1/6
Date Analyzed:	07/13/21	Data File:	071336.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	53	23	127

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:	2021-SB-32	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-17 1/6
Date Analyzed:	07/13/21	Data File:	071337.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	67	23	127

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:	2021-SB-33	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-18 1/6
Date Analyzed:	07/13/21	Data File:	071338.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	74	23	127

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:	2021-SB-34	Client:	Krazan & Associates
Date Received:	07/12/21	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	107164-19 1/6
Date Analyzed:	07/13/21	Data File:	071339.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	85	23	127

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:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107164
Date Extracted:	07/13/21	Lab ID:	01-1619 mb 1/6
Date Analyzed:	07/13/21	Data File:	071316.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	84	23	127

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: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107164-08 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	0.5	<0.02	106	96	50-150	10
Toluene	mg/kg (ppm)	0.5	<0.02	112	100	50-150	11
Ethylbenzene	mg/kg (ppm)	0.5	<0.02	114	102	50-150	11
Xylenes	mg/kg (ppm)	1.5	<0.06	113	100	50-150	12
Gasoline	mg/kg (ppm)	20	<2	130	120	50-143	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	84	66-121
Toluene	mg/kg (ppm)	0.5	92	72-128
Ethylbenzene	mg/kg (ppm)	0.5	86	69-132
Xylenes	mg/kg (ppm)	1.5	87	69-131
Gasoline	mg/kg (ppm)	20	85	61-153

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107164-08 (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	104	104	73-135	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	102	74-139

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107164-08 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	78	77	75-125	1
Lead	mg/kg (ppm)	50	<5	95	96	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	95	80-120
Lead	mg/kg (ppm)	50	99	80-120

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107164-08 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	55	64	50-150	15
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	59	69	50-150	16
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	58	67	50-150	14
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	63	72	50-150	13
Acenaphthene	mg/kg (ppm)	0.83	<0.01	61	71	50-150	15
Fluorene	mg/kg (ppm)	0.83	<0.01	65	73	50-150	12
Phenanthrene	mg/kg (ppm)	0.83	<0.01	68	72	50-150	6
Anthracene	mg/kg (ppm)	0.83	<0.01	69	74	50-150	7
Fluoranthene	mg/kg (ppm)	0.83	<0.01	76	78	50-150	3
Pyrene	mg/kg (ppm)	0.83	<0.01	76	77	50-150	1
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	75	77	50-150	3
Chrysene	mg/kg (ppm)	0.83	<0.01	74	75	50-150	1
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	75	76	50-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	78	91	50-150	15
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	73	74	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	84	84	50-150	0
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	81	82	50-150	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	81	79	50-150	2

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	78	61-102
2-Methylnaphthalene	mg/kg (ppm)	0.83	82	62-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	80	62-108
Acenaphthylene	mg/kg (ppm)	0.83	82	61-111
Acenaphthene	mg/kg (ppm)	0.83	81	61-110
Fluorene	mg/kg (ppm)	0.83	81	62-114
Phenanthrene	mg/kg (ppm)	0.83	84	64-112
Anthracene	mg/kg (ppm)	0.83	86	63-111
Fluoranthene	mg/kg (ppm)	0.83	92	66-115
Pyrene	mg/kg (ppm)	0.83	89	65-112
Benz(a)anthracene	mg/kg (ppm)	0.83	88	64-116
Chrysene	mg/kg (ppm)	0.83	86	66-119
Benzo(a)pyrene	mg/kg (ppm)	0.83	85	62-116
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	101	61-118
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	82	65-119
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	94	64-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	93	67-131
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	91	67-126

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107215-05 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	73	69	34-118	6
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	79	75	29-130	5
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	79	75	37-119	5
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	84	81	45-128	4
Acenaphthene	mg/kg (ppm)	0.83	<0.01	80	77	36-125	4
Fluorene	mg/kg (ppm)	0.83	<0.01	84	82	48-121	2
Phenanthrene	mg/kg (ppm)	0.83	<0.01	86	86	50-150	0
Anthracene	mg/kg (ppm)	0.83	<0.01	89	88	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	0.016	93	94	50-150	1
Pyrene	mg/kg (ppm)	0.83	0.019	84	84	50-150	0
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	91	92	50-150	1
Chrysene	mg/kg (ppm)	0.83	<0.01	90	91	50-150	1
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.010	95	94	50-150	1
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.011	88	86	50-150	2
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	86	87	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.0090	111	116	41-134	4
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	107	110	44-130	3
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	101	103	33-131	2

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	80	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	83	67-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	82	66-107
Acenaphthylene	mg/kg (ppm)	0.83	87	70-130
Acenaphthene	mg/kg (ppm)	0.83	82	66-112
Fluorene	mg/kg (ppm)	0.83	86	67-117
Phenanthrene	mg/kg (ppm)	0.83	87	70-130
Anthracene	mg/kg (ppm)	0.83	88	70-130
Fluoranthene	mg/kg (ppm)	0.83	93	70-130
Pyrene	mg/kg (ppm)	0.83	91	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	92	70-130
Chrysene	mg/kg (ppm)	0.83	93	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	95	68-120
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	91	69-125
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	86	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	109	67-129
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	107	67-128
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	103	64-127

Date of Report: 07/21/21
Date Received: 07/12/21
Project: Lots 25 and 26, F&BI 107164

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

Laboratory Code: 107164-08 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	68	68	29-125	0
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	84	83	25-137	1

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	84	55-137
Aroclor 1260	mg/kg (ppm)	0.25	92	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. 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.

107164

SAMPLE CHAIN OF CUSTODY

ME 07/12/21 VS4/BE4

Page # 1 of 2

Report To Shawn Williams

Company Krazan

Address 1230 Finn Hill Rd NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawn.williams@krazan.com

SAMPLERS (signature)	
PROJECT NAME: Lots 25 and 26	PO #
REMARKS Project specific RLs? - Yes / No	INVOICE TO

TURNAROUND TIME
- X 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		MS/MSD	Notes
2021-SB-16	01 A-E	7/12/21	1140am	Soil	5	X	X	X			X	X	X	X			
2021-SB-17	02		1145am		5												
2021-SB-18	03		1157am		5												
2021-SB-19	04		1205pm		5												
2021-SB-20	05		1247pm		5												
2021-SB-21	06		1257pm		5												
2021-SB-22	07		9:12am		5												
2021-SB-23	08 A-O		915am		15											X	
2021-SB-24	09 A-E		922am		5												
2021-SB-25	10		930am		5	X	X	X			X	X	X	X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abbigail Corwer	FBI	7/12/21	1645
Relinquished by:				
Received by:		Samples received at 4 °C		

107164

SAMPLE CHAIN OF CUSTODY

ME 07/12/21 V34/ 2 BI4

Page # 2 of 2

Report To Shawn Williams

Company Krazan

Address 1230 Finn Hill Rd NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email Shawnwilliams@krazan.com

SAMPLERS (signature)

PROJECT NAME: Lots 25 and 26

PO #

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

TURNAROUND TIME
- [x] 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
2021-SB-26	11 A-E	7/12/21	941am	Soil	5	X	X	X			X	X	X	X			
2021-SB-27	12		950am														
2021-SB-28	13		200pm														
2021-SB-29	14		207pm														
2021-SB-30	15		213pm														
2021-SB-31	16		220pm														
2021-SB-32	17		220pm														
2021-SB-33	18		232pm														
2021-SB-34	19		239pm			X	X	X			X	X	X	X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abbigail Corwen	FBI	7/12/21	1040
Relinquished by:				
Received by:		Samples received at 4		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 23, 2021

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

Dear Mr Williams:

Included are the results from the testing of material submitted on July 13, 2021 from the Lots 25 and 26, F&BI 107190 project. There are 71 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
KZP0723R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 13, 2020 by Friedman & Bruya, Inc. from the Krazan & Associates Lots 25 and 26, F&BI 107190 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates
107190 -01	2021-SB-35
107190 -02	2021-SB-36
107190 -03	2021-SB-37
107190 -04	2021-SB-38
107190 -05	2021-SB-39
107190 -06	2021-SB-40
107190 -07	2021-SB-41
107190 -08	2021-SB-42
107190 -09	2021-SB-43
107190 -10	2021-SB-44
107190 -11	2021-SB-45
107190 -12	2021-SB-46
107190 -13	2021-SB-47
107190 -14	2021-SB-48
107190 -15	2021-SB-49

The surrogate in the 8082 method blank did not pass the acceptance criteria. The data were flagged accordingly.

The 8021B xylenes matrix spike exceeded the acceptance criteria. Xylenes were not detected in the samples, therefore the data were acceptable.

All other quality control requirements were acceptable.

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/19/21
Date Analyzed: 07/20/21 and 07/21/21

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)
2021-SB-35 107190-01	<0.02	<0.02	<0.02	<0.06	<5	108
2021-SB-36 107190-02	<0.02	<0.02	<0.02	<0.06	<5	108
2021-SB-37 107190-03	<0.02	<0.02	<0.02	<0.06	<5	109
2021-SB-38 107190-04	<0.02	<0.02	<0.02	<0.06	<5	107
2021-SB-39 107190-05	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-40 107190-06	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-41 107190-07	<0.02	<0.02	<0.02	<0.06	<5	94
2021-SB-42 107190-08	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-43 107190-09	<0.02	<0.02	<0.02	<0.06	<5	105
2021-SB-44 107190-10	<0.02	<0.02	<0.02	<0.06	<5	105
2021-SB-45 107190-11	<0.02	<0.02	<0.02	<0.06	<5	105

Date of Report: 07/23/21
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Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/19/21
Date Analyzed: 07/20/21 and 07/21/21

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)
2021-SB-46 107190-12	<0.02	<0.02	<0.02	<0.06	<5	106
2021-SB-47 107190-13	<0.02	<0.02	<0.02	<0.06	<5	98
Method Blank 01-1644 MB	<0.02	<0.02	<0.02	<0.06	<5	135

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/19/21
Date Analyzed: 07/20/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2021-SB-48 107190-14	<1	<1	<1	<3	<100	82
2021-SB-49 107190-15	<1	<1	<1	<3	<100	82
Method Blank 01-1645 MB	<1	<1	<1	<3	<100	95

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/15/21
Date Analyzed: 07/15/21 and 07/19/20

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 56-165)
2021-SB-35 107190-01	<50	<250	90
2021-SB-36 107190-02	<50	<250	94
2021-SB-37 107190-03	<50	<250	84
2021-SB-38 107190-04	<50	<250	85
2021-SB-39 107190-05	<50	<250	91
2021-SB-40 107190-06	<50	<250	89
2021-SB-41 107190-07	<50	<250	91
2021-SB-42 107190-08	<50	<250	85
2021-SB-43 107190-09	<50	<250	95
2021-SB-44 107190-10	<50	<250	95
2021-SB-45 107190-11	<50	<250	86
2021-SB-46 107190-12	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/15/21
Date Analyzed: 07/15/21 and 07/19/20

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 56-165)
2021-SB-47 107190-13	<50	<250	94
Method Blank 01-1631 MB	<50	<250	86

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190
Date Extracted: 07/16/21
Date Analyzed: 07/16/21 and 07/19/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
2021-SB-48 107190-14	<80	<400	59
2021-SB-49 107190-15 1/1.6	<80	<400	57
Method Blank 01-1640 MB	<50	<250	89

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-35	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-01
Date Analyzed:	07/15/21	Data File:	107190-01.067
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.17
Lead	1.62

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-36	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-02
Date Analyzed:	07/15/21	Data File:	107190-02.112
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.19

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-37	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-03
Date Analyzed:	07/15/21	Data File:	107190-03.113
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-38	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-04
Date Analyzed:	07/15/21	Data File:	107190-04.114
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-39	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-05
Date Analyzed:	07/15/21	Data File:	107190-05.115
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.27

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-40	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-06
Date Analyzed:	07/15/21	Data File:	107190-06.116
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.23
Lead	1.44

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-41	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-07
Date Analyzed:	07/15/21	Data File:	107190-07.117
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.35

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-42	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-08
Date Analyzed:	07/15/21	Data File:	107190-08.118
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-43	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-09
Date Analyzed:	07/15/21	Data File:	107190-09.119
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-44	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-10
Date Analyzed:	07/15/21	Data File:	107190-10.120
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.56

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-45	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-11
Date Analyzed:	07/15/21	Data File:	107190-11.123
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.60

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-46	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-12
Date Analyzed:	07/15/21	Data File:	107190-12.126
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	1.14
Lead	1.63

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-47	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-13
Date Analyzed:	07/15/21	Data File:	107190-13.127
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	1.35

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	I1-436 mb
Date Analyzed:	07/15/21	Data File:	I1-436 mb.108
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-48	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-14
Date Analyzed:	07/15/21	Data File:	107190-14.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SB-49	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-15
Date Analyzed:	07/15/21	Data File:	107190-15.063
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	I1-432 mb2
Date Analyzed:	07/15/21	Data File:	I1-432 mb2.061
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-35	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-01 1/5
Date Analyzed:	07/16/21	Data File:	071612.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	84	39	103
Phenol-d6	91	48	109
Nitrobenzene-d5	81	23	138
2-Fluorobiphenyl	83	50	150
2,4,6-Tribromophenol	87	40	127
Terphenyl-d14	101	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-36	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-02 1/5
Date Analyzed:	07/16/21	Data File:	071613.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	77	39	103
Phenol-d6	86	48	109
Nitrobenzene-d5	79	23	138
2-Fluorobiphenyl	82	50	150
2,4,6-Tribromophenol	87	40	127
Terphenyl-d14	103	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-37	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-03 1/5
Date Analyzed:	07/16/21	Data File:	071614.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	79	39	103
Phenol-d6	88	48	109
Nitrobenzene-d5	78	23	138
2-Fluorobiphenyl	84	50	150
2,4,6-Tribromophenol	87	40	127
Terphenyl-d14	103	50	150

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

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ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-38	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-04 1/5
Date Analyzed:	07/16/21	Data File:	071615.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	69	39	103
Phenol-d6	92	48	109
Nitrobenzene-d5	86	23	138
2-Fluorobiphenyl	89	50	150
2,4,6-Tribromophenol	88	40	127
Terphenyl-d14	100	50	150

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:	2021-SB-39	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-05 1/5
Date Analyzed:	07/16/21	Data File:	071616.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	83	39	103
Phenol-d6	92	48	109
Nitrobenzene-d5	84	23	138
2-Fluorobiphenyl	85	50	150
2,4,6-Tribromophenol	92	40	127
Terphenyl-d14	103	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-40	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-06 1/5
Date Analyzed:	07/16/21	Data File:	071617.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	81	39	103
Phenol-d6	88	48	109
Nitrobenzene-d5	82	23	138
2-Fluorobiphenyl	86	50	150
2,4,6-Tribromophenol	96	40	127
Terphenyl-d14	104	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-41	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-07 1/5
Date Analyzed:	07/16/21	Data File:	071618.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	80	39	103
Phenol-d6	89	48	109
Nitrobenzene-d5	82	23	138
2-Fluorobiphenyl	83	50	150
2,4,6-Tribromophenol	92	40	127
Terphenyl-d14	100	50	150

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

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ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-42	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-08 1/5
Date Analyzed:	07/16/21	Data File:	071619.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	55	39	103
Phenol-d6	63	48	109
Nitrobenzene-d5	55	23	138
2-Fluorobiphenyl	58	50	150
2,4,6-Tribromophenol	71	40	127
Terphenyl-d14	91	50	150

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:	2021-SB-43	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/19/21	Lab ID:	107190-09 1/5
Date Analyzed:	07/20/21	Data File:	072009.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	45	24	111
Phenol-d6	56	37	116
Nitrobenzene-d5	51	38	117
2-Fluorobiphenyl	60	45	117
2,4,6-Tribromophenol	53 ca	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-44	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-10 1/5
Date Analyzed:	07/17/21	Data File:	071621.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	40	39	103
Phenol-d6	56	48	109
Nitrobenzene-d5	49	23	138
2-Fluorobiphenyl	64	50	150
2,4,6-Tribromophenol	85	40	127
Terphenyl-d14	94	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-45	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-11 1/5
Date Analyzed:	07/17/21	Data File:	071622.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	46	39	103
Phenol-d6	70	48	109
Nitrobenzene-d5	59	23	138
2-Fluorobiphenyl	66	50	150
2,4,6-Tribromophenol	78	40	127
Terphenyl-d14	84	50	150

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

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ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-46	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-12 1/5
Date Analyzed:	07/17/21	Data File:	071623.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	63	39	103
Phenol-d6	72	48	109
Nitrobenzene-d5	65	23	138
2-Fluorobiphenyl	75	50	150
2,4,6-Tribromophenol	91	40	127
Terphenyl-d14	101	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-47	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-13 1/5
Date Analyzed:	07/17/21	Data File:	071624.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	67	39	103
Phenol-d6	77	48	109
Nitrobenzene-d5	65	23	138
2-Fluorobiphenyl	71	50	150
2,4,6-Tribromophenol	86	40	127
Terphenyl-d14	100	50	150

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
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	01-1633 mb 1/5
Date Analyzed:	07/16/21	Data File:	071611.D
Matrix:	Soil	Instrument:	GCMS12
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	76	39	103
Phenol-d6	89	48	109
Nitrobenzene-d5	78	23	138
2-Fluorobiphenyl	87	50	150
2,4,6-Tribromophenol	87	40	127
Terphenyl-d14	107	50	150

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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/19/21	Lab ID:	01-1677 mb 1/5
Date Analyzed:	07/20/21	Data File:	072008.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	76	24	111
Phenol-d6	87	37	116
Nitrobenzene-d5	82	38	117
2-Fluorobiphenyl	93	45	117
2,4,6-Tribromophenol	65 ca	11	158
Terphenyl-d14	107	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

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-48	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-14 1/4
Date Analyzed:	07/15/21	Data File:	071530.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	57	11	65
Phenol-d6	46	11	65
Nitrobenzene-d5	79	50	150
2-Fluorobiphenyl	77	44	108
2,4,6-Tribromophenol	83	10	140
Terphenyl-d14	97	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.8
2-Methylnaphthalene	<0.8
1-Methylnaphthalene	<0.8
Acenaphthylene	<0.08
Acenaphthene	<0.08
Fluorene	<0.08
Phenanthrene	<0.08
Anthracene	<0.08
Fluoranthene	<0.08
Pyrene	<0.08
Benz(a)anthracene	<0.08
Chrysene	<0.08
Benzo(a)pyrene	<0.08
Benzo(b)fluoranthene	<0.08
Benzo(k)fluoranthene	<0.08
Indeno(1,2,3-cd)pyrene	<0.08
Dibenz(a,h)anthracene	<0.08
Benzo(g,h,i)perylene	<0.16

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-SB-49	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	107190-15 1/4
Date Analyzed:	07/15/21	Data File:	071531.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	51	11	65
Phenol-d6	42	11	65
Nitrobenzene-d5	76	50	150
2-Fluorobiphenyl	76	44	108
2,4,6-Tribromophenol	66	10	140
Terphenyl-d14	99	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.8
2-Methylnaphthalene	<0.8
1-Methylnaphthalene	<0.8
Acenaphthylene	<0.08
Acenaphthene	<0.08
Fluorene	<0.08
Phenanthrene	<0.08
Anthracene	<0.08
Fluoranthene	<0.08
Pyrene	<0.08
Benz(a)anthracene	<0.08
Chrysene	<0.08
Benzo(a)pyrene	<0.08
Benzo(b)fluoranthene	<0.08
Benzo(k)fluoranthene	<0.08
Indeno(1,2,3-cd)pyrene	<0.08
Dibenz(a,h)anthracene	<0.08
Benzo(g,h,i)perylene	<0.16

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/15/21	Lab ID:	01-1626 mb2 1/4
Date Analyzed:	07/15/21	Data File:	071528.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	22	11	65
Phenol-d6	14	11	65
Nitrobenzene-d5	85	50	150
2-Fluorobiphenyl	76	44	108
2,4,6-Tribromophenol	81	10	140
Terphenyl-d14	98	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.8
2-Methylnaphthalene	<0.8
1-Methylnaphthalene	<0.8
Acenaphthylene	<0.08
Acenaphthene	<0.08
Fluorene	<0.08
Phenanthrene	<0.08
Anthracene	<0.08
Fluoranthene	<0.08
Pyrene	<0.08
Benz(a)anthracene	<0.08
Chrysene	<0.08
Benzo(a)pyrene	<0.08
Benzo(b)fluoranthene	<0.08
Benzo(k)fluoranthene	<0.08
Indeno(1,2,3-cd)pyrene	<0.08
Dibenz(a,h)anthracene	<0.08
Benzo(g,h,i)perylene	<0.16

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-SB-35	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-01 1/6
Date Analyzed:	07/15/21	Data File:	071520.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	61	23	127

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:	2021-SB-36	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-02 1/6
Date Analyzed:	07/15/21	Data File:	071521.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	66	23	127

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:	2021-SB-37	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-03 1/6
Date Analyzed:	07/15/21	Data File:	071522.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	56	23	127

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

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Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-SB-38	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-04 1/6
Date Analyzed:	07/15/21	Data File:	071523.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	59	23	127

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:	2021-SB-39	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-05 1/6
Date Analyzed:	07/15/21	Data File:	071524.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	23	127

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:	2021-SB-40	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-06 1/6
Date Analyzed:	07/15/21	Data File:	071525.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	51	23	127

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:	2021-SB-41	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-07 1/6
Date Analyzed:	07/15/21	Data File:	071526.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	64	23	127

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:	2021-SB-42	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-08 1/6
Date Analyzed:	07/15/21	Data File:	071527.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	66	23	127

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:	2021-SB-43	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-09 1/6
Date Analyzed:	07/15/21	Data File:	071529.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	63	23	127

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:	2021-SB-44	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-10 1/6
Date Analyzed:	07/15/21	Data File:	071530.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	60	23	127

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:	2021-SB-45	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-11 1/6
Date Analyzed:	07/15/21	Data File:	071531.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	49	23	127

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:	2021-SB-46	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-12 1/6
Date Analyzed:	07/15/21	Data File:	071534.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	48	23	127

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:	2021-SB-47	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	107190-13 1/6
Date Analyzed:	07/15/21	Data File:	071535.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	55	23	127

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:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/14/21	Lab ID:	01-1629 mb 1/6
Date Analyzed:	07/14/21	Data File:	071412.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	23	127

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:	2021-SB-48	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-14 1/4
Date Analyzed:	07/16/21	Data File:	071609.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	27	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.4
Aroclor 1232	<0.4
Aroclor 1016	<0.4
Aroclor 1242	<0.4
Aroclor 1248	<0.4
Aroclor 1254	<0.4
Aroclor 1260	<0.4
Aroclor 1262	<0.4
Aroclor 1268	<0.4

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-SB-49	Client:	Krazan & Associates
Date Received:	07/13/21	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	107190-15 1/4
Date Analyzed:	07/16/21	Data File:	071610.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	29	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.4
Aroclor 1232	<0.4
Aroclor 1016	<0.4
Aroclor 1242	<0.4
Aroclor 1248	<0.4
Aroclor 1254	<0.4
Aroclor 1260	<0.4
Aroclor 1262	<0.4
Aroclor 1268	<0.4

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107190
Date Extracted:	07/16/21	Lab ID:	01-1643 mb
Date Analyzed:	07/16/21	Data File:	071604.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	23 vo	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1 js
Aroclor 1232	<0.1 js
Aroclor 1016	<0.1 js
Aroclor 1242	<0.1 js
Aroclor 1248	<0.1 js
Aroclor 1254	<0.1 js
Aroclor 1260	<0.1 js
Aroclor 1262	<0.1 js
Aroclor 1268	<0.1 js

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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: 107190-11 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	0.5	<0.02	140	120	50-150	15
Toluene	mg/kg (ppm)	0.5	<0.02	140	120	50-150	15
Ethylbenzene	mg/kg (ppm)	0.5	<0.02	140	120	50-150	15
Xylenes	mg/kg (ppm)	1.5	<0.06	153 vo	130	50-150	16
Gasoline	mg/kg (ppm)	20	<5	135	110	50-150	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	105	69-120
Toluene	mg/kg (ppm)	0.5	113	70-117
Ethylbenzene	mg/kg (ppm)	0.5	110	65-123
Xylenes	mg/kg (ppm)	1.5	115	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107266-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	127 vo	65-118
Toluene	ug/L (ppb)	50	124 vo	72-122
Ethylbenzene	ug/L (ppb)	50	122	73-126
Xylenes	ug/L (ppb)	150	123 vo	74-118
Gasoline	ug/L (ppb)	1,000	97	69-134

FRIEDMAN & BRUYA, INC.

