

**GROUND WATER ASSESSMENT
INDEPENDENT METALS STORAGE LOT
703 SOUTH MONROE STREET
SEATTLE, WASHINGTON 98109
FINAL REPORT**



Prepared for:

South Monroe LLC
10512 NE 170th Street
Bothell, Washington 98011

703 South Monroe Street
Seattle, Washington 98109

Prepared by:

GO Spectrum NW, LLC.
14777 NE 140th Street, Suite 301
Bellevue, Washington 98007

March 30, 2020

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ACRONYMS & ABBREVIATIONS

ASTM	American Society for Testing and Materials
BGS.....	Below ground surface
cPAH.....	Carcinogenic Polynuclear Aromatic Hydrocarbon
CSCSL	Confirmed and Suspected Contaminated Sites List
CULs.....	Regulatory cleanup levels
Ecology	Washington State Department of Ecology
Ecology VCP RP...	Ecology VCP Response Plan
EPA.....	United States Environmental Protection Agency
GW.....	Ground water
GPS.....	Global Positioning System
MTCA.....	Washington State Model Toxics Control Act
NWTPH	Northwest Total Petroleum Hydrocarbon
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
MTCA 5 metals.....	arsenic, cadmium, chromium, lead, and mercury
RCRA 8 metals	arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.
Spectrum	GO Spectrum NW, LLC
SVOCs	Semivolatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
µg/L.....	microgram per liter
USGS	United States Geologic Survey
VCP.....	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds

SUMMARY OF FINDINGS

GO Spectrum NW, LLC (Spectrum) prepared this Final Report to document a Ground Water Assessment of commercial property located at 703 South Monroe Street in Seattle, Washington 98108 (Site). South Monroe LLC requested the Ground Water Assessment to meet the requirements of an ongoing Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) evaluation.

ENVIRONMENTAL BACKGROUND

In 2012, an “oily residue dripping into rainwater from an uncovered, empty metal container,” was observed at the Site (Pacific Crest Environmental 2017). Because of sampling results conducted by the City of Seattle, the site “was added to Ecology’s CSCSL in 2014 based on elevated concentrations of Polychlorinated biphenyls (PCBs) in concentrations above Washington State regulatory Cleanup Levels (CULs).

The results of a 2018 Phase II investigation indicate that there were no soil samples with detectable Polynuclear Aromatic Hydrocarbons (PAHs), Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), PCBs, Total Petroleum Hydrocarbons (TPHs), arsenic, barium, cadmium, chromium, mercury, selenium, and lead (RCRA 8 metals) in concentrations above State of Washington regulatory clean up levels.

The results of a 2018 Phase II investigation indicated that there were no soil samples with detectable PAHs, VOCs, SVOCs, PCBs, TPH, RCRA, or metals in concentrations above State of Washington regulatory clean up levels.

The results of a 2018 Phase II investigation also indicated that there were no ground water samples with detectable PAHs, VOCs, SVOCs, PCBs, and TPH in concentrations above State of Washington regulatory clean up levels. However, three ground water samples had concentrations of arsenic above the MTCA Method A Cleanup Level for Groundwater.

In order to determine if the 2018 grab ground water samples were representative of the Site ground water quality, ground water monitoring wells were installed, and the Site ground water was retested.

SITE DESCRIPTION

The Site is a 20,000-square foot (0.5-acre) King County commercial property located within a south Seattle neighborhood that is occupied by heavy industry and both, single- and multi-family residences. The Site is made up of three King County parcels (King County Parcel Numbers: 732790-1445, 732790-1465, and 732790-1475). The Site elevation is 13 feet above mean sea level (AMSL). The Site is a gravel and dirt storage lot with frontages on South Monroe Street (north), South Elmgrove Street (south), and 7th Avenue South (west). No structures exist within the Site. The Site has a very slight south-southeast slope. There is one point of ingress/egress to the Site on 7th Avenue South.

ANALYTICAL PROTOCOL

ESN tested ground water samples for arsenic, cadmium, chromium, lead, and mercury (MTCA 5 metals) via US Environmental Protection Agency (EPA) Test Method Inductively Coupled Plasma Mass Spectrometry (ICP-MS) Metals and EPA Test Method 200.8 – Water.

REGULATORY REVIEW

The ground water samples analytical results were compared to the MTCA Method A Ground Water Cleanup Levels.

FINDINGS

SUBSURFACE CONDITIONS

The subsurface consists of fill (gravels and construction debris) soft brown and gray from surface to approximately 3 feet BGS; fine silt and silty sand with minor pebbles (SM) from 3.1 to approximately 6.0 to 6.4 feet below ground surface (BGS), where it transitions to saturated organic clay with high plasticity (OH) intermixed with coarse sand lenses (SP) at a depth of 10 to 12.3 feet BGS; the bottom 8 to 10 feet are made up of clayey silts (OL) with some random silty lenses with organic odor. All ground water samples were free of chemical odors and staining.

GROUND WATER

Spectrum personnel supervised the installation of three ground water monitoring wells at the Site. The three ground water monitoring wells were advanced to 20 feet BGS. Ground water was encountered in all three ground water monitoring wells installed at the Site. Saturated ground water indicative of a perched water table was encountered at depths of 13.7 feet and 12.7 feet BGS in ground water monitoring wells SM-MW1 and SM-MW3, respectively. The uppermost water table was encountered at 7.18 feet BGS in SM-MW2. All encountered ground water was free of chemical odors and staining. The Site is essentially flat, and the ground water gradient mirrored the property topography. There is no discernable gradient across the Site. However, if pure differences are assessed the overall gradient would be south-southeast.

ANALYTICAL RESULTS

Ground water analytical results indicated that arsenic was present in the Site ground water in concentrations ranging from 4.0 to 4.7 $\mu\text{g/L}$.

Ground water analytical results indicated that cadmium was present in the Site ground water in concentrations ranging from 0.3 to 0.4 $\mu\text{g/L}$.

Ground water analytical results indicated that chromium was present in the Site ground water in concentrations ranging from 2.5 to 5.9 $\mu\text{g/L}$.

