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Two Union Square
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Technical Memorandum

To: Maureen Sanchez, Washington State Department of Ecology

Copies: Alan Sidell, Seattle Iron & Metals

From: Lynn Grochala, Floyd|Snider

Date: May 31, 2017

Project No: SIM-730EDR

Re: **Whitehead Tyee Site: 730 S. Myrtle Street Shallow Soil Characterization Data Summary**

This technical memorandum was prepared at the request of Seattle Iron & Metals (SIM) to document the results of additional surface soil characterization completed on the 730 S. Myrtle Street property of the Whitehead Tyee Site (Site). Soil samples were collected by Floyd|Snider on April 11, 2017, in accordance with the *730 S. Myrtle Street Shallow Soil Characterization Work Plan* (Work Plan) dated March 22, 2017 (Floyd|Snider 2017a), which was approved by the Washington State Department of Ecology (Ecology) in email correspondence dated April 4, 2017. The location of the Site is shown on Figure 1.

The Work Plan outlined the collection and analysis of surface soil samples, per Ecology's request, to monitor for the presence of polychlorinated biphenyls (PCBs) and metals in shallow soil prior to beginning construction for the installation of a stormwater conveyance system at the 730 S. Myrtle Street property. Construction will also include the completion of an interim action, which will be conducted pursuant to Agreed Order (AO) No. DE 13458, and is described in detail in an *Interim Action Work Plan* (IAWP; Floyd|Snider 2017b). The IAWP describes the background, approach, and procedures to complete an interim action at the Site concurrent with installation of an on-property stormwater conveyance and treatment system. The property is currently unpaved with no stormwater conveyance system. Pursuant to Administrative Order No. 13739, issued by Ecology's Water Quality Program on September 20, 2016, the stormwater treatment system will be installed to bring the property back into compliance with the Industrial Stormwater General Permit. The interim action will address subsurface soils contaminated with pentachlorophenol, Stoddard solvent, and heavy oil-range organics in locations where components of the stormwater treatment system will be installed. Pertinent site features, including the proposed stormwater system, are shown on Figure 2.

The additional sample collection for PCBs was requested by Ecology as a result of recent detection of PCBs in a stormwater sample collected at the Site in November 2016. PCBs have not

been detected in subsequent stormwater samples. The additional sample collection for metals was requested as a result of Ecology observation of heavy truck traffic and bed sweeping in the main drive aisle to supplement existing data prior to the disturbance of surface soils associated with the installation of the proposed stormwater conveyance system at the Site. Existing shallow soil data collected during previous sampling events did not indicate that either PCBs or metals were present at elevated concentrations in soils on the 730 S. Myrtle Street property.

1.0 SURFACE SOIL SAMPLE COLLECTION

Surface soil samples were collected in accordance with the Work Plan, using hand tools to sample to a depth of 6 inches below ground surface (bgs). Because the shallow soils on the property consist primarily of crushed gravel surfacing, the collected material was homogenized and then passed through a sieve to collect the finer grained material present within the gravel matrix. Samples were logged and processed according to the Work Plan.

Soil sampling stations were located using a handheld global positioning system (GPS) receiver. In some instances, sampling stations were relocated less than 2 feet away from their target locations to avoid large puddles or other obstructions that would inhibit sample collection and sieving. These relocated stations remained within the areas where trenches will be excavated for stormwater system components. Two sampling stations were altered more significantly from those proposed in the Work Plan. These included:

- WT-SS-01, which had a target location within the truck access driveway. This location was not safely accessible at the time of sampling and was relocated 15 feet to the southwest along the stormwater system trench segment.
- WT-SS-03, which was found to be underlain by an asphalt or concrete slab that could not be penetrated by hand tools at approximately 3 inches bgs at the target location. The slab extended to the north below a segment of asphalt driveway, and its limits could not be located to the east, west, or south due to large puddles in those directions. The sample at WT-SS-03 was therefore collected from 0 to 3 inches bgs within 2 feet of its target location.

Surface soil sampling station locations, as well as previous soil boring and monitoring well sampling locations, are shown on Figure 3.

2.0 SOIL SAMPLE ANALYSIS

All eight surface soil samples were analyzed for PCBs by U.S. Environmental Protection Agency (USEPA) Method 8082, and samples from stations WT-SS-01, WT-SS-04, WT-SS-06, and WT-SS-08 were additionally analyzed for the Resource Conservation and Recovery Act (RCRA) list of 8 metals by USEPA Method 6020, as specified in the Work Plan. The RCRA 8 list includes arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The sample from WT-SS-01 was re-analyzed for low-level mercury by USEPA Method 1613E due to matrix interference that

caused this sample to be qualified as estimated at the USEPA Method 6020 reporting limit. Samples were analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

Additional analysis by USEPA Method 7196 to determine whether chromium (VI) was present in samples from stations WT-SS-04 and WT-SS-06 was performed by Fremont Analytical of Seattle, Washington. These samples were analyzed after the holding time specified by the analytical method had lapsed and were therefore qualified as estimated. Copies of analytical reports are included in Attachment 1.

2.1 Data Validation

A Compliance Screening (Stages 1 & 2a) data quality review was performed on select metals and PCBs resulting from laboratory analysis. The analytical data were validated in accordance with the USEPA *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2016a) and USEPA *National Functional Guidelines for Inorganic Superfund Data Review* (USEPA 2016b).

A total of eight soil samples were submitted in one sample delivery group (SDG), FB704169, to Freidman & Bruya, Inc. of Seattle, Washington, for chemical analysis by USEPA Methods 6020A, 1631E, and 8082A. Freidman & Bruya, Inc. subsequently submitted two samples to Fremont Analytical of Seattle, Washington, as sample delivery group FA1705149 for chemical analysis by USEPA Method 7196. For all sample delivery groups, the method blanks had no detections. The matrix spike (MS), matrix spike duplicate (MSD), laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries and LCS/LCSD and sample/sample duplicate relative percent differences (RPDs) all met USEPA requirements.

For the USEPA Method 6020A analysis of sample WT-SS-01-0-6”, the laboratory noted that the internal standard failed the acceptance criteria due to matrix interferences. The data were flagged and samples were diluted and reanalyzed. The original results were flagged Do Not Report, or "DNR," in favor of the diluted and reanalyzed samples. The diluted reporting limit for mercury was greater than cleanup criteria; the result was therefore flagged “DNR” in favor of a result for the sample that was analyzed by USEPA Method 1631E.

For USEPA Method 6020A, the laboratory noted that the selenium MS/MSD recoveries and RPD were outside of acceptance criteria. The laboratory control sample passed the acceptance criteria; therefore the laboratory concluded the results were likely due to matrix effect. Per USEPA Guidelines, results were not qualified based on MS/MSD information alone. As the MS/MSD was performed on a batch sample belonging to another client at a 10 times dilution, and the similarity of this sample’s matrix to field samples in this SDG cannot be assessed, and the LCS was within control limits, it is with professional judgement that no selenium results were qualified based on this MS/MSD information alone.

For USEPA Method 6020A, the MSD recovery for barium and the MS/MSD recoveries for lead were outside laboratory control limits low, and RPDs for both were also outside the control limits.

The laboratory noted that the results may not be meaningful as the samples were spiked at less than 10 times the original concentration in the sample. Barium was spiked at 50 milligrams per kilogram (mg/kg), with an original sample concentration of 80.4 mg/kg. Lead was spiked at 50 mg/kg, with an original sample concentration of 233 mg/kg. Per USEPA Guidelines, data were not qualified based on MS/MSD information alone. As MS/MSD analysis was performed on a sample belonging to another client at a 10 times dilution, and the similarity of this sample's matrix to field samples in this SDG cannot be assessed, and the LCS was within control limits, it is with professional judgment that no barium or lead results were qualified based on this MS/MSD information alone.