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Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107190-11 (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	104	106	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	100	79-144

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	92	96	63-142	4

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107190-11 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	97	99	75-125	2
Lead	mg/kg (ppm)	50	<5	94	95	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	83	80-120
Lead	mg/kg (ppm)	50	94	80-120

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 106242-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	2.23	103	102	75-125	1
Lead	ug/L (ppb)	50	<1	82	82	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	97	80-120
Lead	ug/L (ppb)	50	95	80-120

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107190-11 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	84	78	50-150	7
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	92	84	50-150	9
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	92	84	50-150	9
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	91	85	50-150	7
Acenaphthene	mg/kg (ppm)	0.83	<0.01	89	83	50-150	7
Fluorene	mg/kg (ppm)	0.83	<0.01	92	88	50-150	4
Phenanthrene	mg/kg (ppm)	0.83	<0.01	92	91	50-150	1
Anthracene	mg/kg (ppm)	0.83	<0.01	94	93	50-150	1
Fluoranthene	mg/kg (ppm)	0.83	<0.01	97	97	50-150	0
Pyrene	mg/kg (ppm)	0.83	<0.01	102	94	50-150	8
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	98	96	50-150	2
Chrysene	mg/kg (ppm)	0.83	<0.01	98	96	50-150	2
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	102	102	50-150	0
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	101	104	50-150	3
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	100	102	50-150	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	95	93	50-150	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	94	91	50-150	3
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	106	102	50-150	4

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	85	61-102
2-Methylnaphthalene	mg/kg (ppm)	0.83	91	62-108
1-Methylnaphthalene	mg/kg (ppm)	0.83	90	62-108
Acenaphthylene	mg/kg (ppm)	0.83	93	61-111
Acenaphthene	mg/kg (ppm)	0.83	90	61-110
Fluorene	mg/kg (ppm)	0.83	93	62-114
Phenanthrene	mg/kg (ppm)	0.83	93	64-112
Anthracene	mg/kg (ppm)	0.83	94	63-111
Fluoranthene	mg/kg (ppm)	0.83	98	66-115
Pyrene	mg/kg (ppm)	0.83	100	65-112
Benz(a)anthracene	mg/kg (ppm)	0.83	98	64-116
Chrysene	mg/kg (ppm)	0.83	98	66-119
Benzo(a)pyrene	mg/kg (ppm)	0.83	99	62-116
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	99	61-118
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	99	65-119
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	93	64-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	91	67-131
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	103	67-126

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107190-09 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	<0.03	75	34-118
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.03	76	29-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.03	77	37-119
Acenaphthylene	mg/kg (ppm)	0.83	<0.03	82	45-128
Acenaphthene	mg/kg (ppm)	0.83	<0.03	82	36-125
Fluorene	mg/kg (ppm)	0.83	<0.03	84	48-121
Phenanthrene	mg/kg (ppm)	0.83	<0.03	89	50-150
Anthracene	mg/kg (ppm)	0.83	<0.03	87	50-150
Fluoranthene	mg/kg (ppm)	0.83	<0.03	88	50-150
Pyrene	mg/kg (ppm)	0.83	<0.03	93	50-150
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.03	89	50-150
Chrysene	mg/kg (ppm)	0.83	<0.03	97	50-150
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.03	89	50-150
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.03	88	50-150
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.03	95	50-150
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.03	91	41-134
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.03	92	44-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.03	92	33-131

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	84	84	58-108	0
2-Methylnaphthalene	mg/kg (ppm)	0.83	86	86	67-108	0
1-Methylnaphthalene	mg/kg (ppm)	0.83	86	87	66-107	1
Acenaphthylene	mg/kg (ppm)	0.83	86	87	70-130	1
Acenaphthene	mg/kg (ppm)	0.83	87	87	66-112	0
Fluorene	mg/kg (ppm)	0.83	87	88	67-117	1
Phenanthrene	mg/kg (ppm)	0.83	94	95	70-130	1
Anthracene	mg/kg (ppm)	0.83	90	93	70-130	3
Fluoranthene	mg/kg (ppm)	0.83	87	95	70-130	9
Pyrene	mg/kg (ppm)	0.83	102	104	70-130	2
Benz(a)anthracene	mg/kg (ppm)	0.83	93	95	70-130	2
Chrysene	mg/kg (ppm)	0.83	102	104	70-130	2
Benzo(a)pyrene	mg/kg (ppm)	0.83	94	96	68-120	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	94	98	69-125	4
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	100	99	70-130	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	114	95	67-129	18
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	96	95	67-128	1
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	97	96	64-127	1

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	76	74	66-94	3
2-Methylnaphthalene	ug/L (ppb)	5	82	79	68-98	4
1-Methylnaphthalene	ug/L (ppb)	5	81	80	67-97	1
Acenaphthylene	ug/L (ppb)	5	85	87	70-130	2
Acenaphthene	ug/L (ppb)	5	80	82	70-130	2
Fluorene	ug/L (ppb)	5	85	88	70-130	3
Phenanthrene	ug/L (ppb)	5	87	89	70-130	2
Anthracene	ug/L (ppb)	5	89	91	70-130	2
Fluoranthene	ug/L (ppb)	5	96	97	70-130	1
Pyrene	ug/L (ppb)	5	88	92	70-130	4
Benz(a)anthracene	ug/L (ppb)	5	92	95	70-130	3
Chrysene	ug/L (ppb)	5	92	93	70-130	1
Benzo(a)pyrene	ug/L (ppb)	5	95	99	70-130	4
Benzo(b)fluoranthene	ug/L (ppb)	5	87	95	62-130	9
Benzo(k)fluoranthene	ug/L (ppb)	5	87	89	70-130	2
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	120	113	70-130	6
Dibenz(a,h)anthracene	ug/L (ppb)	5	116	109	70-130	6
Benzo(g,h,i)perylene	ug/L (ppb)	5	111	106	70-130	5

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: 107190-11 1/6 107190-11 dup (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	<0.02	<0.02	nm
Aroclor 1260	mg/kg (ppm)	<0.02	<0.02	nm

Laboratory Code: 107190-11 ms 1/6 107190-11 msd 1/6 (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	69	64	29-125	8
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	79	78	25-137	1

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	83	55-137
Aroclor 1260	mg/kg (ppm)	0.25	106	51-150

Date of Report: 07/23/21
Date Received: 07/13/21
Project: Lots 25 and 26, F&BI 107190

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	42	44	25-111	5
Aroclor 1260	ug/L (ppb)	0.25	58	64	23-123	10

FRIEDMAN & BRUYA, INC.

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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.

107190

SAMPLE CHAIN OF CUSTODY

ME ~~A03~~ 07/13/21 BI2 VW1 VS4 E03

Page # 1 of 2

Report To Shawn Williams

Company Krazan

Address 1230 Finn Hill Road NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawnwilliams@krazan.com

SAMPLERS (signature)

PROJECT NAME	PO #
Lots 25 and 26	
REMARKS	INVOICE TO
Project specific RLs? Yes / No	

TURNAROUND TIME
- [x] 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
2021-SB-35	01 A→E	7/13/21	845am	Soil	5	X	X	X			X	X	X	X			
2021-SB-36	02		849am														
2021-SB-37	03		855am														
2021-SB-38	04		910am														
2021-SB-39	05		920am														
2021-SB-40	06		930am														
2021-SB-41	07		930am														
2021-SB-42	08		1055am														
2021-SB-43	09		1100am														
2021-SB-44	10		1105am														

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abbigail Corwen	FBI	7/13/21	1830
Relinquished by:		Samples received at 4 °C		
Received by:				

107190

SAMPLE CHAIN OF CUSTODY

ME 07/13/21 ~~A03~~ BT2 VW1 US4 E03

Page # 2 of 2

Report To ~~kw~~ Shawn Williams

Company krazan

Address 1230 Finn Hill Road NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawnwilliams@krazan.com

SAMPLERS (signature)	
PROJECT NAME: Lots 25 and 26	PO #
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

TURNAROUND TIME
- [x] 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		MS/MSD	Notes
2021-SB-45	11 A→O	7/13/21	1115am	Soil	15	X	X	X			X	X	X	X		X	
2021-SB-46	12A→E	↓	1121am	↓	5	X	X	X			X	X	X	X			
2021-SB-47	13 ↓	↓	1129am	↓	5	X	X	X			X	X	X	X			
2021-SB-48	14 A→G	7/13/21	815am	Water	7	X	X	X			X	X	X	X			
2021-SB-49	15 ↓	7/13/21	1140am	Water	7	X	X	X			X	X	X	X			

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
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SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	krazan		
Received by:	Abagail Corwen	FBI	7/13/21	1830
Relinquished by:		Samples received at 4 °C		
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

July 29, 2021

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

Dear Mr Williams:

Included are the results from the testing of material submitted on July 21, 2021 from the Lots 25 and 26, F&BI 107352 project. There are 38 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
KZP0729R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 21, 2020 by Friedman & Bruya, Inc. from the Krazan & Associates Lots 25 and 26, F&BI 107352 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates
107352 -01	2021-GW-101
107352 -02	2021-GW-102
107352 -03	2021-GW-103
107352 -04	2021-GW-104
107352 -05	2021-GW-105
107352 -06	2021-GW-106
107352 -07	Trip Blank

All quality control requirements were acceptable.

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352
Date Extracted: 07/27/21
Date Analyzed: 07/27/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2021-GW-101 107352-01	<1	<1	<1	<3	<100	82
2021-GW-102 107352-02	<1	<1	<1	<3	<100	81
2021-GW-103 107352-03	<1	<1	<1	<3	<100	80
2021-GW-104 107352-04	<1	<1	<1	<3	<100	80
2021-GW-105 107352-05	<1	<1	<1	3.3	370	79
2021-GW-106 107352-06	<1	<1	<1	3.1	380	80
Method Blank 01-1658 MB	<1	<1	<1	<3	<100	80

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352
Date Extracted: 07/23/21
Date Analyzed: 07/23/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
2021-GW-101 107352-01	180 x	<250	107
2021-GW-102 107352-02	<50	<250	90
2021-GW-103 107352-03	210 x	<250	101
2021-GW-104 107352-04 1/1.2	130 x	<300	103
2021-GW-105 107352-05	420 x	<250	91
2021-GW-106 107352-06	340 x	<250	97
Method Blank 01-1728 MB	<50	<250	86

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-101 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-01
Date Analyzed:	07/28/21	Data File:	107352-01.089
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-102 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-02
Date Analyzed:	07/28/21	Data File:	107352-02.092
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-103 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-03
Date Analyzed:	07/28/21	Data File:	107352-03.093
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-104 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-04
Date Analyzed:	07/28/21	Data File:	107352-04.094
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-105 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-05
Date Analyzed:	07/28/21	Data File:	107352-05.095
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-106 f	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	107352-06
Date Analyzed:	07/28/21	Data File:	107352-06.096
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank f	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/28/21	Lab ID:	I1-455 mb
Date Analyzed:	07/28/21	Data File:	I1-455 mb.083
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-101	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-01
Date Analyzed:	07/23/21	Data File:	107352-01.164
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-102	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-02
Date Analyzed:	07/23/21	Data File:	107352-02.167
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-103	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-03
Date Analyzed:	07/23/21	Data File:	107352-03.168
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-104	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-04
Date Analyzed:	07/23/21	Data File:	107352-04.169
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-105	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-05
Date Analyzed:	07/23/21	Data File:	107352-05.170
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-106	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-06
Date Analyzed:	07/26/21	Data File:	107352-06.038
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates
Date Received:	NA	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	I1-448 mb
Date Analyzed:	07/23/21	Data File:	I1-448 mb.133
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-101	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-01 1/2
Date Analyzed:	07/23/21	Data File:	072311.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	43	11	65
Phenol-d6	29	11	65
Nitrobenzene-d5	75	50	150
2-Fluorobiphenyl	68	44	108
2,4,6-Tribromophenol	95	10	140
Terphenyl-d14	101	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-102	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-02 1/2
Date Analyzed:	07/23/21	Data File:	072312.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35	11	65
Phenol-d6	29	11	65
Nitrobenzene-d5	72	50	150
2-Fluorobiphenyl	67	44	108
2,4,6-Tribromophenol	85	10	140
Terphenyl-d14	92	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-103	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-03 1/2
Date Analyzed:	07/23/21	Data File:	072313.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	26	11	65
Phenol-d6	27	11	65
Nitrobenzene-d5	73	50	150
2-Fluorobiphenyl	65	44	108
2,4,6-Tribromophenol	67	10	140
Terphenyl-d14	94	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-104	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-04 1/2
Date Analyzed:	07/23/21	Data File:	072314.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35	11	65
Phenol-d6	28	11	65
Nitrobenzene-d5	82	50	150
2-Fluorobiphenyl	71	44	108
2,4,6-Tribromophenol	82	10	140
Terphenyl-d14	101	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-105	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-05 1/2
Date Analyzed:	07/23/21	Data File:	072315.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	27	11	65
Phenol-d6	30	11	65
Nitrobenzene-d5	81	50	150
2-Fluorobiphenyl	71	44	108
2,4,6-Tribromophenol	59	10	140
Terphenyl-d14	96	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-106	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	107352-06 1/2
Date Analyzed:	07/23/21	Data File:	072316.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	35	11	65
Phenol-d6	29	11	65
Nitrobenzene-d5	78	50	150
2-Fluorobiphenyl	69	44	108
2,4,6-Tribromophenol	82	10	140
Terphenyl-d14	99	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.4
2-Methylnaphthalene	<0.4
1-Methylnaphthalene	<0.4
Acenaphthylene	<0.04
Acenaphthene	<0.04
Fluorene	<0.04
Phenanthrene	<0.04
Anthracene	<0.04
Fluoranthene	<0.04
Pyrene	<0.04
Benz(a)anthracene	<0.04
Chrysene	<0.04
Benzo(a)pyrene	<0.04
Benzo(b)fluoranthene	<0.04
Benzo(k)fluoranthene	<0.04
Indeno(1,2,3-cd)pyrene	<0.04
Dibenz(a,h)anthracene	<0.04
Benzo(g,h,i)perylene	<0.08

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/22/21	Lab ID:	01-1694 mb
Date Analyzed:	07/23/21	Data File:	072310.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	20	11	65
Phenol-d6	12	11	65
Nitrobenzene-d5	81	50	150
2-Fluorobiphenyl	72	44	108
2,4,6-Tribromophenol	63	10	140
Terphenyl-d14	94	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-101	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-01
Date Analyzed:	07/23/21	Data File:	072312.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	33	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-102	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-02
Date Analyzed:	07/23/21	Data File:	072313.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	47	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-103	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-03
Date Analyzed:	07/23/21	Data File:	072314.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	43	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-104	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-04
Date Analyzed:	07/23/21	Data File:	072315.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	42	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-105	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-05
Date Analyzed:	07/23/21	Data File:	072316.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	42	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-106	Client:	Krazan & Associates
Date Received:	07/21/21	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	107352-06
Date Analyzed:	07/23/21	Data File:	072317.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	53	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Krazan & Associates
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 107352
Date Extracted:	07/23/21	Lab ID:	01-1727 mb
Date Analyzed:	07/23/21	Data File:	072310.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	49	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	<1	85	87	50-150	2
Toluene	ug/L (ppb)	50	<1	88	90	50-150	2
Ethylbenzene	ug/L (ppb)	50	<1	95	97	50-150	2
Xylenes	ug/L (ppb)	150	<3	90	91	50-150	1
Gasoline	ug/L (ppb)	1,000	<100	92	95	53-117	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	94	65-118
Toluene	ug/L (ppb)	50	98	72-122
Ethylbenzene	ug/L (ppb)	50	101	73-126
Xylenes	ug/L (ppb)	150	96	74-118
Gasoline	ug/L (ppb)	1,000	100	69-134

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	<250	133	123	50-150	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	115	63-142

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<1	98	97	75-125	1
Lead	ug/L (ppb)	50	<1	92	90	75-125	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	94	80-120
Lead	ug/L (ppb)	50	92	80-120

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<1	100	99	75-125	1
Lead	ug/L (ppb)	10	<1	99	99	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	93	80-120
Lead	ug/L (ppb)	10	100	80-120

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 1/2 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	<0.4	76	65	50-150	16
2-Methylnaphthalene	ug/L (ppb)	5	<0.4	81	70	50-150	15
1-Methylnaphthalene	ug/L (ppb)	5	<0.4	82	70	50-150	16
Acenaphthylene	ug/L (ppb)	5	<0.04	84	77	50-150	9
Acenaphthene	ug/L (ppb)	5	<0.04	83	75	50-150	10
Fluorene	ug/L (ppb)	5	<0.04	89	82	50-150	8
Phenanthrene	ug/L (ppb)	5	<0.04	90	83	50-150	8
Anthracene	ug/L (ppb)	5	<0.04	90	85	50-150	6
Fluoranthene	ug/L (ppb)	5	<0.04	95	89	50-150	7
Pyrene	ug/L (ppb)	5	<0.04	98	88	50-150	11
Benz(a)anthracene	ug/L (ppb)	5	<0.04	98	91	50-150	7
Chrysene	ug/L (ppb)	5	<0.04	96	89	50-150	8
Benzo(a)pyrene	ug/L (ppb)	5	<0.04	99	93	50-150	6
Benzo(b)fluoranthene	ug/L (ppb)	5	<0.04	99	94	50-150	5
Benzo(k)fluoranthene	ug/L (ppb)	5	<0.04	99	91	50-150	8
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	<0.04	95	92	50-150	3
Dibenz(a,h)anthracene	ug/L (ppb)	5	<0.04	94	90	50-150	4
Benzo(g,h,i)perylene	ug/L (ppb)	5	<0.08	106	100	50-150	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	ug/L (ppb)	5	74	62-90
2-Methylnaphthalene	ug/L (ppb)	5	81	64-93
1-Methylnaphthalene	ug/L (ppb)	5	81	64-93
Acenaphthylene	ug/L (ppb)	5	82	70-130
Acenaphthene	ug/L (ppb)	5	79	70-130
Fluorene	ug/L (ppb)	5	84	70-130
Phenanthrene	ug/L (ppb)	5	88	70-130
Anthracene	ug/L (ppb)	5	88	70-130
Fluoranthene	ug/L (ppb)	5	95	70-130
Pyrene	ug/L (ppb)	5	95	70-130
Benz(a)anthracene	ug/L (ppb)	5	97	70-130
Chrysene	ug/L (ppb)	5	97	70-130
Benzo(a)pyrene	ug/L (ppb)	5	99	70-130
Benzo(b)fluoranthene	ug/L (ppb)	5	99	70-130
Benzo(k)fluoranthene	ug/L (ppb)	5	97	70-130
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	94	70-130
Dibenz(a,h)anthracene	ug/L (ppb)	5	92	70-130
Benzo(g,h,i)perylene	ug/L (ppb)	5	106	70-130

Date of Report: 07/29/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	<0.1	53	54	50-150	2
Aroclor 1260	ug/L (ppb)	0.25	<0.1	58	57	50-150	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	ug/L (ppb)	0.25	52	25-111
Aroclor 1260	ug/L (ppb)	0.25	81	23-123

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.