Ground water analytical results indicated that lead was present in the Site ground water in concentrations ranging from 0.7 to 1.2 $\mu\text{g/L}$.

There was no mercury detected in the analyzed ground water samples at concentrations above the test method detection limit of 1.0 $\mu\text{g/L}$.

REGULATORY REVIEW RESULTS

Three ground water samples (SM-MW1-01, SM-MW2-02, and SM-MW3-01) had detectable concentrations of arsenic, cadmium, chromium, and lead. However, the detected concentrations of arsenic, cadmium, chromium, and lead were below MTCA Method A Ground Water Cleanup Level for arsenic (5 $\mu\text{g/L}$), cadmium (5 $\mu\text{g/L}$), chromium (50 $\mu\text{g/L}$), and lead (15 $\mu\text{g/L}$). There was no mercury detected in the analyzed ground water samples at concentrations above the test method detection limit of 1.0 $\mu\text{g/L}$. Therefore, the analyzed

ground water samples were also compliant with the MTCA Method A Cleanup Level for mercury in Ground Water.

CONCLUSIONS

The Site subsurface consists of fill (gravels and construction debris) underlain by fine silt and silty sand with minor pebbles transitioning to saturated organic clay with high plasticity that is intermixed with coarse sand lenses, with the lowermost unit consisting of clayey silts with some random silty lenses with organic odor.

Ground water was encountered in all three ground water monitoring wells installed at the Site. Saturated ground water indicative of a perched water table was encountered at depths of 13.7 feet and 12.7 feet BGS. The uppermost water table was encountered at 7.18 feet BGS. All encountered ground water was free of chemical odors and staining. The Site is essentially flat, and the ground water gradient mirrored the property topography. However, if pure differences are assessed the overall gradient would be south-southeast.

Three ground water samples had detectable concentrations of arsenic, cadmium, chromium, and lead. There was no mercury detected in the analyzed ground water samples.

The analyzed ground water samples indicated that ground water at the Site is MTCA Method A Cleanup Levels for Ground Water compliant for arsenic, cadmium, chromium, lead, and mercury.

RECOMMENDATIONS

Our research for the execution of this Ground Water Assessment shows that Spectrum has conducted a thorough analysis of ground water conditions at the Site. The results of the Spectrum Ground Water Assessment indicate that ground water within the Site is free of heavy metal contamination. Currently, we do not recommend any further environmental analysis of the subject property ground water.

1 INTRODUCTION

Spectrum prepared this Final Report to document a Ground Water Assessment of commercial property located at the Site (Figure 1). South Monroe LLC requested the Ground Water Assessment to meet the requirements of an ongoing Washington State Ecology VCP evaluation.

1.1 REPORT ORGANIZATION

This report begins with a Summary of Findings, documentation of earlier Site investigations, a summary of field services, general property overview, and a site legal description. A discussion of project area geology, site conditions and field observations follow the initial sections. Subsequent sections present the elements of the Ground Water Assessment field investigation (ground water sampling methodology, laboratory analyses, and analytical results), as well as a regulatory review, project conclusions, and recommendations. Two figures, two tables, and four supporting appendices follow the main text. Figure 1 is the property Location Map and Figure 2 is the property Plot Plan. Table 1 presents the ground water well locations and Global Positioning System (GPS) coordinates. Table 2 provides the ground water metals analytical results. Select photographs taken during the field investigation are presented in Appendix A and the water sample logs are presented in Appendix B. The ground water monitoring well logs are provided in Appendix C and a copy of the analytical report is presented in Appendix D.

1.2 INVOLVED PARTIES

The Site Owner, South Monroe LLC, selected Spectrum to conduct a Groundwater Assessment of the Site as part of an ongoing Ecology VCP project. Spectrum supervised the Ground Water Assessment. Spectrum retained ESN of Lacey, Washington to provide drilling and environmental analytical services. ESN is a Washington State Department of Ecology accredited analytical laboratory.

1.3 PROJECT OBJECTIVES

The results of this Ground Water Assessment will be used to determine if ground water underlying the Site is compliant with the State of Washington regulatory cleanup levels.

1.4 ENVIRONMENTAL BACKGROUND

In 2012, an “oily residue dripping into rainwater from an uncovered, empty metal container,” was observed at the Site (Pacific Crest Environmental 2017). Because of sampling results conducted by the City of Seattle, the site “was added to Ecology’s CSCSL in 2014 based on concentrations of PCBs above Washington State regulatory CULs (Ecology 2013).

The results of a 2018 Phase II investigation indicated that there were no soil samples with detectable PAHs, VOCs, SVOCs, PCBs, TPHs, and RCRA 8 metals in concentrations above State of Washington regulatory clean up levels (GO Spectrum NW 2018).

The results of a 2018 Phase II investigation also indicated that there were no ground water samples with detectable PAHs, VOCs, SVOCs, PCBs, and TPH in concentrations above State of Washington regulatory clean up levels. However, three ground water samples had concentrations of arsenic above the MTCA Method A Cleanup Level for Groundwater (GO Spectrum NW 2018).

In order to determine if the 2018 grab ground water samples were representative of the Site ground water quality, ground water monitoring wells were installed, and the Site ground water was retested.

1.5 SITE DESCRIPTION

The Site is a 0.5-acre King County commercial property located within a south Seattle neighborhood that is occupied by heavy industry and both, single- and multi-family residences. The Site is made up of three King County parcels (King County Parcel Numbers: 732790-1445, 732790-1465, and 732790-1475). The Site elevation is 13 feet AMSL. The Site is a gravel and dirt storage lot with frontages on South Monroe Street (north), South Elmgrove Street (south), and 7th Avenue South (west). No structures exist within the Site. The Site has a very slight south-southeast slope. There is one point of ingress/egress to the Site on 7th Avenue South (Figure 2).

2 GROUND WATER ASSESSMENT FIELD WORK

Spectrum personnel supervised the installation of three ground water monitoring wells at the Site. The ground water monitoring wells were sampled and analyzed for heavy metals by ESN. Project field work photographs are provided in Appendix A.