For USEPA Method 7196, the laboratory noted that the samples were analyzed outside of the 30-day holding time for the method and flagged the results "H." The laboratory qualifier was preserved as the final qualifier "UJ" as all results were non-detect and the reporting limit should be considered an estimate due to analysis outside of method holding times.

Based on the data quality review, data were determined to be of acceptable quality for use as reported by the laboratory unless specifically qualified above.

3.0 SOIL DATA SUMMARY

Surface soil sampling results from this investigation, as compared to applicable and relevant Model Toxics Control Act (MTCA) cleanup levels, are discussed in the following sections and are presented in Table 1.

3.1 Selection of Cleanup Levels for Comparison

The cleanup levels selected for the purposes of evaluating the surface soil data were the most stringent cleanup levels provided in MTCA. The most stringent cleanup levels provided in MTCA are Method A cleanup levels developed for protection of groundwater quality at unrestricted use properties. For contaminants for which MTCA Method A cleanup levels have not been established, MTCA Method B cleanup levels developed for the protection of human health due to direct contact are the most stringent cleanup levels available. It should be noted that final cleanup levels will be evaluated as part of the future Remedial Investigation/Feasibility Study and established as part of the Cleanup Action Plan for the Site. MTCA Method A cleanup levels have been established for PCBs and several of the RCRA 8 metals including arsenic, cadmium, chromium, lead, and mercury. MTCA Method B cleanup levels have been established for the remaining RCRA 8 metals including barium, selenium, and silver.

Two MTCA Method A cleanup levels have been established for chromium's two most common species, including chromium (III) (i.e., trivalent chromium) and chromium (VI) (i.e., hexavalent chromium). Trivalent chromium is a naturally occurring elemental metal that is an essential micronutrient for human metabolism (USEPA 2017); this species of chromium is present in chrome coatings, and chromium metal alloys such as stainless steel. Hexavalent chromium is a human carcinogen that is typically manufactured via a chemical reaction; this species of

chromium is used in electroplating solutions (where it is reduced to trivalent chromium during plating deposition) and in leather tanning and dyeing processes (OSHA 2009).

Given the current usage of the property for scrap metal container storage, trivalent chromium resulting from the corrosion of metal products is the species most likely to be present in surface soil. The property does not have any history of electroplating or leather tanning/dyeing and hexavalent chromium is unlikely to be present. To confirm the species of chromium present on the property, the surface samples with the greatest detected total chromium concentrations (WT-SS-04 and WT-SS-06) were submitted for hexavalent chromium analysis. These samples did not have any detectable hexavalent chromium, confirming that trivalent chromium is the species present in property soils. Therefore, the selected MTCA cleanup level for comparison of total chromium soil data at the property is the MTCA Method A trivalent chromium cleanup level of 2,000 mg/kg.

3.2 Polychlorinated Biphenyls

PCB Aroclors were analyzed in all eight surface soil samples collected during this investigation. PCBs were detected at low-level concentrations in all eight of the surface soil samples analyzed. Aroclor 1254 was detected in all eight samples, Aroclor 1242 was detected in five of the eight samples, Aroclor 1248 was detected in one sample, and other Aroclors were not detected. Total PCB concentrations ranged from 0.051 mg/kg at WT-SS-05 to 0.250 mg/kg at WT-SS-01. These concentrations were all significantly less than the most stringent MTCA Method A unrestricted land use cleanup level of 1.00 mg/kg for PCBs.

These results are consistent with existing property data, which included four surface soil samples collected from 0 to 2 feet bgs. These samples did not have detectable PCBs at their laboratory reporting limits of 0.0990 to 0.117 mg/kg.

PCB results for surface soil samples collected per the work plan are presented in Table 1. All available surface soil total PCB results for property soils are shown on Figure 4.

3.3 Metals

The RCRA list of 8 metals were analyzed in four of the eight surface soil samples per the work plan, at locations WT-SS-01, WT-SS-04, WT-SS-06, and WT-SS-08. Metals concentrations were compared to the most stringent MTCA Method A unrestricted land use cleanup levels, or MTCA Method B cleanup levels if Method A cleanup levels were not available. At least one metal was detected in each sample analyzed, as described below.

- Arsenic concentrations ranged from 4.42 mg/kg at WT-SS-04 to 10.4 mg/kg at WT-SS-06. These concentrations were all less than the MTCA Method A cleanup level of 20.0 mg/kg.

- Barium concentrations ranged from 30.2 mg/kg at WT-SS-08 to 140 mg/kg at WT-SS-04 and were all significantly less than the MTCA Method B cleanup level of 16,000 mg/kg.
- Cadmium concentrations ranged from 0.356 mg/kg at WT-SS-06 to 1.62 mg/kg at WT-SS-01 and were all less than the MTCA Method A cleanup level of 2.00 mg/kg.
- Chromium concentrations ranged from 142 mg/kg at WT-SS-01 to 256 mg/kg at WT-SS-04 and were all significantly less than the MTCA Method A cleanup level of 2,000 for trivalent chromium.
- Lead concentrations ranged from 41.0 mg/kg at WT-SS-04 to 105 mg/kg at WT-SS-01 and were all less than the MTCA Method A cleanup level of 250 mg/kg.
- Mercury was detected at 0.160 mg/kg at WT-SS-01, less than the cleanup level of 2.00 mg/kg. The remaining samples did not have detectable mercury at a laboratory reporting limit of 0.400 mg/kg.
- Selenium was detected at a concentration 0.208 mg/kg at WT-SS-08, significantly less than the MTCA Method B cleanup level of 400 mg/kg. The remaining samples did not have detectable selenium at a laboratory reporting limit of 0.200 mg/kg.
- Silver concentrations ranged from 0.277 mg/kg at WT-SS-06 to 0.470 mg/kg at WT-SS-01 and were all significantly less than the MTCA Method B cleanup level of 400 mg/kg.

As evidenced in the above discussion, detected metals concentrations are ubiquitous at relatively low concentrations, and are less than the MTCA cleanup levels. The minor variations in these concentrations reflect the heterogeneity of the shallow soils at the property, which consist of fill soil to a depth of 6 to 10 feet bgs.

These results are consistent with existing property data, which included four surface soil samples collected from 0 to 2 feet bgs, five composite soil samples collected from 0 to 5 feet bgs, and two composite soil samples collected from 0 to 10 feet bgs. These samples also had RCRA 8 metals concentrations less than their respective MTCA cleanup levels, and metals concentrations were generally consistent across the property without areas of elevated concentrations.

Metals results for surface soil samples collected per the Work Plan are presented in Table 1. All available surface soil metals results for property soils are shown on Figure 5.

4.0 REFERENCES

Floyd|Snider. 2017a. *Whitehead Tyee Site: 730 S. Myrtle Street Shallow Soil Characterization Work Plan.* Technical memorandum from Lynn Grochala, Floyd|Snider, to Maureen Sanchez, Washington State Department of Ecology. 22 March.

_____. 2017b. *Whitehead Tyee Site Interim Action Work Plan*. Prepared for Seattle Iron & Metals Corporation. April.

U.S. Department of Labor Occupational Safety and Health Administration (OSHA). 2009. *Hexavalent Chromium*. Publication No. OSHA 3373-10.