107352

SAMPLE CHAIN OF CUSTODY

ME 07/21/21 VW5/AI6

E04

Report To Shawn Williams

Company kraZan

Address 1230 Finn Hill Road NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email Shawn williams@ krazan.com

SAMPLERS (signature)

PROJECT NAME Lots 25 and 26

PO#

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

~~Page#~~ 1 of 1

TURNAROUND TIME
- [x] 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	MS/MSD	Notes
																	Total / Dissolved
2021-GW-101	01 A-AD	7/21/21	12:00pm	Water	30	X	X	X			X	X		X	X	X	Metals per
2021-GW-102	02 A-J	↓	10:30am	↓	10	X	X	X			X	X		X	X		SW 7/22/21
2021-GW-103	03	↓	11:05am	↓	10	X	X	X			X	X		X	X		ME
2021-GW-104	04	↓	9:50am	↓	10	X	X	X			X	X		X	X		
2021-GW-105	05	↓	9:00am	↓	10	X	X	X			X	X		X	X		
2021-GW-106	06	↓	9:00 am	↓	10	X	X	X			X	X		X	X		
Trip Blank	07 A B	—	—	water	2												Added at lab
																	NP 7/22

AP

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abbigail Cotwen	FBI	7/21/21	1650
Relinquished by:				
Received by:		Samples received at 6 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 4, 2021

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

Dear Mr Williams:

Included are the additional results from the testing of material submitted on July 21, 2021 from the Lots 25 and 26, F&BI 107352 project. There are 4 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
KZP0804R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 21, 2020 by Friedman & Bruya, Inc. from the Krazan & Associates Lots 25 and 26, F&BI 107352 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates
107352 -01	2021-GW-101
107352 -02	2021-GW-102
107352 -03	2021-GW-103
107352 -04	2021-GW-104
107352 -05	2021-GW-105
107352 -06	2021-GW-106
107352 -07	Trip Blank

All quality control requirements were acceptable.

Date of Report: 08/04/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352
Date Extracted: 07/23/21
Date Analyzed: 08/02/21

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

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
2021-GW-101 107352-01	<50	<250	110
2021-GW-103 107352-03	<50	<250	96
2021-GW-104 107352-04	<60	<300	105
2021-GW-105 107352-05	86 x	<250	99
2021-GW-106 107352-06	84 x	<250	95
Method Blank 01-1728 MB	<50	<250	98

Date of Report: 08/04/21
Date Received: 07/21/21
Project: Lots 25 and 26, F&BI 107352

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

Laboratory Code: 107352-01 (Matrix Spike) Silica Gel

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	<50	103	95	50-150	8

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	92	63-142

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.

107352

SAMPLE CHAIN OF CUSTODY

ME 07/21/21 VW5/AI6

Page # 1 of 1 E04

Report To: Shawn Williams

Company: Krazan

Address: 1230 Finn Hill Road NW Suite A

City, State, ZIP: Poulsbo, WA 98370

Phone: 360-598-2126 Email: Shawn williams@krazan.com

SAMPLERS (signature)	
PROJECT NAME: Lots 25 and 26	PO #
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

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

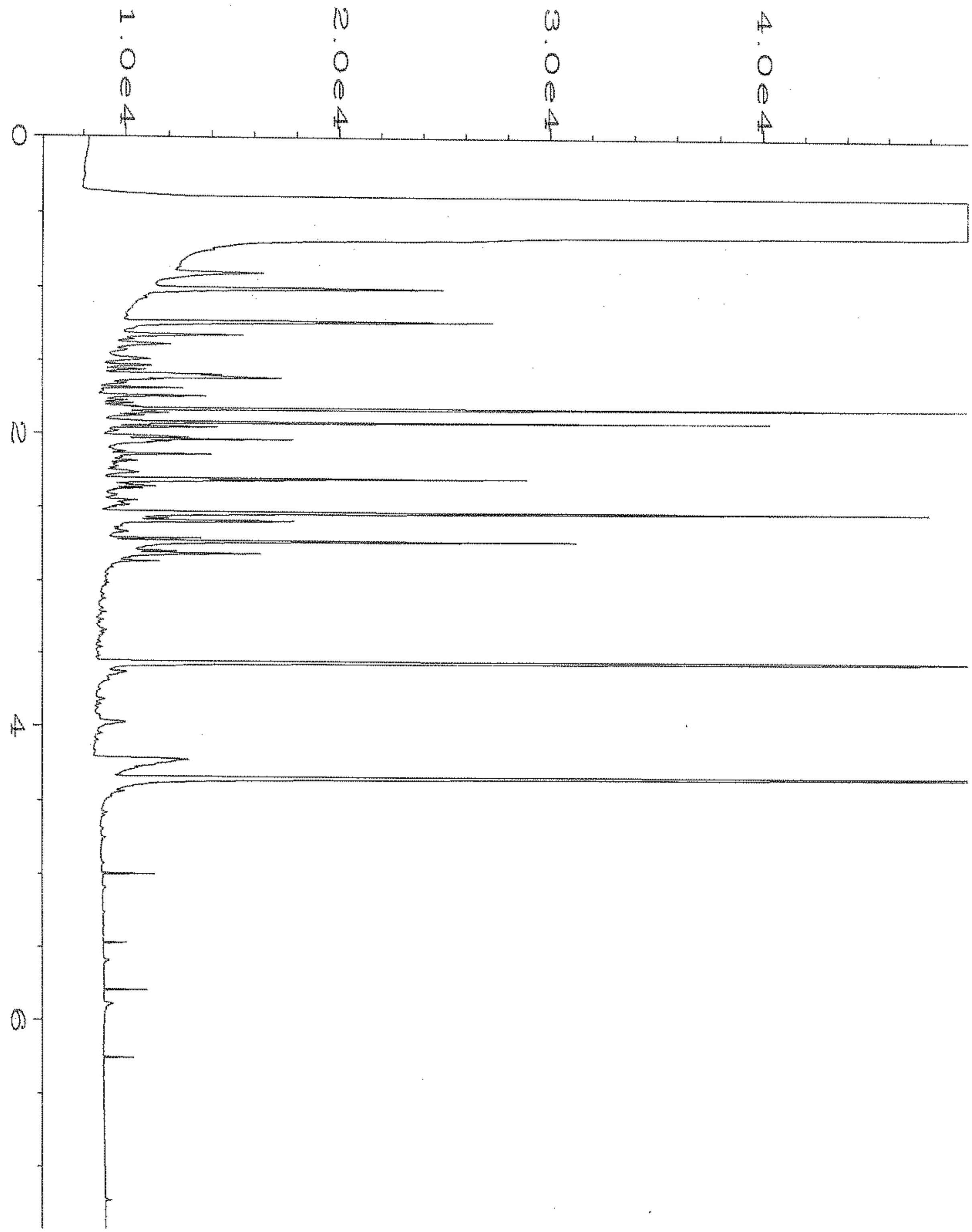
SAMPLE DISPOSAL
- ☐ Archive samples
- ☐ Other
- Default: Dispose after 30 days

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	Dx w/ Silica Gel	Lead	Arsenic	MS/MSD	Notes
																	Total / Dissolved
2021-GW-101	01 A-AD	7/21/21	12:00pm	Water	30	X	X	X			X	X	●	X	X	X	Metals per
2021-GW-102	02 A-J		10:30am		10	X	X	X			X	X		X	X		SW 7/22/21
2021-GW-103	03		11:05am		10	X	X	X			X	X	●	X	X		ME
2021-GW-104	04		9:50am		10	X	X	X			X	X	●	X	X		● per SW
2021-GW-105	05		9:00am		10	X	X	X			X	X	●	X	X		8/2/21 ME
2021-GW-106	06		9:00 am		10	X	X	X			X	X	●	X	X		
Trip Blank	07 A B	—	—	Water	2												Added at lab
																	(NP) 7/22

AP

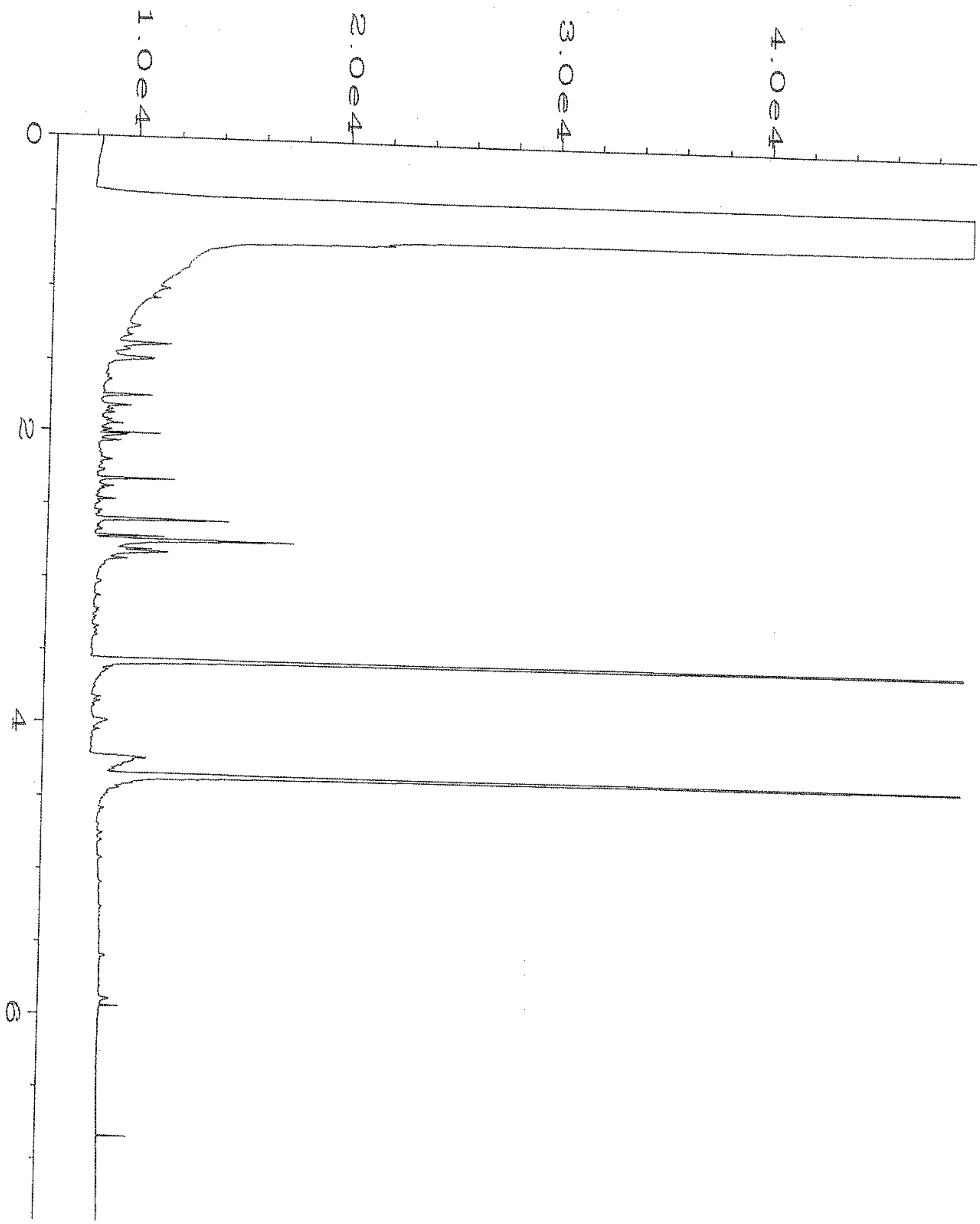
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan		
Received by:	Abigail Cotwen	FBI	7/21/21	1650
Relinquished by:				
Received by:		Samples received at 6 °C		



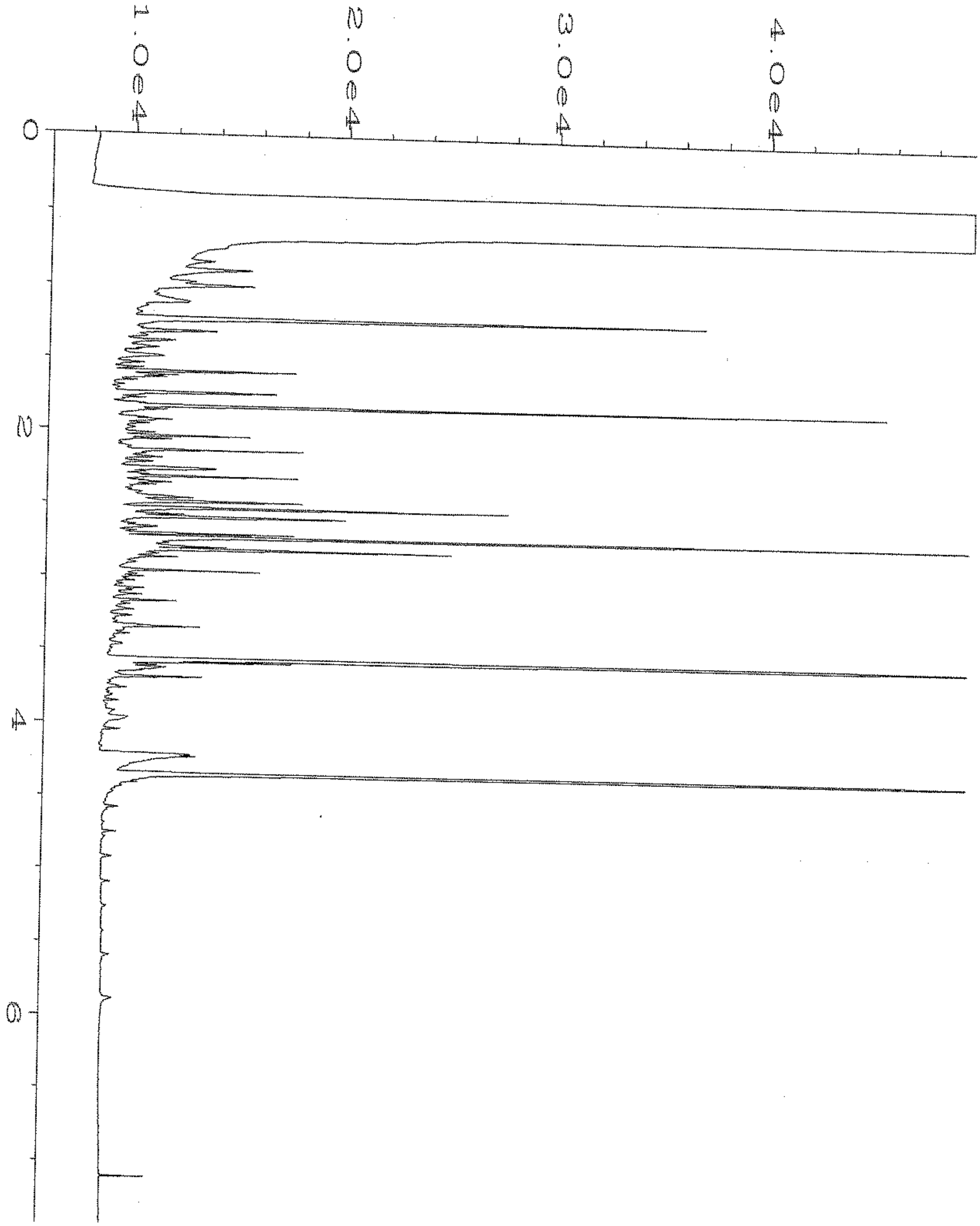
Data File Name : C:\HPCHEM\1\DATA\07-23-21\029F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-01
Run Time Bar Code:
Acquired on : 23 Jul 21 02:53 PM
Report Created on: 26 Jul 21 12:14 PM

Page Number : 1
Vial Number : 29
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



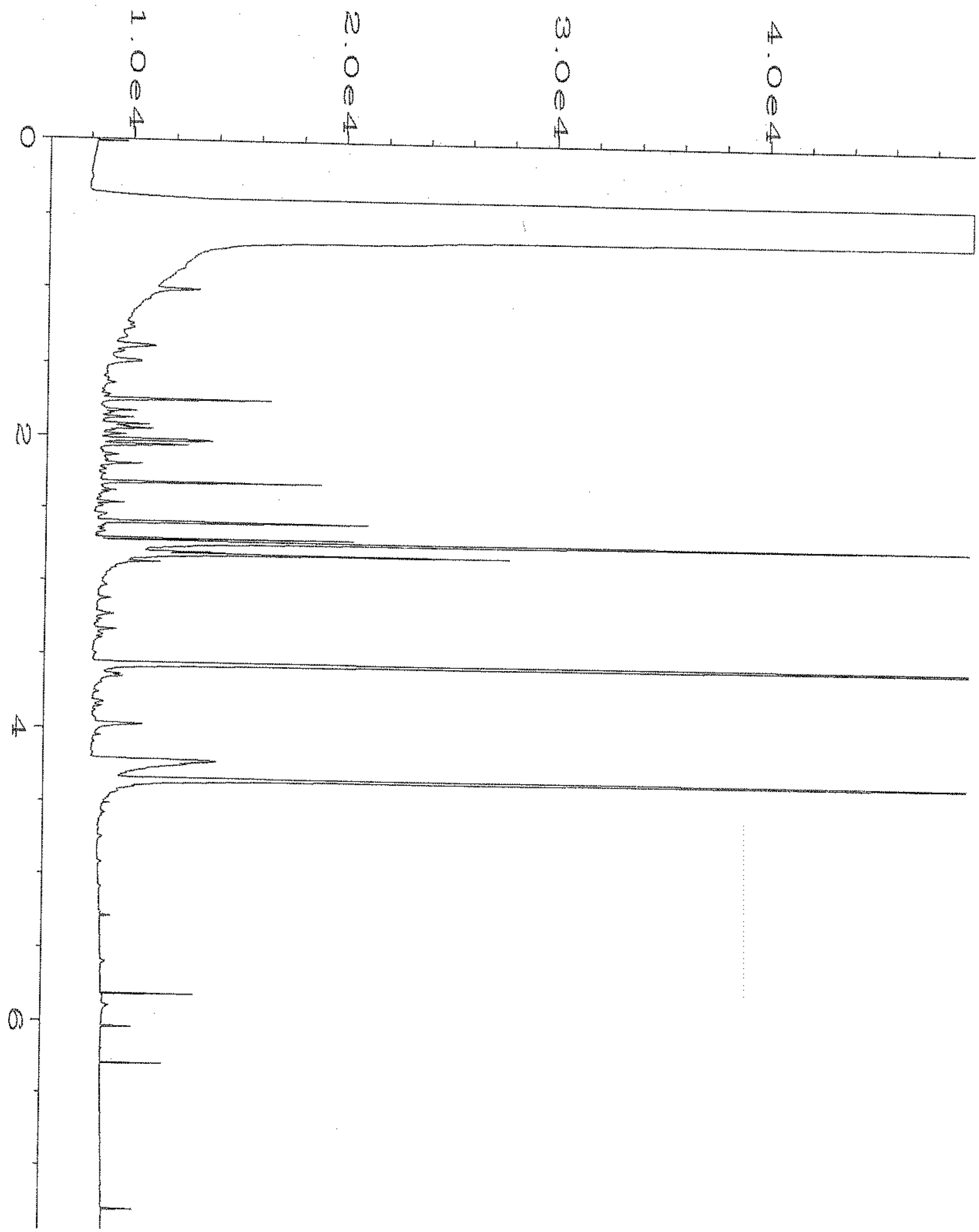
Data File Name : C:\HPCHEM\1\DATA\07-23-21\030F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-02
Run Time Bar Code:
Acquired on : 23 Jul 21 03:05 PM
Report Created on: 26 Jul 21 12:14 PM

Page Number : 1
Vial Number : 30
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



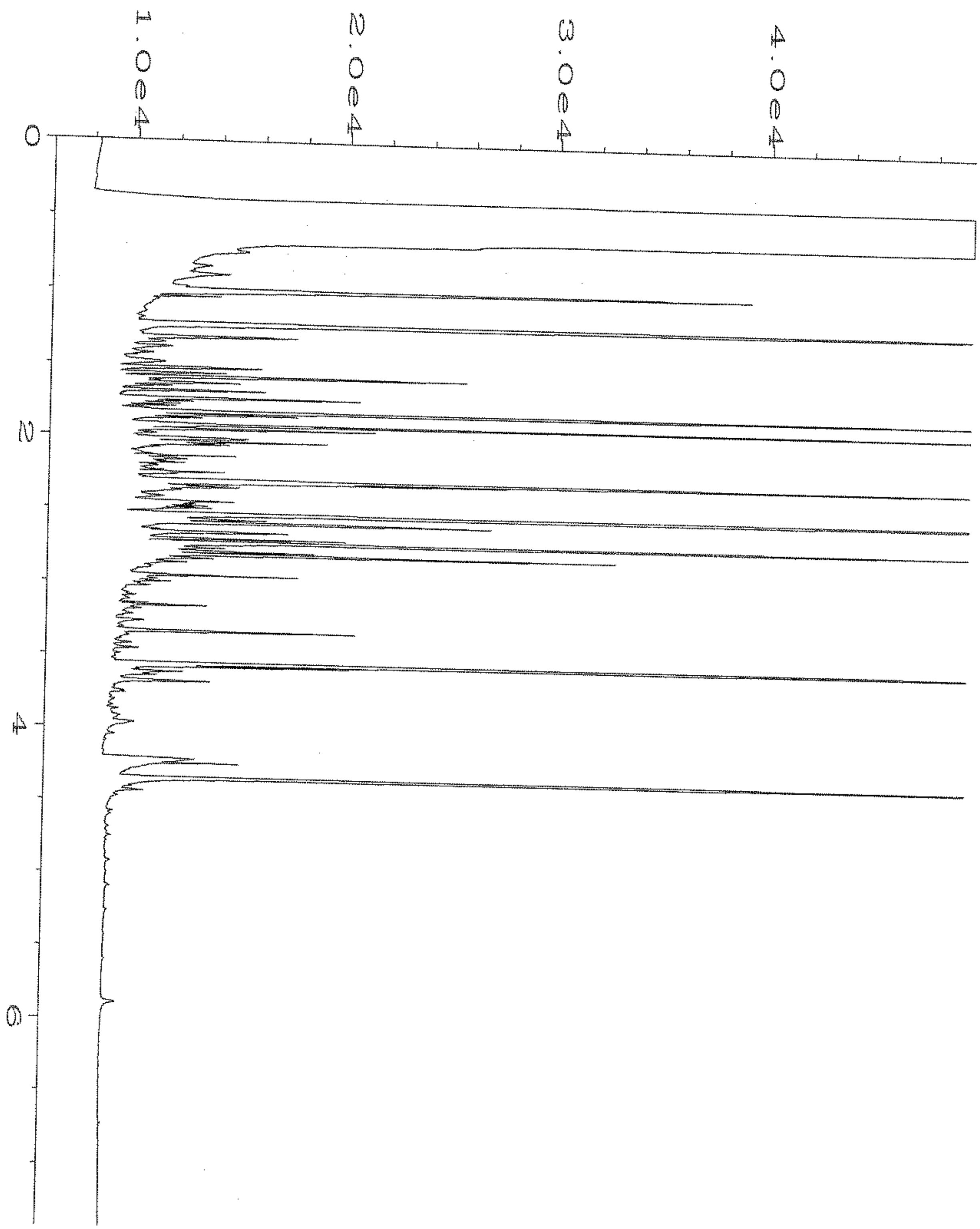
Data File Name : C:\HPCHEM\1\DATA\07-23-21\031F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-03
Run Time Bar Code:
Acquired on : 23 Jul 21 03:17 PM
Report Created on: 26 Jul 21 12:15 PM