2.1 MONITORING WELL LOCATIONS

The GPS coordinates in degrees, minutes, and seconds (DMS) for the Site ground water monitoring logs are as follows:

SM-MW1 - Longitude 47° 31' 51.4" Latitude - 122° 19' 31.1"; 13 feet AMSL¹.

SM-MW2 - Longitude 47° 31' 51.4" Latitude - 122° 19' 30.9" ; 13 feet AMSL.

SM-MW3 - Longitude 47° 31' 50.8" Latitude - 122° 19' 31.0" ; 13 feet AMSL.

The GPS coordinates were downloaded using a Garmin Trex 30x hand-held GPS device. AMSL¹: above mean sea level. The ground water monitoring well locations are documented in Table 2.

2.2 MONITORING WELLS CONSTRUCTION

On March 7, 2020, Spectrum personnel supervised the installation of three ground water monitoring wells at the Site.

Three 2-inch diameter ground water monitoring wells were installed at the proposed locations described in the Independent Metals Storage Lot Ecology VCP Response Plan (Ecology VCP RP 2020) and as shown on Figure 2. Well installation depths were 20 feet BGS. Subsurface drilling was completed with hollow stem augers using a truck-mounted drill rig. The augers were 4.25-inch inner diameter and 8-inch outer diameter. The wells were constructed with Schedule 40 PVC casing with 10 feet of 0.01-inch screen, at depths within the shallow water bearing zone. A 20-40 sand pack extended from the bottom of the well boring to approximately one foot above the well screen in each well. The wells were completed with a hydrated bentonite seal placed above the sand pack and extended to the cement grout, which was about 18 inches at the top of each well. The completed wells were fitted with round, 5-foot length, white heavy-duty environmental monitoring well protectors with industrial-strength steel locking lids.

After the wells were installed, they were developed to remove any sediment and to clear the well screen. Well development methods consisted of removing a minimum of ten well volumes from each well using a submersible pump with dedicated tubing and letting the well recharge between development purges.

The boring tailings and purge water were collected in 55-gallon drums that will be transported to an off-site facility for disposal based on laboratory results.

The ground water monitoring well construction logs are provided in Appendix C.

2.3 GROUND WATER SAMPLING

Depth to static groundwater was measured at each well using an electronic water level meter. The measurements were recorded to 0.1-inch in conformance with industry standard protocols. To prevent cross-contamination between wells, the water sensor probe was decontaminated using an aqueous solution of Alconox detergent and rinsing with distilled water between each well measurement. Each well measurement was then recorded in relation to an established elevation benchmark (mark on well casing).

Prior to sampling, each well was purged using methods that consisted of removing at least three well volumes using a low flow submersible pump with dedicated tubing and letting the well recharge to at least 80% volume prior to sampling. Spectrum field personnel used a YSI 556 Multiparameter water quality meter to measure and record temperature, pH, and specific conductivity. Data was logged into the sample-specific Ground Water Sampling Log sheet.

A peristaltic pump with dedicated plastic disposable tubing was used to collect a sample from each well using EPA low-flow techniques. A 40 mL VOA HCl preserved vial was filled for the lead sample analysis. A 500 mL HCl preserved polyethylene bottle was filled for the arsenic, cadmium, chromium, and mercury analyses.

The samples were stored in an ice chest maintained at 4 degrees C and submitted directly to the ESN laboratory under standard chain of custody protocols.

Details of the ground water well development and ground water physical measurements at the time of sampling are provided in the Water Sample Logs. Copies of the Water Sample Logs are provided in Appendix B.

2.4 ASSESSMENT DOCUMENTATION

Spectrum documented all field activities associated with the Ground Water Assessment. Documentation included a comprehensive discussion of field observations, including field parameters measurements, and any problems encountered.

All ground water sample containers were labeled with the following information:

- Project identification number;
- Sample date;
- Sampler's name; and
- Sample identification number.

Each sample collected was given a unique identification number as described below:

Project\Source\Source Location: For example, sample SM-MW2-01 is a ground water sample collected for the South Monroe LLC (SM) project, collected from MW2, and was the first (01) ground water sample collected from this ground water monitoring well .

In addition, the sample chain-of-custody forms were completed with the Spectrum project identification number, the sampler's name, date, and sample identification codes, number of containers, and date and time the sample was collected. The chain-of-custody form was included with samples transported to the analytical laboratory.

2.5 DECONTAMINATION PROCEDURES

All non-disposable sampling equipment was decontaminated prior to and after each sampling operation. The specific steps used for decontamination of the equipment are:

- Rinse and pre-clean equipment in potable water;
- Wash and scrub equipment with non-phosphate based detergent and potable water;
- Rinse with potable water;
- Rinse in deionized water; and
- Air-dry and store in clean plastic bags (or visqueen sheet) between samplings.

2.6 SAMPLE HANDLING AND SHIPPING

Spectrum field personnel checked all sample jars for completeness and cap tightness. The sealed sample containers were then placed upright in a cooler and chilled with Blue Ice. The sample cooler was then placed in a field vehicle to await transportation to the analytical laboratory. All samples collected were shipped under chain-of-custody to the ESN laboratory for analysis.

2.7 ANALYTICAL PROTOCOL

ESN tested ground water samples for MTCA 5 metals via EPA Test Method ICP-MS Metals and EPA Test Method 200.8 - Water (Table 1).

3 FINDINGS

The Ground Water Assessment findings are provided in the following sections.

3.1 SUBSURFACE CONDITIONS

The subsurface consists of fill (gravels and construction debris) soft brown and gray from surface to approximately 3 feet BGS; fine silt and silty sand with minor pebbles (SM) from 3.1 to approximately 6.0 to 6.4 feet BGS, where it transitions to saturated organic clay with high plasticity (OH) intermixed with coarse sand lenses (SP) at a depth of 10 to 12.3 feet BGS; the bottom 8 to 10 feet are made up of clayey silts (OL) with some random silty lenses with organic odor. All encountered ground water was free of chemical odors and staining.

Copies of the Monitoring Well Logs documenting the well construction element and subsurface conditions encountered are provided in Appendix C.