U.S. Environmental Protection Agency (USEPA). 2017. *Chromium in Drinking Water*. <https://www.epa.gov/dwstandardsregulations/chromium-drinking-water>. 24 April.

_____. 2016a. *National Functional Guidelines for Superfund Organic Methods Data Review*. Prepared by the Office of Superfund Remediation and Technology Innovation. EPA-540-R-014-002/OSWER 9355.0-132. August.

_____. 2016b. *National Functional Guidelines for Inorganic Superfund Data Review*. Prepared by the Office of Superfund Remediation and Technology Innovation. EPA-540-R-014-001/OSWER 9355.0-131. August.

ATTACHMENTS

Table 1	Surface Soil Sample Results
Figure 1	Vicinity Map
Figure 2	Pertinent Site Features
Figure 3	Soil Boring and Monitoring Well Locations
Figure 4	PCB Concentrations in Surface Soil
Figure 5	Metals Concentrations in Surface Soil
Attachment 1	Laboratory Analytical Reports

Table

Table 1
Surface Soil Sample Results

					Location	WT-SS-01	WT-SS-02	WT-SS-03	WT-SS-04	WT-SS-05	WT-SS-06	WT-SS-07	WT-SS-08
					Sample ID	WT-SS-01-0-6"	WT-SS-02-0-6"	WT-SS-03-0-3"	WT-SS-04-0-6"	WT-SS-05-0-6"	WT-SS-06-0-6"	WT-SS-07-0-6"	WT-SS-08-0-6"
					Sample Date	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017	4/11/2017
					Depth (ft bgs)	0–0.5	0–0.5	0–0.25	0–0.5	0–0.5	0–0.5	0–0.5	0–0.5
Analyte	Units	MTCA Method A Industrial Cleanup Level	MTCA Method A Unrestricted Cleanup Level	MTCA Method B Cleanup Level, Noncancer	Relevant Comparison Criterion								
Polychlorinated Biphenyls (PCBs)													
PCB Aroclor 1016	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCB Aroclor 1221	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCB Aroclor 1232	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCB Aroclor 1242	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0550	0.0200 U	0.0250	0.0390	0.0790	0.0620
PCB Aroclor 1248	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.027	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCB Aroclor 1254	mg/kg	--	--	--	66.0	0.250	0.160	0.0590	0.0420	0.0260	0.0200 U	0.0520	0.0700
PCB Aroclor 1260	mg/kg	--	--	--	66.0	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.044	0.0200 U	0.0200 U
PCB Aroclor 1262	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCB Aroclor 1268	mg/kg	--	--	--	--	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U	0.0200 U
PCBs (Total, Aroclors)	mg/kg	1.00	1.00	--	1.00	0.250	0.160	0.110	0.0690	0.0510	0.0830	0.130	0.130
Metals													
Arsenic	mg/kg	20.0	20.0	--	20.0	8.85	--	--	4.42	--	10.4	--	6.20
Barium	mg/kg	--	--	16,000	16,000	53.2	--	--	140	--	45.8	--	30.2
Cadmium	mg/kg	2.00	2.00	--	2.00	1.62	--	--	1.16	--	0.356	--	0.797
Chromium	mg/kg	2,000[1]	2,000[1]	--	2,000	142	--	--	256	--	241	--	145
Lead	mg/kg	250	250	--	250	105	--	--	41.0	--	42.7	--	42.1
Mercury	mg/kg	2.00	2.00	--	2.00	0.160	--	--	0.400 U	--	0.400 U	--	0.400 U
Selenium	mg/kg	--	--	400	400	0.200 U	--	--	0.200 U	--	0.200 U	--	0.208
Silver	mg/kg	--	--	400	400	0.470	--	--	0.317	--	0.277	--	0.370

Notes:

-- Not applicable or not analyzed.

1 The MTCA cleanup level given is for chromium (III). This species of chromium is most closely associated with metal and metal alloy products and is likely to be present at the property due to current metal recycling operations. Chromium (VI) was not detected in property soils.

Abbreviations:

bgs Below ground surface

ft Feet

mg/kg Milligrams per kilogram

MTCA Model Toxcis Control Act

Qualifier:

U The analyte was not detected at the reporting limit.

Figures

Note:
· Basemap provided by Esri, 2015

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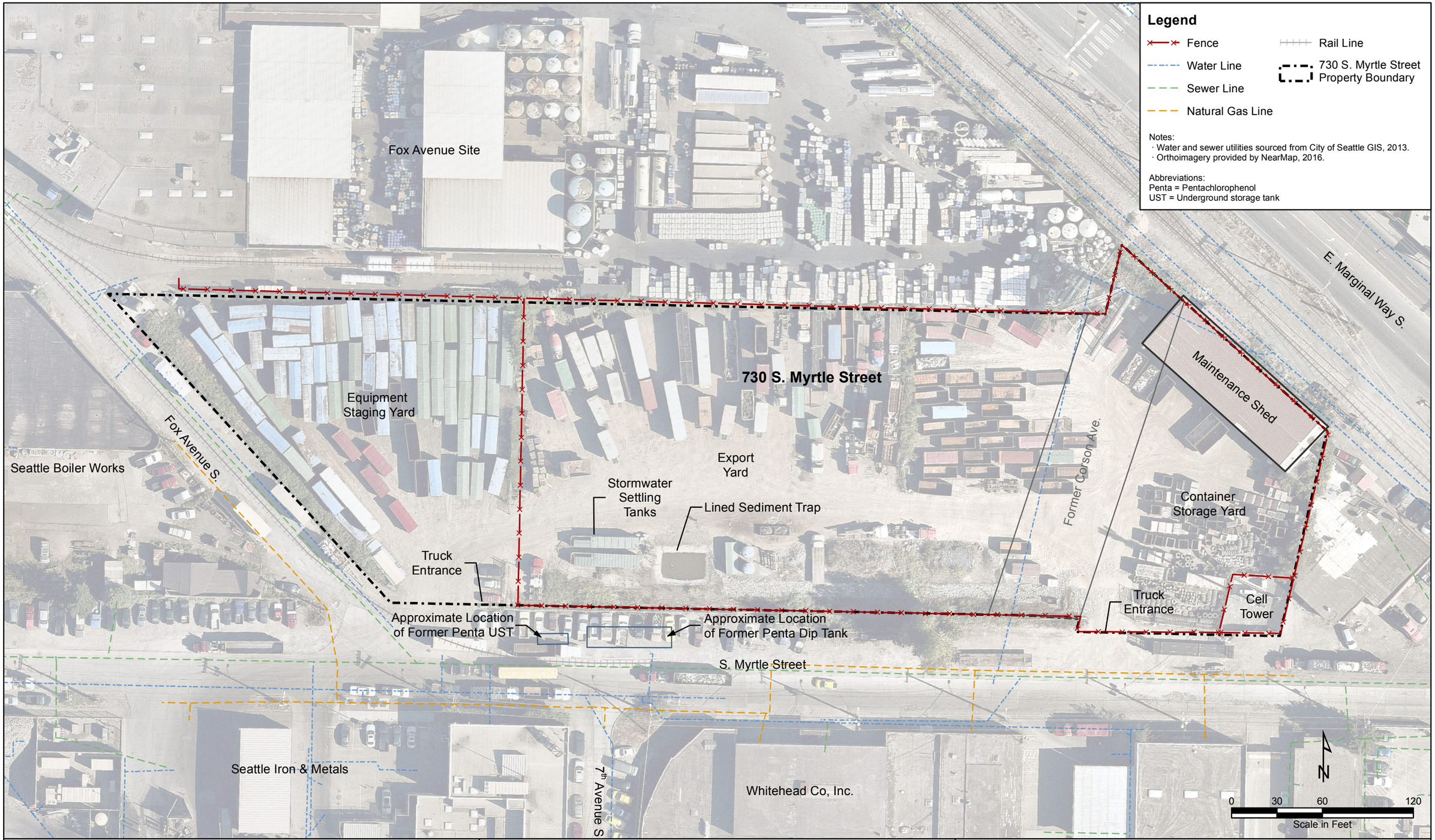
Whitehead Tyee Site
730 S. Myrtle Street
Shallow Soil Characterization
Data Summary
Seattle, Washington