Page Number : 1
Vial Number : 31
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



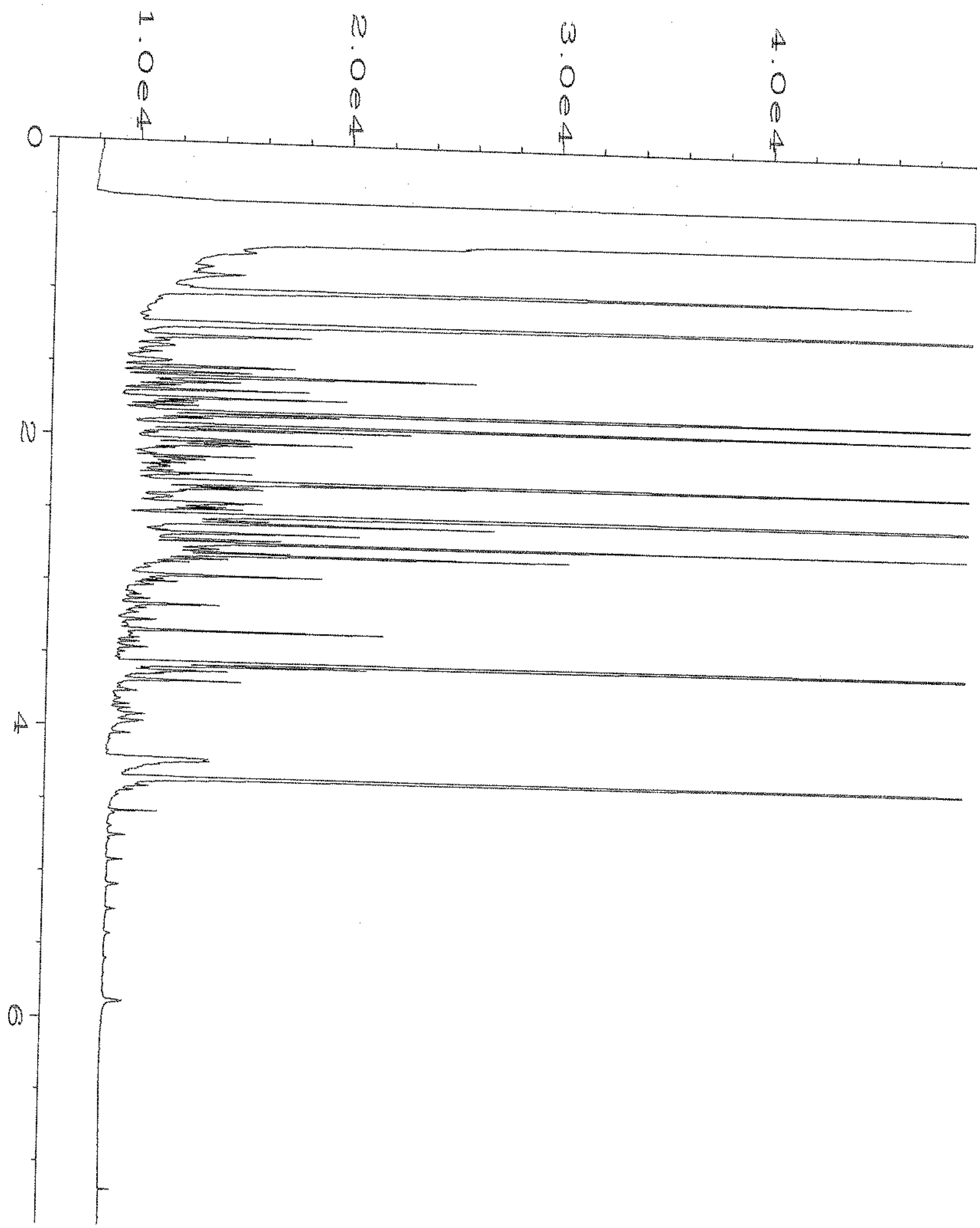
Data File Name : C:\HPCHEM\1\DATA\07-23-21\032F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-04
Run Time Bar Code:
Acquired on : 23 Jul 21 03:28 PM
Report Created on: 26 Jul 21 12:15 PM

Page Number : 1
Vial Number : 32
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



Data File Name : C:\HPCHEM\1\DATA\07-23-21\033F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-05
Run Time Bar Code:
Acquired on : 23 Jul 21 03:40 PM
Report Created on: 26 Jul 21 12:15 PM

Page Number : 1
Vial Number : 33
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH



Data File Name : C:\HPCHEM\1\DATA\07-23-21\034F0501.D
Operator : TL
Instrument : GC1
Sample Name : 107352-06
Run Time Bar Code:
Acquired on : 23 Jul 21 03:52 PM
Report Created on: 26 Jul 21 12:15 PM

Page Number : 1
Vial Number : 34
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DEFAULT.MTH

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 18, 2021

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 October 7, 2021 from the Lots 25 and 26, F&BI 110159 project. There are 39 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
KZP1018R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on October 7, 2021 by Friedman & Bruya, Inc. from the Krazan & Associates (Poulsbo) Lots 25 and 26, F&BI 110159 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates (Poulsbo)
110159 -01	2021-GW-201
110159 -02	2021-GW-202
110159 -03	2021-GW-203
110159 -04	2021-GW-204
110159 -05	2021-GW-205
110159 -06	2021-GW-206
110159 -07	Trip Blank

The dissolved metals samples were filtered at Friedman and Bruya on October 8, 2020 at 12:22. The data were flagged accordingly.

All other quality control requirements were acceptable.

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159
Date Extracted: 10/11/21
Date Analyzed: 10/11/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2021-GW-201 110159-01	<1	<1	<1	<3	<100	95
2021-GW-202 110159-02	<1	<1	<1	<3	<100	85
2021-GW-203 110159-03	<1	<1	<1	<3	<100	95
2021-GW-204 110159-04	<1	<1	<1	<3	<100	95
2021-GW-205 110159-05	<1	<1	<1	<3	<100	92
2021-GW-206 110159-06	<1	<1	<1	<3	<100	78
Method Blank 01-2294 MB	<1	<1	<1	<3	<100	95

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159
Date Extracted: 10/13/21
Date Analyzed: 10/13/21

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

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 41-152)
2021-GW-201 110159-01	<60	<300	109
2021-GW-202 110159-02	73 x	<250	100
2021-GW-203 110159-03	<60	<300	107
2021-GW-204 110159-04	<50	<250	113
2021-GW-205 110159-05	<50	<250	108
2021-GW-206 110159-06	<50	<250	109
Method Blank 01-2356 MB	<50	<250	111

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-201	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-01
Date Analyzed:	10/14/21	Data File:	110159-01.209
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-202	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-02
Date Analyzed:	10/14/21	Data File:	110159-02.210
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-203	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-03
Date Analyzed:	10/14/21	Data File:	110159-03.213
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-204	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-04
Date Analyzed:	10/14/21	Data File:	110159-04.214
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-205	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-05
Date Analyzed:	10/14/21	Data File:	110159-05.215
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-GW-206	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-06
Date Analyzed:	10/14/21	Data File:	110159-06.216
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

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:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	I1-651 mb
Date Analyzed:	10/13/21	Data File:	I1-651 mb.054
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-201 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-01
Date Analyzed:	10/09/21	Data File:	110159-01.220
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-202 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-02
Date Analyzed:	10/09/21	Data File:	110159-02.221
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-203 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-03
Date Analyzed:	10/09/21	Data File:	110159-03.222
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-204 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-04
Date Analyzed:	10/09/21	Data File:	110159-04.223
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-205 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-05
Date Analyzed:	10/09/21	Data File:	110159-05.224
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

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ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	2021-GW-206 f	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	110159-06
Date Analyzed:	10/09/21	Data File:	110159-06.225
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Dissolved Metals By EPA Method 6020B

Client ID:	Method Blank f	Client:	Krazan & Associates (Poulsbo)
Date Received:	NA	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/08/21	Lab ID:	I1-633 mb2
Date Analyzed:	10/09/21	Data File:	I1-633 mb2.214
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Lead	<1

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-201	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-01
Date Analyzed:	10/13/21	Data File:	101314.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	17	11	65
Phenol-d6	15	11	65
Nitrobenzene-d5	93	50	150
2-Fluorobiphenyl	86	44	108
2,4,6-Tribromophenol	74	10	140
Terphenyl-d14	93	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

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ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-202	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-02
Date Analyzed:	10/13/21	Data File:	101311.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	6 vo	10	60
Phenol-d6	11	10	49
Nitrobenzene-d5	104	15	144
2-Fluorobiphenyl	94	25	128
2,4,6-Tribromophenol	31	10	142
Terphenyl-d14	106	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-203	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-03
Date Analyzed:	10/13/21	Data File:	101315.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	7 vo	11	65
Phenol-d6	11	11	65
Nitrobenzene-d5	90	50	150
2-Fluorobiphenyl	82	44	108
2,4,6-Tribromophenol	39	10	140
Terphenyl-d14	95	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-204	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-04
Date Analyzed:	10/13/21	Data File:	101316.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	5 vo	11	65
Phenol-d6	10 vo	11	65
Nitrobenzene-d5	92	50	150
2-Fluorobiphenyl	84	44	108
2,4,6-Tribromophenol	20	10	140
Terphenyl-d14	96	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

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Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-205	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-05
Date Analyzed:	10/13/21	Data File:	101317.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	3 vo	11	65
Phenol-d6	8 vo	11	65
Nitrobenzene-d5	70	50	150
2-Fluorobiphenyl	69	44	108
2,4,6-Tribromophenol	18	10	140
Terphenyl-d14	100	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	2021-GW-206	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	110159-06
Date Analyzed:	10/13/21	Data File:	101318.D
Matrix:	Water	Instrument:	GCMS12
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	2 vo	11	65
Phenol-d6	1 vo	11	65
Nitrobenzene-d5	82	50	150
2-Fluorobiphenyl	76	44	108
2,4,6-Tribromophenol	2 vo	10	140
Terphenyl-d14	98	50	150

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02 js
Anthracene	<0.02 js
Fluoranthene	<0.02 js
Pyrene	<0.02 js
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/12/21	Lab ID:	01-2354 mb
Date Analyzed:	10/13/21	Data File:	101310.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	23	10	60
Phenol-d6	15	10	49
Nitrobenzene-d5	109	15	144
2-Fluorobiphenyl	96	25	128
2,4,6-Tribromophenol	75	10	142
Terphenyl-d14	108	41	138

Compounds:	Concentration ug/L (ppb)
Naphthalene	<0.2
2-Methylnaphthalene	<0.2
1-Methylnaphthalene	<0.2
Acenaphthylene	<0.02
Acenaphthene	<0.02
Fluorene	<0.02
Phenanthrene	<0.02
Anthracene	<0.02
Fluoranthene	<0.02
Pyrene	<0.02
Benz(a)anthracene	<0.02
Chrysene	<0.02
Benzo(a)pyrene	<0.02
Benzo(b)fluoranthene	<0.02
Benzo(k)fluoranthene	<0.02
Indeno(1,2,3-cd)pyrene	<0.02
Dibenz(a,h)anthracene	<0.02
Benzo(g,h,i)perylene	<0.04

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-201	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-01
Date Analyzed:	10/13/21	Data File:	101316.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	38	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-202	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-02
Date Analyzed:	10/13/21	Data File:	101317.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-203	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-03
Date Analyzed:	10/13/21	Data File:	101318.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	37	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-204	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-04
Date Analyzed:	10/13/21	Data File:	101319.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	35	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-205	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-05
Date Analyzed:	10/13/21	Data File:	101320.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	2021-GW-206	Client:	Krazan & Associates (Poulsbo)
Date Received:	10/07/21	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	110159-06
Date Analyzed:	10/13/21	Data File:	101321.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	31	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

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Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	Not Applicable	Project:	Lots 25 and 26, F&BI 110159
Date Extracted:	10/13/21	Lab ID:	01-2355 mb
Date Analyzed:	10/13/21	Data File:	101307.D
Matrix:	Water	Instrument:	GC7
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	40	24	127

Compounds:	Concentration ug/L (ppb)
Aroclor 1221	<0.1
Aroclor 1232	<0.1
Aroclor 1016	<0.1
Aroclor 1242	<0.1
Aroclor 1248	<0.1
Aroclor 1254	<0.1
Aroclor 1260	<0.1
Aroclor 1262	<0.1
Aroclor 1268	<0.1

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: 110159-02 Matrix Spike

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	<1	98	96	50-150	2
Toluene	ug/L (ppb)	50	<1	98	94	50-150	4
Ethylbenzene	ug/L (ppb)	50	<1	95	92	50-150	3
Xylenes	ug/L (ppb)	150	<3	94	91	50-150	3
Gasoline	ug/L (ppb)	1,000	<100	75	79	50-150	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	103	72-119
Toluene	ug/L (ppb)	50	101	71-113
Ethylbenzene	ug/L (ppb)	50	100	72-114
Xylenes	ug/L (ppb)	150	99	72-113
Gasoline	ug/L (ppb)	1,000	95	70-119

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: 110159-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	<250	108	108	50-150	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	ug/L (ppb)	2,500	84	63-142

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: 110159-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	<1	97	99	70-130	2
Lead	ug/L (ppb)	10	<1	95	97	70-130	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	90	85-115
Lead	ug/L (ppb)	10	91	85-115

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	103	101	80-120	2
Lead	ug/L (ppb)	10	103	101	80-120	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: 110159-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	ug/L (ppb)	5	<0.2	88	82	50-150	7
2-Methylnaphthalene	ug/L (ppb)	5	<0.2	92	86	50-150	7
1-Methylnaphthalene	ug/L (ppb)	5	<0.2	93	86	50-150	8
Acenaphthylene	ug/L (ppb)	5	<0.02	98	93	50-150	5
Acenaphthene	ug/L (ppb)	5	<0.02	95	89	50-150	7
Fluorene	ug/L (ppb)	5	<0.02	98	93	50-150	5
Phenanthrene	ug/L (ppb)	5	<0.02	95	93	50-150	2
Anthracene	ug/L (ppb)	5	<0.02	98	96	50-150	2
Fluoranthene	ug/L (ppb)	5	<0.02	101	98	50-150	3
Pyrene	ug/L (ppb)	5	<0.02	103	101	50-150	2
Benz(a)anthracene	ug/L (ppb)	5	<0.02	101	100	50-150	1
Chrysene	ug/L (ppb)	5	<0.02	102	100	50-150	2
Benzo(a)pyrene	ug/L (ppb)	5	<0.02	103	99	50-150	4
Benzo(b)fluoranthene	ug/L (ppb)	5	<0.02	101	97	50-150	4
Benzo(k)fluoranthene	ug/L (ppb)	5	<0.02	107	102	50-150	5
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	<0.02	93	95	50-150	2
Dibenz(a,h)anthracene	ug/L (ppb)	5	<0.02	97	99	50-150	2
Benzo(g,h,i)perylene	ug/L (ppb)	5	<0.04	95	100	50-150	5

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	ug/L (ppb)	5	85	66-94
2-Methylnaphthalene	ug/L (ppb)	5	88	68-98
1-Methylnaphthalene	ug/L (ppb)	5	89	67-97
Acenaphthylene	ug/L (ppb)	5	95	70-130
Acenaphthene	ug/L (ppb)	5	92	70-130
Fluorene	ug/L (ppb)	5	96	70-130
Phenanthrene	ug/L (ppb)	5	94	70-130
Anthracene	ug/L (ppb)	5	98	70-130
Fluoranthene	ug/L (ppb)	5	99	70-130
Pyrene	ug/L (ppb)	5	101	70-130
Benz(a)anthracene	ug/L (ppb)	5	101	70-130
Chrysene	ug/L (ppb)	5	103	70-130
Benzo(a)pyrene	ug/L (ppb)	5	101	70-130
Benzo(b)fluoranthene	ug/L (ppb)	5	99	62-130
Benzo(k)fluoranthene	ug/L (ppb)	5	104	70-130
Indeno(1,2,3-cd)pyrene	ug/L (ppb)	5	96	70-130
Dibenz(a,h)anthracene	ug/L (ppb)	5	98	70-130
Benzo(g,h,i)perylene	ug/L (ppb)	5	97	70-130

Date of Report: 10/18/21
Date Received: 10/07/21
Project: Lots 25 and 26, F&BI 110159

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

Laboratory Code: 110159-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	ug/L (ppb)	0.25	<0.1	64	57	50-150	12
Aroclor 1260	ug/L (ppb)	0.25	<0.1	82	77	50-150	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	ug/L (ppb)	0.25	55	25-111
Aroclor 1260	ug/L (ppb)	0.25	66	23-123

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.

110159

SAMPLE CHAIN OF CUSTODY

ME 10/7/21

[redacted] 1 of VW3/ A14

Report To Shawn Williams

Company krazan and Associates

Address 1230 NW Finn Hill Road Suite A

City, State, ZIP Poulsbo, WA, 98370

Phone 360 5982126 Email Shawnwilliams@krazan.com

SAMPLERS (signature)

PROJECT NAME Lots 25 and 26

PO #

REMARKS

INVOICE TO

Project specific RLs? - Yes / No

TURNAROUND TIME EO3

X Standard turnaround 5day

~~RUSH~~ per CB 10/8/21

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		MS/MSD		Notes
																	Total + Dissolved
2021-GW-201	01 A-G	10/6/21	9:45am	water	7	X	X	X			X	X	X				metals per historical
2021-GW-202	02 A-S		8:40am		19	X	X	X			X	X	X		X		ME 10/7/21 ME
2021-GW-203	03 A-G		10:30am		7	X	X	X			X	X	X				
2021-GW-204	04 A-G		10:30am		7	X	X	X			X	X	X				
2021-GW-205	05 A-G		9:15am		7	X	X	X			X	X	X				
2021-GW-206	06 A-G		10:55		7	X	X	X			X	X	X				
Trip Blank	07 A-B	—	—	water	2												Added at lab NP 10/8/21

Samples received at 6 °C

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Chloe Bartlett	Krazan	10/7/21	2:50
Received by:	NINH	FBI	10/7/21	2:50PM
Relinquished by:				
Received by:				

Samples received at 6 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

September 30, 2021

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 September 27, 2021 from the Lots 25 and 26, F&BI 109492 project. There are 9 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
KZP0930R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on September 27, 2021 by Friedman & Bruya, Inc. from the Krazan & Associates (Poulsbo) Lots 25 and 26, F&BI 109492 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Krazan & Associates (Poulsbo)
109492 -01	2021-SS-47
109492 -02	2021-SS-48
109492 -03	2021-SS-49
109492 -04	2021-SS-50
109492 -05	2021-SS-51
109492 -06	2021-SS-52

All quality control requirements were acceptable.

Date of Report: 09/30/21
Date Received: 09/27/21
Project: Lots 25 and 26, F&BI 109492
Date Extracted: 09/28/21
Date Analyzed: 09/28/21

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 56-165)
2021-SS-50 109492-04	<50	<250	89
2021-SS-51 109492-05	<50	<250	86
2021-SS-52 109492-06	<50	<250	94
Method Blank 01-2199 MB	<50	<250	90

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-47	Client:	Krazan & Associates (Poulsbo)
Date Received:	09/27/21	Project:	Lots 25 and 26, F&BI 109492
Date Extracted:	09/28/21	Lab ID:	109492-01
Date Analyzed:	09/28/21	Data File:	109492-01.178
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	2.95

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-48	Client:	Krazan & Associates (Poulsbo)
Date Received:	09/27/21	Project:	Lots 25 and 26, F&BI 109492
Date Extracted:	09/28/21	Lab ID:	109492-02
Date Analyzed:	09/28/21	Data File:	109492-02.179
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	2.35

Analysis For Total Metals By EPA Method 6020B

Client ID:	2021-SS-49	Client:	Krazan & Associates (Poulsbo)
Date Received:	09/27/21	Project:	Lots 25 and 26, F&BI 109492
Date Extracted:	09/28/21	Lab ID:	109492-03
Date Analyzed:	09/28/21	Data File:	109492-03.180
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	2.15

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Krazan & Associates (Poulsbo)
Date Received:	NA	Project:	Lots 25 and 26, F&BI 109492
Date Extracted:	09/28/21	Lab ID:	I1-606 mb
Date Analyzed:	09/28/21	Data File:	I1-606 mb.155
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

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

Date of Report: 09/30/21
Date Received: 09/27/21
Project: Lots 25 and 26, F&BI 109492

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

Laboratory Code: 109492-04 (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	96	86	63-146	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	79-144

Date of Report: 09/30/21
Date Received: 09/27/21
Project: Lots 25 and 26, F&BI 109492

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

Laboratory Code: 109450-01 (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	1.41	85	86	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	94	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.