3.2 GROUND WATER

Ground water was encountered in all three ground water monitoring wells installed at the Site. Saturated ground water indicative of a perched water table was encountered at depths of 13.7 feet and 12.7 feet BGS in ground water monitoring wells SM-MW1 and SM-MW3, respectively. The uppermost water table was encountered at 7.18 feet BGS in SM-MW2. The Site is essentially flat, and the ground water gradient mirrored the property topography. There is no discernable gradient across the Site. However, if pure differences are assessed the overall gradient would be south-southeast (Figure 2).

4 GROUND WATER ANALYTICAL RESULTS

Project analytical results are provided below.

Ground water analytical results indicated that arsenic was present in the Site ground water in concentrations ranging from 4.0 to 4.7 µg/L.

Ground water analytical results indicated that cadmium was present in the Site ground water in concentrations ranging from 0.3 to 0.4 µg/L.

Ground water analytical results indicated that chromium was present in the Site ground water in concentrations ranging from 2.5 to 5.9 µg/L.

Ground water analytical results indicated that lead was present in the Site ground water in concentrations ranging from 0.7 to 1.2 µg/L.

There was no mercury detected in the analyzed ground water samples at concentrations above the test method detection limit of 1.0 µg/L.

The ground water sample analytical results are summarized in Table 2. A copy of the Analytical Report is provided in Appendix D.

5 REGULATORY REVIEW RESULTS

The analytical results were compared to the MTCA Method A Ground Water Cleanup Levels. Three ground water samples (SM-MW1-01, SM-MW2-02, and SM-MW3-01) had detectable concentrations of arsenic, cadmium, chromium, and lead. However, the detected concentrations of arsenic, cadmium, chromium, and lead were below MTCA Method A Ground Water Cleanup Level for arsenic (5 µg/L), cadmium (5 µg/L), chromium (50 µg/L), and lead (15 µg/L). There was no mercury detected in the analyzed ground water samples at concentrations above the test method detection limit of 1.0 µg/L. Therefore, the analyzed ground water samples were also compliant with the MTCA Method A Cleanup Level for mercury in Ground Water.

6 CONCLUSIONS

The Site subsurface consists of fill (gravels and construction debris) soft brown and gray from surface to approximately 3 feet BGS; fine silt and silty sand with minor pebbles (SM) from 3.1 to approximately 6.0 to 6.4 feet BGS, where it transitions to saturated organic clay with high plasticity (OH) intermixed with coarse sand lenses (SP) at a depth of 10 to 12.3 feet BGS; the bottom 8 to 10 feet are made up of clayey silts (OL) with some random silty lenses with organic odor. All ground water samples were free of chemical odors and staining.

Ground water was encountered in all three ground water monitoring wells installed at the Site. Saturated ground water indicative of a perched water table was encountered at depths of 13.7 feet and 12.7 feet BGS in ground water monitoring wells SM-MW1 and SM-MW3, respectively. The uppermost water table was encountered at 7.18 feet BGS in SM-MW2. The Site is essentially flat, and the ground water gradient mirrored the property topography (However, if pure differences are assessed the overall gradient would be south-southeast).

Three ground water samples (SM-MW1-01, SM-MW2-02, and SM-MW3-01) had detectable concentrations of arsenic, cadmium, chromium, and lead. There was no mercury detected in the analyzed ground water samples.

The analyzed ground water samples indicated that ground water at the Site is MTCA Method A Ground Water compliant for arsenic, cadmium, chromium, lead, and mercury.

7 RECOMMENDATIONS

Our research for the execution of this Ground Water Assessment shows that Spectrum has conducted a thorough analysis of ground water conditions at the Site. The results of the Spectrum Ground Water Assessment indicate that ground water within the Site is free of heavy metal contamination. Currently, we do not recommend any further environmental analysis of the subject property ground water.

8 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

The report has been prepared in accordance with generally accepted environmental methodologies referred to in ASTM 1903-11 and contains all the limitations inherent in these methodologies. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

A Ground Water Assessment evaluates the presence and degree of contamination at the subject property but does not provide a complete delineation of the nature and extent of that contamination, nor is it intended to provide all the information necessary to formulate an appropriate remediation plan. It is possible that additional sampling would be necessary to completely define the nature and extent of contamination. The samples submitted for analysis represent the site conditions at the time of data collection. Therefore, the data collected as part of this Ground Water Assessment may have a finite span of usability. An environmental professional should evaluate whether the generated data are appropriate for any subsequent use beyond the original purpose for which it was collected.

9 REFERENCES

ASTM E1903 – 11; Standard Practice for Environmental Site Assessments: Ground Water Assessment Process. Adapted 2011.

Ecology 2011. Washington State Department of Ecology, Toxics Cleanup Program, 2011. Focus on Developing Soil Cleanup Standards Under the Model Toxics Control Act. Retrieved from: <https://fortress.wa.gov/ecy/publications/publications/0109071.pdf>; Accessed

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GO Spectrum NW 2018. Phase II Environmental Site Assessment Commercial Property 703 South Monroe Street Seattle, Washington 98109 Final Report. Project Number 18-0251. September 21, 2018.

Ecology VCP RP 2020. Independent Metals Storage Lot Washington State Department of Ecology Voluntary Cleanup Program Response Plan. Project Number 19-001. January 17, 2020.

MTCA 2001. Washington State/Model Toxics Control Act (MTCA) Cleanup Regulations; WAC 173-340-900. August 2001.

USGS 7.5 Minute Quadrangle Seattle South, Washington 2014.

10 SIGNATURE

The undersigned prepared the Ground Water Assessment Final Report.



Miguel A. Ortega, L.G.