Figure 1
Vicinity Map

I:\GIS\Projects\SIM-730EDR\MXD\Shallow Soil Characterization\Results Memo\Figure 1 Vicinity Map.mxd
5/30/2017



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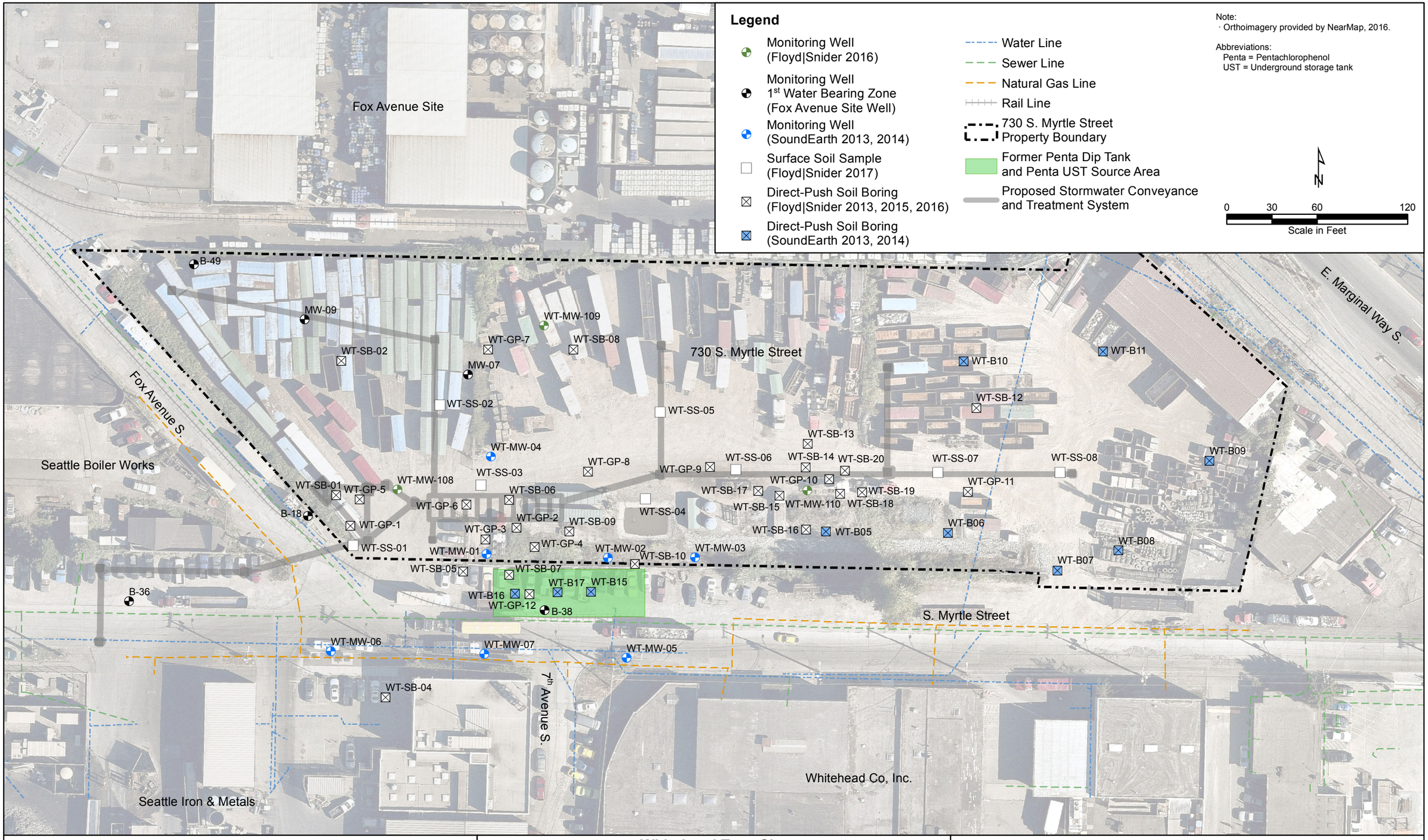
Whitehead Tyee Site
730 S. Myrtle Street
Shallow Soil Characterization Data Summary
Seattle, Washington

Figure 2
Pertinent Site Features

I:\GIS\Projects\SIM-730EDR\MXD\Shallow Soil Characterization\Results Memo\Figure 2 Pertinent Site Features.mxd
5/30/2017



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Whitehead Tyee Site
730 S. Myrtle Street
Shallow Soil Characterization Data Summary
Seattle, Washington

Figure 3
Soil Boring and Monitoring Well Locations

I:\GIS\Projects\SIM-730EDR\MXD\Shallow Soil Characterization\Results Memo\Figure 3 Soil Boring and Monitoring Well Locations.mxd
5/30/2017

Legend

- Monitoring Well (Floyd|Snider 2016)
- Surface Soil Sample (Floyd|Snider 2017)
- Direct-Push Soil Boring (Floyd|Snider 2016)
- 730 S. Myrtle Street Property Boundary
- Former Penta Dip Tank and Penta UST Source Area
- Proposed Stormwater Conveyance and Treatment System
- Water Line
- Sewer Line
- Natural Gas Line
- Rail Line

Notes:
· PCB results are presented in units of milligrams per kilogram (mg/kg).
· Orthoimagery provided by NearMap, 2016.

Abbreviations:
ft bgs = Feet below ground surface
PCB = Polychlorinated biphenyl
Penta = Pentachlorophenol
UST = Underground storage tank

Qualifier:
U = The analyte was not detected at the reporting limit.

Fox Avenue Site

730 S. Myrtle Street

E. Marginal Way S.

Fox Avenue S.

Seattle Boiler Works

WT-SS-02 *0–0.5:* 0.160

WT-SB-08 *0–2:* 0.110 U

WT-SS-05 *0–0.5:* 0.0510

WT-SS-06 *0–0.5:* 0.0830

WT-SS-07 *0–0.5:* 0.130

WT-SS-08 *0–0.5:* 0.130

WT-SS-03 *0–0.25:* 0.110

WT-SB-01 *0–2:* 0.117 U

WT-SS-04 *0–0.5:* 0.0690

WT-MW-110 *0–2:* 0.100 U

WT-SS-01 *0–0.5:* 0.250

WT-SB-05 *0–2:* 0.117 U

S. Myrtle Street

7th Avenue S.

Whitehead Co, Inc.