ME 09/27/21 VS4

109492

SAMPLE CHAIN OF CUSTODY

[redacted] Report To Shawn Williams

Company kiazan and Associates

Address 1230 Finn Hill Road NW Suite A

City, State, ZIP Poulsbo, WA 98370

Phone 360-598-2126 Email shawn williams@krazan.com

SAMPLERS (signature) [signature]

PROJECT NAME	PO #
Lots 25 and 26	
REMARKS	INVOICE TO
Project specific RLs? - Yes / No	

~~Page~~ # 1 of 1 BO4

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

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
2021-SS-47	01 A-F	9/27/21	10:20am	Soil	6									X			
2021-SS-48	02	↓	10:25am	↓	↓									X			
2021-SS-49	03	↓	10:30am	↓	↓									X			
2021-SS-50	04	↓	1:00 pm	↓	↓	X											
2021-SS-51	05	↓	1:05 pm	↓	↓	X											
2021-SS-52	06	↓	1:10pm	↓	↓	X											
																	Samples received at 5 °C

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Chloe Bartlett	krazan		
Received by: [signature]	Abbigail Corwen	FBI	9/27/21	1610
Relinquished by:				
Received by:				

FSID6865393
Appendix E.
N.L. Olson & Associates
Report and Test Pit Logs

GEOTECHNICAL ENGINEERING INVESTIGATION
SILVERDALE MULTI-FAMILY/COMMERCIAL DEVELOPMENT
NEAR CLEAR CREEK RD NW AND NW GREAVES WAY
SILVERDALE, WA

CLIENT:

Blaise Hilton
Russell Square Consulting
4857 W 147th Street, Suite D
Hawthorne, CA 90250

BY:

N.L. OLSON AND ASSOCIATES, INC.
2453 BETHEL AVE. SE
PORT ORCHARD, WA 98366
(360) 876-2284

Project Number: 11338-20

MARCH 2021

P.O. Box 637 • 2453 Bethel Avenue • Port Orchard, Washington 98366
Phone: 1(800) 755-1282 • Fax: (360) 876-1487

N.L. OLSON & ASSOCIATES, INC.

Engineering, Planning and Surveying

March 10, 2021 Project Number: 11338-20

Attn: **Blaise Hilton**
Russell Square Consulting
41428 Mackenzie CT
Murrieta, CA 92562

Subject: Geotechnical Engineering Investigation
Russell Square Apartments
Near 11493 Clear Creek Road NW
Silverdale, WA 98383

N.L. Olson & Associates, Inc., (NLO) has provided our report that presents our geotechnical investigation results and provides preliminary recommendations for the proposed development.

We appreciate the opportunity to be of continued service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please contact our office.

Sincerely,

Wesley R. Johnson, P.E.
Geotechnical Division Manager

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GEOTECHNICAL ENGINEERING INVESTIGATION
SILVERDALE MULTI-FAMILY DEVELOPMENT
NEAR CLEAR CREEK RD NW AND NW GREAVES WAY
SILVERDALE, WA

INTRODUCTION

For the proposed Silverdale Multifamily Development, N.L. Olson & Associates, Inc., (NLO) has summarized the findings of our subsurface exploration program and provided our recommendations and conclusions for the proposed site development as discussed in the following.

SITE LOCATION

The site is situated in Section 08, Township 25, Range 1E (SE/4), W.M., in Kitsap County, Washington as shown on the Vicinity Map, Figure 1.

PARCEL NUMBERS

The subject property is located in Silverdale, WA. The parcel numbers comprising the subject property include: 082501-4-021-2005, 082501-4-033-2001, 082501-4-022-2004, 082501-4-032-2002, 082501-4-025-2001, 082501-4-026-2000, 082501-4-046-2006, 082501-4-047-2005, 082501-4-048-2004 and western half of 082501-4-024-2002.

SITE CONDITIONS

The current development is comprised of ten (10) parcels that make up a total project area of about 22 acres. The project area is bordered by residential development to the west and north, to the south by undeveloped land and beyond by Fieldstone's Phase 1 development presently under construction. The subject property is irregular in shape with the long dimension extending north to south about 750 feet.

The site's existing topography consisted of a gradual slope that descends from the west side, el 252, of the property to the east, el 214, with gradients of 10 percent to 20 percent.

The site is a mix of pasture land and secondary growth forest. The forested area is mainly douglas fir with a mix of cedar, maple, alder and forest brush outside the pasture areas.

PREVIOUS DEVELOPMENT

At the time of our field work, NLO observed that the project area has undergone development that occurred on parcels 021, 022, 046 and 047.

- Parcel 021 was developed with a 1.0 story residence with a building footprint of 1,300 square feet (sf) built in 1962. The dwelling had a basement, septic drain field and detached garage.

- Parcel 022 was developed with a 1.5 story residence with a building footprint of 868 sf built in 1938. The dwelling has a 728-sf basement, septic drain field and detached garage.

- Parcel 046 developed in 1999 with 1770 sf residence, septic and detached building.

- Parcel 047 developed in 1941 one story with basement and around 1800 sf.

PROPOSED DEVELOPMENT

As presently conceived, the property is proposed for development with 506 apartment units with associated parking. The proposed apartments will range from 3 to 4 stories in height and the footing loads are anticipated range from light to moderate. Along the downhill side of the proposed buildings, a daylight basement will be implemented in areas requiring grade separation. NLO anticipates light wood frame construction for the above grade levels and concrete frame construction for the below grade levels.

At this time, the apartment structures will have five (5) different building footprints sizes that range from 31,250 sf to 42,300 sf. NLO has provide a summary of the size and number type of structures proposed for this development in Table 1.

Proposed Buildings
TABLE 1

Building Type	(square feet)	Number of Structures
Apartment BLDG A 1	32,150	2
Apartment BLDG A 1.1	31,250	4
Apartment BLDG A 2.1	38,600	3
Apartment BLDG A 4.1	38,600	5
Apartment BLDG 5	42,300	1
Club House	3,000	1
Commercial Building	6,000	1

To achieve finish floor elevation of the proposed buildings, NLO anticipates open cuts of about five (5) feet to twelve (12) feet. For grade separation throughout the site, several walls ranging from 2 feet to 12 feet in height are planned. At the time of this report, the materials utilized for wall construction is not available at this time.

The primary access for this development will be from Clear Creek Road, from the east, through parcels 021 and 033. The existing commercial developments on these lots will be reconfigured to suit the new project's entrance and commercial uses. To achieve road finish grades, NLO anticipates 2H:1V (Horizontal: Vertical) permanent slopes along the west side of the development and the entrance areas to the north and south. General cuts and fills along the road subgrade could range up to about 10 feet with fills in the range of 5 feet or less and road gradients of 5 percent to 15 percent. NLO provided the proposed new construction as shown on the Site Plan, Figure 2.

A stormwater detention facility is proposed on the western portion of parcel 082501-4-024-2002. The pond's dimensions are 158 feet by 160 feet as measured at the pond base with 50 percent slopes ascending up to water level elevation el 153. The maximum pond depth is 8.5 feet deep. Pond grades within the proposed pond area will be primarily achieved by cut slope. Fill slopes will be minimized along the east side of the pond areas. The cut slopes along the northwest corner of the pond can range up to about a maximum height of 10 feet above pond full level with the slopes daylighting to the south and east.

NLO understands that stormwater from the proposed development will be conveyed from the detention facility towards the south side of the development via drainage ditches for offsite discharge into Clear Creek.

FIELD INVESTIGATION AND LABORATORY TESTING

Subsurface Investigation

The site's subsurface soil conditions were explored with 19 test pits advanced to a maximum depth of 14 feet below current site grades. A Sany SY 135C Excavator was used during the exploration program. The subsurface investigation was performed on October 22, 2019. The test pit locations are shown on the Site Plan, Figure 2.

Site Soil Conditions

In general, NLO's subsurface exploration program revealed three (3) feet of loose to medium dense silty sand (SM) underlain by dense to very dense above the glacial till. The glacial till consisted of unsorted, unstratified, very dense mixture of silty sand (SM) and gravel with cobbles and trace boulders. For a more detailed description of the subsurface conditions, please refer to the test pit logs presented in Appendix A.

Groundwater

At the time of our subsurface exploration program, subsurface water was encountered in two (2) test pit locations. The test pits that the subsurface water was encountered included TP-8 at 11 feet bgs and TP-11 at 4 feet bgs.

Note: A shallow seasonally dependent interflow condition should be expected to exist within the weathered soil margin near the ground's surface as shallow as 2 feet to 3 feet below current site grades during the winter given the dense underlying soil conditions. Interflow arises as surface water percolates downward through weathered soil and perches above a soil restriction and flows under the surface along the downhill gradient above the till.

AVAILABLE GEOLOGIC SOILS INFORMATION

Geology of Seattle and the Seattle Area

Review of Kathy Goetz Troost & Derek B. Booth, "Geology of Seattle and the Seattle Area, 2008", indicated the site was underlain by Vashon till. Vashon Till (Q_{vt}) also known as lodgment till and glacial till was deposited beneath the Vashon Ice Stade. Locally, this material is known as "hardpan," and consists of an unsorted, unstratified, highly compacted mixture of clay, silt, sand, gravel and boulders. The Vashon till deposits was placed by glacial ice during the most recent glacial period of the Vashon Stade - Fraser Glaciation, which occurred during the later stages of the Pleistocene Epoch and retreated from the region some 12,500 years ago.

Soil Conservation Service

USDA Soil Conservation Service (SCS) soil classification has classified the soils as (2), Alderwood gravelly sandy loam, 8 percent to 15 percent slopes. Further discussion of the soil's condition indicated the subject property is provided in Table 2.

KITSAP COUNTY AREA, WASHINGTON Table 2		
Map Unit Symbol	Map Unit Name	Soil Description
2	Alderwood gravelly sandy loam, 8 to 15 percent slopes	These soils are considered rapid to moderately deep well drained, surface runoff slow and the hazard of water erosion hazard is slight.

The SCS indicated groundwater levels during the winter rain season should range between 2.5 to three (3) feet bgs. The Web Soil Survey National Cooperative soil mapping for the subject property NLO has provided as shown on Figure 3.

GEOLOGIC HAZARDS (LANDSLIDES)

Quaternary Geology and Stratigraphy of Kitsap County

A review of "Quaternary Geology and Stratigraphy of Kitsap County", - Jerald Deeter 1979 was performed in preparation of this report. The area of proposed development and adjacent slope areas have been classified as stable.

The stable classification generally characterizes slopes with gradients of 15 percent or less, except in local areas of low groundwater concentration or competent bedrock is encountered. Stable slopes include rolling uplands and lowlands underlain by stable material such as unweathered till and/or peat deposits which, although inherently weak have no significant slope.

Kitsap County Landslide Hazard Mapping

NLO has reviewed the recently published "Geologic Hazard Mapping, Landslide Hazards, Kitsap County WA, Map Publish Date Feb 23, 2017". The hazard rating for both shallow and deep slides has been provided in Table 3.

Kitsap County Geologic Hazard Mapping Table 3	
Geologic Hazard	Hazard Rating
Deep Landslide Hazard	LOW
Shallow Landslide Hazard	LOW

Per Kitsap County's Geologic Hazard mapping for landslide hazards areas, indicated a low hazard rating for both shallow and deep landslides within the project area. Note: areas outside the project area along the stream north of the site have been indicated to have a moderate to high risk of shallow slides. Kitsap County's Geologic Hazard Mapping for potential Landslide Hazards has been provided on Figure 4.

Washington's DNR Geology Library - Landslides

Based on our online review of DNR's Geology Library - landslides on-line portal, a roughly 10-acre shallow slide is shown that resides more than 885 feet horizontal distance east of the subject property. The DNR Geology Library has designated this slide as a shallow slide. NLO has shown the landslide and its proximity to the subject property on Figure 5.

SLOPE RECONNAISSANCE

During our slope reconnaissance that occurred on October 22, 2020, NLO has utilized the potential Landslide Hazard Indicators per Kitsap County's 19.400.425, Section C.

The site slope descends from west el 225 to east el 155 with average gradients of about 10 to 15 percent. At the time of our visit during the subsurface exploration program, NLO did not observe any conditions that would suggest past slope movement. NLO observed that the subject area was stable.

Along the southwest corner of the subject area, future project entrance, a localized steep slope was observed that ascended up a gulley in the direction of the subject area. An old logging road was excavated along the north side of the gulley that resulted in a steep cut slope ranging up to about 10 feet in height. NLO did not observed slope instability or erosion along the old logging road.

SEISMIC GROUND SHAKING PARAMETERS (IBC 2018)

NLO has reviewed the seismic design criteria per 2018, International Building Code (IBC), for the proposed building area for the location of 47.66817360° Latitude and -122.69551610° Longitude. The interpolated probabilistic ground motion values (PGA) for horizontal peak acceleration and spectral acceleration provided in Table 4.

Seismic Ground Shaking Summary
Table 4

Probability Of exceedance	Approximate Return Period	Spectral Acceleration (g), Site Class C Period (sec)	
	years	0.2 sec	1.0 sec
2% in 50 years	2475	1.375	0.549

NLO has reviewed the 2018 International Building Code (IBC) for seismic design criteria for the proposed construction. The IBC seismic design parameters for the subject site, include a seismic zone soil profile, **Type C**.

Seismic Parameters 2018 IBC	Values
Mapped Spectral Acceleration Short Period (S_S)	1.375
Mapped Spectral Acceleration for One Second (S_1)	0.549
Site Class	**C**
Short period Site Coefficient (F_a)	1.000
1-second Site Coefficient (F_v)	1.300
MCE Spectral Response Acceleration for short period ($S_{MS}=S_S x F_a$)	1.375
MCE Spectral Response Acceleration for one second ($S_{M1}=S_1 x F_V$)	0.714
Design Spectral Response Acceleration for Short Period ($S_{DS}=2/3xS_{MS}$)	0.916
Design Spectral Response Acceleration for one second ($S_{D1}=2/3xS_{M1}$)	0.476
Design Peak Ground Acceleration (PGA=SDS x 0.4)	**PGA=0.366**

Horizontal Ground Acceleration

Per Kitsap County guidelines, the seismic acceleration was based on information provided by Kitsap County's Ordinance Regarding Growth Management, Revisions to Title 19 Critical Areas, Seismic Information, effective date, October 2, 2017. The acceptable minimal values of **a=0.17g** for glacially consolidated soils can be utilized for a near crustal one-in-100 year seismic event, with an assumed magnitude of 6.5 occurring below the site.

CONCLUSIONS & RECOMMENDATIONS

NLO performed this geotechnical investigation as set forth in Kitsap Counties Critical Areas Ordinance, Chapter 19.400 Geologic Hazardous Areas. Based on our slope assessment, and subsurface exploration program that encountered glacial till soils throughout the project area, in our opinion, the potential for large scale sliding or "deep-seated rotational failures" along the proposed development for the multifamily apartments and the proposed access roads appears negligible. I

Our slope stability assessment is based on the underlying soils being comprised of glacially consolidated soils and gradual sloping nature of the subject area that was typically 10 percent to 15 percent. In our opinion, given the proposed method of placement for the roads, and buildings, and storm water mitigation, NLO does not anticipate that these site improvements will destabilize the slope area within the subject property or impact off site properties around its perimeter. Based on the results of our study, it is our opinion the proposed development can proceed.

However, NLO has not preformed a subsurface exploration program within parcels 082501-4-046-2006, 082501-4-047-2005, 082501-4-048-2004 and western half of 082501-4-024-2002. In our opinion, NLO recommends that the additional exploration work is required to verify the site soil conditions, which will be of significant importance in the proposed stormwater detention pond area. NLO is recommending that the stormwater detention pond needs to be lined to prevent percolation of stormwater though the pond bottom and sidewalls. NLO plans to perform this additional work prior to the project's final design.

In order to achieve construction subgrade elevations, excavations with cut depths ranging up to 10 feet to 12 feet is needed for placement of retaining structures and proposed building areas. In our opinion, the excavation work can be accomplished using a combination of conventional open cuts, and temporary slopes. Support for the building and retaining walls can be provided with a conventional shallow foundation system bearing on structural fill or on the dense to very dense glacial till.

This report has been prepared for specific application to this project only and in a manner consistent with the level of care and skill ordinarily exercised by other members of the profession currently acting under similar conditions in this area for the exclusive use of client and their representatives. No warranty, expressed or implied, is made. This report, in its entirety, should be included in the project contract documents for the information of the contractor.

SITE PREPARATION AND GRADING

All subgrade areas supporting structural fill, building and pavement subgrade areas will require being stripped of all sod, organic laden soil, muck, uncontrolled fill and debris. Additional over excavation greater than five (5) feet may be required in the existing building area to remove tree root-balls, existing fill, foundations, septic tanks and associated and drain fields. Stripped soils, contaminated with organics or debris, should be wasted off site or used in landscape areas.

Following site stripping and unless stated otherwise in this report, and prior to fill placement, the exposed subgrade should be proof rolled and compacted to a firm, unyielding condition using vibratory equipment of appropriate size and type capable of developing a minimum dynamic compaction effort rating of at least 25,000 pounds with a static smooth drum weight of 13,000 pounds for sand and gravel soils.

Compaction of the stripped subgrade should be continued until field density tests indicate a minimum compaction of 95% of the maximum dry density, as determined by ASTM method D-1557, has been achieved in all fill, building, roadway, and parking areas, or a representative from NLO determines a firm unyielding subgrade has been achieved. Soft or weaving areas disclosed during proof rolling shall be excavated and replaced with properly compacted structural fill. Areas, which are to be filled to bring the building or paved parking grades up to the desired elevation, should be filled with compacted granular material free from roots, trash or other deleterious materials. We recommend that all site grading and preparation be undertaken and completed during dry weather with soils. During dry weather, wet soil can be moisture conditioned and aerated as necessary to meet desired compaction requirements. NLO recommends that site preparation and grading should be undertaken and completed during dry weather.

If grading in the building is necessary during wet weather, we recommend that all soil excavated on-site be removed from the site or set aside in covered stockpiles. If grading in building or pavement areas is necessary during wet weather, and time does not permit allowing the soils to drain, we recommend that all excavated soil be removed from the site or set aside in covered stockpiles, and imported materials should be used for structural fill.

STRUCTURAL FILL

Structural fill is defined as compacted fill placed under buildings or pavements that consist of free draining gravelly sand having a maximum size of 1-1/2 inches and no more than 5.0% fines passing the No. 200 sieve. Soils with a fine content greater than 5 percent passing the 200 sieve will degrade if exposed to excessive moisture and will not meet recommended compaction requirements. All imported fill material should conform to the above recommendation regardless of the site's weather conditions. All structural fill should be placed on a firm, properly prepared subgrade in loose layers approximately 8 inches in thickness, conditioned to a moisture content suitable for compaction, and compacted to 95% of the maximum dry density as determined by ASTM D-1557 – Modified Proctor. All Structural fill material should be submitted for approval to the Geotechnical Engineer at least 48 hours prior to delivery to the site.

Although density testing of fill is frequently used as a primary criterion for acceptable fill, it should be not be the only criteria. If in the judgment of the geotechnical engineer or his representative, placed fill is not suitable it should be rejected regardless of density test results. As an example, fill that is compacted wet of the optimum moisture content may exhibit "pumpy" behavior even if density test results indicate better than 95 percent compaction has been achieved. In such a situation, the fill should be removed and replaced with a more suitable material. Additional fill layers shall not be placed, until the previous lift meets the compaction requirements presented in this report. If aerating cannot reduce high soil moisture, soil removal may be necessary.

GENERAL ON-SITE FILL MATERIAL

The on-site soils utilized for structural fill should be moisture conditioned to within plus/minus 2 percent of the optimum moisture content, and compacted to 95 percent of the maximum dry density based on the Modified Proctor ASTM 1557. Additional fill layers shall not be placed, until the previous lift meets the compaction requirements presented in this report.

During dry weather, most soils that are compactable and non-organic can be used as structural fill, during the months May 1 through September 30. Based on the results of our subsurface exploration, the on-site soils at the time of our exploration appear suitable for use as structural fill, provided grading operations are performed during dry weather. Native soils with a fine content greater than 5 percent passing the 200 sieve will degrade if exposed to excessive moisture, and compaction and grading will be difficult or impossible if soil moisture significantly increases.

TEMPORARY, PERMANENT AND FILL SLOPES

Temporary Slopes

As a preliminary guideline for temporary slopes less than 10 feet in height, we recommend temporary slopes be made no steeper than 1H:1V for the dense granular soils and no steeper than 1.5H:1V in medium dense soils or structural fill placed in a manner described earlier in this report. For temporary cut slopes in existing fill, topsoil, or loose materials over 10 feet in height we recommend temporary slopes no steeper than 1 1/2H:1V for the full height of the cut. Temporary slopes or excavations should be benched as required by safety regulations in effect at the time of construction. The provided temporary slope recommendations are for native soils and fill materials; flatter slopes may be required in wet weather or if soil conditions other than those previously described are encountered.

The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations; e.g., WAC Safety Standards for Construction Work, Chapter 296-155 WAC, Part N, Excavation, Trenching and Shoring, or successor regulations. Such regulations are strictly enforced and, if not followed, the owner, the contractor, or the earthwork or utility subcontractors could be liable for substantial penalties.

The contractor should be made responsible for the stability of all excavations and slopes during construction because they are continually on site and can observe the stability of the exposed soils. In addition, the contractor should be prepared to shore unstable slope area and provide shoring as required by local, state, or federal laws or codes. The provision of shoring design recommendations is beyond the authorized scope of this report. All temporary cuts and excavations should be sloped or shored in accordance with local, state and federal requirements.

Permanent Cut Slopes

It is recommended that permanent cut and fill slopes should not be steeper than 2H:1V (50%). fill slopes and fill should be placed in accordance with Section J106, Excavations, J106.1 Maximum slope of the IBC 2018 International Building Code (IBC) for excavations is as follows; The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than 2 horizontal to 1 vertical (50 percent) unless the applicant furnishes a soils report justifying a steeper slope. Exceptions: A cut surface may be at a slope of 1.5 horizontal to 1 vertical (67 percent) provided that all the following are met:

- It is not intended to support structures or surcharges.
- It is adequately protected against erosion.
- It is no more than 8 feet (2438 mm) in height.
- The building official approves it.