March 30, 2020

Date

Washington Licensed Geologist (Hydrogeology Specialty); License #534.
Washington State Site Assessor No. 8261734

FIGURES

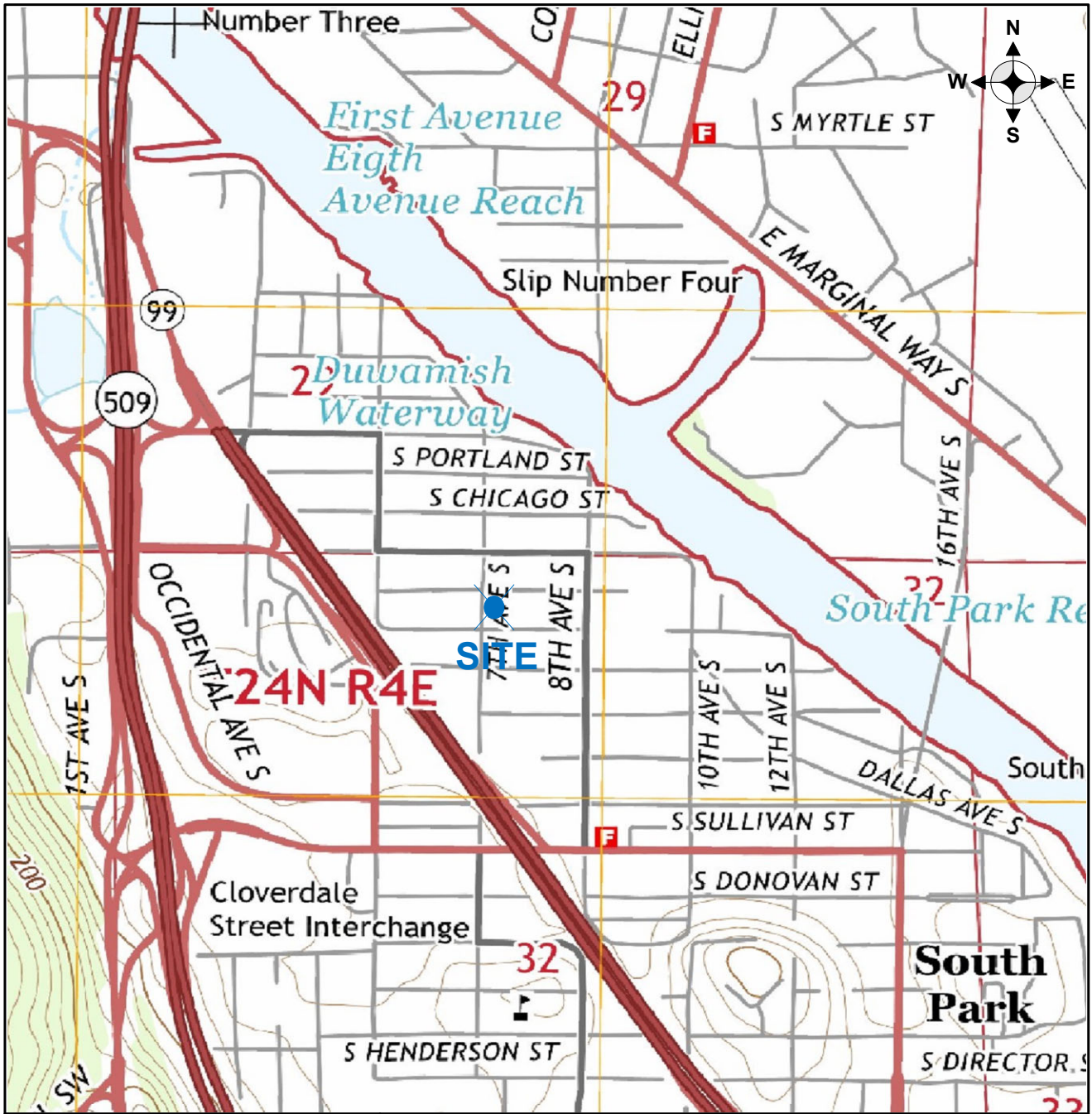
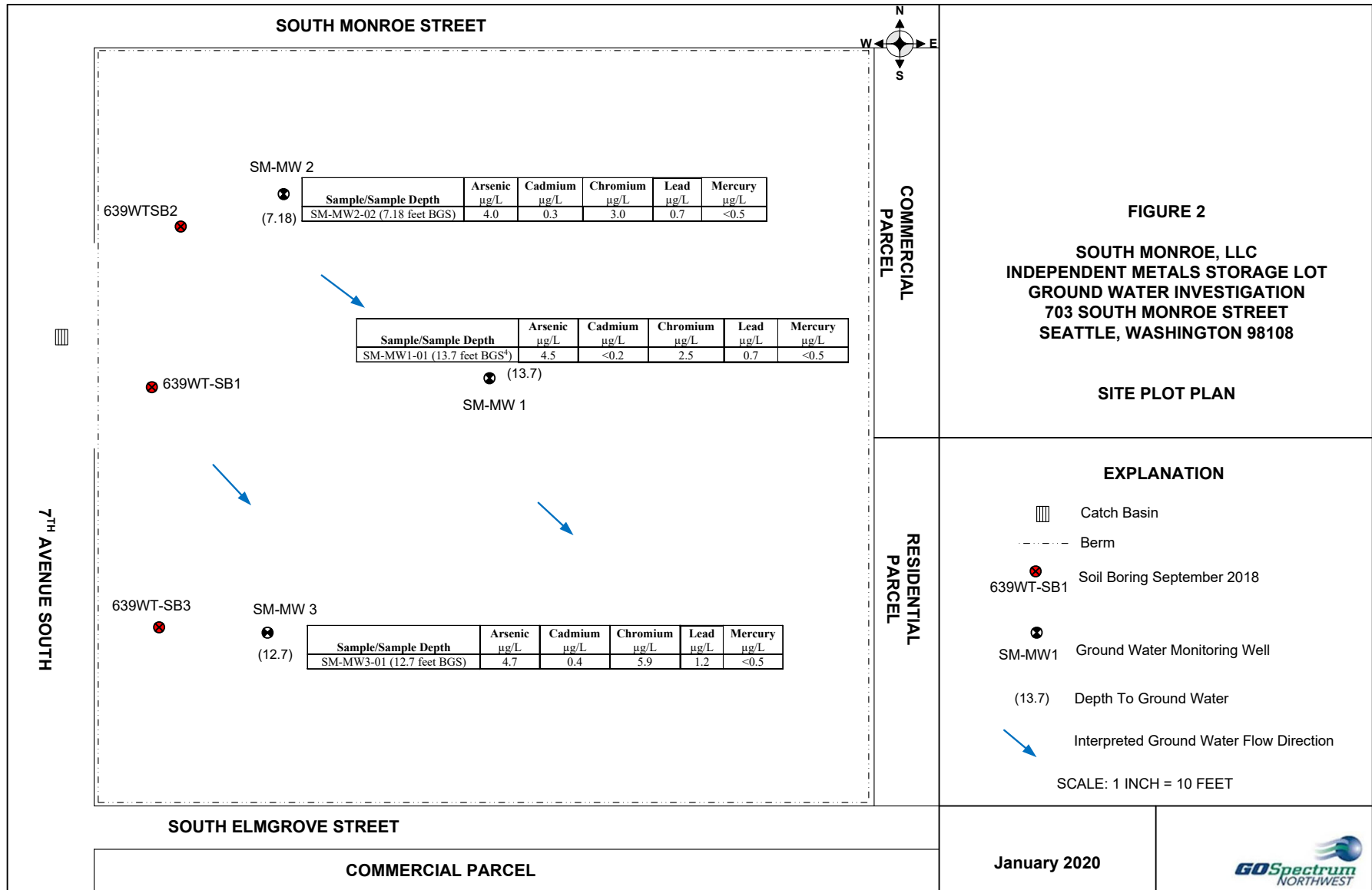