Seattle Iron & Metals

Label Key

Location
Depth (ft bgs): Concentration

0 30 60 120
Scale in Feet

N

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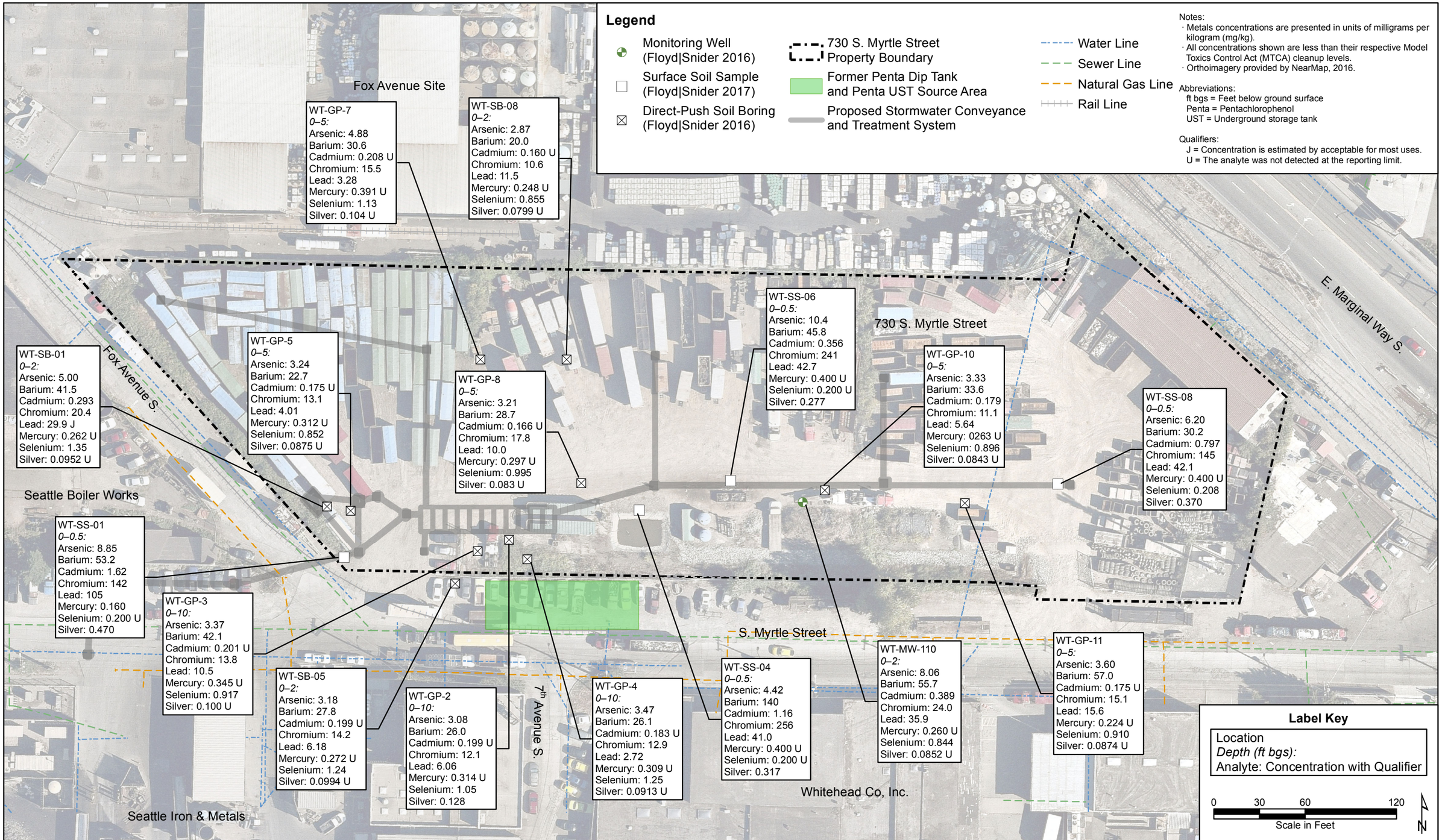
Whitehead Tyee Site
730 S. Myrtle Street
Shallow Soil Characterization Data Summary
Seattle, Washington

Figure 4
PCB Concentrations in Surface Soil

I:\GIS\Projects\SIM-730EDR\MXD\Shallow Soil Characterization\Results Memo\Figure 4 PCB Concentrations in Surface Soil.mxd
5/30/2017



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Whitehead Tyee Site
730 S. Myrtle Street
Shallow Soil Characterization Data Summary
Seattle, Washington

Figure 5
Metals Concentrations in Surface Soil

I:\GIS\Projects\SIM-730EDR\MXD\Shallow Soil Characterization\Results Memo\Figure 5 Metals Concentrations in Surface Soil.mxd
5/30/2017

Attachment 1
Laboratory Analytical 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.

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April 21, 2017

Lynn Grochala, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Ms Grochala:

Included are the amended results from the testing of material submitted on April 11, 2017 from the SIM-730 EDR, F&BI 704169 project. The sample IDs were corrected. 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
FDS0420R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
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April 20, 2017

Lynn Grochala, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Ms Grochala:

Included are the results from the testing of material submitted on April 11, 2017 from the SIM-730 EDR, F&BI 704169 project. There are 22 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. 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
FDS0420R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 11, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider SIM-730 EDR, F&BI 704169 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
704169 -01	WT-SS-01-0-6"
704169 -02	WT-SS-02-0-6"
704169 -03	WT-SS-03-0-3"
704169 -04	WT-SS-04-0-6"
704169 -05	WT-SS-05-0-6"
704169 -06	WT-SS-06-0-6"
704169 -07	WT-SS-07-0-6"
704169 -08	WT-SS-08-0-6"

A 6020A internal standard failed the acceptance criteria for the metals samples due to matrix interferences. The data were flagged accordingly. The samples were diluted and reanalyzed.

The 6020A selenium matrix spike, matrix spike duplicate and the associated relative percent difference did not pass the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were likely due to matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-01 x0.2
Date Analyzed:	04/18/17	Data File:	704169-01 x0.2.080
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.85
Barium	53.2
Cadmium	1.62
Chromium	106 J
Lead	110 J ve
Mercury	<0.4 J
Selenium	<0.2
Silver	0.470

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-01 x2
Date Analyzed:	04/19/17	Data File:	704169-01 x2.033
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	142
Lead	105
Mercury	<4

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-04 x0.2
Date Analyzed:	04/18/17	Data File:	704169-04 x0.2.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.42
Barium	140
Cadmium	1.16
Chromium	204 J
Lead	41.0
Mercury	<0.4
Selenium	<0.2
Silver	0.317

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-04 x2
Date Analyzed:	04/18/17	Data File:	704169-04 x2.094
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	256

Analysis For Total Metals By EPA Method 200.8

Client ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-06 x0.2
Date Analyzed:	04/18/17	Data File:	704169-06.089
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	10.4
Barium	45.8
Cadmium	0.356
Chromium	186 J
Lead	42.7
Mercury	<0.4
Selenium	<0.2
Silver	0.277

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-06 x2
Date Analyzed:	04/18/17	Data File:	704169-06 x2.095
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	241

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-08 x0.2
Date Analyzed:	04/18/17	Data File:	704169-08 x0.2.091
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.20
Barium	30.2
Cadmium	0.797
Chromium	114 J
Lead	42.1
Mercury	<0.4
Selenium	0.208
Silver	0.370

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-08 x2
Date Analyzed:	04/18/17	Data File:	704169-08 x2.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	145

Analysis For Total Metals By EPA Method 6020A

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	I7-197 mb
Date Analyzed:	04/18/17	Data File:	I7-197 mb.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	AP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Barium	<0.2
Cadmium	<0.2
Chromium	<0.2
Lead	<0.2
Mercury	<0.4
Selenium	<0.2
Silver	<0.2