In areas where steeper slopes are required, retaining structures should be provided. It should be anticipated that, if steeply cut, the near surface soils may be subject to caving, and sloughing will occur as the soils are exposed to drying.

SURFACE RUNOFF AND GROUND WATER

Only minor storm water related problems are anticipated if site grading and preparation are undertaken during the normally drier portions of the year. If site work is undertaken during wet weather it should be expected that the near surface silty and fine-grained soils would become over-saturated and unworkable. If the site work is undertaken during wet weather the contractor should be fully prepared to deal with soil and water problems normally encountered in these materials during wet weather work, including the filtering of runoff, as needed to prevent the siltation of down slope areas. To aid in minimizing potential erosion, it is recommended that the site not be stripped and left without erosion protection for an extended period of time prior to the actual start of construction and/or landscaping. Silt fencing and other erosion control devices and measures may be required to control water runoff over slope areas and sediment transport off the site.

EROSION

It is our experience that this risk of erosion can be mitigated through normal landscaping and the control of surface runoff. During construction and until fully surfaced and/or landscaped, the exposed site soils may be subject to some erosion. Erosion of the exposed soils would be most noticeable during periods of intense rainfall and may be controlled by the use of normal erosion control measures, i.e., silt fences, hay bales, mulching, control ditches or diversion trenching, and contour furrowing.

In a disturbed condition, the site soils may be eroded by channelized water or storm runoff from sheet flow. Therefore, it is recommended that all site preparation and excavation work be completed during the normally drier portion of the year. During periods of heavy rainfall, ditching should be used to divert water away from stripped areas and visqueen should be used to cover the slopes and soil stockpiles to aid in preventing excessive surface erosion. This covering also aids in preventing infiltration of water into the unprotected soils. All disturbed soil areas and slopes should be replanted with fast-growing, deep-rooted grass, shrubs and other ground cover as soon after final grading as possible. If the vegetation is not fully established prior to the onset of wet weather, the slopes should be covered with visqueen to aid in preventing excessive erosion and water infiltration.

FOUNDATIONS

Based on our subsurface exploration program, analysis and review of relevant site information, the proposed buildings may be constructed as proposed. Support for the building can be provided with a conventional shallow foundation system bearing on competent native granular soils or structural fill. In our opinion, properly compacted structural fill placed on dense native soils will provide adequate bearing capacity for the proposed buildings.

Prior to building placement, we recommend removal of previously placed fill, if encountered, down to dense underlying soil conditions and brought back up to the desired construction elevation with structural fill.

NLO has provided two (2) allowable soil bearing pressures for structural fill or dense soil conditions or glacial till as bulleted below.

- Building placement on structural fill or on dense native soil conditions can utilize an allowable soil bearing pressure of 2,500 psf.
- If the proposed building's foundation is constructed on the dense to very dense glacial till, the allowable soil bearing pressure can be increased to 5,000 psf.

For frost protections, footings should have a minimum embedment depth of 18 inches below adjacent grade. A base friction coefficient of 0.35 is considered appropriate for the expected dense site foundation soils.

NLO has assumed that structural fill will be placed along the foundation and below grade stem walls. An ultimate passive equivalent fluid earth pressure for retaining structures or foundation stem walls, considering a horizontal ground surface, of 250 pcf is available to develop additional resistance to lateral pressures for both the parking garage and new medical facility.

Passive pressures should be ignored or appropriately reduced in areas where the ground slopes downward on the resisting side of the wall within 4 times the footing embedment depth of the wall. The upper two feet of soil should be neglected when calculating the passive resistance. A 1/3 increase in the above value may be used for short duration, wind, and seismic loads.

NLO shall be on-site to verify all footing subgrade areas because of the provided soil bearing pressures and provide a determination adequate foundation subgrade soils have been achieved or if modifications to the observed subgrade conditions are required. We recommend that a geotechnical engineer or his assistant at his direction be on site to observe all shallow foundation subgrade areas prior to the placement of concrete formwork or rebar.

If necessary, NLO may recommend over excavation below the proposed bottom of anticipated footing level and backfilling with structural fill, crushed rock or CDF depending on foundation requirement or modified allowable soil bearing pressures authorized by NLO. Prior to material placement, material used for backfill operations will need to be approved by a representative of our firm.

Foundations Settlement

Based on an allowable soil bearing pressures of 2,500 psf, or 5,000 psf, a total settlement in the range of one inch is anticipated with differential settlement of about ½ inch over a span distance of 50 linear feet. Most of the anticipated settlement should occur during construction as dead loads are applied.

Subsurface Drainage

To preclude groundwater build-up adjacent to the building's footing system, we recommended a perforated four-inch diameter pipe – Schedule 40. The pipe's perforations must be placed down at the footing subgrade elevation around the bottom of footing level around the foundation perimeter. The footing drainage system should be bedded in sand and gravel and designed to carry any accumulated water away from the structure to an appropriate discharge area. Roof drainage shall not be connected to the footing drains but may use the same outfall piping if connected well away from the building such that roof water will not backup into the footing drains.

SLAB-ON-GRADE FLOORS

Following site preparation guidelines discussed above, slab-on-grade floors may be supported on properly placed and compacted structural fill or dense in-situ native soils. A capillary break/drainage layer consisting of six inches of pea gravel, or clean crushed rock should be placed below the floor slab. The capillary break material should contain less than 1.0% material passing a U.S. No. 200 sieve and less than 4.0% material passing a U.S. No. 10 sieve. A visqueen vapor barrier having a minimum thickness of 6-mils should be placed between the capillary break and the floor slab. We understand that a sand cushion between the vapor barrier and the base of the slab may improve the curing of the slab concrete. If a sand cushion is placed between the capillary break material or the vapor barrier and the slab, it should not contain free moisture when the slab is constructed. Excess moisture in the cushion could cause impervious floor coverings to bubble.

ROAD SUBGRADE PREPARATION

If encountered, soils tainted with uncontrolled fill, organics or other deleterious debris will need to be removed from the road subgrade areas that may extend deeper than 24 inches. In areas granular soil conditions are encountered, compaction of the exposed subgrade should be continued until field density tests indicate a minimum compaction of 95% of the maximum dry density, as determined by ASTM method D-1557, has been achieved.

Prior to structural fill placement, the subsequent subgrade shall be verified that a firm unyielding condition exists. Areas, which are to be filled to bring pavement grades up to the desired elevation, should be utilize compacted granular material free from roots, trash or other deleterious materials.

A proof rolled should be performed when the road subgrade has been brought up to the desired finish subgrade elevation. Soft or weaving areas disclosed during proof rolling shall be excavated and replaced with structural fill. We recommend that all road subgrade preparation be undertaken and completed during dry weather. During dry weather, most soils that are compactable and non-organic can be used as structural fill, during the months May 1 through September 30.

CAST-IN-PLACE WALLS

The following earth pressures and design values are provided for cast-in-place retaining structures up to 15 feet in height. We recommend that all retaining wall foundations be designed as outlined above and bear on the dense to very dense native soils or structural fill placed and compacted to a minimum compaction of 95% of the maximum dry density, as determined by ASTM method D-1557.

For the purpose of preliminary design, NLO has provided cast-in-place wall recommendations. If Segmental block wall or soil nail wall are being considered for the projects grade separations requirements, NLO will be provide this additional information at the client request.

Retaining Wall Loading Conditions

Retaining and subsurface walls should be designed for an active equivalent fluid pressure of 34 pcf, if the top of the wall is allowed to deflect, assuming a horizontal ground surface behind the wall. If the top of the wall is restrained an equivalent fluid pressure of 53 pcf is recommended. This restrained and active equivalent fluid pressure values have assumed a level backfill area above the wall. At the client's request, N.L Olson will provide specific information for active or restrained earth pressures for sloping ground behind the wall. A traffic surcharge of 200 psf should be utilized for the wall areas located along the access drives and parking areas that services the project area.

Note: allowable soil bearing pressures for the proposed walls will be similar to those provided for shallow foundations.

- Foundation wall placement on structural fill or on dense native soil conditions can utilize an allowable soil bearing pressure of 2,500 psf.

- If the proposed wall foundation is constructed on the dense to very dense glacial till, the allowable soil bearing pressure can be increased to 5,000 psf.

Resistance to sliding could be developed by a combination of passive pressure and base friction. A base friction coefficient of 0.35 is considered appropriate for the expected dense site foundation support soils. An ultimate passive equivalent fluid earth pressure for retaining structures, considering a horizontal ground surface, of 250 pcf is available to develop additional resistance to lateral pressures. Passive pressures should be ignored or appropriately reduced in areas where the ground slopes downward on the resisting side of the wall within 4 times the wall footing embedment depth. Appropriate safety factors by the design engineer should be applied to the provided base friction coefficient and ultimate passive pressure values.

Earthquake Loading

Earthquake loadings are also expected to increase the lateral pressures indicated above. The increases for most basement walls have historically been expected to be within limits that are generally compensated for with a reduced safety factor (Seed, H. B. & Whitman, R. V., Design of Earth Retaining Structures for Dynamic Loads, 1970 Specialty Conference on Lateral Stresses in the Ground and Design of Earth Retaining Structures, American Society of Civil Engineers, 1970). However, the increases in lateral loadings from earthquake forces are expected to provide a slightly increased component of the lateral pressures to be taken into consideration in the structural design of buried walls. Seed and Whitman discuss a procedure for determination of lateral loading following an approach suggested by Mononobe and Okabe. As input to the Mononobe-Okabe evaluation, a friction angle of 35 degrees for the backfill soils was used along with a horizontal earthquake acceleration, K_h=0.17.

Based on this input and some assumptions on wall friction, an earthquake loading surcharge of 7.2H (equivalent fluid pressure), for unrestrained walls, and 11.3H, for braced walls is recommended. This loading is additive to the static "active" and "at-rest" pressures indicated above. This equivalent fluid pressure fluid pressure values have assumed a level backfill area above the wall. The application of this loading depends on the wall type chosen. The earthquake surcharge loading should be applied as a uniform distributed load evenly distributed along the back portion of the retaining structure.

The above-recommended pressures do not include the effects of hydrostatic pressure on the wall as N.L Olson has assumed a drained condition will exist along the wall's backfill section. Therefore, the maintenance of a dewatered/drained condition behind all retaining structures is required for the above values to be valid. In order to maintain the free draining condition along the wall's backfill section, N.L Olson has recommended the following drain system and backfill requirements.

Retaining Wall Subsurface Drainage

A longitudinal sub-drain with a minimum diameter of 4 inches should be constructed at the base of the footing elevation behind the walls. This drain should be 4-inch diameter and consist of Schedule 40 perforated pipe laid perforations down, bedded in an eighteen-inch envelope of free-draining sand and gravel. This system should be sloped to drain with the water disposed of in the storm drainage system. Clean-outs should be provided at bends and convenient intervals, so that the drainage system can be maintained to a well-functioning condition. Flexible plastic piping (such as corrugated ADS-type piping) should not be used behind the wall.

Retaining Wall Backfill

All wall backfill over the gravel envelope should consist of clean, free-draining, well-graded sand and gravel containing less than 2.0% fines (material passing a U.S. No. 200 sieve). This material should extend out from the rear wall face a minimum of eighteen inches. The free-draining backfill should be placed to the surface in paved areas or to within eighteen inches of the surface in non-paved areas. Backfill should be compacted as recommended above for fills.

In non-paved areas, the final eighteen inches of backfill should consist of topsoil or native materials firmly tamped into place.

SAFETY GUIDELINES UTILITY TRENCH AND TRENCH BACKFILL PROCEDURES

A competent person should frequently inspect trench excavation in which the soil was previously disturbed or where there are variations in the moisture content of the soil, loading due to equipment or stored materials, or vibration from equipment or traffic.

OSHA requires that all excavations over 4 feet deep be sloped, shored or otherwise supported. When soil conditions are unstable, excavations shallower than 4 feet must be supported.

Safety Guidelines

The contractor shall excavate utility trench excavations in accordance with specified local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations. The contractor should be made responsible for the stability of all excavations during construction because they are continually on site and can observe the stability of the exposed soils. The contractor should be prepared to shore any unstable trench wall areas and provide shoring as required by local, state, or federal laws or codes.

Vibration from equipment or traffic should be minimize near trench walls and prevent repeated wetting and drying of excavation side slopes. Depending on the locality and utility trench excavation depth, groundwater seepage into the trench could occur. Design of temporary dewatering systems to remove standing water from trenches should be the responsibility of the contractor. The provision of shoring design recommendations is beyond the authorized scope of this report.

Trench Backfill Procedures

Compaction of utility trench shall be determined with a field density tests as determined by the maximum dry density ASTM method D-1557. Compaction requirements for the utility trench are as follows.

- Compaction of at least 95 percent for utility trench backfill placed in or adjacent to buildings and exterior slabs.
- Compaction of at least 95 percent for the upper 3 feet of utility trench backfill placed in pavement areas.
- At least 92 percent below 3 feet in utility trench backfill underlying pavement areas.
- Utility trench backfill shall consist of structural fill and the pipe bedding should be placed in accordance with pipe manufacturer's recommendations.

Note: The contractor is fully responsible for achieving the specified compaction recommendations. NLO or the soil-testing laboratory may direct the contractor to remove, correct or amend fill soils that fail to comply with the structural fill criteria presented in this report.

The contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

CONSTRUCTION MONITORING

NLO recommends inspection of all footing subgrade areas by a NLO to verify if over excavation will be required or adequate foundation subgrade soils have been reached. NLO may recommend that over excavation below the proposed bottom of anticipated footing level may be required. Fill material intended for structural fill use will need to be approved by a representative of our firm. Structural fill placement shall be done in accordance to the structural fill section discussed in Site Preparation and Grading Section and Structural Fill section presented earlier in this report.

REPORT LIMITATIONS

This report has been prepared for the client regarding the subject property. Information presented in this report has been collected and interpreted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions, and in accordance with sound and generally accepted principles consistent with normal consulting practice. No other warranty, expressed or implied, including (but not limited to) any warranty or merchantability or fitness for a particular use has been made.

In the event that change in the nature, design, or location of the proposed construction is made, or any physical changes to the site occur, recommendations are not be considered valid unless the changes are reviewed by N.L Olson and conclusions of this report are modified or verified in writing.

N.L Olson should be retained to provide geotechnical services during construction. This is to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. We do not accept responsibility for the performance of the foundation or earthwork unless we are retained to review the construction drawings and specifications, and to provide construction observation.

APPENDIX A

SUBSURFACE EXPLORATION DISCUSSION

TEST PIT LOG

The site's subsurface soil conditions were explored with 19 test pits advanced to a maximum depth of 14 feet below current site grades. A Sany SY 135C Excavator was used during the exploration program. The subsurface investigation was performed on October 22, 2019. The test pit locations are shown on the Site Plan, Figure 2 and the test pit logs provided in this Appendix.

Stratification lines designating the interface between soil types in subsurface exploration logs represent approximate boundaries. The transition between materials may be gradual. The depths represented on our test pits logs were referenced to present site grades encountered during our subsurface exploration work.

The subsurface exploration logs and related information depicts conditions only at the specific locations and at the particular time designated on the logs. The passage of time may result in a change of subsurface conditions at these exploration locations. Subsurface conditions at other locations may differ from conditions occurring at the exploration locations. The nature and extent of variations of subsurface conditions between explorations are not known. If variations appear during additional explorations or construction, reevaluation of recommendations in this report may be necessary.

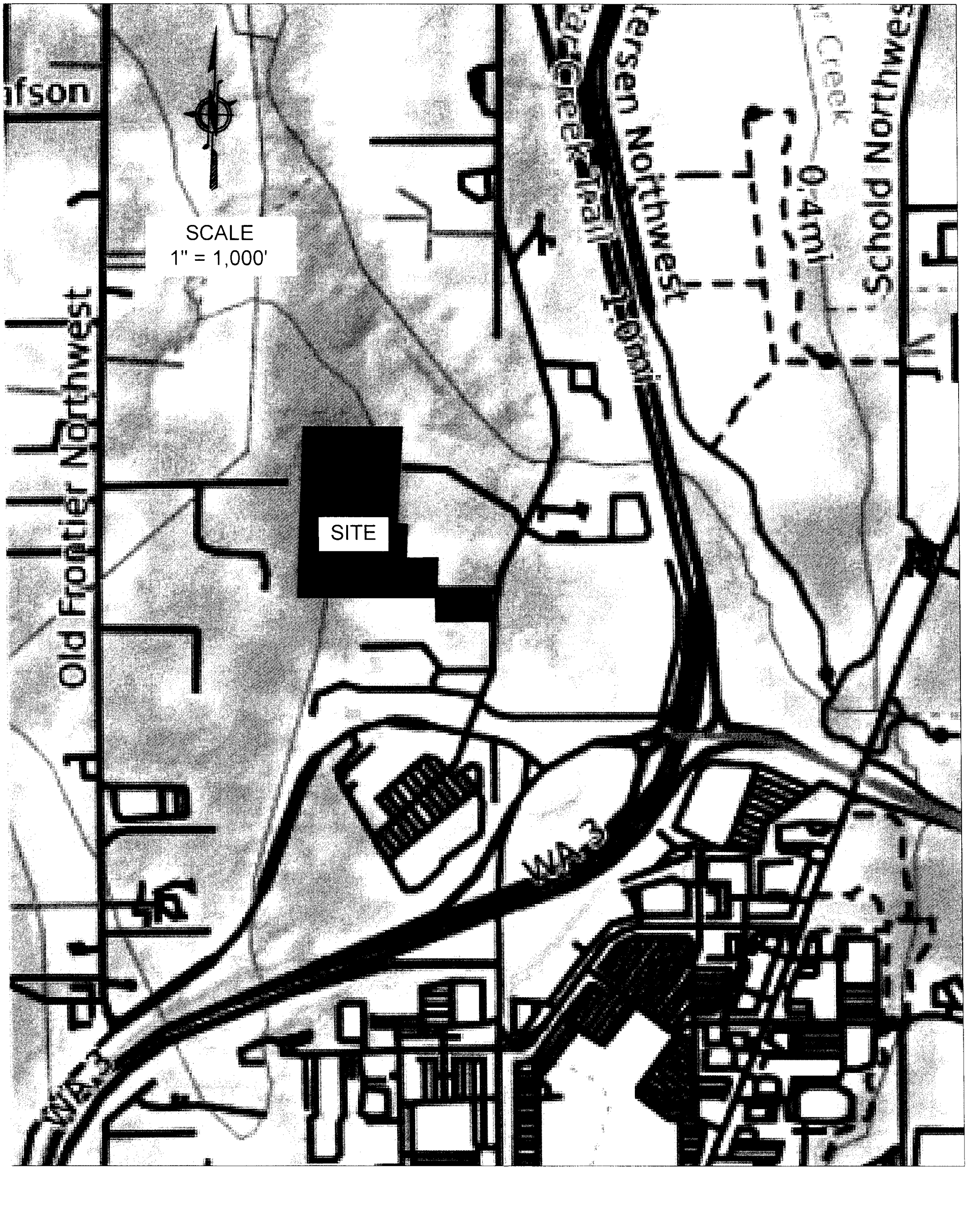


FIGURE 1

N.L.Olson&Associates,Inc. Engineering, Planning and Surveying (360) 876-2284 2453 Bethel Avenue, P.O. Box 637, Port Orchard, WA 98366	VICINITY MAP SILVERDALE MULTIFAMILY DEVELOPMENT NEAR 11493 CLEAR CREEK ROAD NW SILVERDALE, WA 98383	**FOR:** **Blaise Hilton** **Russell Square Consulting** **4857 W 147th Street, Suite D** **Hawthorne, CA 90250**	SCALE: 1" = 500' DATE: Jan 2021 DRAWING NUMBER 11338-20 SHEET 1 OF 1

Kitsap County's he
tax parcel numbers
following:

082501-4-021-2005,
082501-4-033-2001,
082501-4-022-2004,
052501-032-2002,
082501-4-025-2001
and
08251-4-026-2000.