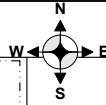
FIGURE 1

SOUTH MONROE LLC
 GROUND WATER ASSESSMENT
 INDEPENDENT METAL STORAGE LOT
 703 SOUTH MONROE STREET
 SEATTLE, WASHINGTON 98109

SITE LOCATION MAP



SOUTH MONROE STREET



COMMERCIAL
PARCEL

FIGURE 2

SOUTH MONROE, LLC
INDEPENDENT METALS STORAGE LOT
GROUND WATER INVESTIGATION
703 SOUTH MONROE STREET
SEATTLE, WASHINGTON 98108

SITE PLOT PLAN

SM-MW 2
(7.18)

Sample/Sample Depth	Arsenic µg/L	Cadmium µg/L	Chromium µg/L	Lead µg/L	Mercury µg/L
SM-MW2-02 (7.18 feet BGS)	4.0	0.3	3.0	0.7	<0.5

639WTSB2

Sample/Sample Depth	Arsenic µg/L	Cadmium µg/L	Chromium µg/L	Lead µg/L	Mercury µg/L
SM-MW1-01 (13.7 feet BGS)	4.5	<0.2	2.5	0.7	<0.5

639WT-SB1

(13.7)
SM-MW 1

RESIDENTIAL
PARCEL

EXPLANATION

- Catch Basin
- Berm
- 639WT-SB1 Soil Boring September 2018
- SM-MW1 Ground Water Monitoring Well
- (13.7) Depth To Ground Water
- Interpreted Ground Water Flow Direction

SCALE: 1 INCH = 10 FEET

7TH AVENUE SOUTH

639WT-SB3

SM-MW 3
(12.7)

SOUTH ELMGROVE STREET

COMMERCIAL PARCEL

January 2020



TABLES

TABLE 1: GROUND WATER MONITORING WELL LOCATIONS

MONITORING WELL	LOCATION	¹GPS COORDINATES & ELEVATION
SM-MW1	75 Feet south of the southeast corner of South Monroe Street and 7 th Avenue South; then 50 feet east of 7th Avenue South, parallel with a catch basin.	Longitude 47° 31' 51.4" Latitude - 122° 19' 31.1"; 13 feet ² AMSL
SM-MW2	50 Feet south of the southeast corner of South Monroe Street and 7 th Avenue South; then 35 feet east of 7th Avenue South.	Longitude 47° 31' 51.4" Latitude - 122° 19' 30.9" ; 13 feet AMSL
SM-MW3	150 Feet south of the southeast corner of South Monroe Street and 7 th Avenue South; then 35 feet east of 7th Avenue South.	Longitude 47° 31' 50.8" Latitude - 122° 19' 31.0" ; 13 feet AMSL

EXPLANATION¹GPS: Global Positioning System.²AMSL: Above mean sea level.

TABLE 2: GROUND WATER ANALYTICAL RESULTS METALS¹

Sample/Sample Depth	Arsenic²	Cadmium	Chromium	Lead	Mercury
SM-MW1-01 (13.7 feet BGS ⁴)	4.5	<0.2	2.5	0.7	<0.5
SM-MW2-02 (7.18 feet BGS)	4.0	0.3	3.0	0.7	<0.5
SM-MW3-01 (12.7 feet BGS)	4.7	0.4	5.9	1.2	<0.5
MTCA Method A Cleanup Levels ⁵	5	5	50	15	2

EXPLANATION

¹MTCA 5 Metals by EPA Method ICP-MS Metals EPA Test Method 200.8 - Water; ²Analytical values reported in micrograms per liter (µg/L); ³BGS – Below Ground Surface; ⁴Not Detected, below test method detection limits – arsenic (2.0 µg/L), cadmium (2.0 µg/L), chromium (10 µg/L), lead (2.0 µg/L), and mercury (1.0 µg/L); **Bold-** signifies exceedance of regulatory cleanup level; ⁴BGS – Below Ground Surface; and ⁵MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-900).

APPENDIX A: PROJECT PHOTOGRAPHS



Photograph 1: View of drill rig set up on a monitoring well location.



Photograph 2: View developing monitoring well SM-MW2.



Photograph 3: View of set up to sample monitoring well SM-MW3.



Photograph 4: View of fill material found in the boring for monitoring well SM-MW3.

APPENDIX B: WATER SAMPLE LOGS



GROUND WATER SAMPLING LOG

WELL ID. SM-MW2 DATE March 7, 2020

CLIENT South Monroe LLC

LOCATION Independent Metals Storage Lot Ecology Well I.D.