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-01 1/5
Date Analyzed:	04/13/17	Data File:	041305.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	70	29	154

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	0.25
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-02-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-02 1/5
Date Analyzed:	04/13/17	Data File:	041306.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	62	29	154

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	0.16
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-03-0-3”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-03 1/5
Date Analyzed:	04/13/17	Data File:	041307.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	45	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.055
Aroclor 1248	<0.02
Aroclor 1254	0.059
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-04 1/5
Date Analyzed:	04/13/17	Data File:	041308.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	0.027
Aroclor 1254	0.042
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-05-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-05 1/5
Date Analyzed:	04/13/17	Data File:	041309.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	72	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.025
Aroclor 1248	<0.02
Aroclor 1254	0.026
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-06 1/5
Date Analyzed:	04/13/17	Data File:	041310.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.039
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	0.044
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-07-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-07 1/5
Date Analyzed:	04/13/17	Data File:	041311.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	78	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.079
Aroclor 1248	<0.02
Aroclor 1254	0.052
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-08 1/5
Date Analyzed:	04/13/17	Data File:	041312.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	76	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.062
Aroclor 1248	<0.02
Aroclor 1254	0.070
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:	Floyd-Snider
Date Received:	Not Applicable	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	07-752 mb2 1/5
Date Analyzed:	04/13/17	Data File:	041304.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	79	29	154

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: 04/20/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169

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

Laboratory Code: 704210-26 x10 (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	<50	103	99	75-125	4
Barium	mg/kg (ppm)	50	80.4	99 b	72 b	75-125	32 b
Cadmium	mg/kg (ppm)	10	<10	102	98	75-125	4
Chromium	mg/kg (ppm)	50	15.5	101	89	75-125	13
Lead	mg/kg (ppm)	50	233	42 b	0 b	75-125	200 b
Mercury	mg/kg (ppm	5	<10	114	106	75-125	7
Selenium	mg/kg (ppm)	5	<10	137 vo	43 vo	75-125	104 vo
Silver	mg/kg (ppm)	10	<10	94	91	75-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	103	80-120
Barium	mg/kg (ppm)	50	104	80-120
Cadmium	mg/kg (ppm)	10	104	80-120
Chromium	mg/kg (ppm)	50	101	80-120
Lead	mg/kg (ppm)	50	98	80-120
Mercury	mg/kg (ppm)	5	101	80-120
Selenium	mg/kg (ppm)	5	91	80-120
Silver	mg/kg (ppm)	10	98	80-120

Date of Report: 04/20/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169

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

Laboratory Code: 704167-01 1/50 (Matrix Spike) 1/50

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.8	<0.2	61	50-150
Aroclor 1260	mg/kg (ppm)	0.8	<0.2	72	50-150

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	72	73	55-130	1
Aroclor 1260	mg/kg (ppm)	0.8	87	91	58-133	4

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 compound 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. Compounds in the sample matrix interfered with the quantitation of the analyte.

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.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
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April 20, 2017

Lynn Grochala, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Ms Grochala:

Included are the results from the testing of material submitted on April 11, 2017 from the SIM-730 EDR, F&BI 704169 project. There are 22 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. 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
FDS0420R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 11, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider SIM-730 EDR, F&BI 704169 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
704169 -01	WT-SS-01-0-6"
704169 -02	WT-SS-02-0-6"
704169 -03	WT-SS-03-0-6"
704169 -04	WT-SS-04-0-6"
704169 -05	WT-SS-05-0-6"
704169 -06	WT-SS-06-0-6"
704169 -07	WT-SS-07-0-6"
704169 -08	WT-SS-08-0-6"

A 6020A internal standard failed the acceptance criteria for the metals samples due to matrix interferences. The data were flagged accordingly. The samples were diluted and reanalyzed.

The 6020A selenium matrix spike, matrix spike duplicate and the associated relative percent difference did not pass the acceptance criteria. The laboratory control sample passed the acceptance criteria, therefore the results were likely due to matrix effect.

All other quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-01 x0.2
Date Analyzed:	04/18/17	Data File:	704169-01 x0.2.080
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.85
Barium	53.2
Cadmium	1.62
Chromium	106 J
Lead	110 J ve
Mercury	<0.4 J
Selenium	<0.2
Silver	0.470

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-01 x2
Date Analyzed:	04/19/17	Data File:	704169-01 x2.033
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	142
Lead	105
Mercury	<4

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-04 x0.2
Date Analyzed:	04/18/17	Data File:	704169-04 x0.2.087
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.42
Barium	140
Cadmium	1.16
Chromium	204 J
Lead	41.0
Mercury	<0.4
Selenium	<0.2
Silver	0.317

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-04 x2
Date Analyzed:	04/18/17	Data File:	704169-04 x2.094
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	256

Analysis For Total Metals By EPA Method 200.8

Client ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-06 x0.2
Date Analyzed:	04/18/17	Data File:	704169-06.089
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	10.4
Barium	45.8
Cadmium	0.356
Chromium	186 J
Lead	42.7
Mercury	<0.4
Selenium	<0.2
Silver	0.277

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-06 x2
Date Analyzed:	04/18/17	Data File:	704169-06 x2.095
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	241

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-08 x0.2
Date Analyzed:	04/18/17	Data File:	704169-08 x0.2.091
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	6.20
Barium	30.2
Cadmium	0.797
Chromium	114 J
Lead	42.1
Mercury	<0.4
Selenium	0.208
Silver	0.370

Analysis For Total Metals By EPA Method 6020A

Client ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	704169-08 x2
Date Analyzed:	04/18/17	Data File:	704169-08 x2.096
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Chromium	145

Analysis For Total Metals By EPA Method 6020A

Client ID:	Method Blank	Client:	Floyd-Snider
Date Received:	Not Applicable	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/17/17	Lab ID:	I7-197 mb
Date Analyzed:	04/18/17	Data File:	I7-197 mb.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	AP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Barium	<0.2
Cadmium	<0.2
Chromium	<0.2
Lead	<0.2
Mercury	<0.4
Selenium	<0.2
Silver	<0.2

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-01-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-01 1/5
Date Analyzed:	04/13/17	Data File:	041305.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	70	29	154

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	0.25
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-02-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-02 1/5
Date Analyzed:	04/13/17	Data File:	041306.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	62	29	154

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	0.16
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-03-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-03 1/5
Date Analyzed:	04/13/17	Data File:	041307.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	45	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.055
Aroclor 1248	<0.02
Aroclor 1254	0.059
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-04-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-04 1/5
Date Analyzed:	04/13/17	Data File:	041308.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	44	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	0.027
Aroclor 1254	0.042
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-05-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-05 1/5
Date Analyzed:	04/13/17	Data File:	041309.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	72	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.025
Aroclor 1248	<0.02
Aroclor 1254	0.026
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-06-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-06 1/5
Date Analyzed:	04/13/17	Data File:	041310.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	69	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.039
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	0.044
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-07-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-07 1/5
Date Analyzed:	04/13/17	Data File:	041311.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	78	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.079
Aroclor 1248	<0.02
Aroclor 1254	0.052
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	WT-SS-08-0-6”	Client:	Floyd-Snider
Date Received:	04/11/17	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	704169-08 1/5
Date Analyzed:	04/13/17	Data File:	041312.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	76	29	154

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	0.062
Aroclor 1248	<0.02
Aroclor 1254	0.070
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:	Floyd-Snider
Date Received:	Not Applicable	Project:	SIM-730 EDR, F&BI 704169
Date Extracted:	04/12/17	Lab ID:	07-752 mb2 1/5
Date Analyzed:	04/13/17	Data File:	041304.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	79	29	154