NOTE

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

CALL 48 HOURS BEFORE YOU DIG 1-800-811 DIG

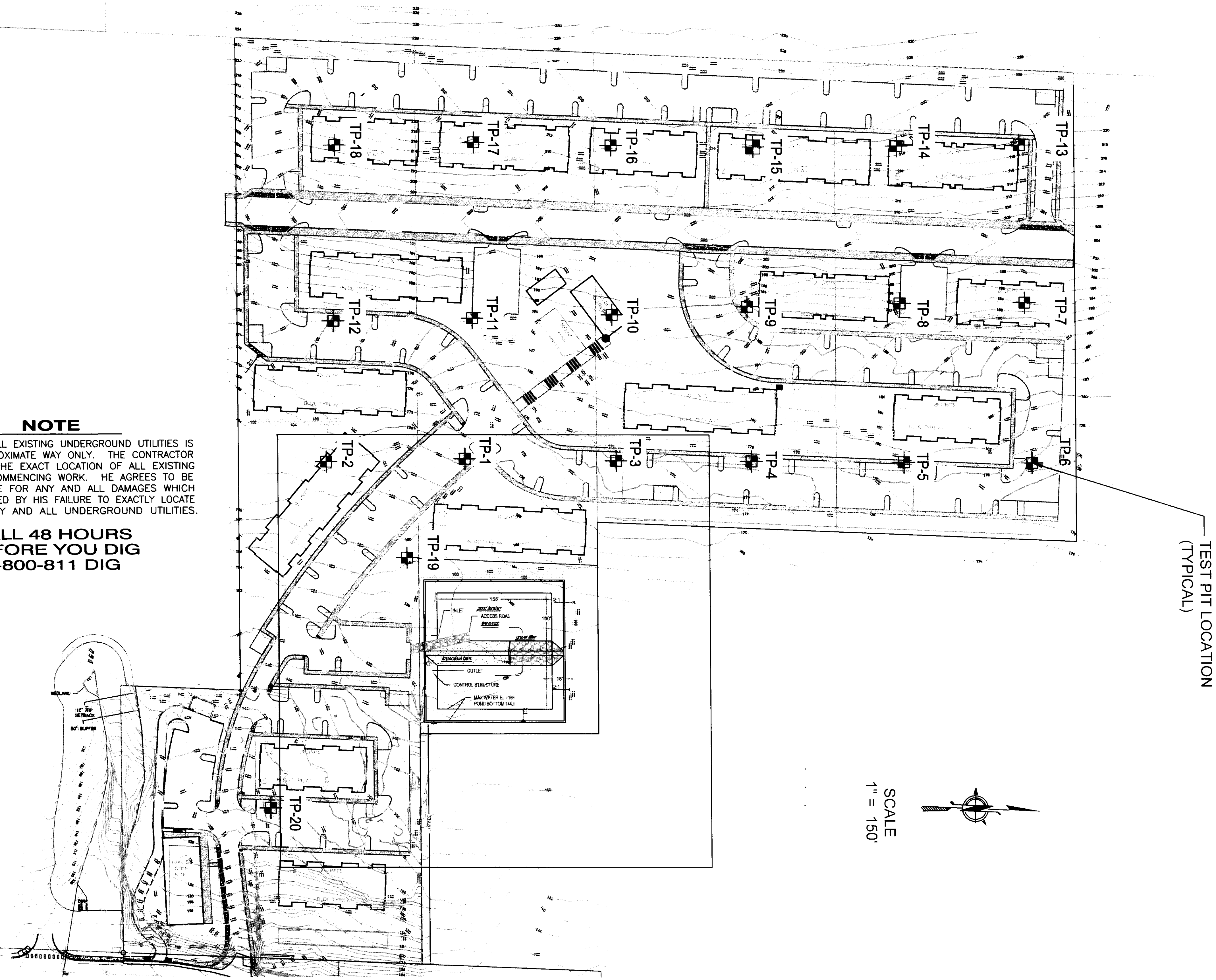


FIGURE 2

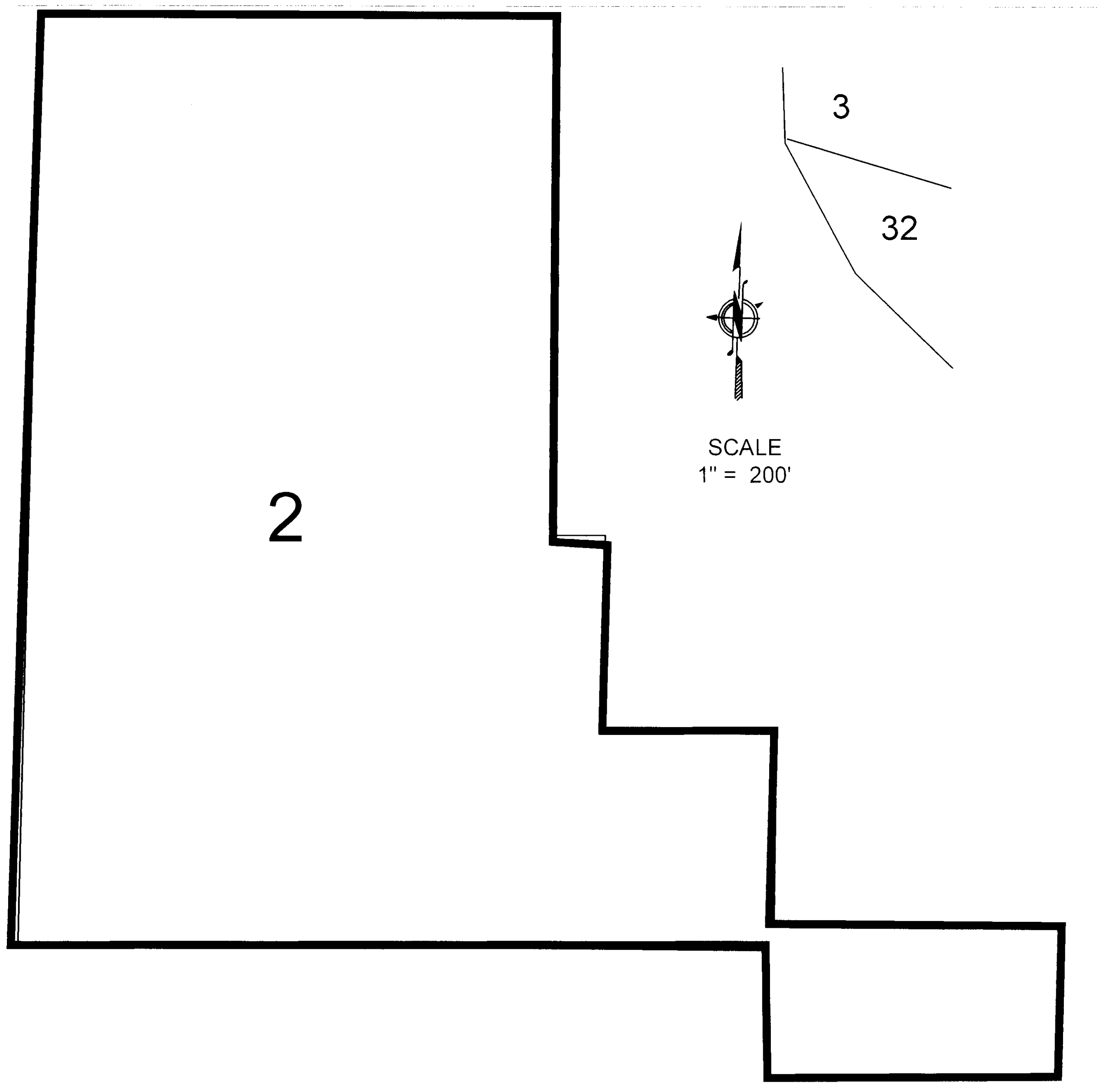
REVISIONS					BY	DATE
NO.	DATE	BY	DESCRIPTION	DESIGNED		
				DRAWN		
				CHECKED		
				APPROVED		
				ACCEPTED		

N.L.Olson&Associates,Inc.
Engineering, Planning and Surveying
(360) 876-2284
2453 Bethel Avenue, P.O. Box 637, Port Orchard, WA 98366

SILVERDALE MULTIFAMILY DEVELOPMENT
NEAR 11493 CLEAR CREEK ROAD NW
SILVERDALE, WA 98383

FOR:
Blaise Hilton
Russell Square Consulting
4857 W 147th Street, Suite D
Hawthorne, CA 90250

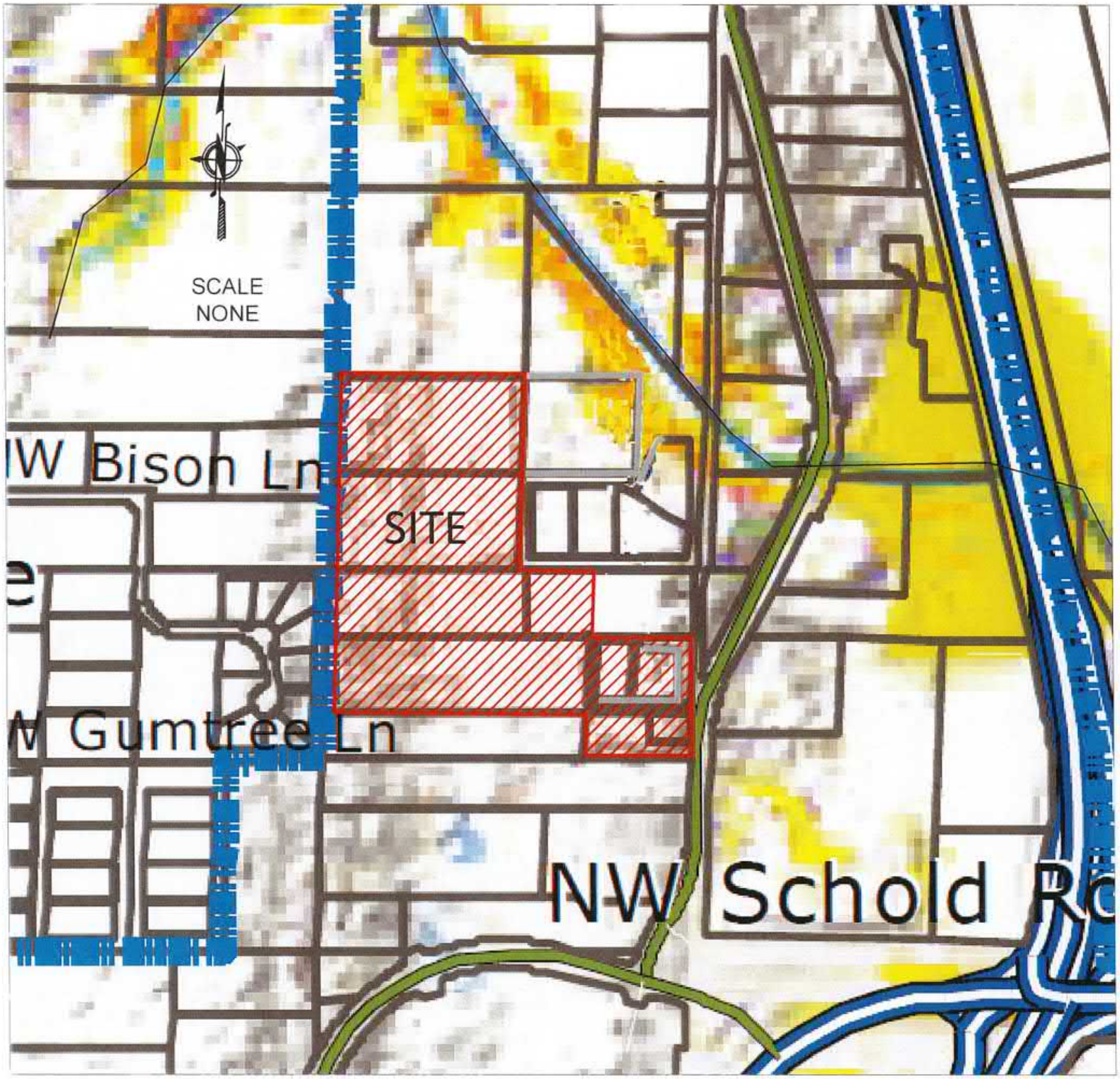
SCALE: 1" = 150'
DATE: Jan 2021
DRAWING NUMBER
11338-20
SHEET 1 OF 1



USDA Soil Conservation Service (SCS) soil classificationthe soils as
(2), Alderwood gravelly sandy loam, 8 percent to 15 percent slopes

FIGURE 3

N.L.Olson&Associates,Inc. Engineering, Planning and Surveying (360) 876-2284 2453 Bethel Avenue, P.O. Box 637, Port Orchard, WA 98366	USDA SOIL CONSERVATION SERVICE SILVERDALE MULTIFAMILY DEVELOPMENT NEAR 11493 CLEAR CREEK ROAD NW SILVERDALE, WA 98383	FOR: **Blaise Hilton** **Russell Square Consulting** **4857 W 147th Street, Suite D** **Hawthorne, CA 90250**	SCALE: 1" = 500' DATE: Jan 2021 DRAWING NUMBER 11338-20 SHEET 1 OF 1



Kitsap County Geologic Hazard Mapping

Geologic Hazard	Hazard Rating
Deep Landslide Hazard	LOW
Shallow Landslide Hazard	LOW

FIGURE 4

N.L.Olson&Associates,Inc. Engineering, Planning and Surveying (360) 876-2284 2453 Bethel Avenue, P.O. Box 637, Port Orchard, WA 98366	GEOLOGIC HAZARD MAPPING LANDSLIDE HAZARDS SILVERDALE MULTIFAMILY DEVELOPMENT NEAR 11493 CLEAR CREEK ROAD NW SILVERDALE, WA 98383	FOR: Blaise Hilton Russell Square Consulting 4857 W 147th Street, Suite D Hawthorne, CA 90250	SCALE: 1" = 500' DATE: Jan 2021 DRAWING NUMBER 11338-20 SHEET 1 OF 1

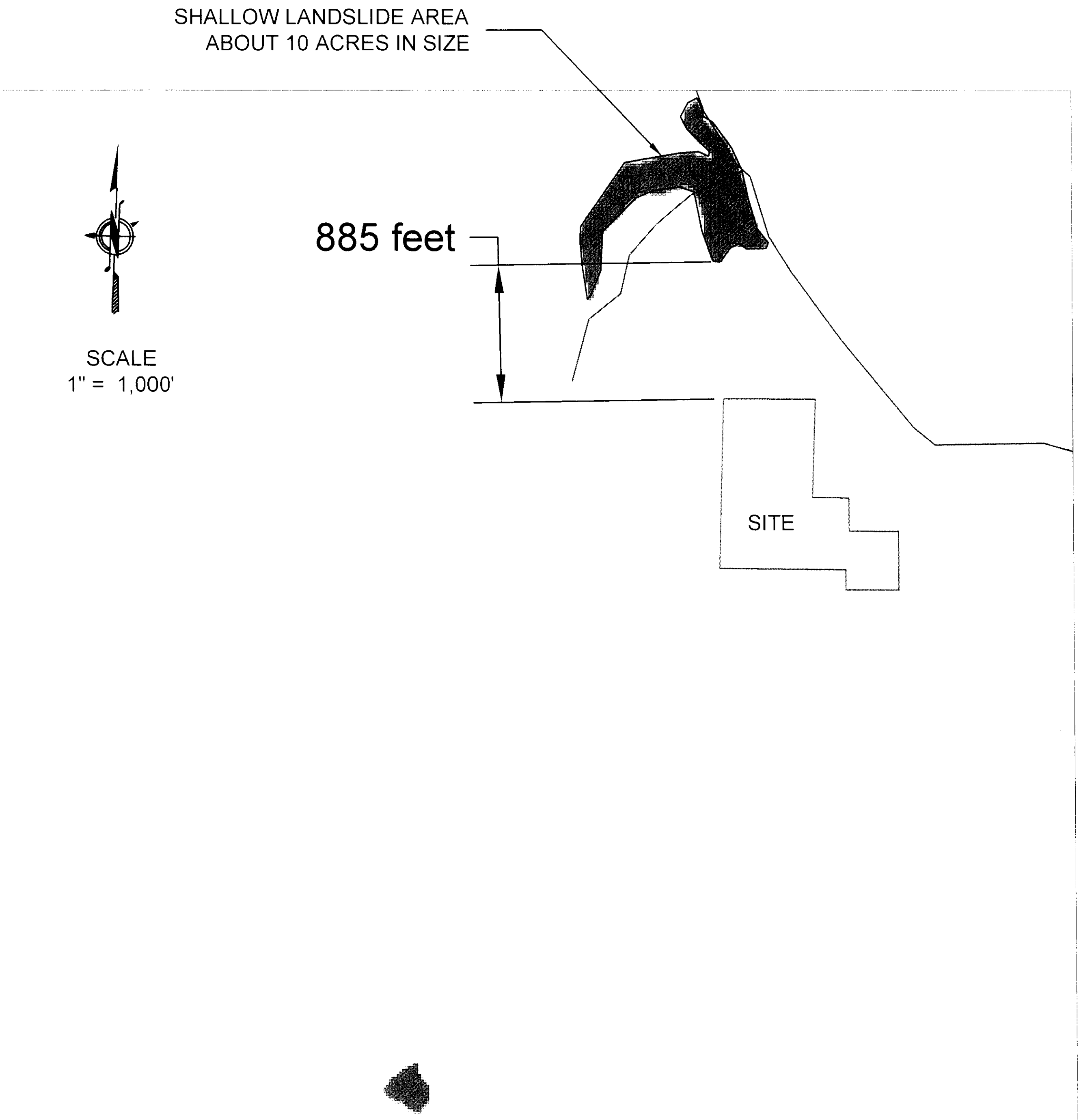


FIGURE 5

N.L.Olson&Associates,Inc. Engineering, Planning and Surveying (360) 876-2284 2453 Bethel Avenue, P.O. Box 637, Port Orchard, WA 98366	Washington's DNR Geology Library LANDSLIDES SILVERDALE MULTIFAMILY DEVELOPMENT NEAR 11493 CLEAR CREEK ROAD NW SILVERDALE, WA 98383	FOR: **Blaise Hilton** **Russell Square Consulting** **4857 W 147th Street, Suite D** **Hawthorne, CA 90250**	SCALE: 1" = 500' DATE: Jan 2021 DRAWING NUMBER 11338-20 SHEET 1 OF 1

FINE SOILS - RELATIVE DENSITY

CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/ft	POCKET PENTROMETER
VERY SOFT	EASILY PENETRATED SEVERAL INCHES BY THUMB. EXCLUDES BETWEEN THUMB AND FINGERS WHEN SQUEEZED IN HAND.	<2	500 (PSF)
SOFT	EASILY PENETRATED ONE INCH BY THUMB. MOLDED BY LIGHT FINGER PRESSURE.	2-4	500-1000
MEDIUM STIFF	CAN BE PENETRATED OVER 1/4 INCH BY THUMB WITH MODERATE EFFORT. MOLDED BY STRONG FINGER PRESSURE.	4-8	1000-2000
STIFF	CAN BE PENETRATED ABOUT 1/4 INCH BY THUMB BUT PENETRATED ONLY WITH GREAT EFFORT.	8-15	2000-4000
VERY STIFF	READILY INDENTED BY THUMBNAIL.	15-30	4000-8000
HARD	INDENTED WITH DIFFICULTY BY THUMBNAIL.	>30	>8000

TREES

A = ALDER
D.F. = DOUGLAS FIR
C = CEDAR
M = MADRONA
L.L. = LOWER LYING BRUSH

ANGULARITY DESCRIPTIONS

DESCRIPTION	CRITERIA
ANGULAR	PARTICLES HAVE SHARP EDGES AND UNPOLISHED SURFACES
SUB-ANGULAR	PARTICLES SIMILAR TO ANGULAR BUT HAVE ROUNDED EDGES
SUB-ROUNDED	PARTICLES HAVE NEARLY PLANE SIDES AND HAVE WELL ROUNDED CORNERS AND EDGES
ROUNDED	PARTICLES HAVE SMOOTH CURVED SIDE AND NO EDGES

CLASSIFICATION OF SOIL CONSTITUENTS

WITH - INDICATES GREATER THAN 12 PERCENT OF THE SOILS CONSTITUENTS

TRACE - INDICATES 0 TO 5 PERCENT OF THE SOILS CONSTITUENTS

MOISTURE CONTENT DEFINITIONS

DRY - ABSENCE OF MOISTURE, DUSTY, DRY TO THE TOUCH

MOIST - DAMP WITH NO VISIBLE WATER

WET - VISIBLE FREE WATER CONTENT

GRAIN SIZE DISTRIBUTION

DESCRIPTION	SIEVE # / SIZE
FINES	< #200 (0.00315")
SAND - FINE - MEDIUM - COARSE	#200 TO #40 (0.00315" TO 0.01575") #40 TO #10 (0.01575" TO 0.0787") #10 TO #4 (0.0787" TO 0.19685")
GRAVEL - FINE - COARSE	#4 TO 3/4 INCH 3/4 INCH TO 3 INCHES
COBBLES	3 TO 12 INCHES
BOULDERS	> 12 INCHES

WELL / DRILLING SYMBOLS

BENTONITE CEMENT GROUT	CEMENET SEAL
BENTONITE GROUT	ASPHALT PATCH
BENTONITE CHIPS	BEDROCK
SILICA SAND	
PVC SCREEN (MON. WELL)	

VARIATIONS IN SOIL STRATIGRAPHY

DESCRIPTIVE TERM	THICKNESS OR CONFIGURATION
PARTING	- 0-1/16" THICKNESS
SEAM	- 1/16-1/2" THICKNESS
LAYER	- 1/2-12" THICKNESS
STRATUM	- GREATER THAN 12" THICKNESS
POCKET	- SMALL, ERRATIC DEPOSIT, USUALLY <12"
VARVED CLAY	- ALTERNATING SEAMS OF LAYERS OF SAND, SILT AND CLAY (LAMINATED)
OCCASIONAL	- ONE OR LESS PER FOOT OF THICKNESS
FREQUENT	- MORE THAN 1 PER FOOT OF THICKNESS
WITH	- 5-15 PERCENT CONTAINED
TRACE	- LESS THAN 5 PERCENT CONTAINED

CRITERIA FOR DESCRIBING STRUCTURE

DESCRIPTION	CRITERIA
STRATIFIED	ALTERNATING LAYERS OF VARYING MATERIAL OR COLOR WITH LAYERS AT LEAST 3/4" THICK; NOTE THICKNESS.
LAMINATED	ALTERNATING LAYERS OF VARYING MATERIALOR COLOR WITH THE LAYERS LESS THAN 1/4 THICK; NOTE THICKNESS
FISSURED	BREAKS ALONG DEFINITE PLANES OF FRACTURE WITH LITTLE RESISTANCETO FRACTURING.
SLICKENSIDED	FRACTURE PLANES APPEAR POLISHED OR GLOSSY; SOMTIMES STRIATED.
BLOCKY	COHESIVE SOIL THAT CAN BE BROKEN DOWN INTO SMALL ANGULAR LUMPS WHICH RESIST FURTHER BREAKDOWN.
LENSED	INCLUSION ON SMALL POCKETS OF DIFFERENT SOILS; NOTE THICKNESS.
HOMOGENEOUS	SAME COLOR AND APPEARANCE THROUGHOUT.