FIELD CONDITIONS Excellent BJR891

SAMPLER Miguel Ortega

SITE CONDITIONS Rainy and cool

WELL DIAMETER 2-inch

WELL DEPTH (Feet): 20.0 feet

DEPTH TO WATER(Feet) 7.18 feet BGS

REFERENCE POINT: Mark on well casing

REFERENCE POINT ELEVATION: 13 feet above mean sea level

PURGE METHOD: Submersible pump TOTAL VOLUME PURGED: 10 gallons

FIELD INSTRUMENTATION: YSI 556 Multiparameter water meter & sounder

TIME	VOLUME	TEMP.	pH	SPECIFIC CONDUCTANCE	NOTES
1530	4 gallons	16.1 C	7.2	4420	Lot of suspended sediments in water; well is a poor producer
1550	2 gallons	16.1 C	7.2	4429	Lot of suspended sediments in water
1610	2 gallons	16.1 C	7.2	4437	Lot of suspended sediments in water
1630	2 gallons	16.1 C	7.2	4437	Murky water

SAMPLE ID. SM-MW1-02 SAMPLING TIME: 1630

SAMPLING METHOD: Removed 11 gallons from well casing with a low flow submersible pump; used a peristaltic pump to collect sample

COMMENTS: Let well stand for 10 minutes prior to sampling; sample was very murky; silica gel filtering required.

APPENDIX C: GROUND WATER MONITORING WELL LOGS



MONITORING WELL LOG

Well ID: SM-MW1
 Total depth 20.0 feet
 Sheet 1 of 1

Project name SM GW Assessment

Project number 19-001

Client South Monroe LLC

Spectrum Rep. M. Ortega

Ecology Well ID: BJR890

Drilling Contractor ESN

Location Independent Metals Storage Lot

703 South Monroe Street Seattle, Washington

Start date March 6, 2020

End date March 6, 2020

Drilling method Hollow-stem auger

Sampling method Continuous core

Ground elevation 13 feet AMSL

Air monitoring (Y/N) No

Instrument(s) ---

Instrument reading (ppm)	Sample type, interval	% recovery	Water level (feet)	Depth (feet, BGS)	Soil group	Soil description		
	Hollow tube sampler	80		1	F	Fill: black coarse sand and gravel debris (brick & cement), metal fragments, and wood pieces no odors or staining (Fill)		
				2	F			
						3	SM	Fine silt and silty sand with minor pebbles; dry no odors.
				4				
				5				
	Hollow tube sampler	80			6	OH SP	Organic clay with high plasticity intermixed with coarse sand Lenses; saturated	
								7
								8
					9			
	Hollow tube sampler	80			10	OL	Clayey silts with some random silty lenses with organic odor	
								11
								12
					13		Ground water at 13.7 feet BGS	
					14			
					15			
	Hollow tube sampler	80			16			
						17		
						18		
					19			
					20		Bottom of boring 20.0 feet BGS	



MONITORING WELL LOG

Well ID: SM-MW2
 Total depth 20.0 feet
 Sheet 1 of 1

Project name SM GW Assessment

Project number 19-001

Client South Monroe LLC

Spectrum Rep. M. Ortega

Ecology Well ID: BJR891

Drilling Contractor ESN

Location Independent Metals Storage Lot

703 South Monroe Street Seattle, Washington

Start date March 6, 2020

End date March 6, 2020

Drilling method Hollow-stem auger

Sampling method Continuous core

Ground elevation 13 feet AMSL

Air monitoring (Y/N) No

Instrument(s) ---

Instrument reading (ppm)	Sample type, interval	% recovery	Water level (feet)	Depth (feet, BGS)	Soil group	Soil description	
	Hollow tube sampler	80		1	F	Fill: black coarse sand and gravel debris (brick & cement), metal fragments, and wood pieces no odors or staining (Fill)	
				2	F		
						3	SM
				4			
	Hollow tube sampler	80			5		
				6	OH SP	Organic clay with high plasticity intermixed with coarse sand lenses; saturated	
				7			
					8		Ground water at 7.8 feet BGS
					9		
	Hollow tube sampler	80			10	OL	Clayey silts with some random silty lenses with organic odor
					11		
					12		
					13		
					14		
				15			
	Hollow tube sampler	80			16		
					17		
					18		
					19		
					20		Bottom of boring 20.0 feet BGS



MONITORING WELL LOG

Well ID: SM-MW3
 Total depth 20.0 feet
 Sheet 1 of 1

Project name SM GW Assessment

Project number 19-001

Client South Monroe LLC

Spectrum Rep. M. Ortega

Ecology Well ID: BJR892

Drilling Contractor ESN

Location Independent Metals Storage Lot

703 South Monroe Street Seattle, Washington

Start date March 6, 2020

End date March 6, 2020

Drilling method Hollow-stem auger

Sampling method Continuous core

Ground elevation 13 feet AMSL

Air monitoring (Y/N) No

Instrument(s) ---

Instrument reading (ppm)	Sample type, interval	% recovery	Water level (feet)	Depth (feet, BGS)	Soil group	Soil description	
	Hollow tube sampler	80		1	F	Fill: black coarse sand and gravel debris (brick & cement), metal fragments, and wood pieces no odors or staining (Fill)	
				2	F		
						3	SM
				4			
				5			
	Hollow tube sampler	80			6	OH SP	Organic clay with high plasticity intermixed with coarse sand lenses; saturated
					7		
					8		
				9			
	Hollow tube sampler	80			10	OL	Clayey silts with some random silty lenses with organic odor
					11		
					12		
							Ground water at 12.7 feet BGS
					13		
					14		
					15		
	Hollow tube sampler	80			16		
					17		
					18		
					19		
				20		Bottom of boring 20.0 feet BGS	

APPENDIX D: COPY OF THE ANALYTICAL REPORT

03/17/2020

ESN Northwest
1210 Eastside St SE
Suite 200
Olympia, WA 98501
Attn: Julie Woods

Project: Wuhers
Client ID: SM-MW1-01
Sample Matrix: Water
Date Sampled: 03/09/2020
Date Received: 03/12/2020
Spectra Project: 2020030409
Spectra Number: 1

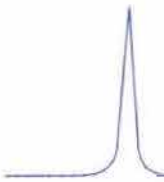
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Total Arsenic	4.5	µg/L	EPA 200.8
Total Cadmium	< 0.2	µg/L	EPA 200.8
Total Chromium	2.5	µg/L	EPA 200.8
Total Lead	0.7	µg/L	EPA 200.8
Total Mercury	< 0.5	µg/L	EPA 245.1