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: 04/20/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169

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

Laboratory Code: 704210-26 x10 (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	<50	103	99	75-125	4
Barium	mg/kg (ppm)	50	80.4	99 b	72 b	75-125	32 b
Cadmium	mg/kg (ppm)	10	<10	102	98	75-125	4
Chromium	mg/kg (ppm)	50	15.5	101	89	75-125	13
Lead	mg/kg (ppm)	50	233	42 b	0 b	75-125	200 b
Mercury	mg/kg (ppm	5	<10	114	106	75-125	7
Selenium	mg/kg (ppm)	5	<10	137 vo	43 vo	75-125	104 vo
Silver	mg/kg (ppm)	10	<10	94	91	75-125	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	mg/kg (ppm)	10	103	80-120
Barium	mg/kg (ppm)	50	104	80-120
Cadmium	mg/kg (ppm)	10	104	80-120
Chromium	mg/kg (ppm)	50	101	80-120
Lead	mg/kg (ppm)	50	98	80-120
Mercury	mg/kg (ppm)	5	101	80-120
Selenium	mg/kg (ppm)	5	91	80-120
Silver	mg/kg (ppm)	10	98	80-120

Date of Report: 04/20/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169

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

Laboratory Code: 704167-01 1/50 (Matrix Spike) 1/50

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Control Limits
Aroclor 1016	mg/kg (ppm)	0.8	<0.2	61	50-150
Aroclor 1260	mg/kg (ppm)	0.8	<0.2	72	50-150

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.8	72	73	55-130	1
Aroclor 1260	mg/kg (ppm)	0.8	87	91	58-133	4

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 compound 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. Compounds in the sample matrix interfered with the quantitation of the analyte.

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.

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

April 20, 2017

INVOICE # 17FDS0420-1

Accounts Payable
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

RE: Project SIM-730 EDR, F&BI 704169 - Results of testing requested by Lynn Grochala for material submitted on April 11, 2017.

8 samples analyzed for PCBs as Aroclors by Method 8082 @ $95 per sample	$ 760.00
4 samples analyzed for RCRA 8 Metals by Method 6020A @ $125 per sample	500.00
Amount Due	$ 1,260.00

FEDERAL TAX ID #91-1287838

FRIEDMAN & BRUYA, INC.

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James E. Bruya, Ph.D.
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3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
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" 1260.00","17FDS0420-1","Floyd-Snider","SIM-730 EDR, F&BI 704169 ","April 21, 2017","
1260.00","","","","","","",""

704169

SAMPLE CHAIN OF CUSTODY

ME 04-11-17

BT3

Page # 1 of 1

Send Report To Lynn Grochala
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone # 206-292-2078 Fax #
Email Address Lynn.Grochala@floydsnider.com

SAMPLERS (signature)

PROJECT NAME/NO. SIM-730 EDR

PO #

PROJECT ADDRESS

· ELECTRONIC DATA REQUESTED

TURNAROUND TIME
· Standard Turnaround
· RUSH
Rush charges authorized by:

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

Samples Received at ____ °C

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	PCBs EPA 8082	RCRA 8 metals EPA 6020				Notes
WT-SS-01-0-6"	01 A B	4/11/17	1245	S	2							X	X				report results
WT-SS-02-0-6"	02		1220		1							X					to lowest RL for
WT-SS-03-0-3"	03		~~1155~~ 1205 P.O.		1							X					method
WT-SS-04-0-6"	04 A B		1115		2							X	X				
WT-SS-05-0-6"	05		1135		1							X					
WT-SS-06-0-6"	06 A B		1100		2							X	X				
WT-SS-07-0-6"	07		1030		1							X					
WT-SS-08-0-6"	08 A B	↓	1015	↓	2							X	X				

ANALYSES REQUESTED

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

FORMS\COC\COC.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Kristin Anderson	FS	4/11/17	1326
Received by:		Khan Phan	FBI	4/11/17	1326
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

April 28, 2017

Lynn Grochala, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Ms Grochala:

Included are the additional results from the testing of material submitted on April 11, 2017 from the SIM-730 EDR, F&BI 704169 project. There are 4 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Chell Black
FDS0428R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 11, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider SIM-730 EDR, F&BI 704169 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
704169 -01	WT-SS-01-0-6"
704169 -02	WT-SS-02-0-6"
704169 -03	WT-SS-03-0-6"
704169 -04	WT-SS-04-0-6"
704169 -05	WT-SS-05-0-6"
704169 -06	WT-SS-06-0-6"
704169 -07	WT-SS-07-0-6"
704169 -08	WT-SS-08-0-6"

All quality control requirements were acceptable.

Date of Report: 04/28/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169
Date Extracted: 04/24/17
Date Analyzed: 04/24/17

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL MERCURY
USING EPA METHOD 1631E

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

Sample ID Laboratory ID	Total Mercury
WT-SS-01-0-6” 704169-01	0.16
Method Blank	<0.1

Date of Report: 04/28/17
Date Received: 04/11/17
Project: SIM-730 EDR, F&BI 704169

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

Laboratory Code: 704169-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Mercury	mg/kg (ppm)	0.125	0.14	90	99	71-125	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Mercury	mg/kg (ppm)	0.125	100	68-125

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 compound 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. Compounds in the sample matrix interfered with the quantitation of the analyte.

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.

704169

SAMPLE CHAIN OF CUSTODY

ME 04-11-17 BI3

Page # 1 of 1

Send Report To Lynn Grochala

Company Floyd Snider

Address 601 Union St, Suite 600

City, State, ZIP Seattle, WA 98101

Phone # 206-292-2078 Fax #

Email Address Lynn.Grochala@floydsnider.com

SAMPLERS (signature)

PROJECT NAME/NO. SiM - 730 EDR

PO #

PROJECT ADDRESS

· ELECTRONIC DATA REQUESTED

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

SAMPLE DISPOSAL
- Dispose after 30 days (circled)
- Return samples
- Will call with instructions

Samples Received at ___ °C

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	PCBs EPA 8082	RCRA 8 metals EPA 6020	Hg by 1631E		Notes (Ⓧ - per LL 4/24/17)
WT-SS-01-0-6"	01 A B	4/11/17	1245	S	2							X	X	Ⓧ		report results
WT-SS-02-0-6"	02	↓	1220	↓	1							X				to lowest RL for
WT-SS-03-0-3"	03	↓	~~1155~~ 1205 P.D.	↓	1							X				method
WT-SS-04-0-6"	04 A B	↓	1115	↓	2							X	X			
WT-SS-05-0-6"	05	↓	1135	↓	1							X				
WT-SS-06-0-6"	06 A B	↓	1100	↓	2							X	X			
WT-SS-07-0-6"	07	↓	1030	↓	1							X				
WT-SS-08-0-6"	08 A B	↓	1015	↓	2							X	X			

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Kristin Anderson	FS	4/11/17	1326
Received by: [signature]	Nhan Phan	FEBI	4/11/17	1326
Relinquished by:				
Received by:		Samples received at 4 °C		

FORMS\COC\COC.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

May 22, 2017

Lynn Grochala, Project Manager
Floyd-Snider
Two Union Square, Suite 600
601 Union St
Seattle, WA 98101

Dear Ms Grochala:

Included are the additional results from the testing of material submitted on April 11, 2017 from the SIM-730 EDR, F&BI 704169 project. There is 1 page 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
FDS0522R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 11, 2017 by Friedman & Bruya, Inc. from the Floyd-Snider SIM-730 EDR, F&BI 704169 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Floyd-Snider
704169 -01	WT-SS-01-0-6"
704169 -02	WT-SS-02-0-6"
704169 -03	WT-SS-03-0-6"
704169 -04	WT-SS-04-0-6"
704169 -05	WT-SS-05-0-6"
704169 -06	WT-SS-06-0-6"
704169 -07	WT-SS-07-0-6"
704169 -08	WT-SS-08-0-6"

The samples were sent to Fremont Analytical for hexavalent chromium analysis. The report is enclosed.