STRUCTURAL FEATURES

DESCRIPTION	SPACING	DESCRIPTION FOR JOINST, FAULTS OR OTHER FRACTURES
VERY THICKLY (BEDDED, FOILIATED OR BANDED)	MORE THAN 6 FEET	VERY WIDELY (FRACTURED OR JOINTED)
THICKLY	2-6 FEET	WIDELY
MEDIUM	8-24 INCHES	MEDIUM
THINLY	2.5-8 INCHES	CLOSELY
VERY THINLY	3.25-2.5 INCHES	VERY CLOSELY

MICROSTRUCTURAL FEATURES

DESCRIPTION	SPACING	DESCRIPTION FOR JOINST, FAULTS OR OTHER FRACTURES
INTENSELY (LAMINATED, FOLIATED OR CLEAVED)	0.25-0.75 INCHES	EXTREMELY CLOSE
VERY INTENSELY	< 0.25 INCHES	

ROCK GRADE

GRADE	SYMBOL	DIAGNOSTIC FEATURES
FRESH	F	NO VISIBLE SIGNS OF DECOMPOSITION OR DISCOLORATION. RINGS WHEN STRUCK BY HAMMER.
SLIGHTLY WEATHERED	WS	SLIGHT DISCOLORATION INWARDS FROM OPEN FRACTURES, OTHERWISE SIMILAR TO "F".
MODERATELY WEATHERED	WM	DISCOLORATION THROUGHOUT. WEAKER MINERALS SUCH AS FELDSPAR DECOMPOSE. STRENGTH SOMEWHAT LESS THAN FRESH ROCK BUT CORES CANNOT BE BROKEN BY HAND OR SCRAPED BY KNIFE. TEXTURE PRESERVED.
HIGHLY WEATHERED	WH	MOST MINERALS SOMEWHAT DECOMPOSED. SPECIMENS CAN BE BROKEN BY HAND WITH EFFORT OR SHAVED WITH KNIFE. CORE STONES PRESENT IN ROCK MASS. TEXTURE BECOMING INDISTINCT BUT FABRIC PRESERVED.
COMPLETELY WEATHERED	WC	MINERALS DECOMPOSE TO SOIL BUT FABRIC AND STRUCTURE PRESERVED. SPECIMENS EASILY CRUMBLED OR PENETRATED.
RESIDUAL SOIL	RS	ADVANCED STATE OF DECOMPOSITION RESULTING IN PLASTIC SOIL. ROCK FABRIC AND STRUCTURE COMPLETELY DESTROYED. LARGE VOLUME CHANGE.

ROCK STRENGTH

CLASS	STRENGTH	FIELD TEST	UNIAXIAL COMPRESSION STRENGTH ($TONS/FT^2$)
I	EXTREMELY STRONG	MANY BLOWS WITH GEOLOGIC HAMMERREQUIRED TO BREAK INTACT SPECIMEN.	2000+
II	VERY STRONG	HAND HELD SPECIMEN BREAKS WITH HAMMER END OF PICK UNDER MORE THAN ONE BLOW.	2000-1000
III	STRONG	CANNOT BE SCRAPED OR PEELED WITH KNIFE. HAND HELD SPECIMEN CAN BE BROKEN WITH SINGLE MODERATE BLOW WITH PICK.	1000-500
IV	MODERATELY STRONG	CAN JUST BE SCRAPED OR PEELED WITH KNIFE. INDENTATIONS 1mm TO 3mm SHOW IN SPECIEMEN WITH MODERATE BLOW WITH PICK.	500-125
V	MODERATELY WEAK TO WEAK	MATERIAL CRUMBLES UNDER MODERATE BLOW WITH SHARP END OF PICK AND CAN BE PEELED WITH A KNIFE, BUT IS TOO HARD TO HAND TRIM FOR TRIAXIAL TEST SPECIMEN.	125-12

SANDY SOILS - RELATIVE DENSITY

SOIL TYPE	SPT, N BLOWS/FT	RELATIVE DENSITY	FIELD TEST
VERY LOOSE SAND	<4	0-15	EASILY PENETRATED WITH 1/2"Ø T-PROBE
LOOSE SAND	4-10	15-35	EASILY PENETRATED WITH 1/2"Ø T-PROBE
MEDIUM DENSE SAND	10-30	35-65	PENETRATED 1 FOOT WITH 1/2"Ø T-PROBE
DENSE SAND	30-50	65-85	PENETRATED <1 FOOT WITH 1/2"Ø T-PROBE
VERY DENSE SAND	>50	85-100	PENETRATED <FEW INCHES WITH 1/2"Ø T-PROBE

MATERIAL DESCRIPTION

MATERIAL	FRACTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE COMPARISON
BOULDERS		12 INCHES +	12 INCHES +	LARGER THAN BASKET BALL
COBBLES		3-12 INCHES	3-12 INCHES	FIST-SIZED TO BASKETBALL
GRAVEL	COURSE	3/4-3 INCHES	3/4-3 INCHES	THUMB-SIZED TO FIST-SIZED
	FINE	#4 TO 3/4in.	0.19-0.75in.	THUMB-SIZED TO FIST-SIZED
SAND	COURSE	#10 TO #4	0.079-0.19in.	ROCK SALT TO PEA SIZED
	MEDIUM	#40 TO #10	0.017-0.079in.	SUGAR TO ROCK SALT SIZED
	FINE	#200 TO #40	0.0029-0.017in.	FLOUR TO SUGAR SIZED
FINES		PASSING #200	<0.0029in.	FLOUR SIZED AND SMALLER

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FIELD TECHNICIAN NOTES
REV. #1 (JANUARY 2010)

N.L. OLSON AND ASSOCIATES INC. (NLO) USES A SOIL CLASSIFICATION SYSTEM ADAPTED FROM THE UNIFIED SOIL CLASSIFACTION SYSTEM (USCS). SOIL DESCRIPTIONS ARE BASED ON VISUAL-MANUAL PROCEDURES (ASTM D 2488-93) UNLESS STATED OTHERWISE.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(FROM ASTM D-2487-98 & 2488-93

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL	DESCRIPTION
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON #200 SIEVE)	GRAVELS (MORE THAN 50% OF COARSE FRACTION RETAINED ON #4 SIEVE)	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL-GRADED GRAVELS, GRAVELS, GRAVEL/SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL/SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (MORE THAN 12% FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (50% OR MORE OF COARSE FRACTION PASSES #4 SIEVE)	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (MORE THAN 12% FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS (50% OR MORE PASSES THE #200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)	INORGANIC	ML	INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY, ROCK FLOUR, SANDY SILTS, GRAVELLY SILTS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		ORGANIC	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)	INORGANIC	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTY SOILS, ELASTIC SILT
			CH	INORGANIC CLAYS, MEDIUM TO HIGH PLASTICITY, SANDY FAT CLAY OR GRAVELLY FAT CLAY
		ORGANIC	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS	PRIMARILY ORGANIC MATTER, DARK IN COLOR WITH ORGANIC ODOR		PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

*NOTE - DUAL SYMBOLS ARE USED FOR SOILS WITH 5-12% FINES (EX: SP-SM) OR WHEN THE LIQUID LIMIT AND PLASTICITY INDEX VALUES PLOT IN THE CL-ML SECTION OF THE ANALYSIS.

RELATIVE DENSITY

COARSE-GRAINED SOILS		FINE-GRAINED SOILS	
N, SPT, BLOWS/FT	RELATIVE DENSITY	N, SPT, BLOWS/FT	RELATIVE DENSITY
0-4	VERY LOOSE	UNDER 2	VERY SOFT
4-10	LOOSE	2-4	SOFT
10-30	MEDIUM DENSE	4-8	MEDIUM STIFF
30-50	DENSE	8-15	STIFF
OVER 50	VERY DENSE	15-30	VERY STIFF
		OVER 30	HARD

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2453 BETHEL AVENUE
P.O. BOX 637
PORT ORCHARD, WASHINGTON 98366-0637

Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	170	TP-1	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Sod 1" to 3"
			1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Rootlets to 2'
					At 2', Grades to Brownish Gray Becomes Dense to Very Dense
			3		- Increase in Gravel and Cobbles
					- Fine Grained Sand
4			4		- Iron Oxide Staining at 2'
					At 4', Decrease in Gravel and Cobbles (Glacial Till)
			5		
		SM	6		
			7		
			8		
			9		
11			10		
			11		
					End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor: Todd	Operators Name: Todd	Sampling Method: Grab	Drawn By: SMC	Date: Nov 3, 2020
Equipment: Kuota KX 080-4 Excavator		Groundwater Elevation: No Water Detected	Checked By: WRJ	Date: Nov 3, 2020
Notes:			Revision By: SMC	Date: Nov 3, 2020

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

Test Pit Log

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2453 BETHEL AVENUE
P.O. BOX 637
PORT ORCHARD, WASHINGTON 98366-0637

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	165	TP-2	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Sod 2" to 4"
2 8		SM	1–11		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Rootlets to 2' - Iron Oxide Staining at 2' Gray to Brownish Gray Silty SAND, Dense to Very Dense (Glacial Till) - Trace Gravel and Trace to No Cobbles - Fine Grained Sand
			11–18		End of Test Pit at 11 feet

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion
- [ ] Monitoring Well
- [ ] Piezometer
- [x] Abanonded and backfilled
- [ ] ____________
- [ ] ____________
- [ ] ____________

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2453 BETHEL AVENUE
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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	175	TP-3	1 of 1

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Surface Conditions: Pasture Area
		TPSL			Topsoil 2" to 4"
			1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Rootlets to 3'
			2		
			3		At 3', Grades to Brownish Gray, Becomes Dense to Very Dense (Glacial Till) - Trace Gravel and Trace to No Cobbles - Fine Grained Sand
			4		
		SM	5		
			6		
			7		
			8		
			9		
10			10		End of Test Pit at 10 feet
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- [ ] Monitoring Well
- [ ] Piezometer
- [x] Abanonded and backfilled
- [ ] ____________
- [ ] ____________
- [ ] ____________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	WRJ	Oct 22, 2020	Oct 22, 2020	177	TP-4	1 of 1

Surface Conditions: Wooded Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 1" to 3"
1.5		SM	1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Fine Grained Sand
					- Rootlets to 3'
			3		At 3', Grades to Gray, Becomes Dense to Very Dense, Moist (Glacial Till)
			4		- Trace Gravel and Trace to No Cobbles
					-Fine Grained Sand
			5		
			6		
7.5			7		
			8		
			9		
			10		
			11		
12			12		End of Test Pit at 12 feet
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion

- [ ] Monitoring Well
- [ ] Piezometer
- [x] Abanonded and backfilled
- [ ] ________
- [ ] ________
- [ ] ________

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PORT ORCHARD, WASHINGTON 98366-0637

Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	WRJ	Oct 22, 2020	Oct 22, 2020	180	TP-5	1 of 1

Surface Conditions: Wooded Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 1" to 3"
1.5		SM	1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Fine Grained Sand
					- Rootlets to 3'
			3		At 3', Grades to Gray, Becomes Dense to Very Dense, Moist
					(Glacial Till)
			4		- Trace Gravel and Trace to No Cobbles
					- Fine Grained Sand
			5		
			6		
			7		
			8		
9			9		
			10		
			11		End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:

Revision By:	Date
SMC	Nov 3, 2020

Test Pit Completion

- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ____________
- ☐ ____________
- ☐ ____________

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PORT ORCHARD, WASHINGTON 98366-0637

Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	177	TP-6	1 of 1

Surface Conditions: Wooded Area (Cedar, Douglas Fir, Maple with sword fern and berry bushes)

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil X" to X"
2 8		SM	1–12		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Fine Grained Sand - Rootlets to 3' At 3', Grades to Gray, Becomes Dense to Very Dense, Moist (Glacial Till) - Trace Gravel and Trace to No Cobbles - Fine Grained Sand
			12–18		End of Test Pit at 12 feet

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	195	TP-7	1 of 1

Surface Conditions: Wooded Area (Cedar, Douglas Fir, Maple with sword fern and berry bushes)

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 1" to 3"
12		SM	1–12		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Fine Grained Sand - Rootlets to 4' At 3', Grades to Brownish Gray, Becomes Dense to Very Dense (Glacial Till) - Trace Gravel and Trace to No Cobbles - Fine Grained Sand - Trace Iron Oxide Staining at 3' and at 12'
			12–18		End of Test Pit at 12 feet

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ____________
- ☐ ____________
- ☐ ____________

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Test Pit Log
Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	195	TP-8	1 of 1

Surface Conditions: Wooded Area (Cedar, Douglas Fir, Maple with sword fern and berry bushes)

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 3" to 5"
			1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Fine Grained Sand
					- Rootlets to 3'
3			3		
					At 3', Grades to Brownish Gray, Becomes Dense to Very Dense
			4		- Increase in Gravel and Cobbles overlying till layer
					- Fine Grained Sand
			5		
6		SM	6		At 6', Decrease in Gravel, Cobbles and Boulders (Glacial Till)
			7		
			8		
			9		
			10		At 10', Increase in Moisture content
			11		At 11', Water Seepage primarily on the westside of pit
					- Associated caving with water seepage
12			12		
					End of Test Pit at 12 feet
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	Water Seepage at 11'	WRJ	Nov 3, 2020

Notes:

Revision By:	Date
SMC	Nov 3, 2020

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	190	TP-9	1 of 1

Surface Conditions: Wooded Area (Cedar, Douglas Fir, Maple with sword fern and berry bushes)

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	
		TPSL			Topsoil 1" to 2"
		SM	1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel
			2		- Rootlets to 3'
			3		At 3', Grades to Brownish Gray, Becomes Dense to Very Dense (Ice Contact)
			4		- Trace Gravel and Cobbles - Fine Grained Sand
			5		
			6		At 6', Decrease in Gravel, Cobbles and Boulders (Glacial Till)
			7		
			8		
			9		
			10		
11			11		End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ____________
- ☐ ____________
- ☐ ____________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	190	TP-10	1 of 1

Surface Conditions: Wooded Area (Cedar, Douglas Fir, Maple with sword fern and berry bushes)

General Notes SAMPLE COLLECTION DEPTH (FT)	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
	TPSL			Topsoil 3" to 5"
	SM	1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel
		2		- Rootlets to 3'
3		3		
		4		At 3', Grades to Brownish Gray, Becomes Dense to Very Dense, (Glacial Till) - Trace Gravel and Cobbles
		5		- Fine Grained Sand
6		6		At 6', Increase in Silt Content
		7		
		8		
9		9		At 9', Grades to Gray, Decrease in Silt Content
		10		
		11		End of Test Pit at 11 feet
		12		
		13		
		14		
		15		
		16		
		17		
		18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion
- [ ] Monitoring Well
- [ ] Piezometer
- [x] Ananonded and backfilled
- [ ] __________
- [ ] __________
- [ ] __________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	185	TP-11	1 of 1

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Surface Conditions: Pasture Area
		TPSL			Topsoil 1" to 3"
			1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Rootlets to 3'
					At 1', Grades to Brownish Gray, Becomes Dense to Very Dense
			3		(Glacial Till)
					- Trace Gravel and Trace to No Cobbles
4		SM	4		At 4' Water Seepage on west side of pit
			5		
			6		
			7		
			8		
			9		
10			10		
					End of Test Pit at 10 feet
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	Water Seepage at 4'	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion

- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ __________
- ☐ __________
- ☐ __________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	180	TP-12	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 3" to 5"
		SM	1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel
2			2		At 2', Grades to Brownish Gray, Dense to Very Dense, - Increase in Gravel, Cobbles and Boulders
			3		
			4		
			5		
			6		At 6', Decrease in Gravel and Cobbles (Glacial Till) - No Boulders
7			7		
			8		
			9		
			10		
			11		End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- [ ] Monitoring Well
- [ ] Piezometer
- [x] Abanonded and backfilled
- [ ] ____________
- [ ] ____________
- [ ] ____________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	220	TP-13	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 2" to 4"
			1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Rootlets to 3'
3			3		
					At 3', Grades to Brownish Gray, Becomes Dense to Very Dense
			4		(Glacial Till)
					- Trace to No Gravel and Cobbles
		SM	5		
			6		
			7		
			8		
			9		
10			10		
			11		
			12		
			13		
14			14		
					End of Test Pit at 14 feet
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion

- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	220	TP-14	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 2" to 4"
		SM	1		Brown Silty SAND, Medium Dense, Moist
					- Trace to No Gravel
			2		- Rootlets to 4'
			3		
					At 4', Grades Brownish Gray, Becomes Dense to Very Dense
			4		(Glacial Till)
					- Trace Gravel and Cobbles
			5		- Trace to No Boulders
					- Fine Grained Sand
			6		
			7		
			8		
			9		At 9', Becomes Very Dense
10			10		
					End of Test Pit at 10 feet
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:	Revision By:	Date
	SMC	Nov 3, 2020

Test Pit Completion

- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ____________
- ☐ ____________
- ☐ ____________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	220	TP-15	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 2" to 4"
		SM	1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel
			2		
			3		At 3', Grades to Brownish Gray, Becomes Dense to Very Dense, (Glacial Till)
4			4		- Trace Gravel and Cobbles - Fine to Medium Grained Sand
			5		
			6		
			7		
			8		
			9		
10			10		End of Test Pit at 10 feet
			11		
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ____________
- ☐ ____________
- ☐ ____________

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	215	17	1 of 1

Surface Conditions: Wooded Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 2" to 4"
1			1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Rootlets to 4'
		SM	2		
			3		
4			4		At 4', Grades to Brownish Gray, Becomes Dense to Very Dense, (Glacial Till) - Trace Gravel and Cobbles - Trace to No Boulders - Fine Grained Sand - Iron Oxide staining at 4'
			5		
			6		
			7		
			8		
			9		
			10		
11			11		End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor: Todd	Operators Name: Todd	Sampling Method: Grab
Equipment: Kuota KX 080-4 Excavator		Groundwater Elevation: No Water Detected

Drawn By: SMC	Date: Nov 3, 2020
Checked By: WRJ	Date: Nov 3, 2020
Revision By: SMC	Date: Nov 3, 2020

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

Notes:

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	210	TP-18	1 of 1

Surface Conditions: Wooded Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Topsoil 2" to 4"
1			1		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel
			2		- Rootlets to 4-5'
			3		
			4		At 4', Grades to Brownish Gray, Becomes Dense to Very Dense, (Glacial Till)
		SM	5		- Trace Gravel and Cobbles - Fine Grained Sand
6			6		
			7		
			8		
			9		
10			10		
			11		End of Test Pit at 11 feet
			12		
			13		
			14		
			15		
			16		
			17		
			18		

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐
- ☐
- ☐

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Test Pit Log

Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	SMC	Oct 22, 2020	Oct 22, 2020	157	TP-19	1 of 1

Surface Conditions: Pasture Area

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			Sod 3" to 5"
10		SM	1–10		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Rootlets to 3' At 4', Grades to Gray, Becomes Dense to Very Dense, (Ice Contact) - Trace Gravel and Cobbles - Trace Boulders - Fine Grained Sand At 6', Grades to Brownish Gray (Glacial Till) - Trace Gravel and Cobbles - Fine Grained Sand
			10–18		End of Test Pit at 10 feet

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Revision By:	Date
SMC	Nov 3, 2020

Notes:

Test Pit Completion
- ☐ Monitoring Well
- ☐ Piezometer
- ☒ Abanonded and backfilled
- ☐ ______
- ☐ ______
- ☐ ______

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Test Pit Log
Clear Creek Apartments
Clear Creek Rd NW,
Silverale, WA

Job Number:	Logged By:	Subsurface Exploration Start Date:	Subsurface Exploration End Date:	Ground Surface Elevation	Test Pit Number	Page
11338	WRJ	Oct 22, 2020	Oct 22, 2020	157	TP-20	1 of 1

Surface Conditions: Rod cut next to 420 pot shop

General Notes SAMPLE COLLECTION DEPTH (FT)	Graphic Symbol	USCS SYMBOL	Depth (ft)	Moisture Content (%)	Description
		TPSL			forest duff 3" to 5" top of cut
		SM	1–5		Brown Silty SAND, Medium Dense, Moist - Trace to No Gravel - Rootlets to 3' At 3', Grades to Brownish Gray (Glacial Till) - Trace Gravel and Cobbles - Fine Grained Sand
			5–18		HEIGHT OF SOIL EXPOSURE ROAD CUT

Contractor	Operators Name	Sampling Method	Drawn By:	Date
Todd	Todd	Grab	SMC	Nov 3, 2020

Equipment	Groundwater Elevation	Checked By:	Date
Kuota KX 080-4 Excavator	No Water Detected	WRJ	Nov 3, 2020

Notes:

Revision By:	Date
SMC	Nov 3, 2020

Test Pit Completion
- [ ] Monitoring Well
- [ ] Piezometer
- [x] Abanonded and backfilled
- [ ] ____________
- [ ] ____________
- [ ] ____________

FSID6865393
Appendix F.
Terrestrial Ecological Evaluation

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Terrestrial-ecological-evaluation.

Step 1: IDENTIFY HAZARDOUS WASTE SITE	
Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Silverdale Lots 25 and 26/Seitz Property	
Facility/Site Address: Brian Lane NW, Silverdale, WA 98383	
Facility/Site No: 6865393	VCP Project No.: NW3313

Step 2: IDENTIFY EVALUATOR		
Please identify below the person who conducted the evaluation and their contact information.		
Name: Krista Webb		Title: Senior Environmental Scientist
Organization: Krista Webb Consulting/Krazan & Associates		
Mailing address: 5045 NE Minder Road		
City: Poulsbo	State: WA	Zip code: 98370
Phone: (360) 265-3984	Fax:	E-mail: kristaleewebb@gmail.com

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☐ Yes — *If you answered **"YES,"** then answer **Question 2**.*

☒ No or Unknown — *If you answered **"NO" or "UNKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface.

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous# undeveloped± land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous# undeveloped± land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

± "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

"Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

☒ Yes — *If you answered **"YES,"** then answer **Question 2** below.*

☐ No or Unknown — *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

☒ Yes — *If you answered **"YES,"** then answer **Question 3** below.*

☐ No — *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

☐ Yes — *If you answered **"YES,"** then answer **Question 4** below.*

☒ No — *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*

☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

☒ Area of soil contamination at the Site is not more than 350 square feet.

☒ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

☒ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

☒ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes — *If you answered **"YES,"** then answer **Question 2** below.*

☐ No — *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*

☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

☐ Literature surveys.

☐ Soil bioassays.

☐ Wildlife exposure model.

☐ Biomarkers.

☐ Site-specific field studies.

☐ Weight of evidence.

☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

☐ Confirmed there was no problem.

☐ Confirmed there was a problem and established site-specific cleanup levels.

5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

☐ Yes — If so, please identify the Ecology staff who approved those steps:

☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.

Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

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