SPECTRA LABORATORIES



Authorized by: Kristin Hintz

a6/sej



03/17/2020

ESN Northwest
1210 Eastside St SE
Suite 200
Olympia, WA 98501
Attn: Julie Woods

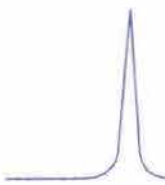
Project: Wuhers
Client ID: SM-MW2-02
Sample Matrix: Water
Date Sampled: 03/09/2020
Date Received: 03/12/2020
Spectra Project: 2020030409
Spectra Number: 2

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Total Arsenic	4.0	µg/L	EPA 200.8
Total Cadmium	0.3	µg/L	EPA 200.8
Total Chromium	3.0	µg/L	EPA 200.8
Total Lead	0.7	µg/L	EPA 200.8
Total Mercury	< 0.5	µg/L	EPA 245.1

SPECTRA LABORATORIES

Authorized by: Kristin Hintz

a6/50



03/17/2020

ESN Northwest
1210 Eastside St SE
Suite 200
Olympia, WA 98501
Attn: Julie Woods

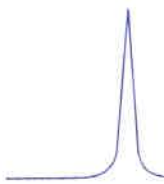
Project: Wuhers
Client ID: SM-MW3-01
Sample Matrix: Water
Date Sampled: 03/09/2020
Date Received: 03/12/2020
Spectra Project: 2020030409
Spectra Number: 3

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Total Arsenic	4.7	µg/L	EPA 200.8
Total Cadmium	0.4	µg/L	EPA 200.8
Total Chromium	5.9	µg/L	EPA 200.8
Total Lead	1.2	µg/L	EPA 200.8
Total Mercury	< 0.5	µg/L	EPA 245.1

SPECTRA LABORATORIES

Authorized by: Kristin Hintz

a67scj



3/17/2020

ESN Northwest
1210 Eastside St. NE
Suite 200
Olympia, WA 98501

Units: ug/L
Spectra Project: 2020030409
Applies to Spectra #'s 1-3
Analyst: SCJ

QUALITY CONTROL RESULTS ICP-MS Metals - EPA Method 200.8 - Water

Laboratory Reagent Blank (LRB)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020

Element	CAS #	Result
Arsenic	7440-38-2	< 0.2
Cadmium	7440-43-9	< 0.2
Chromium	7440-47-3	< 0.5
Lead	7439-92-1	< 0.5

Laboratory Fortified Blank (LFB)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020

Element	Spike Added	LCS Conc.	LCS %Rec
Arsenic	100.0	107.09	107.1
Cadmium	100.0	106.39	106.4
Chromium	100.0	107.71	107.7
Lead	100.0	111.29	111.3

LCS Recovery limits 85-115%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020
Sample Spiked: 2020030215-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Arsenic	0.28	100.0	112.39	112.1	110.81	110.5	1.4
Cadmium	0.00	100.0	109.59	109.6	106.22	106.2	3.1
Chromium	0.33	100.0	109.06	108.7	108.74	108.4	0.3
Lead	0.00	100.0	98.51	98.5	106.31	106.3	7.6

Recovery Limits 70-130%

RPD Limit 20

SPECTRA LABORATORIES

Authorized by: Kristin Hintz

March 17, 2020

ESN Northwest
1210 Eastside St. NE
Suite 200
Olympia, WA 98501

Units: ug/L
Spectra Project: 2020030409
Applies to Spectra #'s: 1-2

QUALITY CONTROL RESULTS
Mercury by Cold Vapor - EPA 245.1

Laboratory Reagent Blank (LRB)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020

	CAS #	Result
Mercury	7439-97-6	< 0.5

Laboratory Fortified Blank (LFB)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020

	Spike Added	LCS Conc.	LCS %Rec
Mercury	5.0	5.10	102.0

LCS Recovery limits 85-115%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 3/17/2020 Date Analyzed: 3/17/2020

Sample Spiked: 2020030494-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Mercury	0.00	5.0	4.77	95.4	4.98	99.6	4.3

Recovery Limits 70-130%

RPD Limit 20

SPECTRA LABORATORIES



Authorized by: Kristin Hintz

CHAIN-OF-CUSTODY RECORD

CLIENT: GO Spectrum NW DATE: 3/7/20 PAGE 1 OF 1

ADDRESS: 14777 N. VALLEY STREET BELLUVE WA 98003 PROJECT NAME: South Morse LLC

PHONE: 425-209-1406 FAX: _____ LOCATION: Seattle WA

CLIENT PROJECT #: 19-001 PROJECT MANAGER: M. Cortes DATE OF COLLECTION: 3/7/20

COLLECTOR: M. Cortes

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES											NOTES	Total Number of Containers	Laboratory Note Number													
					TPH - HCD	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	Semivol 8270	PAH's 8270	PCB's 8082	RCA 8 Metals	MTCAs 5 Metals	Pb				Asbestos - PLM	GRO Suite	DRO Suite	WO Suite									
1. SM-SW-01	-	0900	water	1/2 Gal																								1			
2. SM-MW1-01	3.2	1740	↓	2-gal										X															2	filter over bearing	
3. SM-MW2-01	13.7	0745	↓											X															2		
4. SM-MW3-01	12.7	1750	↓											X															2		
5.																															
6.																															
7.																															
8.																															
9.																															
10.																															
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14.																															
15.																															
16.																															
17.																															
18.																															
RELINQUISHED BY (Signature)					DATE/TIME	RECEIVED BY (Signature)	DATE/TIME	SAMPLE RECEIPT											LABORATORY NOTES:												
<i>Mindy Bell</i>					3/7/20 3:45 PM	<i>Mindy Bell</i>	3/7/20 3:45 PM	TOTAL NUMBER OF CONTAINERS																							
								CHAIN OF CUSTODY SEALS Y/N/NA																							
								SEALS INTACT? Y/N/NA																							
								RECEIVED GOOD COND./COLD																							
								NOTES:																							