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Friedman & Bruya
Michael Erdahl
3012 16th Ave. W.
Seattle, WA 98119

RE: 704169
Work Order Number: 1705149

May 17, 2017

Attention Michael Erdahl:

Fremont Analytical, Inc. received 2 sample(s) on 5/12/2017 for the analyses presented in the following report.

Hexavalent Chromium by EPA Method 7196
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Fremont Analytical

Date: *05/17/2017*

CLIENT: Friedman & Bruya
Project: 704169
Work Order: 1705149

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1705149-001	WT-SS-04-0-6"	04/11/2017 11:15 AM	05/12/2017 12:52 PM
1705149-002	WT-SS-06-0-6"	04/11/2017 11:00 AM	05/12/2017 12:52 PM

CLIENT: Friedman & Bruya
Project: 704169

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

CLIENT: Friedman & Bruya
Project: 704169

Lab ID: 1705149-001 **Collection Date:** 4/11/2017 11:15:00 AM
Client Sample ID: WT-SS-04-0-6" **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R36134		Analyst: BB
Percent Moisture	13.7	0.500		wt%	1	5/15/2017 12:03:59 PM
Hexavalent Chromium by EPA Method 7196				Batch ID: 17068		Analyst: KT
Chromium, Hexavalent	ND	0.571	H	mg/Kg-dry	1	5/17/2017 8:49:00 AM

Lab ID: 1705149-002 **Collection Date:** 4/11/2017 11:00:00 AM
Client Sample ID: WT-SS-06-0-6" **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R36134		Analyst: BB
Percent Moisture	6.92	0.500		wt%	1	5/15/2017 12:03:59 PM
Hexavalent Chromium by EPA Method 7196				Batch ID: 17068		Analyst: KT
Chromium, Hexavalent	ND	0.531	H	mg/Kg-dry	1	5/17/2017 9:01:00 AM

Fremont Analytical

Work Order: 1705149
CLIENT: Friedman & Bruya
Project: 704169

QC
Hexavalent Chro

Sample ID	MB-17068	SampType:	MBLK			Units:	mg/Kg	Prep Date:	5/16/2017	
Client ID:	MBLKS	Batch ID:	17068					Analysis Date:	5/17/2017	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	
Chromium, Hexavalent		ND	0.500							

Sample ID	LCS-17068	SampType:	LCS			Units:	mg/Kg	Prep Date:	5/16/2017	
Client ID:	LCSS	Batch ID:	17068					Analysis Date:	5/17/2017	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	
Chromium, Hexavalent		2.46	0.500	2.500	0	98.5	65	135		

Sample ID	1705121-001ADUP	SampType:	DUP			Units:	mg/Kg-dry	Prep Date:	5/16/2017	
Client ID:	BATCH	Batch ID:	17068					Analysis Date:	5/17/2017	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	
Chromium, Hexavalent		ND	0.625							0

Sample ID	1705121-001AMS	SampType:	MS			Units:	mg/Kg-dry	Prep Date:	5/16/2017	
Client ID:	BATCH	Batch ID:	17068					Analysis Date:	5/17/2017	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	
Chromium, Hexavalent		2.81	0.625	3.123	0	89.8	65	135		

Sample ID	1705121-001AMSD	SampType:	MSD			Units:	mg/Kg-dry	Prep Date:	5/16/2017	
Client ID:	BATCH	Batch ID:	17068					Analysis Date:	5/17/2017	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	
Chromium, Hexavalent		3.04	0.631	3.154	0	96.4	65	135	2.805	

Fremont Analytical

Work Order: 1705149
CLIENT: Friedman & Bruya
Project: 704169

QC
Sample N

Sample ID	1705143-001ADUP	SampType:	DUP			Units:	wt%	Prep Date:	5/15/2017
Client ID:	BATCH	Batch ID:	R36134					Analysis Date:	5/15/2017

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val
Percent Moisture	11.3	0.500						10.82

Sample ID	1705150-004ADUP	SampType:	DUP			Units:	wt%	Prep Date:	5/15/2017
Client ID:	BATCH	Batch ID:	R36134					Analysis Date:	5/15/2017

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val
Percent Moisture	15.5	0.500						15.53

Fremont Analytical

Sample Log-In Check List

Client Name:	FB	Work Order Number:	1705149
Logged by:	Chelsea Ward	Date Received:	5/12/2017 12:52:00 PM

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	FedEx		

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐
	Samples received at appropriate temperature			
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☑	Not Required ☐
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C *	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☐	No ☑	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	2.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1705149

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER Fremont

PROJECT NAME/NO. 704169

PO # E-626

REMARKS

Please Email Results F/S Deliverable

Page # 1 of 1

TURNAROUND TIME

☒ Standard ~~(2 Weeks)~~ 1 week

☐ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL

☐ Dispose after 30 days

☐ Return samples

☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED: Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M	cVOC			Notes
WT-SS-04-0-6"		4/11/17	1115	Soil	1								X			
WT-SS-06-0-6"		"	1100	"	1								X			

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

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Michael Erdahl	Friedman and Bruya	5/12/17	9:40 AM
Received by:		Brianna Burnes	FBI	5/12/17	1252
Relinquished by:					
Received by:					

704169

SAMPLE CHAIN OF CUSTODY

ME 04-11-17

BT3

Page # 1 of 1

Send Report To Lynn Grochala
Company Floyd Snider
Address 601 Union St, Suite 600
City, State, ZIP Seattle, WA 98101
Phone # 206-292-2078 Fax #
Email Address Lynn.Grochala@floydsnider.com

SAMPLERS (signature)

PROJECT NAME/NO.: SiM - 730 EDR

PO #

PROJECT ADDRESS

• ELECTRONIC DATA REQUESTED

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

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

Samples Received at ____ °C

Sample ID	Lab ID	Date	Time	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	PCBs EPA 8082	RCRA 8 metals EPA 6020	Hg by 1631E	cPAH		ANALYSES REQUESTED / Notes
																	⊗ per LL 4/24/17 Notes MS
WT-SS-01-0-6"	01 A B	4/11/17	1245	S	2							X	X	⊗			report results
WT-SS-02-0-6"	02		1220		1							X					to lowest RL for
WT-SS-03-0-3"	03		~~1155~~ 1205 PA		1							X					method
WT-SS-04-0-6"	04 A B		1115		2							X	X		⊛		
WT-SS-05-0-6"	05		1135		1							X					⊛ per LL
WT-SS-06-0-6"	06 A B		1100		2							X	X		⊛		5/12/17
WT-SS-07-0-6"	07		1030		1							X					MS.
WT-SS-08-0-6"	08 A B	↓	1015	↓	2							X	X				

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

FORMS\COC\COC.DOC

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Krishna Anderson	FS	4/11/17	1326
Received by:		Khan Phan	FCBI	4/11/17	1326
Relinquished by:					
Received by:			Samples received at 4 °C		